



BOTANICAL GRAMMAR

AND

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DICTIONARY ;

TRANSLATED

FROM THE FRENCH,

OF

BULLIARD AND RICHARD.

—◆—
BY PROF. A. EATON.
—◆—

THIRD EDITION,

Wholly written over, and now including the Natural Orders of
LINNEUS AND JESSIEU.

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—◆—
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ANNEX
Botany

NORTHERN DISTRICT OF NEW-YORK, ss.

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A. E.

RENSSELAER SCHOOL,
Aug. 29, 1828.

Grammar and Dictionary of Botany.

GRAMMAR OF BOTANY.

IT is not necessary that a student in Botany should remember the definitions of all the terms used in the descriptions of plants. There are some terms, however, which ought to be studied in systematic order. Such terms, so systematized, may constitute a *grammar of botany*, or a botanical nomenclature.

The annexed grammar of botany comprizes the most important elementary terms; and all that a student should store up in his memory.

ELEMENTARY ORGANS.

Every plant is either phenogamous or cryptogamous.

Phenogamous plants have their stamens and pistils sufficiently manifest for examination.

Cryptogamous plants either lose the staminate organs before they become manifest, or they are too minute for inspection.

1. The *Classes, Orders and Genera* of the Linnean system, are founded wholly on the seven elementary organs of fructification.

2. These are,

1. *Calyx*. The outer or lower part of the flower, generally not coloured.*

2. *Corol*. The coloured blossom, within or above the calyx.

3. *Stamens*. The organs immediately surrounding or adjoining the central one; consisting of mealy or glutinous knobs, either sessile or supported on filaments.

4. *Pistil*. The central organ of the flower, whose base becomes the pericarp and seed.

5. *Pericarp*. The covering of the seed, whether pod, shell, bag, or pulpy substance.

6. *Seed*. The essential part, which contains the rudiment of a new plant.

7. *Receptacle*. The base which sustains the other six parts, being at the end of the flower-stem.

SUBDIVISIONS OF THE CALYX.

Every calyx is either *monophyllous*, consisting of one leaf; or *polyphyllous*, consisting of more than one leaf. Either kind may be:

1. *Perianth*. That calyx which adjoins and surrounds the other parts of the flower, as of the apple, rose, &c.

About two thirds of all plants have perianths.

* In the language of Botany, any part of a plant is not coloured when it is green; as the calyx of the apple is said not to be coloured, because it is green; and that of the nasturtion is coloured, because it is not green.

2. *Involucre*. That calyx which comes out at some distance below the flower, and never encloses it. It is commonly at the origin of the peduncles of umbels, and sometimes attached to other aggregate flowers.

Involucres are either *universal*, placed at the origin of the universal umbel, as in caraway, lovage, &c.; or *partial*, placed at the origin of a particular umbel, as in coriander; or *proper*, placed beneath a single flower.

3. *Spathe*. A kind of membrane, which at first encloses the flower, and after it expands, is left at a distance below it, as daffodil, onion, Indian turnip.

4. *Glume*. That kind of calyx which is composed of one, two, or three valves or scales, commonly transparent at the margin, and often terminated by a long awn or beard. All grasses have glume calyxes.

5. *Ament*. An assemblage of flower-bearing scales, arranged on a slender thread, or long receptacle; each scale generally constituting the lateral calyx of a flower, as in the willow, chesnut, pine, &c.

6. *Calyptra*. The cap or hood of pistillate mosses, resembling in form and position an extinguisher set on a candle. Conspicuous in the common hair-cap moss.

7. *Volva*. The ring or wrapper at first enclosing the pileus or head of a fungus; and which, after the plant has arrived to maturity contracts and remains on the stem or at the root.

SUBDIVISIONS OF THE COROL.

Every corol is either *monopetalous*, consisting of one petal or leaf; or *polypetalous*, consisting of more than one.

**Monopetalous Corols are,*

1. *Bell-form*. Hollowed out within the base, and generally diverging upwards, as Canterbury bells, gentian, &c.

2. *Funnel-form*. With a tubular base, and the border opening gradually in the form of a tunnel, as the thorn-apple, morning-glory.

3. *Salver-form*. Having a flat spreading limb or border, proceeding from the top of a tube, as lilac, trailing arbutus, &c.

* It is proper to inform the student, in this place, of two important facts, connected with the descriptions of plants, which are made by references to natural and artificial forms.

1. A certain number of forms were assumed by Linneus as standards for references; none of which are to be considered as perfect. But when any one of these forms is referred to, it is to be understood, that it is nearer the true form of the organ under consideration, than any other of these standard forms.

2. All standard forms are either drawn from well-known natural bodies, or from artificial bodies or implements known to the ancients. Some of the most common NATURAL bodies are the egg, lips of animals, the throat, head, knee, the heart, the kidneys, the hand, bird's feet, spur, feather, a bay, a tooth, hair, bristles, silk, down, eye-lashes, veins, nerves, wings, ears, claws, &c. Some of the most common ARTIFICIAL bodies or implements are, a spike, spindle, circle, oval, lance, line, awl, arrow, halbert, viol, lyre, saw, shield, cross, sabre, needle, bell, keel, club, cone, leather, cup, greek letter delta, fork, urn, wheel, &c.

4. *Wheel-form.* Having a spreading border without a tube, or with an exceeding short one, as borage, laurel, mullein.
5. *Labiata.* A labiate corol is divided into two general parts, somewhat resembling the lips of a horse or other animal. Labiate corols are either *personate*, (with the throat muffled) as snap-dragon; or *ringent*, (with the throat open) as mint, mother-wort, catnip, monkey-flower.

Polypetalous Corols are,

1. *Cruciform.* Consisting of four equal petals spreading out in the form of a cross, as radish, cabbage, mustard, &c.
 2. *Caryophylleous.* Having five single petals, each terminating in a long claw, enclosed in a tubular calyx, as pink, catch-fly, cockle, &c.
 3. *Liliaceous.* A corol with six petals, spreading gradually from the base, so as altogether to exhibit a bell-form appearance, as tulip lily, &c.
 4. *Rosaceous.* A corol formed of roundish spreading petals without claws, or with extremely short ones, as rose, apple, strawberry, &c.
 5. *Papilionaceous.* A flower which consists of a banner, two wings and a keel, as pea, clover, &c. supposed to resemble a butterfly.
- If a corol agrees with none of the above descriptions, it is called *anomalous*.

SUBDIVISION OF THE STAMEN.

1. *Anther.* The knob of the stamen, which contains the pollen; very conspicuous in the lily, &c. Never wanting.
2. *Pollen.* The dusty, mealy or glutinous substance contained in the anthers. Never wanting.
3. *Filament.* That part of the stamen which connects the anther with the receptacle, calyx or pistil. Often wanting; generally thread-form when present.

SUBDIVISION OF THE PISTIL.

1. *Stigma.* The organ which terminates the pistil; very conspicuous in the lily, and hardly distinguishable in the Indian corn. Never wanting.
2. *Germ.* That part of the pistil which in maturity becomes the pericarp and the seed, as in the cherry, pompion. Never wanting.
3. *Style.* That part of the pistil which connects the stigma and the germ; very conspicuous in the lily; wanting in the tulip.

SUBDIVISION OF THE PERICARP.

1. *Silique.* That kind of pod which has a longitudinal partition, with the seeds attached alternately to its opposite edges, as radish, cabbage, &c.
2. *Legume.* A pod without a longitudinal partition, with the seeds attached to one suture only, as the pea, &c.
3. *Capsule.* That kind of pericarp which opens by valves or pores, and becomes dry when ripe, as the poppy, which opens by pores, and the mullein by valves.

4. *Drupe*. That kind of pericarp which consists of a thick fleshy or cartilaginous coat enclosing a nut or stone, as in the cherry, in which it is said to be *berry-like*; and in the walnut, where it is *dry*.
5. *Pome*. A pulpy pericarp without valves, which contains within it a capsule, as apples, quinces, &c.
6. *Berry*. A pulpy pericarp enclosing seeds without any capsule, as currant, grape, cucumber, melon.
7. *Strobile*. An ament with woody scales, as the fruit of the pine.

SUBDIVISIONS OF THE SEED.

1. *Cotyledon*. The thick fleshy lobes of seeds; very manifest in beans, whose cotyledons grow out of the ground in the form of two large succulent leaves. Many plants, as Indian corn, wheat, the grasses, &c. have but one cotyledon; mosses, &c. none.
2. *Corcle*. The rudiment of the future plant, always proceeding from the cotyledon; easily distinguished in chesnuts, acorns, &c.
3. *Tegument*. The skin or bark of seeds; it separates from peas, beans, Indian corn, &c. on boiling.
4. *Hilum*. The external mark or scar on seeds, by which they were affixed to their pericarps. In beans, and the like, it is called the *eye*.

SUBDIVISIONS OF THE RECEPTACLE.

1. *Proper*. That which belongs to one flower only.
2. *Common*. That which connects several distinct florets, as in the sun-flower, daisy, teasel. A common receptacle may be,
3. *Rachis*. The filiform receptacle, connecting the florets in a spike, as in the heads of wheat.
4. *Columella*. The central column in a capsule, to which the seeds are attached.
5. *Spadix*. An elongated receptacle, proceeding from a spathe, as Indian turnip.

GENERAL DIVISIONS OF FLOWERS.

1. *Simple*. Having a single flower on a receptacle, as in the quince, tulip, &c.
2. *Aggregate*. Having on the same receptacle several flowers, whose anthers are not united, as teasel, button-bush, &c.
3. *Compound*. Having several florets on the same receptacle, with their anthers united, as sun-flower, china-aster, &c.
4. *Staminate*. Having stamens only, as those in the tassels of Indian corn.
5. *Pistillate*. Having pistils only, as the fertile flower of the cucumber.
6. *Perfect*. Having both stamens and pistils.
7. *Neutral*. Having neither stamens nor pistils.
8. *Complete*. Having a calyx and corol.

INFLORESCENCE.

The manner in which Flowers are situated on Plants.

1. *Whorl*. In which the flowers grow around the stem in rings one above another, as mother-wort, catnip.

2. *Raceme*. Having the florets on short undivided pedicels, arranged along a general peduncle, as currants.
3. *Panicle*. Having some of the pedicels, along the general peduncle of the raceme, divided, as in oats. A panicle contracted into a compact, somewhat ovate form, as in lilac, is called *thyrs*.
4. *Spike*. Having the florets sessile, or nearly so, on the elongated general receptacle, as wheat, mullein, &c.
5. *Umbel*. Having the flower-stems diverging from one place, like the braces of an umbrella, bearing florets on their extremities, as carrot, dill, fennel, &c.
6. *Cyme*. It agrees with the umbel in having its general flower-stems spring from one centre, but differs in having those stems irregularly subdivided, as elder, &c.
7. *Corymb*. In the corymb the peduncles take their rise from different heights along the main stem; but the lower ones being longer, they form nearly a level or convex top, as yarrow.
8. *Fascicle*. In general external appearance it resembles the umbel, but the foot-stalks are irregular in their origin and subdivisions, as sweet-william.
9. *Head*. In this the flowers are heaped together in a globular form without peduncles, or with very short ones, as clover.

CONCENTRIC CYLINDERS OF ROOTS AND HERBAGE.

The Substance of Roots and Herbage consists of :

1. *Cuticle*. The thin outside coat of the bark, which seems to be without life, and often transparent. Very conspicuous on some kinds of birch, cherry, currant-bushes, &c.
2. *Cellular Integument*. The parenchymous substance between the cuticle and bark, generally green. Easily seen in the elder, after removing the cuticle.
3. *Bark*. The inner strong fibrous part of the covering of vegetables.
4. *Camb*. The mucilaginous or gelatinous substance, which, in the spring of the year, abounds between the bark and the wood of trees.
5. *Wood*. The most solid part of the trunks and roots of herbs and trees.
6. *Pith*. The spongy substance in the centre of the stems and roots of most plants. Large in the elder.

ROOTS.

Roots are the descending parts of vegetables, and are *annual*, *biennial*, or *perennial*. They are of seven kinds.

1. *Branching*. Having the whole root divided into parts as it proceeds downwards, as the oak, apple-tree, &c.
2. *Fibrous*. The whole root consisting of filiform parts, originating immediately from the base of the stem, as many of the grasses.
3. *Creeping*. Extending itself horizontally, and sending out fibrous radicles, as quack-grass.
4. *Spindle*. Thick at the top, and tapering downward, as carrot, parsnip, &c.
5. *Tuberous*. Roots which are thick and fleshy, but not of any regular globular form. They are *knobbed*, as the potatoe; *oval*, as those

of orchis; *abrupt*, as the birdsfoot violet; or *fascicled*, as asparagus.

6. *Bulbous*. Fleshy and spherical. They are either *solid*, as the turnip; *coated*, as the onion; or *scaly*, as the garden lily.
7. *Granulated*. Consisting of several little knobs in the form of grains, strung together along the sides of a filiform radicle, as the wood-sorrel.

HERBAGE is all the plant except the *root* and *fructification*. It includes *stems*, *leaves* and *appendages*.

STEMS.

1. *Tige*, or *proper stem*. The ascending herbage-bearing trunk or stem of all phenogamous plants, except the grasses, as the trunk of the oak, the grape-vine, the mullein stalk.
2. *Culm*. The stalk or stem of the grasses, as wheat-straw, sugar-cane, &c.
3. *Scap*. That kind of flower-bearing stem which springs immediately from the root, and is destitute of leaves, as dandelion.
4. *Peduncle*. The flower-bearing stem which springs from any part of the stem or branches, as apple, cucumber, &c.
5. *Petiole*. The foot-stalk of the leaf.
6. *Fron*d. Applied entirely to cryptogamous plants. It includes the herbaceous, leathery, crustaceous, or gelatinous substance, from which the fruit is produced.
7. *Stipe*. The stem of a fern, of a fungus, of compound egret, and of a pericarp when elevated from the receptacle; as of maiden-hair, garden caper.

LEAVES are *evergreen* or *deciduous*.

FORMS OF SIMPLE LEAVES.

1. *Orbicular*. Nearly circular, as the leaves of red clover, of cabbage, &c.
2. *Ovate*. Resembling the longitudinal section of an egg, the base being broader than the extremity. One of the most common forms of leaves.
3. *Oval*. Differing from ovate in having both ends equal in breadth.
4. *Oblong*. The length more than twice the breadth, and the sides somewhat parallel.
5. *Obovate*. Ovate with the narrowest end towards the stem, as those of red clover.
6. *Cordate*. Heart-shaped, the hind-lobes being rounded, as lilac.
7. *Obcordate*. Cordate, with the apex or narrowest end towards the stem, as of wild indigo.
8. *Kidney-form*. Hollowed in at the base, with rounded lobes and rounded ends, as mallows.
9. *Lanceolate*. In the form of the ancient lance, tapering from near the base to the apex, and narrow, as the leaves of most of the willows, of ribwort, &c.
10. *Linear*. Continuing of the same width through nearly the whole length; usually pointed at one or both ends, as most grasses.
11. *Awl-form*. Linear at the base, and becoming more or less curved at the point.

12. *Acuminate*. Any kind of leaf terminating more or less suddenly in a point turned towards one edge of the leaf.
13. *Arrow-form*. Shaped like an arrow-head; differing from cordate in having the hind-lobes more or less acute.
14. *Halbert-form*. Hastate. Shaped like an halbert, as field-sorrel, creeping snapdragon.
15. *Guitar-form*. Oblong, broadish near the base, and contracted at the sides.
16. *Lobed*. Deeply parted, and the divisions large, with rounded sides or ends, as the white oak.
17. *Palmate*. Resembling a hand with the fingers spread, as horse-chesnut.
18. *Pedate*. Resembling a bird's foot.
19. *Sinuate*. Having the margin hollowed with deep sinuses or bays, as the white oak.
20. *Pinnatifid*. Divided transversely by deep incisions, not extending to the midrib.
21. *Lyrate*. Pinnatifid, with the largest division at the apex, and diminishing from thence to the base, as hedge-mustard.
22. *Runcinate*. Pinnatifid, with the divisions pointing backwards, as dandelion.

EDGES OF LEAVES.

23. *Serrate*. Having sharp notches resembling saw-teeth along the margin, and pointing towards the apex, as those of cherry-trees, roses, &c.
24. *Toothed*. Having projections from the margin of its own substance, which are neither serratures, nor crenatures, as those of blue-bottle.
25. *Crenate*. Having uniform notches on the margin of the leaf, which incline towards the apex, or the base, or neither, as gill-over-ground.

ENDS OF LEAVES.

26. *Emarginate*. Notched at the termination of the midrib.
27. *Retuse*. Emarginate with a shallow sinus.
28. *Obtuse*. Having the apex of the leaf more or less rounded.
29. *Acute*. Terminating in an angle; that is, not rounded.

SURFACES OF LEAVES.

1. *Hairy*. Having distinct strait hairs.
2. *Downy*. Covered with fine cotton-like down.
3. *Silky*. Covered with soft close-pressed hairs.
4. *Bristly*. Set with stiff hairs.
5. *Ciliate*. Edged with parallel hairs or bristles, resembling eyelashes.
6. *Nerved*. Furnished with midrib-like fibres running from the base to the apex.
7. *Veined*. Having tendinous fibres variously branched.

POSITIONS OF LEAVES.

1. *Decurrent*. When the two edges of the leaf extend along the stem below the place of insertion.

2. *Clasping*. Sessile with the base more or less heart-form, so as entirely or in part to surround the stem.
3. *Sheathing*. With the leaf prolonged down the stem, so as to cover it, in the manner of the grasses.
4. *Perfoliate*. Having the stem passing through the leaf.
5. *Connate*. Leaves opposite, with their bases united.
6. *Peltate*. With the foot-stalk attached to the lower side of the leaf, so as to resemble a shield.
7. *Opposite*. Standing at the same height with base against base.
8. *Whorled*. Surrounding the stem in horizontal rings or rows.
9. *Imbricate*. Lying over each other like shingles on a roof, so as to "break joints."
10. *Fascicled*. Growing in bunches from the same point, as leaves from white pine.
11. *Radical*. Proceeding immediately from the root.

COMPOUND LEAVES.

1. *Ternate*. Having three leaflets proceeding from the end of one petiole.
2. *Bilernate*. Twice ternate; when the petiole is ternate, and each division bears three leaflets.
3. *Triternate*. Three times ternate.
4. *Pinnate*. With distinct leaflets arranged on opposite sides of the same petiole.
5. *Bipinnate*. Twice pinnate.
6. *Tripinnate*. Thrice pinnate.
7. *Interruptedly-pinnate*. Having smaller leaflets dispersed among the larger, as potatoe.

APPENDAGES.

1. *Stipule*. A leaflet or scale at, or near, the base of a petiole.
2. *Bract*. A leaf among or near the flowers, different from the other leaves of the plant.
3. *Thorn*. A sharp process from the woody part of a plant.
4. *Prickle*. A sharp process from the bark, as those on raspberry bushes, &c.
5. *Sting*. Hair-like processes mostly from the leaves, as nettles.
6. *Gland*. A roundish, generally minute, appendage to different parts of plants.
7. *Tendril*. The filiform appendage by which climbing plants support themselves on other bodies.

NUMERALS.

The Latin and Greek numerals are so frequently compounded with other words by botanical writers, that an English student ought to commit them to memory, as here laid down.

LATIN.	NOS.	GREEK.	
Unus	1	Monos	single.
Bis	2	Dis	twice.
Tres	3	Treis	thrice.
Quatuor	4	Tettares	
Quinque	5	Pente	
Sex	6	Ex (pronounced hex)	
Septem	7	Epta (pronounced hepta)	
Octo	8	Okto	
Novem	9	Ennea	
Decem	10	Deka	
Undecem	11	Endeka	
Duodecem	12	Dodeka	
Tredecem	13	Dekatreis	
Quatuordecim	14	Dekatettares	
Quindecim	15	Dekapente	
Sexdecim	16	Dekaex	
Septendecim	17	Dekaeptha	
Octodecim	18	Dekaokto	
Novendecim	19	Dekaennea	
Viginti	20	Eikosi	
Multus	Many	Polus	

LINNEAN CLASSIFICATION.

Plants are classified upon two distinct plans; the Artificial and Natural. The object of the Artificial system is merely to furnish a method for ascertaining the name of a plant. The object of the Natural system is to bring together into small groups, plants which resemble each other in their botanical affinities, sensible qualities and medicinal properties. The Artificial system has been very aptly compared to the dictionary, and the Natural to the grammar of a language.

ARTIFICIAL SYSTEM.

The art of searching out the name of a plant is denominated the analysis of the plant. It is, in truth, an elegant illustration of the *Analytical method* of logic; as the construction of a genus, order and class, is of the *Synthetical method*.

When we analyze a plant by the aid of the artificial system, our final purpose is to ascertain the specific name, by which it was called by the first botanist, who *published* a description of it. But in doing this, we trace it through several intermediate steps. Species are grouped together under generic names—genera under orders—orders under classes. By this arrangement much labour is saved. For example, we see the common wild strawberry, for the first time; and are desirous to learn its name. By comparing the proper organs (to be described hereafter) with the description of the classes, we find it belongs with the group of plants, which constitute a class, called *Icosandria*. This class is subdivided into orders, and we find our plant is to be referred to the order *Polygynia*. Here we find the names of several genera—such as the rose, the raspberry, the strawberry, the five-finger, the avens, &c. On comparing our plant with all the genera under this order, we find it will agree with none but the strawberry.

On turning to the strawberry (under the botanical name *fragaria*) we find there are several kinds of strawberry. Each kind is called a *species*, as the English strawberry, haut-boy strawberry, pine-apple strawberry, wild strawberry, &c. are different species. On carefully comparing our plant with the descriptions of all the species, we find it will agree with none but the wild strawberry (*virginiana*.) Thus we arrive at the generic name *strawberry*, (*fragaria*) and specific name *wild*, (*virginiana*.)

The Linnean Artificial classes are founded upon the four following circumstances of the stamens; *number, position, relative length, and connexion*. The first ten classes are distinguished by the number of stamens—the *eleventh* and *twelfth* by number and position—the *thirteenth* and *fourteenth* by number and relative length—the *fifteenth*, *sixteenth* and *seventeenth* by connexion—the *eighteenth*, *nineteenth* and *twentieth* by position. The last or *twenty-first* class, being a natural one, is not distinguished by any circumstance of the stamens.

The first twelve classes are named by prefixing Greek numerals expressive of the number of stamens to ANDRIA; which is a Greek derivative, used metaphorically for stamens.

1. MONANDRIA, includes those plants which bear perfect flowers, with but one stamen in each. As the blite and samphire. It is a very small class.

2. DIANDRIA, includes those plants which bear perfect flowers, with two stamens in each. As hedge-hyssop and lilac. Part of this class of plants bears naked seeds, and forms a natural union with those of the first order of the fourteenth class; as sage, rosemary, mountain mint.

3. TRIANDRIA, includes those plants which bear perfect flowers, with three stamens in each. As the iris and oats. Most of the grass-like or culmiferous plants are included in this class. The rough coarse grasses, as bog-rush and cotton grass, which have closed sheaths or no sheaths to the leaves, have but one style to the pistil. But the finer grasses, as timothy grass and blue grass, which have open sheaths to the leaves, have two styles.

4. TETRANDRIA, includes those plants which bear perfect flowers, with four stamens in each. As plantain and dog-wood. This class is wholly artificial, consequently the plants included in it are easily found out.

5. PENTANDRIA, includes those plants which bear perfect flowers, with five stamens in each. As comfrey, mullein, tobacco, potatoe, ginseng, parsnip, elder and flax. This is a very extensive class. It includes a natural assemblage of rough-leaved plants, as the borage—of nauseous narcotics, as tobacco and henbane—of umbelliferous narcotics and stomachics, as poison hemlock, water-parsnip and fennel—also many plants which greatly disagree in botanical affinities. The rough-leaved and umbelliferous plants of this class resemble each other so nearly, that students find much difficulty in distinguishing the genera.

6. HEXANDRIA, includes those plants which bear perfect flowers, with six stamens in each. As the lily, tulip, dock and water plantain.

7. HEPTANDRIA, includes those plants which bear perfect flowers, with seven stamens in each. As the chick winter-green and horse-

chestnut. This is a very small class, and the number of stamens variable in most flowers found in it.

8. OCTANDRIA, includes those plants which bear perfect flowers, with eight stamens in each. As the marsh cranberry, nasturtion and buckwheat.

9. ENNEANDRIA, includes those plants which bear perfect flowers, with nine stamens in each. As the sassafras and rhubarb. It is a small class, and the number of stamens very variable in all the flowers found in it.

10. DECANDRIA, includes those plants which bear perfect flowers, with ten stamens in each. As the whortleberry, pink, cockle and pokeweed. Some flowers in this class have but half the number of stamens required in part of the species of a genus.

11. ICOSANDRIA, includes those plants which bear perfect flowers, with more than ten stamens in each, growing on the calyx. As the peach, apple, thorn, strawberry and rose. Some flowers in this class have but half the number of stamens required; as some species of thorn, &c. It is called Icosandria, because the average number of stamens is about twenty.

12. POLYANDRIA, includes those plants which bear perfect flowers, with stamens more numerous generally than those of any other class, growing on the receptacle; as the pond lily and common St. John's wort. If the number of stamens exceeds ten, provided they are placed on the receptacle, the plant belongs to this class. This is an extensive class, and the number of stamens is more variable in this than in all the other classes. When several flowers on the same plant have a variable number of stamens placed on the receptacle, we may generally presume that the plant belongs to this class, even if few are found with so many as ten stamens.

The thirteenth and fourteenth classes are named by prefixing the Greek numerals, expressive of the number of long stamens, to DYNAMIA; which is a Greek derivative, signifying power,—importing that the longest stamens are most powerful.

13. DIDYNAMIA, includes those plants which bear perfect flowers, with four stamens in each, two of which are longest; as savory, skull-cap, snapdragon. This class embraces plants of two very natural assemblages. The first order contains plants with naked seeds; none of which are poisonous. The second order contains plants with seeds in capsules, all of which are said to be poisonous. Most flowers of both orders have labiate corols.

14. TETRADYNAMIA, includes those plants which bear perfect flowers, with six stamens in each, four of which are longest; as mustard, cabbage and radish. This class embraces a very natural family of plants, bearing cruciform flowers.

The fifteenth and sixteenth classes are named by prefixing Greek numerals, expressive of the number of parcels in which the stamens are united by their filaments, to the word ADELPHIA; which is a Greek derivative, used to signify brotherhood.

15. MONADELPHIA, includes those plants which bear flowers, whose stamens are united laterally by their filaments in one group or set; as

the hollyhock and mallows. But if the flowers are papilionaceous, they belong to the next class, even if the stamens are so united; as the lupine. Some species of genera which belong to this class, have the stamens broad and membranous at the base, but not attached at all; as some species of geranium. They generally recede from the base of the petals, by approaching the pistil, presenting a columnar form.

16. **DIADELPHIA**, includes those plants which bear perfect flowers, whose stamens are united laterally by their filaments in two groups or sets; as the pea, bean, and locust-tree. In most cases nine stamens are united in one set, and one stamen stands alone. In some flowers the stamens are all united in one set, which is the proper character of the preceding class; though if the corol is papilionaceous, it belongs here. But if the stamens are not united at all, the plant does not belong here, even if the corol is papilionaceous; as the cassia and wild indigo belong to the tenth class. Genera of the tenth order in this class resemble each other so nearly that students find considerable difficulty in distinguishing them.

The seventeenth class is named by prefixing SYN, (a Greek derivative from sun,) signifying together, to GENESIA, a Greek derivative, signifying produced or growing up. The name is intended to signify that the anthers grow up together, or in an united state.

17. **SYNGENESIA**, includes those plants which bear perfect, staminate, pistillate, or neutral florets, in which those bearing anthers have them united laterally, so as to form a hollow cylinder. To this definition should be added, that the plants of this class all bear compound flowers, as the sun-flower, thistle, and dandelion, to exclude the lobelia, some species of violet, the jewel-weed, &c. which belong to the fifth class, though their anthers are united. This is a very extensive and perfectly natural class.

The eighteenth class is named by prefixing an abbreviation of GYNIA, a Greek derivative, used metaphorically to signify the pistil, to ANDRIA; as the stamen and pistil are united in this class.

18. **GYNANDRIA**, includes those plants which bear perfect flowers, with the stamens standing on the pistil; as ladies' slipper and orchis. To this definition should be added, that the stamens are inserted at a distance from the place where the calyx and corol are inserted. For the stamens are inserted on the germ of the pistil in all plants of the class SYNGENESIA, &c. but they are inserted in connexion with the corol.

The nineteenth and twentieth classes are named by prefixing Greek numerals expressive of the number of plants occupied by the stamens and pistils in order to complete a species, to ÆCIA, a Greek derivative from oikos, a house. The name is intended to signify, that the stamens and pistils inhabit the same or different tenements.

19. **MONÆCIA**, includes those plants which bear imperfect flowers, with the staminate and pistillate flowers on the same plant; as the oak, chesnut, and Indian corn.

20. **DIÆCIA**, includes those plants which bear imperfect flowers, with the staminate and pistillate flowers on separate plants; as the hemp, hop, willow and poplar.

Most plants of these two last classes are united in one class by Pursh, called **DICLINIA**. Plants of these two classes may be called diclinious plants, or the diclinious classes.

The twenty-first class is named by prefixing CRYPTO, a Greek derivative, signifying concealed, to GAMIA, a Greek derivative, used metaphorically for the strewing of pollen from the anthers upon the stigmas of pistils. It is intended to signify, that the operation of strewing the fertilizing pollen upon stigmas, so manifest in lilies, poplars, Indian corn, &c. is concealed in plants of this class; though it is probable that such operations are as regularly performed in cryptogamous as in phenogamous plants.

21. **CRYPTOGAMIA**, includes those plants whose stamens are not manifest, even under the lens. They are known by habit, or natural affinities; as ferns, mosses, liver-worts, sea-weeds, lichens, and fungi.

Remarks. To ascertain the number of stamens contained in the flowers of plants, in difficult cases, the student must consider their relation to the divisions of the corol, or of the calyx if the corol is wanting. For if the stamens are all arranged around the pistil in one circular series, they agree in number with the divisions of the corol; or their number is such that they may be divided by the number of the divisions of the corol, or that these divisions may be divided by the number of stamens, without any remainder. If the stamens are arranged in more than one series, each series, separately taken, is subject to the same rule. Thus all cruciform flowers have two series of stamens. The inner series consists of four stamens, which is equal to the number of petals. The outer series consists of two stamens, by which the number of petals may be divided without a remainder.

In some cases the inner series seems to be governed by the pistil; particularly when the principal series is outermost. As in the buckwheat. Here the main series is outermost, and consists of five stamens, agreeing with the divisions of the coloured calyx. The inner series consists of three stamens, agreeing with the triangular form of the germ. One species of this genus (*orientale*) has a two-sided germ; and the inner series consists of but two stamens.

By a careful attention to such relations or analogies, we may fix upon the right number for determining the class, in cases where the real number of stamens is very variable, or where they are partly abortive, or too minute for the eye.

ARTIFICIAL ORDERS.

Each class is subdivided into two or more orders. These subdivisions are founded upon the number of styles (or stigmas when styles are wanting)—the covering or nakedness of seeds—the relative lengths of pods—the comparison between disk and ray florets of compound flowers—and the characters of preceding classes. The orders of the class cryptogamia are distinguished by natural family characters.

The orders of the first twelve classes are distinguished by the number of styles : and named by prefixing Greek numerals, expressive of the number of styles, to GYNIA, a Greek derivative, used metaphorically for style or stigma. The styles are numbered at their origin on the germ. Their subdivisions above the germ are not taken into view in determining the number of the order. Sometimes the style is wanting, leaving the stigma to sit down upon the germ ; in such cases the stigmas are numbered in determining the number of the order.

1. **MONOGYNIA**, includes those plants, in any of the first twelve classes, which bear flowers with but one style, or one sessile stigma in each ; as the samphire in the first class, the lilac in the second, the iris in the third, the plantain in the fourth, the mullein in the fifth, the lily in the sixth, the horse-chesnut in the seventh, the scabish in the eighth, the sassafra in the ninth, the prince's pine in the tenth, the cherry in the eleventh, and the poppy in the twelfth.

2. **DIGYNIA**, includes those plants, in any of the first twelve classes, which bear flowers with two styles, or two sessile stigmas in each ; as timothy grass in the third class, and the pink in the tenth class.

3. **TRIGYNIA**, includes those plants in any of the first twelve classes, which bear flowers with three styles, or three sessile stigmas in each ; as the elder in the fifth class, and the buckwheat in the eighth class.

4. **TETRAGYNIA**, includes those plants in any of the first twelve classes, which bear flowers with four styles or four sessile stigmas ; as the holly in the fourth class, and the lizard's tail in the seventh class.

5. **PENTAGYNIA**, includes those plants in any of the first twelve classes, which bear flowers with five styles or five sessile stigmas in each ; as spikenard in the fifth class, and cockle in the tenth class.

6. **HEXAGYNIA**, six styles or sessile stigmas.

7. **HEPTAGYNIA**, seven styles or sessile stigmas.

8. **OCTOGYNIA**, eight styles or sessile stigmas.

9. **ENNEAGYNIA**, nine styles or sessile stigmas.

10. **DECAGYNIA**, includes those plants in any of the first twelve classes which bear perfect flowers, with ten styles or ten sessile stigmas in each ; as the pokeweed in the tenth class.

13. **POLYGYNIA**, includes those plants in any of the first twelve classes which bear flowers with any number of styles or sessile stigmas above ten ; as the rose in the twelfth, and the crow-foot in the thirteenth.

The orders of the thirteenth and fourteenth classes are but two in each. Those in the thirteenth are named by prefixing GYMNO, a Greek derivative, signifying naked, or ANGIO, a Greek derivative, signifying bag or sack, to SPERMIA, a derivative signifying seed. In the fourteenth, they are named by using a derivative from the Latin SILIQUA, a pod ; and from the diminutive of the same, SILICULA.

1. **GYMNOSPERMIA**, includes those plants of the thirteenth class, which bear seeds without any pericarp. They generally lie naked in the bottom of the calyx ; as of mother-wort and hyssop.

2. **ANGIOSPERMIA**, includes those plants of the thirteenth class, which bear seeds in a capsule ; as the fox-glove and snapdragon.

1. **SILICULOSA**, includes those plants of the fourteenth class which bear silique pods, with the length and breadth nearly equal ; as the shepherd's purse.

2. **SILIQUOSA**, includes those plants of the fourteenth class which bear silique pods, with the length considerably exceeding the breadth, always more than double ; as the mustard.

The orders of the fifteenth, sixteenth, eighteenth, nineteenth and twentieth classes, are distinguished by the characters of preceding classes, and assume the same names. Therefore when a plant is found in either of these five classes, we inquire which nearest preceding class it would fall into, if its particular classic character were wanting. The answer to this inquiry gives the order.

1. **MONANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with but one stamen in each ; as orchis in the eighteenth class, and sea eel-grass in the nineteenth.

2. **DIANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with two stamens in each ; as ladies' slipper in class 18, duck-meat in class 19, and willow in class 20.

3. **TRIANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with three stamens in each ; as blue-eyed grass in class 15, Indian corn in class 19, and the fig in class 20.

4. **TETRANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with four stamens in each ; as the nettle in the 19th class and the bayberry in the 20th class.

5. **PENTANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with five stamens in each ; as the passion-flower in the 15th class, the hog-weed in the 19th, and the hemp in the 20th.

6. **HEXANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with six stamens in each ; as water-oats in the 19th class, and the green-briar in the 20th.

7. **HEPTANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with seven stamens in each ; as the stork-geranium in class 15.

8. **OCTANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with eight stamens in each ; as the seneca snake-root in class 16, and poplar in class 20.

10. **DECAENDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with ten stamens in each ; as the geranium in class 15, and the pea in class 16.

13. **POLYANDRIA**, when used for an order in the 15th, 16th, 18th, 19th, or 20th class, includes those plants in either of said classes which bear flowers with more than ten stamens in each ; as the hollyhock in class 15, the butternut in class 19, and the moon-seed in class 20.

16. **MONADELPHIA**, when used for an order in the 19th or 20th class, (it is never used in 15th, 16th, or 18th,) includes those plants in either

of said classes which bear flowers with the stamens united by their filaments in one set; as the cucumber in class 19, and the red cedar in class 20.

The four first orders of class 17, are distinguished by comparing the disk and ray florets. The first, second and third orders have perfect florets in the disk; the fourth has staminate florets only in the disk. The first has perfect florets in the ray, the second and fourth have pistillate, and the third has neutral. The fifth order has partial perianth calyxes to all the florets; whereas none of the other orders have any but the general calyx—the egret, when present, being a substitute for the perianth. The orders of this class are named by joining the word *POLYGAMIA* to an appropriate adjective. *Polygamia* is a Greek derivative, used metaphorically to signify numerous organs for carrying on the process of strewing the fertilizing pollen upon stigmas. The adjective *ÆQUALIS* is used to signify, that the organs for furnishing pollen are equalized, or duly proportioned to the stigmas to be fertilized; *SUPERFLUA*, that the pistillate florets in the margin or ray are superfluous, each fertile floret of the disk having stamens and pistils in due proportion; *FRUSTRANEA*, that the ray florets are empty or vain, having no stamens or pistils; *NECESSARIA*, that the ray florets are necessary to the production of seed, the disk florets being all staminate; *SEGREGATA*, that the florets are disjointed, or separated from each other by partial calyxes.

1. *POLYGAMIA ÆQUALIS*, includes those plants of the 17th class, which bear flowers with perfect florets in both the disk and ray; as the dandelion, thistle, and burdock.

2. *POLYGAMIA SUPERFLUA*, includes those plants of the 17th class, which bear flowers with perfect florets in the disk, and pistillate florets in the ray; as ox-eyed daisy and yarrow.

3. *POLYGAMIA FRUSTRANEA*, includes those plants of the 17th class, which bear flowers with perfect florets in the disk, and neutral florets in the ray; as the sun-flower and blue-bottle.

4. *POLYGAMIA NECESSARIA*, includes those plants of the 17th class, which bear flowers with staminate florets in the disk, and pistillate florets in the ray; as the pot-marygold, and high-water shrub.

5. *POLYGAMIA SEGREGATA*, includes those plants of the 17th class, which bear flowers with a perianth to each floret; as the globe-thistle, and elephant's foot.

Y The orders of the twenty-first class are distinguished by natural family characters: this class embraces six natural families.

1. *FILICES*, includes all the ferns. These plants bear fruit on the back of the leaves, or some part of the leaves seem as it were metamorphosed into a kind of fruit-bearing spike; as the brake, and maiden-hair. A sub order, which may be denominated *Apteres* or *Pteroides*, includes those which bear fruit in a peculiar appendage, as a spike or protuberance in the axils or at the base of the leaves; as ground pine, scouring-rush, and quill-wort.

2. *MUSCI*, includes the proper mosses. These plants bear, on leafy stems and branches, one-celled capsules opening at the top, where, they are crowned by a peculiar lid. The capsules do not open by valves, and are generally elevated on stems or stipes; as hair-cap moss.

3. **HEPATICÆ**, includes those more succulent moss-like plants, which are called liver-worts. They bear four-valved capsules, which distinguishes them from mosses; as brook liver-wort, and platted moss.

4. **ALGÆ**, includes the sea-weeds and frog-spittle. These plants bear vesiculous or filamentous fruit, mostly in gelatinous fronds. The fruit frequently requires a high magnifying power to render it visible; as common sea-weed, and river green-hair.

5. **LICHENES**, includes the proper lichens. These plants appear in somewhat circular patches on stones, trees, and old fences; also in fibres suspended from branches, &c. They are generally pale green, yellow, white, or black; but they are found of all colours. They bear exceedingly minute fruit in receptacles on compact or gelatinous fronds. These receptacles are divided into twelve kinds, translated by Dr. J. E. Smith into clefts, spangles, puffs, buttons, tubercles, hollows, cellules, globules, shields, targets, orbs, and knobs. All of these terms are separately defined in the Dictionary.

6. **FUNGI**, includes such plants as the mushroom, touchwood, mould, blight, &c. They are destitute of herbage, consisting of a spongy, pulpy, leathery, or woody substance; and bear fruit in a naked dilated membrane, or within the substance of the plant.

Remark. For a more full account of these six last orders, the reader is referred to the Natural Orders of Jussieu.

N. B. When a star (*) is placed before generic names at the end of an order, it is to be understood, that though some species of these genera fall here by the rules of the artificial system, yet that as no natural genus must be divided, these stragglers must be referred back to their natural genera for descriptions. They may thus be referred back by aid of the alphabetical arrangement of generic names, where the species are described.

Note 2. When exercising pupils in the artificial classes, the Instructor should direct them to begin by comparing the stamens of the plant under examination, with the characters of the highest numbered class, and to proceed downwards towards the first class. Because the characters of the lower classes are sometimes included in the higher. Thus, in analyzing the lily, the student should proceed as follows.

1. It is not *cryptogamous*, because the stamens and pistils are manifest.
2. It is not *diclinious*, because the stamens and pistils are in the same flower.
3. It is not *gynandrous*, because the stamens do not stand on any part of the pistil.
4. It is not *syngeneicious*, for the flower is not compound.
5. It is not *adelphous*, for the filaments are not united.
6. It is not *dynamous*, for two stamens are not uniformly the shortest.
7. It is not *hyperdecandrous*, for the number of stamens does not exceed ten.
8. It is not *decandrous*, for the number of stamens is not ten.
9. It is *hypodecandrous*, for the number of stamens is under ten.

Having traced it to the proper group of classes, the exact number of stamens settle it in the class hexandria.

SYNOPSIS OF ARTIFICIAL CLASSES.

- | | | |
|----------------------|---|--|
| No. of
stamens. | } | 1. <i>Monandria</i> , one stamen in the flower.
2. <i>Diandria</i> , 2 stamens.
3. <i>Triandria</i> , 3 stamens.
4. <i>Tetrandria</i> , 4 stamens.
5. <i>Pentandria</i> , 5 stamens.
6. <i>Hexandria</i> , 6 stamens.
7. <i>Heptandria</i> , 7 stamens.
8. <i>Octandria</i> , 8 stamens.
9. <i>Enneandria</i> , 9 stamens.
10. <i>Decandria</i> , 10 stamens. |
| No. and
position. | } | 11. <i>Icosandria</i> , more than ten stamens, standing on the calyx.
12. <i>Polyandria</i> , more than ten stamens, on the receptacle. |
| No. and
length. | } | 13. <i>Didynamia</i> , 4 stamens, 2 of them uniformly the longest.
14. <i>Tetradynamia</i> , 6 stamens, 4 of them uniformly the longest. |
| Connex-
ion. | } | 15. <i>Monadelphia</i> , stamens united by their filaments in one set, anthers generally separate.
16. <i>Diadelphia</i> , stamens united by their filaments in two sets, sometimes in one set, with papilionaceous corols.
17. <i>Syngenesia</i> , stamens 5, united by their anthers in one set, flowers compound. |
| Position. | } | 18. <i>Gynandria</i> , stamens stand on the germ, style or stigma, separate from the base of the calyx and corol.
19. <i>Monœcia</i> , stamens and pistils in separate flowers on the same plant.
20. <i>Diœcia</i> , stamens and pistils on separate plants. |
| Natural. | } | 21. <i>Cryptogamia</i> , stamens not manifest, such plants can only be classed by natural families. |

Remarks. Culmiferous plants, of the 3d, 6th and 19th classes, must be in fruit, almost mature, when analyzed. Also, all plants in classes 11, 13, 14 and ~~15~~, and the umbelliferous, in the 5th. The classes, orders, and most of the generic characters in these classes, may be ascertained after the fruit is sufficiently mature for analyzing.

SYNOPSIS OF ARTIFICIAL ORDERS.

- Class 1.)
 2.)
 3. Orders of these twelve classes are distinguished by the num-
 4. ber of styles or sessile stigmas.
 5.)
 6. Monogynia, 1 style. Digynia, 2.
 7. Trigynia, 3. Tetragynia, 4.
 8. Pentagynia, 5. Hexagynia, 6.
 9. Heptagynia, 7. Octogynia, 8.
 10. Decagynia, 10. Polyginia, over 10.
 12.)
13.) 1, Gymnospermia, seeds naked. 2, Angiospermia, seeds cov-
 ered.
 14.) 1, Siliculosa, pod short. 2, Siliquosa, pod long.
15.) Preceding classes, as 1, Monandria. 2, Diandria. 3, Trian-
 16.) dria. 4, Tetrandria.
17. 1, Polygamia aequalis, florets all perfect. 2, Pol. superflua,
 florets of the disk perfect, of the ray pistillate. 3, Pol. frus-
 tranea, florets of the disk perfect, of the ray neutral. 4, Pol.
 necessaria, florets of the disk staminate, of the ray pistillate.
 5, Pol. segregata, florets furnished with partial calyxes.
18.) Preceding classes, as 5, Pentandria. 6, Hexandria. 7, Hep-
 19.) tandria. 8, Octandria. 10, Decandria. 13, Polyandria.
 20.) 15, Monadelphia.
21. 1, Filices (ferns, brakes, polypods.) 2, Musci (common
 mosses.) 3, Hepaticæ (liverworts and succulent mosses.) 4,
 Algae (frog-spittle, water greenhair, sea-weeds.) 5, Lichenes
 (lichens, dry mosses, patches and specks on trees, rocks,
 stones, &c.) 6, Fungi (mushrooms, puff-balls, mould, wheat-
 rust, &c.)

Remarks. When a plant cannot be made to fall under the order or section which its characters seem to indicate, it should be tried through the whole class or whole order, as though no subdivisions were made.

NATURAL ORDERS.

Plants of the same Natural Order agree in habit, and mostly in medicinal properties. When they differ in these properties, the difference is indicated by the odour.

The Natural Orders of Linneus are retained on account of the books in use which refer to them. Jussieu has improved upon Linneus greatly. Medical students ought to arrange their plants according to Jussieu in the herbarium.

Students should be told, that many plants may possess the qualities of the orders to which they belong, though in a very feeble and scarcely perceptible degree.

NATURAL ORDERS OF LINNEUS.

1. PALMÆ. Palms and their relatives; as Cocoanut, Frog's bit. *Farinaceous diet.*
2. PIPERITÆ. Pepper and its relatives. In crowded spikes; as Indian turnip, Sweet-flag. *Tonics and stomachics.*
3. CALAMARIÆ. Reed-like grasses, with culms without joints; as Cat-tail, Sedge. *Coarse cattle fodder.*
4. GRAMINA. The proper grasses with jointed culms; as Wheat, Rye, Oats, Timothy-grass, Indian corn. *Farinaceous diet, and cattle fodder.*
5. TRIPETALOIDEÆ. Corol three-petalled, or calyx three-leaved; as Water plantain, Rush-grass, Arrow-head. *Tonics, and rough cattle fodder.*
6. ENSATÆ. Liliaceous plants with sword-form leaves; as Iris, Blue-eyed grass, Virginian spider-wort. *Antiscorbutics and tonics.*
7. ORCHIDEÆ. With fleshy roots, stamens on the pistils, pollen glutinous, flowers of singular structure, with the germ inferior; as Ladies' slipper, Arethusa. *Farinaceous diet, and stomachics.*
8. SCITAMINEÆ. Liliaceous corols, stems herbaceous, leaves broad, germ blunt-angular; as Ginger, Turmeric. *Warming stomachics.*
9. SPATHACEÆ. Liliaceous plants with spathes; as Daffodil, Onion, Snow-drop. *Secernant stimulants.**
10. CORONARIÆ. Liliaceous plants without spathes; as Lily, Tulip, Star-grass. The nauseous scented and bitter are *antiscorbutic and cathartic*; the others *emolient*.
11. SARMENTACEÆ. Liliaceous corols with very weak stems; as Smilax, Asparagus, Bell-wort. *Tonics and secernant stimulants.*
12. OLERACEÆ, or HOLERACEÆ. Having flowers destitute of beauty, at least of gay colouring; as Beet, Blight, Pig-weed, Dock, Peppercage. If nauseous, *cathartic*; others, *mild stimulants and nutrimentics.†*
13. SUCCULENTÆ. Plants with very thick succulent leaves; as Prickly-pear, Houseleek, Purslain. *Antiscorbutic and emolient.*
14. GRUINALES. Corols with five petals, capsules beaked; as Flax, Wood-sorrel, Crane bill. *Tonics and refrigerants.*

* Which promote the secretion of perspirable matter, &c. &c.

† Nutrientics of Darwin, which serve as nutriment merely, without producing any extraordinary effects.

15. *INUNDATEÆ*. Growing under water, and having flowers destitute of beauty; as Hippuris, Pond-weed. *Astringents*.
16. *CALYCIFLORÆ*. Plants without corols, with the stamens on the calyx; as Poet's cassia, Seed buckthorn. *Astringents and refrigerants*.
17. *CALYCANthemÆ*. Calyx on the germ, or growing to it, flowers beautiful; as Willow-herb, Ludwigia, Enothera. *Tonics*.
18. *BICORNES*. Anthers with two strait horns; as Whortleberry, Spicy and Bitter Wintergreen, Laurel. *Astringents*.
19. *HESPERIDES*. Sweet-scented, leaves evergreen; as Myrtle, Cloves, Mock orange. *Astringent and stomachic*.
20. *ROTACEÆ*. Corols wheel-form; as St. John's wort. *Tonics*.
21. *PRECIÆ*. Plants with early spring flowers of an elegant specious appearance; as Primrose. *Astringents*.
22. *CARYOPHYLLÆ*. Plants with caryophyllous corols; as Pink, Cockle. *Astringents and secerant stimulants*.
23. *TRIHLATÆ*. Flowers with three stigmas, capsules inflated and winged, and generally three-seeded, with distinct hilums; as Nasturtion, Horse-chesnut. *Tonics and nutrientics*.
24. *CORIDALES*. Corols spurred or anomalous; as Fumitory, Touch-me-not. *Narcotic and antiscorbutic*.
25. *PUTAMINÆ*. Plants which bear shell-fruit; as Caper-bush. *Detergent and antiscorbutic*.
26. *MULTISILIQUEÆ*. Having several pod-form capsules to each flower; as Columbine, Larkspur, Rue, American cowslip. *Cathartic, narcotic and caustic*.
27. *RHÆADEÆ*. Plants with caducous calyces, and capsules or siliques; as Poppy, Blood-root, Celandine. *Anodyne and antiscorbutic*.
28. *LURIDÆ*. Corols lurid, mostly monopetalous; flowers pentandrous or didynamous, with capsules; as Tobacco, Thorn-apple, Nightshade, Foxglove. *Narcotic and antiscorbutic*.
29. *CAMPANACEÆ*. Having bell-form corols, or those whose general aspect is somewhat bell-form; as Morning-glory, Bell-flower, Violet, Cardinal-flower. *Cathartics and secerant stimulants*.
30. *CONTORTÆ*. Corols twisted or contorted; as Milk-weed, Periwinkle, Choke-dog. *Cathartics and antiscorbutics*.
31. *VEPREULÆ*. Having monophyllous calyces, coloured like corols; as Leather wood, Thesium. *Antiscorbutic and emetic*.
32. *PAPILIONACEÆ*. Having papilionaceous flowers; as Peas, Beans, Locust-tree, Clover. *Emolient, diuretic, nutrientic*.
33. *LOMENTACEÆ*. Having legumes or loment, but not perfect papilionaceous flowers with united filaments; as Cassia, Sensitive plant. *Emolient, astringent, cathartic*.
34. *CUCURBITACEÆ*. Fruit pumpkin-like, anthers mostly united; as Melons, Cucumbers, Passion-flower. *Cathartic and refrigerant*.
35. *SENTICOSÆ*. Prickly or hairy, with polypetalous corols, and a number of seeds either naked or slightly covered; as Rose, Raspberry, Strawberry. *Astringent and refrigerant*.
36. *POMACEÆ*. Having many stamens on the calyx, and drupaceous or pomaceous fruit; as Pear, Currant, Cherry, Peach. *Refrigerants*.
37. *COLUMNIFERÆ*. Stamens united in the form of a column; as Hollyhock, Mallows, Cotton. *Emolient*.
38. *TRICOCCÆ*. Having three-celled capsules; as Castor-oil plant, Spurge, Box. *Cathartic*.

39. SILIQUOSÆ. Having silique pods; as Cabbage, Mustard, Shepherd's purse. *Diuretic, antiscorbutic, nutritive.*

40. PERSONATÆ. Having personate corols; as Snapdragon, Monkey-flower. *Deobstruents and cathartics.*

41. ASPERIFOLIÆ. Corols monopetalous, with five stamens, seeds five, naked, leaves rough; as Comfrey, Stone-seed, (lithospermum.) *Astringents and deobstruents.*

42. VERTICILLATA. Having labiate flowers; as Sage, Thyme, Catmint, Mother-wort. *Stomachics and astringents.*

43. DUMOSÆ. Bushy pithy plants with small flowers, petals in four or five divisions; as Sumach, Elder, Holly. *Tonic and cathartic.*

44. SEPIARIÆ. Having mostly tubular divided corols, with few stamens—being ornamental shrubs; as Lilac, Jasmine. *Astringents.*

45. UMBELLATÆ. Flowers in umbels, with five-petalled corols, stamens five, styles two, and two naked seeds; as Fennel, Dill, Carrot, Poison hemlock. *Stomachic and narcotic.*

46. HEDERACEÆ. Corols five-cleft, stamens five to ten, fruit berry-like on a compound raceme; as Grape, Ginseng, Spikenard. *Tonics and refrigerants.*

47. STELLATÆ. Corols four-cleft, stamens four, seeds two, naked, leaves mostly whorled; as Bed-straw, Dog-wood, Venus' pride. *Tonics and Deobstruents.*

48. AGGREGATÆ. Having aggregate flowers; as Button-bush, Marsh rosemary. *Tonics and secernant stimulants.*

49. COMPOSITÆ. All the compound flowers; as Sun-flower, Boneset, Tansey, Thistle. *Tonics and secernant stimulants.*

50. AMENTACEÆ. Bearing pendant aments; as Hazle, Oak, Chestnut, Willow. *Astringents.*

51. CONFIERÆ. Bearing strobiles; as Pine, Juniper, Cedar. *Tonics and stomachics.*

52. COADUNATÆ. Several berry-like pericarps, which are adnate; as Tulip-tree, Magnolia. *Tonics.*

53. SCABRIDÆ. Leaves rough, flowers destitute of beauty; as Nettle, Hemp, Hop, Elm. *Astringents.*

54. MISCELLANÆÆ. Plants not arranged by any particular character; as Pond-lily, Poke-weed, Amaranth. Their qualities are *various*; but see Jussieu's orders.

55. FILICES. All ferns; as Brakes, Maiden-hair. *Secernant stimulants.*

56. MUSCI. All mosses; as Polytrichum. *Cathartics and secernant stimulants.*

57. ALGÆ. All liverworts, lichens, and sea-weeds; as Jungermannia, Fucus, Usnea. *Tonics.*

58. FUNGI. All funguses; as Mushroom, Toad-stool, Puff-ball, Touch-wood, Mould. *Tonics and cathartics.*

NATURAL ORDERS OF JUSSIEU.

The Natural system of Jussieu is founded upon characters greatly resembling, in principle, those which Linneus considers as artificial. But notwithstanding this artificial appearance, the application of these characters forms the basis of a system, which is truly natural.

Plants are distributed into ~~two~~ grand divisions by their seeds. ³ Those plants whose seeds consist chiefly of two fleshy parts, called *Cotyledons*, as the pea, bean, &c. constitute the largest subdivision; called the *Dicotyledonous* division. Those, whose seeds consist chiefly of a single cotyledon, as wheat, barley, Indian corn, &c. constitute a smaller subdivision, called the *Monocotyledonous* division. Those, whose seeds contain no fleshy mass; having nothing analogous to the cotyledon, excepting a thin membrane in some cases, as the mosses, lichens, fungus, &c. constitute the smallest subdivision, called the *Acotyledonous* division.

These grand divisions are subdivided into orders, by a general enumeration of natural characters. The *Acotyledonous* division is directly distributed into six natural orders. But the other two divisions are first distributed into classes, and these classes into ninety-four natural orders, making in the whole one hundred orders.

The two cotyledonous divisions are distributed into classes by the relative position of the germ and the organs of the flower nearest to it. The three positions of these organs are, on the top of the germ, around the germ, and below the germ. The *Monocotyledonous* division is divided into three classes. One class has the stamens on the top of the germ, another has them around the germ, and the third has them below the germ. The *Dicotyledonous* division has nine classes constructed upon the same general plan. The first three classes contain plants *without corols*, the second three classes contain plants with *monopetalous corols*, the third three classes contain plants with *polypetalous corols*. This grand division contains eleven classes however. One of these extra numbers is constituted by subdividing one of the nine classes, by the union and separation of anthers. And the other extra number, (the eleventh class) is chiefly founded on the *diclinious* character of the plants embraced in it. It is, however, the most defective class.

FIRST DIVISION.

ACOTYLEDONS,

OR, PLANTS WITH GONGYLOUS SEEDS.

Order I. Fungi.

Plants of this order are never strictly aquatic, though some of them grow in water and in both damp and dry places indifferently. They never exhibit the verdure of green herbage: but are generally corky, fleshy, or mould-like. They vary much in form and colour: being spherical, hemispheric, columnar, clavate, filamentous, lamellar, capsular, pulverulent; white, yellow, red, black, greenish, &c. The fruit of some is external, of others internal, of others its place can hardly be demonstrated. No plant of this order gives off oxygen gas by the action of light.

Generic names. Sphaeria, Stilbospora, Hysterium, Xyloma, Naemaspora, Tubercularia, Sclerotium, Tuber, Geastrum, Bovista, Tulostoma, Lycoperdon, Scleroderma, Lycogala, Fuligo, Physarum, Trichia, Arcyria, Stemonitis, Tubulina, Mucor, Onygena, Aecidium, Uredo, Puccinia, Trichoderma, Conoplea, Cyathus, Phallus, Armanita, Agaricus, Merulius, Dedalius, Boletus, Sistotrema, Hydnum, Thelephora, Merisma, Clavaria, Geoglossum, Spathularia, Leotia, Helvella, Morchella, Tremella, Peziza, Aegerita, Isaria, Monila, Dematium, Erineum, Racodium, Himantia, Mesenterica.

Properties. Tonics if dry or corky, cathartics and narcotics if juicy. An alkaline juice exudes from some.

Order II. Algae.

First division. The proper *algae* are mostly aquatics. They are filamentous or membranous, and nearly similar in all their parts. They absorb circulating fluids through their immersed parts only, which are not transfused through other parts. They are generally green or reddish, and give off oxygen gas from the parts under water which are exposed to the sun.

Generic names. Fucus, Chordaria, Laminaria, Delesseria, Sphaerococcus, Halymenia, Ulva, Vaucheria, Hutchinsia, Caramium, Lemania, Conferva, Zygenema, Oscillatoria, Batrachospermum, Rivularia, Nostoc.

Second division. The proper *lichens* are various in texture, form and colour. They are leathery, woody, lamellated, leaf-like, filamentous, white, yellow, greenish, black, &c. Often they appear like green herbage, especially if wet. Some appear like leprous spots on stones and trees, speckled with black, white, or yellow dots. Others in greenish or bluish patches on old fences and walls; and others in strong light green filaments, suspended from branches of trees, which are falsely called mosses.

They absorb circulating fluids, which are transfused through every part of their substance. Their fructification is in the form of clefts, spangles, puffs, buttons, tubercles, hollows, cellules, globules, shields, targets, orbs, or knobs.

Generic names. Spiloma, Arthonia, Gyalecta, Lecidea, Calicium, Gyrophora, Opegrapha, Graphis, Verrucaria, Endocarpon, Porina, Pyrenula, Variolaria, Urceolaria, Lecanora, Parmelia, Borrera, Cetraria, Sticta, Peltidea, Nephroma, Evernia, Cenomyce, Baeomyces, Isidium, Stereocaulon, Rhizomorpha, Alectoria, Ramalina, Collema, Cornicularia, Usnea, Lepraria.

Properties. Tonics—some contain useful colouring matter, and some are nutritive.

Order III. Hepaticae.

Plants of this order have green or greenish fronds; some resembling the fronds of *lichens*, others those of *mosses*, but more succulent and cellular. They are always monoecious or dioecious. The barren or staminate flowers contain globules, aggregated together in a kind of calyx, filled with a liquid analagous to pollen. The fertile or pistillate flowers have germs or capsules, either naked or surrounded with pericheths, which are mostly peduncled. The seeds generally adhere to

spirally twisted fibres. The capsules are always 4-celled and destitute of lids ; which characters distinguish this order from the next.

Generic names. Riccia, Anthoceros, Marchantia, Jungermannia.

Properties. Tonics and refrigerants.

Order IV. Musci.

Plants of this order are monoecious, dioecious or perfect. The flowers are lateral or terminal, mostly elevated on peduncles. In early flowers Sprengel says, that by the help of a magnifying glass, "organs may be distinctly seen, which consist partly in oblong bud-like gemmae, supposed formerly to be anthers ; and partly in an aggregation of pistils, intermixed with succulent filaments."

Their capsules are always 1-celled, and open at top by *operculi*, or lids. Over the lids, calyptrae are generally placed. Under the lids and surrounding the mouths may be seen a kind of filamentous or denticulate fringe or edging, called teeth.

The seeds are very numerous, resembling fine dust adhering to the inner surfaces of the capsules. The herbage is green and perennial ; the leaves are minute and generally imbricated. Mosses flourish most in damp shady situations ; and mostly flower early in the spring or late in autumn.

Generic names. Sphagnum, Phascum, Gymnostomum, Schistidium, Anoectangium, Tetraphis, Grimmia, Weissia, Trematodon, Dicranum, Campylopus, Racomitrum, Trichostomum, Barbula, Syntrichia, Didymodon, Splachnum, Ornithotrichum, Ulota, Bartramia, Bryum, Arhenopterum, Mnium, Timmia, Diplocomium, Meesia, Diphyscium, Buxbaumia, Funaria, Pterigynandrum, Lasia, Leucodon, Neckera, Cryphaea, Pilotrichum, Climacium, Leskia, Pterigophyllum, Hypnum, Fontinalis, Fissidens, Polytrichum, Catharinaea.

Properties. Mostly secernant stimulants ; some few are cathartic.

Order V. Filices.*

Plants of this order are herbaceous and take root in the earth ; but bear numerous minute dust-like seeds, like other cryptogamous plants.

First division. The *pteros ferns* bear spherical or reniform 1-celled capsules on the back of winged fronds or on what appears like leaves metamorphosed into fruit-bearing spikes. The leaves are sub-radical, with alternate leaflets, or alternate divisions or indentations. They are mostly coiled, or more or less rolled in at their tips, when they first spring from the earth.

Generic names. Acrostichum, Polypodium, Onoclea, Blechnum, Pteris, Asplenium, Scolopendrium, Woodwardia, Adiantum, Aspidium, Athyrium, Dicksonia, Woodsia, Cheilanthes, Schizaea, Osmunda, Lycopodium, Botrychium, Ophioglossum.

Second division. The *Apteres* bears fruit on spikes, in the axils of leaves, or in the substance of the frond, having no proper winged frond. They are either very leafy or totally leafless. Neither the leaves nor any other parts of apterous ferns are ever coiled.

* De Lamarck and De Candolle place this order, and the next, among the Monocotyledons.

Generic names. Lycopodium, Equisetum, Isoetes.

Properties. Secernant stimulants.

*Order VI. Naiades.**

Plants of this order are tender aquatics, with few axillary flowers containing few minute stamens.

Generic names. Caulinia, Chara, Najas, Saururus, Podostemum, Lemna.

Properties. Astringent.

SECOND DIVISION.

MONOCOTYLEDONS.

OR, PLANTS WITH 1-LOBED SEEDS.

CLASS FIRST. Stamens below the pistil.

Order VII. Aroideae.

Plants of this order all bear monoecious flowers, which are sessile on a spadix, and destitute of perianth calyxes. Stamens and pistils are intermixed and stand on the spadix. Fruit a roundish berry. They are almost stemless, with sub-radical leaves; and support the flowers on scapes or scape-like stalks.

Generic names. Ictodes, Calla, Zostera, Arum, Orontium.

Properties. Warming stomachics; if nauseous, antispasmodics.

Order VIII. Typhae.

Plants of this order bear monoecious flowers with 3-leaved perianths. Stamens 3 and styles one. Fruit 1-seeded, seed fleshy or ferinaceous. They are always aquatics, stems jointless, and leaves somewhat sheathing.

Generic names. Typha, Sparganium.

Properties. Weak tonics.

Order IX. Cyperoideae.

Flowers glumaceous, in spikes or spikelets, glumes 1-valved. The flowers have no proper perianth calyxes; stamens 3, style 1, with two or three stigmas; seeds single, farinaceous, without pericarp. Plants grassy, perennial, of a coarse texture; culm triangular or cylindrical; leaves with *closed sheaths* or destitute of sheaths.

Generic names. Kyllingia, Schoenus, Rynchospora, Cyperus, Mariscus, Dulichium, Scripus, Eriophorum, Tricophorum, Fuirena, Limnetis, Carex, Scleria.

Properties. Tonics. Used for coarse cattle fodder.

Order X. Gramineae.

Flowers glumaceous, generally in spikes or spikelets, but sometimes solitary. Outer glumes generally 2-valved, which serve as calyxes to

* De Lamarck and De Candolle say that this order is artificial and ought to be abolished.

spikelets, or to single flowers when solitary. Stamens 3; stigmas 2, plumose or capillary. Seeds single, farinaceous, without pericarps. Culms cylindric, jointed; leaves alternate, with *sheaths always cleft* throughout their whole extent, on the side opposite to the direction of the leaf.

Generic names. Cinna, Anthoxanthum, Cenchrus, Oryzopsis, Panicum, Digitaria, Cynodon, Paspalum, Aristida, Stipa, Alopecurus, Phalaris, Crypsis, Hordeum, Milium, Agrostis, Saccharum, Muhlenbergia, Leersia, Trichodium, Phleum, Aira, Uralespis, Elymus, Melica, Eleusine, Secale, Triticum, Lolium, Atheropogon, Uniola, Briza, Sorghum, Dactylis, Poa, Windsoria, Festuca, Bromus, Avena, Danthonia, Arundo, Andropogon, Holcus, Oryza, Zea, Tripsacum, Coix, Zizania, Hierochloa.

Properties. Feeble tonics. The herbage furnishes the best of cattle fodder; and the largest seeds are used for farinaceous diet.

CLASS SECOND. Stamens surrounding the pistil, and standing on the calyx or corol. Sometimes they are merely attached at the base.

Order XI. *Palmae.*

We have no plants of this order in the Northern States. The coconut, palm, and several other tropical plants belong to this order.

Properties. Weak tonics, and yield farinaceous diet.

Order XII. *Asparagi.*

Flowers with petaloid perianths, generally 6-parted or 6-cleft. Stamens adhering to the same base with the corol or calyx. Berry 3 or 4-celled, 1 to 3-seeded. Leaves often alternate, rarely whorled, never sheathing.

Generic names. Asparagus, Convallaria, Dracaena, Gyromia, Smilax, Trillium.

Properties. Mild tonics and secernant stimulants.

Order XIII. *Junci.*

Plants of this order generally bear flowers with small spathes, or spathe-like bracts, and free 6-parted perianths.

First division. The proper *Junci* resemble the Cyperoideae in habit; having sheathing leaves and glumaceous spathes or bracts. The flowers are in panicles or corymbs; stamens 3 or 6, and each flower has but a single germ.

Generic names. Juncus, Xyris, Acorus, Tradescantia, Commelina, Helonias, Xerophyllum, Veratrum, Tofieldia.*

Second division. The *Alismaceae* are all aquatics, and each flower contains more than one germ.

Generic names. Alisma, Sagittaria, Triglochin, Scheuchzeria, Eriocaulon, Potamogeton, Zanichellia.

Properties. Generally secernant stimulants. The sweet-scented are warming stomachics, and the nauseous are antiscorbutics.

* The two last are placed in a distinct order by De Lamarck and De Candoille.

Order XIV. Liliaceae.

Plants of this order have no perianths. They have 6-petalled corols of the liliaceous form. Stamens 6, standing against the divisions of the corol and often attached to it. Style 1, stigmas 3, or 3-lobed. Germs free. Capsules 3-celled, 3-valved, with transverse partitions; seeds flat. Leaves generally with simple nerves.

Generic names. Lilium, Tulipa, Fritillaria, Erythronium, Uvularia Streptopus.

Properties. Emollient and weak seccernant stimulants.

Order XV. Bromeliaceae.

We have no plants of this order, excepting rare exotics, growing in the Northern States. The pine apple (*Bromelia ananas*) belongs here.

Properties. Refrigerants.

Order XVI. Asphodeli.

No perianths, but some have spathes. Corols 6-parted or 6-cleft. Stamens 6, standing against the divisions of the corol and attached to it. Germs free; seeds round or angled.

Generic names. Asphodelus, Hemerocallis, Ornithogalum, Allium, Aletris, Narthecium, Hyacinthus.

Properties. Expectorants and demulcents. The strong-scented are seccernant stimulants, and the bitter are tonic and cathartic.

Order XVII. Narcissi.

No perianths, but most have spathes. Corols 6-parted or 6-petalled. Stamens 6, standing against the divisions of the corol and attached to it. Germ attached to the corol, and generally supporting it.

Generic names. Narcissus, Amaryllis, Galanthus, Polyanthes, Agave, Hypoxis, Leptanthus, Pontederia, Heteranthera.

Properties. Weak tonics and emollients.

Order XVIII. Irides.

Corol 6-cleft or 6-parted: stamens 3: style 1, with 1 or 3 stigmas: germ attached to the corol. Leaves ensi-form or linear. Roots bulbous or tuberous.

Generic names. Iris, Ixia, Crocus, Dilatris, Sisyrinchium.

Properties. Antiscorbutics and tonics.

CLASS THIRD. Stamens standing on the pistil.

Order XIX. Musae.

We have no plants of this order in the Northern States. The bread tree (*Artocarpus incisa*) belongs here.

Properties. Tonics.

Order XX. Cannac.

No plants of this order in our district. Ginger (*Amomum*) is placed here.

Properties. Warming stomachics.

Order XXI. *Orchideae*.

Plants of this order have superior, 5-petalled corols, 3 external and 2 internal. There is also in each corol a petal-like organ, called the lip, various in form and direction. Anthers always 1 or 2, and from 1 to 4-celled, sessile upon the side or apex of the style. The pollen is easily removed from the cells in agglutinated masses. Styles simple, with viscous stigmas of various forms and positions. Capsules 1-celled, 3-valved, 3-keeled. Seeds numerous, dust-like. Leaves entire, and generally nerved and clasping. Flowers more or less spiked and bracted.

Generic names. Orchis, Goodyera, Neottia, Listera, Pogonia, Triphora, Cymbidium, Arethusa, Tipularia, Malaxis, Microstylus, Coralorhiza, Cypripedium.

Properties. *Emollients, and the roots of some are stomachic.* Dioscorides, Galen, and Pliny, speak of the roots as affording excellent farinaceous diet, and as of great use in discussing swellings and cleansing ulcers.

Order XXII. *Hydrocharides*.

Plants of this order are all aquatics. Germs simple; stigmas 3 to 6, bifid. Capsules 1 or 6-celled, many seeded. Rather an artificial order.

Generic names. Proserpinaca, Floerkea, Vallisnerio.

Properties. *Weak tonics.*

THIRD DIVISION.

DICOTYLEDONS,

OR, PLANTS WITH 2-LOBED SEEDS.

CLASS FIRST, SECTION I. *Flowers apetalous.* Stamens standing on the germ.

Order XXIII. *Aristolochiae*.

Perianth 1-leaved adhering to the germ. Stamens numerous, (6 or 12) definite, attached to the germ. Style short, stigma divided. Capsule many-celled (generally 6) many-seeded.

Generic names. Asarum, Aristolochia.

Properties. *Warming stomachics and active tonics.* Galen set a high value on the tonic powers of this order of plants.

CLASS SECOND. Stamens surrounding the germ, being attached to the calyx.

Order XXIV. *Aleagni*.

Calyx adheres to the germ, monophyllous, tubular, generally leafy outside and corol-like within. Stamens stand towards the top of the calyx, and are equal to the number of its division or double that number. Fruit 1-seeded.

Generic names. Thesium, Nyssa, Hippophae.

Properties. *Weak tonics.*

Order XXV. Thymelac.

Calyx free, 1-leaved, 4 or 5-lobed, coloured. Stamens inserted towards the upper part of the calyx, and are double the number of its divisions. Fruit 1-seeded. Stems woody; leaves simple, entire and alternate.

Generic names. Dirca, Daphne.

Properties. Mild emetics and antiscorbutics.

Order XXVI. Protac.

No plants of this order grow in our district. The silver-tree (*Protea*) is placed here.

Properties. Weak tonics.

Order XXVII. Lauri.

Calyx free, monophyllous, permanent, 4 to 6 cleft, or 6-parted. Stamens inserted at the bottom of the divisions of the calyx, sometimes 6 in a single row, sometimes 12 in two rows, generally varying in number; anthers adnate to the filaments, dehiscent from their bases to their apices. Germ 1, style 1, stigma simple, or divided. Drupe or berry 1-celled, 1-seeded. Stems woody, leaves alternate.

Generic name. Laurus.

Properties. Warming stomachics and active secernant stimulants.

Order XXVIII. Polygoneae.

Calyx free, monophyllous, divided, often coloured. Stamens inserted on the bottom of the calyx; anthers 2-celled and 4-grooved, laterally dehiscent into a double chink. Germ 1, styles or sessile stigmas several; seed single, farinaceous, naked, with the corcle inside.

Generic names. Polygonum, Rumex, Rheum.

Properties. Mild cathartics and demulcents. The strong-scented, are antiscorbutic and discutient.

Order XXIX. Atriplices.

Calyx free, monophyllous, parted. Stamens inserted on the bottom of the calyx, and equalling the number of its divisions. Germ 1, style 1 or several. Seed often farinaceous, with corcles outside of it. Leaves alternate, simple, destitute of stipules or sheathes. Flowers small, greenish, and of a dull appearance.

Generic names. Salicornia, Blitum, Salsola, Chenopodium, Beta, Atriplex, Spinacia, Acnida, Phytolacca.

Properties. The strong-scented are active cathartics. The others are mildly aperient.

CLASS THIRD. Stamens standing below the germ.

Order XXX. Amaranthi.

Calyx free, permanent, divided, often coloured. Stamens 3 or 5. Germ 1, capsule 1-celled. Seed farinaceous. Flowers small.

Generic names. Amaranthus, Gomphrena.

Properties. Secernant stimulants and weak tonics.

Order XXXI. Plantagines.

Calyx double, outer one 4-parted, inner one tubular. (Rather the outer is a proper calyx, and the inner a dull membranaceous corol.) Stamens 4, adhering to the inner calyx, exsert. Germ simple, style 1. Capsule opening transversely. 2 to 4-celled. Seed corneous. Flowers in spikes. Leaves nerved and generally radical.

Generic name. Plantago.

Properties. Emollients.

Order XXXII. Nyctagines.

Involucre perianth-like, monophyllous; perianth monophyllous, coloured, permanent, contracted above the germ so as to appear altogether like a corol standing on the germ. Stamens attached to the gland-like base of the inner calyx, (corol?) which encloses the germ. Style 1, capitate. Seed farinaceous.

Generic name. Mirabilis.

Properties. Emetics and cathartics.

Order XXXIII. Plumbagines.

Calyx double, permanent; outer one monophyllous, tubular; inner one (rather the corol) coloured, 1 or many-petalled. Stamens 5, adhering to the inner calyx (corol?) Germ simple, free, styles many, or one with many stigmas. Capsule 1-seeded. Seed farinaceous.*

Generic name. Statice.

Properties. Cathartic and tonic.

CLASS FOURTH. SECTION II. *Flowers monopetalous.* Corols inserted below the germs.

Order XXXIV. Lysimachiae.

Calyx monophyllous, permanent, 4 or 5-lobed. Corol with the limb divided, and bearing the stamens opposite, and equal in number, to the divisions. Germ free, style 1, stigma simple. Capsule 1-celled, many-seeded, seeds attached to a free columella, the corcle strait and within the fleshy seed. Leaves simple.

Generic names. Lysimachia, Anagallis, Trientalis, Primula, Dodecatheon, Samolus, Hottonia, Buchnera.

Properties. Tonics and weak secernant stimulants.

Order XXXV. Pediculares.

Calyx divided, permanent, often tubular. Corol irregular, often ringent. Stamens 2 or 4, inserted on, or attached to, the corol; when 4, two are shorter. Germ free, style simple; capsule 2-valved. Seed with semiterete cotyledons. Flowers bracted.

Generic names. Polygala, Veronica, Callistachia, Bartsia, Rhinanthus, Obolaria, Euphrasia, Melampyrum, Erinus, Pediculares, Oro-

* Here in the three last orders we see, that the advocates for the natural arrangement are compelled to force a corol to become a calyx. But the Linnean artificial system will guide the student to the true genus, thence to the natural order, and thus secure to him its advantages.

banche, Epiphegus. [The two last have been placed in a sub-order, and distinguished by their capsules being 1-celled, and bearing seeds on a longitudinal nerve.]

Properties. *Deobstruents, cathartics and mild tonics.* Ancient authors, as Dioscorides, Pliny and others, valued most plants of this order for their efficacy in healing wounds, by external application.

Order XXXVI. Acanthi.

Calyx divided, permanent, often bracted. Corol irregular. Stamens 2 or 4. Germ free, style 1, stigma 2-lobed. Capsule 2-celled. Seed with foliaceous cotyledons.

Generic names. Justicia, Ruellia.

Properties. *Emollients.*

Order XXXVII. Jesmineae.

Calyx tubular. Corol tubular, except in Fraxinus. Stamens 2, excepting Fraxinus, inserted in, or attached to, the corol. Seed with a flat corcle. Stems woody.

Generic names. Jasminum, Ligustrum, Syringa, Chionanthes, Fraxinus.

Properties. *Mild tonics and secernant stimulants.* Petals of the Syringa contain prussic acid.

Order XXXVIII. Vitices.

Calyx tubular. Corol tubular. Stamens 4, 2 of them shorter—rarely 2 or 6. Germ free, style 1, stigma simple or 2-lobed. Corcle of the seed strait. Leaves opposite.

Generic name. Verbena.

Properties. *Deobstruents and secernant stimulants.* Parkinson, and the older authors, considered them as antidotes to the poison of serpents, &c.; but the moderns do not ascribe to them any very active powers.

Order XXXIX. Labiatae.

Calyx tubular, 5-cleft or 2-lipped. Corol tubular, irregular, often 2-lipped, the upper lip mostly 2-cleft, and the lower one 3-cleft. Stamens sometimes 2, mostly 4, with two of them shorter; they are always inserted under the upper lip of the corol. Germ free, 4-lobed; each lobe becoming a naked seed at the bottom of the calyx, with a strait corcle and flat cotyledons. Style 1, stigma 2-cleft. Stems generally, or perhaps always, 4-sided; leaves opposite. Flowers often whorled, and sometimes spiked.

Generic names. Lycopus, Monarda, Rosmarinus, Salvia, Collinsonia, Teucrium, Isanthus, Lavandula, Lamium, Pycnanthemum, Nepeta, Hyssopus, Mentha, Stachys, Galeopsis, Satureja, Leonurus, Marrubium, Ballota, Cunila, Hedeoma, Glechoma, Melissa, Trichostema, Ocimum, Scutellaria, Origanum, Thymus, Clinopodium, Prunella, Phryma, Molucella.

Properties. *Very active secernant stimulants, embracing all the most valuable sudorifics.* The sweet-scented are warming stomachics, and the bitter ones are tonics. Ancient physicians seem to have drawn a

large proportion of their vegetable *materia medica* from this order. They established the medicinal virtues of these plants very nearly as they are now understood. To those virtues ascribed to them by modern physicians, they added, however, that they are efficient as vermifuges, and in the cure of epilepsy, hemorrhagy, bites of serpents, and stings of scorpions.

Parkinson, who wrote almost two centuries ago, cites as authorities for the above, the trials and practice of Theophrastus, Dioscorides, Galen and Pliny among the ancients; and Matthioli, Clusius, Camerarius, Agrippa, Dodoneus, and many others among the oldest of the moderns.

Order XL. *Scrophularia.*

Calyx divided, often permanent. Corol irregular, limb divided. Stamens rarely 2, mostly 4, with two of them shorter, inserted on the corol. Germ free, style 1, stigma simple or 2-lobed. Capsule 1 or 2-celled, 2-valved, valves concave. Seeds numerous, affixed to the middle of the partition, with a strait corcle and semi-cylindric cotyledons. Flowers bracted.

Generic names. Utricularia, Gratiola, Lindernia, Hemianthus, Eri-nus, Dracocephalum, Schwalbea, Limosella, Zapania, Scrophularia, Antirrhinum, Collinsia, Gerardia, Digitalis, Mimulus.

Properties. *Deobstruents, absorbents, and mild narcotics.* Ancient physicians applied them to the wounds externally. Parkinson used the Digitalis in the epilepsy two centuries ago with great success.

Order XLI. *Solaneae.*

Calyx 5-cleft or 5-parted, often permanent. Corol regular, 5-cleft, mostly of a lurid hue. Stamens 5, attached to the base of the corol, and alternating with its lobes. Germ free, style 1, stigma simple or sub-cleft. Fruit 2-celled, many-seeded, either a 2-valved capsule or a berry. Seeds with spiral corcles and semi-terete cotyledons. Leaves alternate.

Generic names. Lycium, Datura, Nicotiana, Verbascum, Atropa, Phacelia, Hyoscyamus, Solanum, Physalis, Capsicum.

Properties. *Cathartic, discussient, emetic, and antiscorbutic.* The nau-seous-scented are very strong narcotics; pungent scented are warming and deobstruent. Several centuries ago they were much used, externally and internally, in gouts and rheumatisms.

Order XLII. *Boragineae.*

Calyx 5-lobed, permanent. Corol 5-lobed, mostly regular, having a border and a tube, with the upper entrance of the tube, called the throat, naked and open, or more or less choaked up with scales. Stamens 5, attached to the tube of the corol. Germ free, with 4 lobes, which become 4 naked seeds; style simple, permanent, springing up from among the lobes of the germ; stigma entire, or 2-lobed. Seeds attached laterally to the style; corcle strait, cotyledons foliaceous. Leaves alternate, mostly scabrous.

Generic names. Pulmonaria, Cerinthe, Lithospermum, Cynoglossum, Batschia, Anchusa, Myosotis, Heliotropium, Onosmodium, Borago, Symphitum, Echium, Hydrophyllum.

Properties. *Astringent and vulnerary.*

Order XLIII. Convolvuli.

Calyx 5-lobed, permanent. Corol regular, 5-lobed. Stamens 5, attached to the corol, and alternating with its divisions. Germ free, having one or many styles. Capsule generally 3-valved and 3-celled, sometimes 2 to 4-celled and 2 to 4-valved; columella central, 3-cornered. Seed bony, cotyledons folded together. Leaves alternate. Stem often twining or climbing.

Generic names. Convolvulus, Diapensia, Ipomaea, Pyxidantha, Cuscuta.

Properties. Cathartics, mostly very mild.

Order XLIV. Polemonia.

Calyx divided. Corol regular, 5-lobed. Stamens 5, attached to the middle of the tube of the corol, alternating with the divisions. Germ free, style simple, stigmas generally 3, or 3-cleft. Capsule surrounded with the permanent calyx, 3-celled, 3-valved, many-seeded; columella central, 3-cornered. Seed with a strait corcle, and oval foliaceous cotyledons. Leaves opposite.

Generic names. Phlox, Polemonium.

Properties. Feeble tonics.

Order XLV. Bignoniæ.

Calyx divided. Corol irregular, ringent and inflated. Stamens rarely 2, all others 4, with two of them shorter; an odd filament-like organ accompanies them. Capsule 2 or 4-celled, 2-valved.

Generic names. Bignonia, Catalpa, Martynia, Pentstemon, Che-lone.

Properties. Mild narcotics, deobstruents and cathartics.

Order XLVI. Gentiana.

Calyx monophyllous, divided, permanent. Corol regular, often marcescent; limb equally divided into a number of parts equal to those of the calyx and of the stamens, which are mostly 5. Stamens attached to the corol. Germ free, style 1 or 2, stigmas simple or 2-lobed. Capsule 1 or 2-celled, 2-valved, many-seeded; seeds inserted on the inflexed margins of the valves. Herbage glabrous, bitter; leaves opposite.

Generic names. Gentiana, Spigelia, Swertia, Fräsera, Sabbatia, Menyanthes, Villarsia.

Properties. Tonics and mild cathartics. The Spigelia is considered as a vermifuge. Dioscorides, Galen, and other ancient physicians, considered the Gentiana as a vermifuge and an antidote to poison.

Order XLVII. Apocynæ.

Calyx 5-lobed. Corol 5-lobed, regular; often furnished with 5 nectariferous appendages. Stamens 5, inserted in the bottom of the corol, or suspended from the angles of the stigma.* Germs free,

* The celebrated Robert Brown says, that in the young state the anthers of the *Asclepias syriacus* are not attached to the stigmas. The reader is requested to examine the anthers at all stages from the first swelling of the flower.

double, style 1 or none, stigma capitate. Follicles elongated, generally in pairs, 1-celled. Seed attached to the longitudinal margins of the follicle. Herbage generally milky.

Generic names. Apocynum, Asclepias, Periploca, Vinca, Nerium, Gonolobus.

Properties. Active deobstruents, cathartics, antiscorbutics, and narcotics. Ancient physicians used the Asclepias, Apocynum, &c. as counter poisons.

Order XLVIII. Sapotae.

No plants of this order grow in our district. The southern iron-wood (*Bumelia*) is placed here.

Properties. Feeble antispasmodics and cathartics.

CLASS FIFTH. Corols surrounding the germ, and generally inserted on the calyx.

Order XLIX. Guaiacanae.

No plants of this order grow in this district. The lignum vitæ and benjamin tree are placed here.

Properties. Very active tonics and warming stomachics.

Order L. Rhododendra.

Calyx 4 or 5-lobed, permanent. Corol inserted in the base of the calyx, 4 or 5-parted. Stamens definite, distinct. Germ free, style 1, stigma 1. Capsule 4 or 5-celled, 4 or 5-valved. Seeds numerous, minute, corcle strait. Stems woody; leaves alternate.

Generic names. Azalia, Itea, Menziesia, Rhodora, Rhododendron, Kalmia, Ledum, Leiophyllum, Disospyros.

Properties. Tonic. *Kalmia* is said to be narcotic.

Order LI. Ericae.

Calyx permanent, 4 or 5-parted, often free. Corol 4 or 5-parted or cleft, inserted on the calyx or calycine gland, often marcescent and permanent. Stamens definite, distinct, inserted on the bottom of the corol or calycine gland; anthers often 2-horned. Germ often free; style 1, stigma 1. Fruit many-celled, many-seeded; berries or many-valved capsules. Seeds minute, with strait corcles and fleshy cotyledons. Stems more or less woody; leaves often evergreen.

Generic names. Oxycoccus, Erica, Clethra, Pyrola, Chimaphila, Arbutus, Gaultheria, Epigaea, Vaccinium, Empetrum, Andromeda.

Sub order. Destitute of leaves or green herbage; being ivory white, yellowish white, or reddish.

Generic names. Pterospora, Hypopithis, Monotropa.

Properties. Valuable astringents. Some bear refrigerant berries. Gerard, and other old physicians, particularly the old Germans, ap-

bud. He will find that although the anthers or masses of pollen adhere to their cases, they may be separated without lacerating the cuticle of any organ; but that they cannot be separated from the stigma in any stage without rupturing capillary fibres or vessels. Therefore the anthers certainly grow on the stigma only. A magnifying power of at least one hundred is required for this examination.

plied plants of this order to cancerous ulcers and in hemorrhagy, two centuries ago.

Order LII. Campanulaceae.

Calyx adhering to the germ, limb divided. Corol inserted near the top of the calyx, often marcescent. Stamens inserted on the calyx below the corol, often 5, alternating with the divisions of the corol; anthers either distinct, united, or as thickened as to press against each other. Germ glandular above, style 1, stigma simple or divided. Capsule 2 to 6-celled, many seeded, laterally dehiscent. Seeds affixed to the inner angles of the cells; corcle strait. Leaves alternate.

Generic names. Campanuly, Lobelia.

Properties. The nauseous-scented are cathartic, emetic, deobstruent and narcotic; the others are mildly aperient.

CLASS SIXTH. Corols standing on the top of the germ. Stamens with united anthers.

This class includes all plants with **COMPOUND FLOWERS**, and correspond with the class **SYNGENESIA** of Linneus. The flowers have broad receptacles, flat or convex, naked (when the florets are removed) or chaffy, supporting many florets. Egret generally supplies the place of the calyx to each floret, and is inserted on the top of the germ. The corol is tubular or ligulate, often 5-toothed. Germ simple, style 1, stigmas generally 2. Seed single, naked; corcle strait, cotyledons flat.

This class is divided into three orders.

Order LIII. Cichoraceae.

Florets all ligulate and perfect. Leaves alternate; juice in most is milky. Corols mostly yellow; rarely blue.

Generic names. Troximon, Apargia, Leontodon, Krigia, Prenanthes, Lactuca, Hieracium, Sonchus, Hyoseris, Cichorium.

Properties. Mild aperients, and weak anodynes.

Order LIV. Cinarocephalae.

Corols all tubular. Receptacles fleshy and chaffy. Stigma, above the style, articulated. Egret somewhat rigid. Leaves alternate, often spinose. Flowers capitate.

Generic names. Echynops, Cynara, Liatris, Cnicus, Carthamus, Onopordon, Carduus, Arctium, Centaurea.

Properties. Tonics; the nauseous-scented are cathartic.

Order LV. Corymbiferae.

Florets tubular and ligulate, mostly radiate. Receptacle scarcely fleshy. Stigma, above the style, not articulated. Inflorescence often a corymb.

Generic names. Scorzonera, Picris, Tolpis, Scholymus, Vernonia, Sparganophorus, Bidens, Kuhnia, Eupatorium, Mikania, Chrysocoma, Cacalia, Balsamita, Baccharis, Conyza, Gnaphalium, Artemisia, Ta-

hæcetum, Chrysanthemum, Zinnia, Tagetes, Bellis, Pyrethrum, Doronicum, Inula, Erigeron, Solidago, Senecio, Tussilago, Cineraria, Aster, Heliopsis, Buphthalmum, Helenium, Boltonia, Matricaria, Anthemis, Achillea, Verbesina, Rudbeckia, Helianthus, Coreopsis, Silphium, Polymnia, Calendula, Iva, Elephantopus.

Properties. *Most valuable tonics and secernant stimulants.* Two or three centuries ago, the physicians considered plants of this order as the most sovereign remedies for flesh wounds. Parkinson makes a class of them, which he denominates **VULNERARY OR WOUND HERBS.** Dioscorides and Galen deemed them very efficacious in pulmonary complaints.

CLASS SEVENTH. Corols standing above the germs. Stamens with anthers distinct, and with filaments attached to the corol.

Order LVI. Dipsacææ.

Flowers aggregated on a common receptacle, and surrounded by a many-leaved involucre. Calyx double, outer one not adhering to the germ; the inner membranaceous or pappose calyx closely contracting around its apex. Corol inserted on the top of the inner calyx. Stamens 3 to 5, attached to the bottom of the tube of the corol, and alternating with its divisions. Seed with a strait corcle and oblong cotyledons. Leaves opposite.

Generic names. Valeriana, Fedia, Dipsacus, Scabiosa, Cephalanthus.

Properties. *Weak tonics.*

Order LVII. Rubiacææ.

Calyx adhering to the germ, 4 or 5-lobed. Corol regular, inserted on the germ, 4 or 5-lobed. Stamens 4 or 5, inserted on the corol. Style 1, stigmas 2. Seeds generally 2, corcle strait, cotyledons foliaceous. Leaves entire, whorled.

Generic names. Galium, Rubia, Houstonia, Mitchella

Properties. *Aperients and tonics; some abound in colouring matter.*

Order LVIII. Caprifolia.

Calyx adhering to the germ, often 2-bracted at the base. Corol regular, 4 or 5-cleft, or 4 or 5-petalled with the petals broader at the base. Stamens equalling the number of divisions of the corol. Style 1 or none, stigmas 1 to 3. Berry or capsule often crowned with the permanent calyx. Stems mostly woody; leaves opposite, and sometimes connate.

Generic names. Lonicera, Xylosteum, Symphoria, Diervilla, Viburnum, Sambucus, Cornus, Hedera, Linnæa, Triosteum.

Properties. *Tonics; and the strong-scented are cathartic.*

CLASS EIGHTH. SECTION III. *Flowers polypetalous.* Stamens standing on the germ, and alternating with the petals.

Order LIX. Araliae.

Calyx superior, 5-toothed, permanent. Stamens 5, styles 2 to 5. Fruit a berry. Inflorescence an umbel. Leaves compound.

Generic names. Panax, Aralia.

Properties. *Valuable tonics and expectorants.*

Order LX. Umbelliferae.

Calyx attached to the germ. Petals 5, inserted on the germ, or on a gland covering the top of the germ. Stamens 5, alternating with the petals. Styles 2, often permanent. Fruit bipartible, becoming 2 seeds, often ribbed or grooved on their outsides, and on their joining sides, (the commissure.) Stems herbaceous. Leaves alternate, often compound. Inflorescence an umbel, with the radiating peduncles often surrounded at their origin and sub-divisions with involucre.

Generic names. Eryngium, Hydrocotyle, Crantzia, Daucus, Ammi, Conium, Seliuum, Imperatoria, Heracleum, Pastianaca, Ligusticum, Angelica, Sium, Erigenia, Cicuta, Myrrhis, Uraspermum, Chærophyl- lum, Smyrnum, Thaspium, Cenanthe, Carum, Apium, Anethum.

Properties. Deobstruents and narcotics; excepting the sweet-scented, which are stomachics. In the time of Dioscorides, Pliny and Galen, (during the first and second centuries) the sweet-scented plants of this order were in common use as remedies in cases of dyspepsia, flatulency, cholic and epilepsy; and the narcotic kinds* were used as antidotes to poison, and as remedies in liver complaints, gouts and rheumatisms, and by way of external application in the resolution of inflamed tumors.

CLASS NINTH. Stamens inserted below the germ.

Order LXI. Ranunculaceae.

Calyx many-leaved, or none. Petals many, often indefinite. Stamens often indefinite in number. Germs often numerous, rarely solitary, inserted on the receptacle, each having a single style. Seed with a minute corcle at the apex or base of a corneous albumen.

Generic names. Zanthorrhiza, Actæa, Macrotys, Podophyllum, Delphinium, Aconitum, Aquilegia, Nigella, Hydrastis, Clematis, Atragene, Thalictum, Caulophyllum, Helleborus, Anemone, Hepatica, Nelumbium, Ranunculus, Trollius, Adonis, Hydropeltis, Caltha, Pæonia, Coptis.

Properties. Deobstruent, cathartic, caustic and narcotic. The two last genera have astringent roots.

Order LXII. Papaveraceae.

Calyx free, often 2-leaved and caducous; sometimes about 5-leaved. Stamens many. Germ single; style often wanting; stigma divided or lobed, permanent. Fruit a capsule or pod, 1-celled, many-seeded; seeds attached to lateral columellas; albumen fleshy; corcle strait.

Generic names. Chelidonium, Papaver, Sanguinaria, Argemone, Nymphæa, Nuphar, Sarracenia? Fumaria, Corydalis.

Properties. Deobstruent, cathartic, caustic, antiscorbutic, narcotic, and

* The root of the cicuta maculata is a most deadly poison early in the spring. On the 10th of April, 1820, Asa H. Manley and Amos Ramsdell, of Rutland, Vermont, ate a small quantity of the root of this plant. The former died in two hours, the latter in 36. They were both under ten years of age. I examined the plant in the ensuing summer, and took specimens which grew from the remainder of the same root; and was particular in questioning the parents and neighbours respecting the above facts at the same time.

anodyne. The papaver was in use as an anodyne in the time of Theophrastus, between three and four hundred years before the Christian era. Dioscorides used the fumaria and chelidonium as antiscorbutics.

Order LXIII. Cruciferae.

Calyx 4-leaved. Petals 4, disposed in the form of a cross and alternating with the leaves of the calyx. Stamens 6, two of them outer and shorter. Germ single, sitting on the disk-like receptacle which supports the stamens; style 1 or none, stigmas 1 or 2. Fruit a silique or silicle. Seeds with incurved corcles. Stems herbaceous; leaves alternate.

Generic names. Cakile, Draba, Alyssum, Lepidium, Thlaspi, Lunaria, Cochlearia, Iberis, Isatis, Dentaria, Cardamine, Barbarea, Sisymbrium, Erysimum, Cheiranthus, Hesperis, Arabis, Turritis, Raphanus, Brassica, Sinapis.

Properties. *Aperient, diuretic, antiscorbutic, nutrientic and emollient.* Plants of this order have been used as emollients and diuretics, and as remedies in the jaundice, for several centuries.

Order LXIV. Capparides.

Calyx polyphyllous, or monophyllous and parted. Petals 4 or 5. Stamens often indefinite. Germ stiped, style short or none, stigma simple. Pod or berry many-seeded. Corcle of the seed incurved.

Generic names. Reseda, Parnassia, Cleome.

Properties. *Feeble aperients; excepting the Cleome, which is an active cathartic and emetic, and considerably narcotic.*

Order LXV. Sapindi.

We have no plants of this order in our district. The soap-berry of the Southern States is placed here.

Properties. *Emollient.*

Order LXVI. Acera.

Calyx monophyllous, permanent, 5-cleft. Petals 5 (or none) with claws, inserted on a disk below the germ, and alternating with the lobes of the calyx. Stamens distinct and inserted on the disk with the corol. Germ free. Stigmas 1 or 2. Capsules 2 or 3-celled, 1-seeded. Stems woody; leaves opposite.

Generic names. Acer, Aesculus.

Properties. *Aperient.*

Order LXVII. Malpighiae.

We have no plants of this order in our district.

Properties. *Aperient.*

Order LXVIII. Hyperica.

Calyx monophyllous, 4 or 5-parted. Petals 4 or 5. Stamens numerous, sometimes united by their filaments in several parcels. Germ single, free; styles 3 to 5. Capsule 1 to 5-celled, 3 to 5-valved, with inflexed margins, many-seeded. Seed without albumen, corcle strait. Leaves opposite, often glandular; flowers yellow or yellowish.

Generic names. Hypericum, Ascyrum, Dionaea, Drosera.*

Properties. Tonic and vulnerary.

Order LXIX. Guttiferae.

We have no plants of this order in our district.

Properties. Expectorants and seccernant stimulants.

Order LXX. Aurantia.

Calyx monophyllous. Petals 4 or 5; stamens often united by their filaments in several parcels. Berry many-seeded. Corcle strait. Stems woody; leaves glandular.

Generic name. Citrus.

Properties. Tonics and refrigerants.

Order LXXI. Melia.

Calyx monophyllous. Petals 4 to 9, often adhering at the base. Stamens sometimes adhering by their filaments, equal in number to the petals or double. Germ single, free; style 1. Berry or capsule many-celled. Seed without albumen, corcle strait. Stems woody; leaves alternate.

Generic names. Melia, Thea.

Properties. Astringent and feebly narcotic.

Order LXXII. Vites.

Calyx monophyllous, short, subentire. Petals 4 to 6, broader at the base. Stamens equal in number, and opposite to the petals, and inserted on a disk beneath the germ. Germ single, free; style 1 or none. Berry 1 or many-celled, 1 or many-seeded. Seed bony and destitute of albumen, corcle strait, cotyledons flat. Stems woody and climbing; leaves alternate; tendrils opposite to the leaves.

Generic names. Vitis, Ampelopsis.

Properties. Tonics and refrigerants.

Order LXXIII. Gerania.

Calyx permanent, 5-parted or 5-leaved. Petals 5, with claws, generally unequal or irregular. Stamens 5 to 10; filaments often unequal, sometimes united at the base. Germ single, free, often 5 angled, sometimes surrounded by a gland; style 1, stigmas often 5. Seed without albumen, corcle incurved. Stems herbaceous; leaves often stipuled.

Generic names. Geranium, Palargonium, Erodium. *Geranioids.* Oxalis, Impatiens, Tropaeolum.

Properties. Tonics, refrigerants and feeble narcotics.

The geranioids ought to be disposed of differently.

Order LXXIV. Malvaceae.

Calyx often double with the inner one monophyllous. Petals 5, regular, generally adhering to the base of the filaments. Stamens innumerable, united by their filaments. Germ free, simple, often lobed, stigmas many. Fruit many-capsuled or many-celled. Seed without

* See Nuttall, page 279.

albumen ; corcle lobed, incurved and wrinkled. Leaves alternate, simple, stipuled.

Generic names. Gordonia, Napaea, Sida, Hibiscus, Malva, Althaea, Lavatera, Gossipium.

Properties. *Emollient and aperient.* Plants of this order were used as aperients and for sheathing the stomach when any acrid substance had been taken into it, by Dioscorides and other ancient physicians ; and Hippocrates valued them highly for their vulnerary qualities.

Order LXXV. Magnoliae.

Calyx 3-leaved. Petals 6 or 9. Stamens many, not united. Germs many, arranged on an elongated receptacle in the form of a cone. Capsules many, 1 or 2-seeded. Seed with fleshy albumen and strait corcle. Stems woody ; leaves alternate, having caducous stipules.

Generic names. Magnolia, Liriodendron.

Properties. *Tonics.*

Order LXXVI. Annonae.

Calyx 3-leaved. Petals 6. Stamens many. Germs 2 or more. Berries or capsules 2 or more, 1-seeded. Seed compressed, corcle minute, albumen solid. Stems shrubby ; leaves alternate and destitute of stipules.

Generic name. Porcelia.

Properties. *Tonics.*

Order LXXVII. Menispermæ.

Calyx 4 or 6-leaved. Corol none or more than 5-petalled. Flowers dioecious—stamens adnate—germs and styles 3 to 6. Drupes or berries 1-seeded. Seed with fleshy albumen, corcle at the summit. Stems woody, mostly twining or climbing. Leaves alternate, simple, destitute of stipules.

Generic name. Menispermum.

Properties. *Weak narcotics.*

Order LXXVIII. Berberides.

Calyx polyphyllous or deeply parted. Petals equalling the divisions of the calyx in number. Stamens equalling the petals in number and opposite to them. Germ simple, free : style 1 or none. Fruit 1-celled, often many-seeded. Seed affixed to the bottom of the cell ; albumen fleshy, corcle strait. Stems woody ; leaves alternate. Flowers yellow.

Generic names. Berberis, Hamamelis.

Properties. *Astringents and refrigerants.*

Order LXXIX. Tiliaceæ.

Calyx polyphyllous or many parted. Petals alternating with the divisions of the calyx. Stamens innumerable. Germ simple, free. Berry or capsule 1- or many-celled, 1- or many-seeded. Seed with fleshy albumen ; corcle subincurved, flat. Stems woody ; leaves alternate, simple, stipuled.

Generic name. Tilia.

Properties. *Emollient and aperient.*

Order LXXX. *Cisti.*

Calyx 5-parted. Petals 5. Stamens 5 or more. Germ single, free; style 1. Capsule with many seeds attached to the middle of the valves or base of the cells. Albumen fleshy or corneous. Leaves stipuled.

First division. Petals equal. Stamens more than 5. Seed with a curved or spiral corcle.

Generic names. Cistus, Hudsonia.*

Second division. Petals unequal. Stamens 5. Seed with a strait corcle.

Generic name. Viola.

Order LXXXI. *Rutaceae.*

Calyx monophyllous, 5-lobed. Petals 5, alternating with the lobes of the calyx. Stamens 10 or 15. Germ simple, free; style 1. Fruit many-capsuled or many-celled. Seed with flat cotyledons and strait corcle.

Generic name. Ruta.

Properties. Caustic and cathartic.

Order LXXXII. *Caryophylleae.*

Calyx often permanent, 4 or 5-toothed, or 4 or 5-leaved. Petals 4 or 5 (sometimes wanting) with claws, alternating with the divisions of the calyx. Stamens often double the number of the petals; sometimes equal and alternating with them. Germs simple, sometimes sub-stiped; styles 3 to 5. Capsule many-valved, dehiscent at the top. Seeds affixed to the centre of the base of the capsule; albumen farinaceous; corcle involute. Stems with joints; leaves opposite, entire.

Generic names. Dianthus, Saponaria, Lychnis, Agrostemma, Silene, Cucubalus, Cerastium, Arenaria, Spargula, Linum, Sarothra, Sagina, Lechea, Mollugo, Queria, Stellaria.

Properties. Emollient and aperient. This order comprises those plants which are called pinks, chickweeds and flax. Flax-seed has been used as an emollient and aperient more than two thousand years.

CLASS TENTH. Stamens surrounding the germ and attached to a monophyllous calyx.

Order LXXXIII. *Sempervivae.*

Calyx free, parted. Corol inserted at the base of the calyx; petals (or the deep divisions) equalling in number the divisions of the calyx. Stamens equal or double the number of petals. Germs equalling the number of petals, or having an equal number of lobes. Capsules (or follicles) 1-celled, opening on one side longitudinally, many-seeded. Seed with a slender, fleshy albumen, and strait corcle. Stems herbaceous; leaves mostly fleshy; inflorescence a cyme.

Generic names. Sedum, Sempervivum, Penthorum, Tillaca.

Properties. Emollient and vulnerary.

Order LXXXIV. *Saxifragae.*

Calyx adhering, rarely free, limbs 5-lobed. Petals 4 or 5, (sometimes wanting) inserted at the top of the calyx, and alternating with its

* See Nuttall, vol. 2, p. 4,

divisions. Stamens inserted with the petals, and are equal or double in number. Styles 2, permanent. Capsule 2-beaked, 2-valved, 1 or 2-celled, dehiscent by a terminal pore. Seeds inserted on the base of the capsule or the inflexed edges of the valves; albumen fleshy, corcle strait.

Generic names. Heuchera, Hedyotis, Saxifraga, Tiarella, Mitella, Chrysosplenium, Hydrangea? Hortensia?

Properties. Tonics.

Order LXXXV. Cacti.

Calyx adhering to the germ, 5-cleft. Petals inserted on the calyx. Style 1, stigma cleft. Berry 1-celled, many-seeded.

First division. Petals indefinite. Stamens indefinite. Style tubulose, stigma many-cleft. Berry umbilicate. Seed without albumen, corols incurved.

Generic name. Cactus.

Second division. Petals 5. Stamens 5. Style 2-cleft. Berry globose. Seed with corneous albumen, corcle strait.

Generic name. Ribes.

Properties. Refrigerants and emollients.

Order LXXXVI. Portulacaceae.

Calyx divided at the top. Corol inserted on the calyx, 1 or 5-petalled (rarely wanting.) Stamens inserted on the corol. Germ free or adhering at the base; style 1 to 3, or none. Capsule 1 or many-celled, 1 or many-seeded. Seed with an incurved or ring-like corcle, surrounding a farinaceous albumen.

Generic names. Portulacca, Claytonia, Scleranthus, Crypta.

Properties. Emollient.

Order LXXXVII. Ficoideae.

Calyx parted, free or adhering to the germ. Petals inserted on the top of the calyx, sometimes adhering a little at the base. Stamens indefinite in number, inserted with the petals. Styles many. Capsule or drupe many-celled. Seed affixed to the inner angles of the cells. Corcle incurved, and surrounding a farinaceous albumen. Leaves succulent.

Generic name. Mesembryanthemum.

Properties. Refrigerant and emollient.

Order LXXXVIII. Onagraceae.

Calyx adhering to the germ, tubular, divided at the top. Petals generally 4, (rarely none) inserted on the top of the calyx. Stamens inserted with the petals, equalling or double their number. Germs many; style 1. Fruit many-celled, many-seeded; seeds affixed to the top of the cells; albumen wanting, corcle strait, rostell superior and longer than the cotyledons.

Generic names. Circaea, Ludwigia, Isnardia, Gaura, Epilobium, Oenothera, Myriophyllum, Serpicula. Onagroids, with single germs. Callitriche, Hippuris.

Properties. Tonics and aperients.

Order LXXXIX. Myrti.

Calyx adhering to the germ, permanent, divided. Petals generally 5, inserted on the top of the calyx. Stamens 20 or more, inserted on the calyx under the petals. Style 1. Fruit many-seeded, 1 or many-celled. Seed without albumen, corcle strait or curved; cotyledons flat. Stems woody; leaves generally opposite, and often with pellucid punctures.

Generic names. Philadelphus, Myrtus.

Properties. Tonics.

Order XC. Melastomac.

Calyx tubular, 4 or 5-cleft. Petals equal in number to the divisions of the calyx, and alternating with them, inserted on the top of it. Stamens double the number of petals. Germ enclosed by the calyx. Seed without albumen, corcle incurved. Stems herbaceous; leaves opposite, simple, nerved.

Generic name. Rhexia.

Properties. Feebly tonics.

Order XCI. Salicariae.

Calyx free, tubular, permanent. Petals inserted at the top of the calyx, sometimes wanting. Stamens inserted in the middle of the calyx, equalling, or double, the number of divisions. Germ single, style 1. Capsule covered by the calyx, 1 or many-celled. Seeds numerous, affixed to a central columella; without albumen, corcle strait, rostel inferior. Leaves mostly opposite.

Generic names. Lythrum, Glaux, Ceratophyllum, Ammannia, Cuphea.

Properties. Deobstruent and cathartic.

Order XCII. Rosaceae.

Calyx mostly permanent, divided, covering the germ, either adhering or free. Petals inserted on the top of the calyx, generally 5, alternating with the divisions of the calyx. Stamens indefinite in number. Germs single or many. Fruit various. Seed with a lateral hilum under the apex, to which the funicle is attached springing from the bottom of the pericarp; albumen none, corcle strait. Stems woody or herbaceous; leaves alternate.

First division, Pomaceae. Calyx 5-celled. Petals 5. Germ single, adhering to the calyx. Styles many. Pome umbilicate, crowned with the lobes of the calyx, many-celled. Seed with the rostel inferior. Stems woody. Flowers complete and perfect. Stamens about 20.

Generic names. Pyrus, Aronia, Punica, Crataegus, Mespilus, Sorbus.

Second division, Rosae. Germs many, 1-seeded, concealed within the calyx, which is contracted at the neck; style 1 to each germ. Rostel of the seed superior. Stem woody. Flowers complete and perfect. Stamens about 20. Leaves pinnate, with stipules adhering to the petioles.

Generic name. Rosa.

Third division, Agrimoniac. Germs generally 2, each with 1-style, and 1-seeded, concealed within the urceolate calyx. Rostel of the seed

superior. Stems herbaceous or woody. Flowers sometimes apetalous and monoecious. Leaves pinnate or digitate.

Generic names. Poterium, Sanguisorba, Agrimonia.

Fourth division, Dryadeae. Germs many; each 1-seeded, free, inserted on a general receptacle, style 1 to each. Rostel of the seed superior. Stems herbaceous, or suffruticose. Stamens about 20.

Generic names. Potentilla, Fragaria, Dalibarda, Comarum, Geum, Rubus, Calycanthus.

Fifth division, Ulmariae. Germs many, free, each having 1 style. Capsules equal in number to the germs, 1 or many-seeded. Rostel of the seed superior. Flowers mostly complete and perfect. Stamens indefinite in number.

Generic names. Spiræa, Gillenia.

Sixth division, Drupaceae. Germ single, free, style one. Drupe with a 1 or 2-seeded nucleus; internal membrane of the seed somewhat fleshy and tumid. Rostel superior. Stems woody. Flowers complete and perfect. Stamens indefinite in number. Leaves simple, having glandular bases or petioles. Calyx 5-lobed; petals 5.

Generic names. Prunus, Armeniaca, Amygdalus.

Properties. Refrigerants, tonics and astringents.

Order XCIII. Leguminosae.

Calyx often 5-cleft or 5-parted. Corol 5-petalled, inserted on the calyx, consisting of a banner, two wings and a keel. Stamens generally 10, mostly united in two sets, 9 and 1; sometimes in one set, and sometimes they are free. Germ free, style 1. Legume generally 2-valved, 1-celled; sometimes transversely divided into several cells. Seeds affixed to the suture of one side; without albumen; cotyledons thick. Stem woody or herbaceous; leaves alternate, often compound; stipules axillary—leaflets often close up at evening.

First division. Stamens all distinct.

Generic names. Cassia, Cercis, Baptisia.

Second division. Stamens united by their filaments in one set.

Generic names. Ulex, Mimosa, Genista, Crotonaria, Arachis, Amorphia, Lupinus, Spartium.

Third division. Stamens united, 9 in one set, and one separate. Legume 1-celled. Cotyledons always rise up out of the earth when the plant commences its growth, and become succulent leaves. Leaves ternate or pinnate, with a terminal leaflet.

Generic names. Trifolium, Melilotus, Medicago, Trigonella, Phaseolus, Glycine, Galactia, Vexillaria, Glycyrrhiza, Galega, Indigofera, Robinea, Colutea.

Fourth division. Stamens united, 9 in one set, and 1 separate. Legume partly divided by an imperfect longitudinal partition.

Generic names. Astragalus, Dolichos?

Fifth division. Stamens united, 9 in one set, and one separate. Legumes 1-celled. Cotyledons do not rise out of the ground, nor become leaves. Leaves pinnate, without a terminal leaflet; but the general petiole terminates in a tendril or filament.

Generic names. Lathyrus, Pisum, Vicia, Ervum.

Sixth division. Stamens united, 9 in one set, and one separate. Legume transversely divided into many cells, each cell 1-seeded, not dehiscent spontaneously.

Generic names. Coronilla, Gleditschia, Hedysarum, Lespedeza, Stylosanthes, Æschynomene.

Properties. *Emollient, diuretic and aperient.* In the time of Dioscorides and Galen, the same properties were ascribed to this order of plants as at this day.

Order XCIV. Terebintaceae.

Calyx often free, parted. Petals inserted on the base of the calyx, and alternating with its divisions, (often wanting.) Stamens inserted with the petals, equal or double in number. Fruit various. Seed without albumen, rosetel reflexed into lobes. Stems woody; leaves alternate. [This order is not satisfactorily defined.]

Generic names. Rhus, Juglans, Carya, Zanthoxylum.

Properties. *Cathartic, emelic and narcotic.*

Order XCV. Rhamni.

Calyx divided. Corol many-petalled, (sometimes none, and sometimes deeply divided,) inserted on the calyx, and equalling the divisions of the calyx in number. Stamens of the same number. Germs single, free, surrounded by the calyx. Fruit a berry or capsule, many-celled. Seed with fleshy albumen, corcle strait, rosetel inferior. Stems woody; leaves stipuled.

Generic names. Staphylea, Euonymus, Ilex, Ceanothus, Rhamnus, Prinos.

Properties. *Cathartic, and somewhat tonic.*

CLASS ELEVENTH. SECTION IV. *Diclinious or anomalous.* Flowers generally without petals; stamens and pistils mostly in different flowers. [An imperfect definition; for many plants of this class have petals, and are not diclinious. It is a kind of residue class.]

Order XCVI. Euphorbeae.

Flowers solitary, spiked, or encircled by involucre. Perianth (or corol) many-parted; sometimes wanting in the pistillate. Stamens inserted on the receptacle, filaments often articulated in the middle. Germ free, often stiped; styles 1 to 3, 2-cleft. Capsules 2 or 3-seeded; valves elastically dehiscent. Seeds arilled, affixed at the top of a central columella; corcle flat, involved in a fleshy albumen; rosetel superior.

Generic names. Ricinus, Euphorbia, Phyllanthus, Acalypha, Buxus.

Properties. *Cathartics, and mild emetics.* The seeds of the Ricinus communis had been long in use as a cathartic, before the time of Dioscorides in the first century.

Order XCVII. Cucurbitaceae.

Calyx adhering to the germ, contracted above, and then dilated into a 5-cleft limb. Corol bell-form, inserted on the top of the germ, 5-lobed, at length withering and permanent. Stamens 3 to 5, inserted on the contracted part of the calyx, often united; anthers 1-celled, oblong, attached to the top of the filament; the staminate flowers have abortive germs. Germ single. Fruit a berry, with a solid bark, which

is often corneous. Seeds many, without albumen; corcle strait; cotyledons flat. Stems herbaceous, mostly climbing; leaves petioled, alternate, broad; tendrils are often inserted in the axils of the leaves.

Generic names. Passiflora, Momordica, Sycios, Cucurbita, Cucumis, Melothria

Properties. The fruit is mostly refrigerant; the herbage and nauseous fruit are emetic and cathartic.

Order XCVIII. *Urticæ.*

Flowers small, greenish, solitary, in aments, or surrounded by involucre. Calyx (or corol) 1-leaved, lobed. Stamens inserted on the base of the calyx. Germ single, free; styles 1 or 2-cleft. Leaves mostly hispid.

First division. *Artocarpæ* Flowers aggregated, sitting on a general receptacle. Fruit fleshy. Seed having fleshy albumen and curved corcle.

Generic names. Ficus, Morus.

Second division. *Urticæ.* Flowers solitary, on aments or spikes. Fruit never fleshy. Seed without albumen; corcle often strait.

Generic names. Urtica, Bœhmeria, Parietaria, Cannabis, Humulus, Ambrosia, Xanthium.*

Properties. Tonics.

Order XCIX. *Amentaceæ.*

Staminate flowers in aments, furnished with scales on which the stamens are inserted. Pistillate flowers have scales or perianths; germs free; stigmas many. Fruit bony or membranaceous. Seed without albumen; corcle strait, flat. Stems woody; leaves alternate and caducous. [This description is defective in its application to Celtis and Ulmus.]

First division. Flowers diœcious.

Generic names. Salix, Populus, Myrica.

Second division. Flowers monœcious.

Generic names. Betula, Alnus, Carpinus, Ostrya, Fagus, Castanea, Corylus, Quercus, Platanus, Liquidambar, Comptonia.

Third division. Flowers perfect.

Generic names. Fothergillia, Celtis, Ulmus.

Properties. Tonics and astringents.

Order C. *Coniferae.*

Staminate flowers in aments, each furnished with a scale or perianth supporting the stamens. Pistillate flowers in strobiles, each furnished with a hard scale. Fruit bony or membranaceous. Seed with a cylindrical corcle in the centre of fleshy albumen. Stems woody; leaves evergreen; juice resinous.

Generic names. Pinus, Cupressus, Thuja.

Sub-order, Juniperi. Fruit a berry or drupe.

Generic names. Juniperus, Taxus.

* Some botanists place the two last genera in the order corymbiferae, also in the Linnean class syngenesia. I see no good reason for these innovations. See De Lamarck and De Candolle, p. 183.

Properties. Secernant stimulants and expectorants. The resinous juice obtained from these plants has been applied as a remedy to wounds and old ulcers for more than two thousand years. Various preparations, as tar-water, decoctions of the bark, &c. have been used with various success from the time of Dioscorides, and probably much earlier, in pulmonary complaints.



GENERAL RULES FOR AVOIDING POISONS.

Plants not poisonous.

1. Plants with a *glume* calyx, never poisonous. As Wheat, Indian corn, Foxtail grass, Sedge grass, Oats. *Linneus*.
2. Plants whose stamens *stand on the calyx*, never poisonous. As Currant, Apple, Peach, Strawberry, Thorn. *Smith*, p. 392.
3. Plants with *cruciform* flowers, rarely if ever poisonous. As Mustard, Cabbage, Water-cress, Turnip. *Smith*, p. 487.
4. Plants with *papilionaceous* flowers, rarely if ever poisonous. As Pea, Bean, Locust tree, Wild indigo, Clover. *Smith*, p. 446.
5. Plants with *labiate* corols, bearing seeds without pericarps, never poisonous. As Catmint, Hyssop, Mint, Mother-wort, Majoram. *Smith*, p. 434.
6. Plants with *compound* flowers, rarely poisonous. As Sunflower, Dandelion, Lettuce, Burdock. *Milne*.

Poisonous Plants.

1. Plants with 5 stamens and one pistil, with a dull-coloured *lurid* corol, and of a nauseous sickly smell, always poisonous. As Tobacco, Thorn-apple, Henbane, Nightshade. The degree of poison is diminished where the flower is brighter coloured and the smell is less nauseous. As potatoe is less poisonous, though of the same genus with nightshade. *Smith*, p. 415.
2. *Umbelliferous plants* of the aquatic kind, and of a nauseous scent, are always poisonous. As Water-hemlock, Cow-parsley. But if the smell be pleasant, and they grow in dry land, they are not poisonous. As Fennel, Dill, Coriander, Sweet-cicely. *Smith*, p. 416.
3. Plants with *labiate* corols and seeds in capsules, frequently poisonous. As Snapdragon, Foxglove. *Smith*.
4. Plants from which issues a *milky juice* on being broken, are poisonous, unless they bear compound flowers. As Milkweed, Dogbane, *Milne's Contortæ* and *Lactescentia*.
5. Plants having any *appendage* to the calyx or corol, and twelve or more stamens, generally poisonous. As Columbine, Crowfoot. *Linneus*.

Most general Rule.

Plants with few stamens, not frequently poisonous, except the number be five; but if the number be twelve or more, and the smell nauseous, heavy and sickly, the plants are generally poisonous. *Milne's Multisiliquæ* and *Sapor*.

Note. Many plants possess some degree of the narcotic principle, which are still by no means hurtful.

VEGETABLE PHYSIOLOGY.

This Grammar was prepared for aiding students in the study of Analytical Botany. But the Physiology of Vegetation should occupy a small proportion of the time devoted to Analytical, or Systematical Botany ; to prepare him for understanding some principles which lie directly in his way.

Vegetable Physiology, Phytology, and the Philosophy of Vegetation, mean nearly the same thing. It is the science which treats of : 1. The germination and growth of a plant from the seed. 2. The propagation of a plant. 3. The increase of the growth of a perennial plant. 4. The external and internal structure and constituent organs of a plant, with their uses in its economy. 5. The properties of a plant in relation to other bodies.

1. THE GERMINATION AND GROWTH OF PLANTS FROM THE SEED.

If a seed be immersed in warm water for a considerable time, and then subjected to a high magnifying power, the elementary form of the future plant may be seen. In some seeds even the embryo of the future flower becomes manifest. Therefore it may not be absurd to say, that the germination and growth is effected by the development of the embryo plant contained in the seed ; and that this development goes on by means of successive supplies of nutriment, which are taken into an organized structure adapted to their reception.

But where shall we stop in our views of these elementary forms ? Shall we say, that within the embryo of the future flower which sometimes become manifest under the microscope, there is probably another seed containing the elementary form of the next generation, and so on *ad infinitum* ?

Fortunately, the present state of the science presents the means of fixing the limit in the most satisfactory manner. For nothing in the physiology of organized beings is better established, than that a perfect future seed cannot be produced without the application of pollen from a stamen to the pistil of a stigma. But if the future seed were perfect in the present one, such an operation would not be necessary. Therefore, by the aid of the microscope and this established law, we are enabled to infer, that a seed may contain the elements of a future plant as far as the flower and empty tegument of the future seed, and no farther.

2. THE PROPAGATION OF PLANTS.

There are two methods of propagating plants. First by *reproduction* ; second, by *continuation*.

1. A plant is *reproduced*, when it grows immediately from the seed. The potatoe is reproduced, when the seed is taken from the berry, planted and grows. Apple trees are reproduced in the nurseries from seeds, &c.

2. A plant is *continued*, when parts taken from its roots, stem, branches, buds, &c. are transferred to different places, and so cultivated as to continue to grow in several places at the same time. The

living branches or twigs of the same apple tree may continue to grow from the original root, and from hundreds of other roots in different countries at the same time. And it is a fact now well established, that those twigs or grafts, however recently inserted, feel the effects of age in the same degree with the twigs remaining on the original tree ;* all other circumstances being similar.

The roots of potatoes continue in succession in their native torrid regions year after year for a limited period, like the *Malaxis* and some others of the *Orchis* family in our latitude. Agriculturalists and gardeners aid their progress here, by housing the roots in winter, and setting them in the earth again in the spring season. These too are greatly distributed ; so that this plant is vastly extended by the continuation of the same individual. But in due time the effects of age become manifest to the cultivator, and he finds it necessary to reproduce this useful plant from the seed.

The Lombardy poplar is becoming enfeebled with age in our country, so that very recent shoots will hardly withstand a severe winter. The reason is manifest. There has never been a pistillate tree introduced from Europe ; consequently this tree has never been reproduced here from the seed. We therefore see but the feeble limbs of an exile in dotage, though yet sustained in a thousand localities.

3. THE INCREASE OF PLANTS, OR THE ENLARGEMENT OF THEIR VOLUME.

After the first season of growing, all woody plants continue to increase their size, if no accident occurs, until age terminates their vital energies. Their volume is not enlarged from an extension of each fibre or pore ; but from the annual acquisition of new ones. These new ones are always deposited between the bark and wood.

In the spring season a mucilage is formed between the bark and wood, called the camb, or *cambium*. Towards the decline of the year it becomes considerably indurated, and separates itself into two concentric hollow cylinders of very different thicknesses. The thinner one is attached to the bark, and forms its inner membrane. The thick one is attached to the wood, and becomes the outer layer of the wood for the next year.

It is on this account that those trees which long retain their expanding cuticles, present to our land surveyors those paradoxical magic-like marks. A beech tree, for example, if lettered or figured with a board-marker, will present these marks twenty or thirty years afterwards, both on the cuticle and on the wood, of the year when marked ; while the intervening layers are sound and without a scar. These interposed woody layers, originating in mucilage annually deposited between the bark and wood, gradually separate the marked bark and cuticle from the marked wood, while they grow between these marks and become continuous.

4. THE EXTERNAL AND INTERNAL STRUCTURE, AND CONSTITUENT ORGANS OF PLANTS, WITH THEIR USES IN ITS ECONOMY.

Plants are bounded externally, in all their parts, with curved lines. They are defended by an almost insensible and imperishable membrane

* See Smith's Elements of Botany.

called the cuticle. This and the other concentric cylinders have been described at p.7. The parenchymous parts of the foliage, consisting wholly of the cellular integument covered with the transparent cuticle, is well adapted to the purpose of subjecting the sap to the requisite influence of the atmosphere. This office is, to the plant, very analagous to that of the lungs to animals—particularly the gills of fish.

The internal structure of a plant is adapted to the reception and circulation of the fluids. The tubes and cells are different in different plants. Large in aquatics, small in evergreens.

The organs and parts of a plant are adapted to its situation, soil, and nature. The lichen is furnished with organs adapted to its slow growth and dry leathery texture. The pompkin to its rapid and gigantic growth, succulent herbage, and open texture. The same species will often vary some of its characteristics to accommodate itself to a forced situation. As some trees bear large and almost intire leaves, while in a defended situation, enclosed by other trees. But when left exposed to winds and storms, by having their defenders cut away, their leaves will be diminished in size, encrease in number, and present a deeply divided form.

When trees, which have wide-spreading tops, grow upon a steep side-hill, they accommodate the direction of their lower spreading limbs to the ascent of the hill.

I might add those organs with which a plant is furnished for propagating its seed. Such as the egret of the dandelion and thistle ; and the hooks of the hated burdock, which compel shaggy coated animals to transport the seed ; and thus become the unwilling instruments for propagating a plant, which is never sought but as a loathsome drug.

5. THE PROPERTIES OF A PLANT IN RELATION TO OTHER BODIES.

Animals feed on plants and find them essential to their well-being. But there are many plants, which affect the animal system very powerfully. These plants are studied, with a view to check any morbid action in the animal system, which may be effected by the uses of plants which are found to counteract such morbid action. A classification of plants for this purpose has been described in the Natural Orders of Jussieu.

Vegetables are studied for the purpose of learning their properties in relation to unorganized matter also. A profitable application of this kind of knowledge is made in dying, calico-printing, reducing ores by the aid of charcoal, &c.

The student will find much information on these subjects in Smith's Elements of Botany, Wildenow's Elements, Darwin's Phytology, Sumner's Botany, &c.

BOTANICAL DICTIONARY.

As the language of Botany is now extended to every department of Natural Science, I have added the common terms which are peculiar to Mineralogy and Zoology, for the purpose of furnishing Schools with a general Dictionary of Natural History.

NOTICES.—Words, which are defined in the grammar, will be referred to the pages in the grammar, in order to avoid repetition.

Latin words are printed in *Italics*. When a word is the same in Latin and English, excepting a terminal letter or two, it is generally omitted in one of the languages.

A.

ABBREVIATED pe'rianth. Shorter than most perianths in proportion to its breadth.

ABBREVIATION. Altho' any botanist may employ such abbreviations as best suit his purpose, by explaining their import; yet the following are in such general use, that it is convenient to know them:

Rad. root.

Fol. leaf.

Stip. stipule.

Flo. flower.

Cal. calyx.

Cor. corol.

Pet. petal.

Stam. stamen.

Fil. filament.

Anth. anther.

Pist. pistil.

Stig. stigma.

Fr. fruit.

Ph. leaflet of calyx, or leaf.

Per. pericarp.

Mas. staminate flower.

Fem. pistillate flower.

Neu. neutral flower.

Her. perfect flower.

☉ annual.

♂ biennial.

♂ perennial.

♂ woody.

Abbreviat'us. See abbreviated.

ABDOMI'NAL. Belonging to, or situated on, the abdomen; as fins, rings, &c.

Abort'iens. See abortive.

ABOR'TIVE flower. Not arriving to perfection; the proof of which is the want of perfect seed.

— *seed*. Not increasing, or not becoming perfect for want of the reception of pollen by way of the stigma.

— *pistil*. Defective in some essential part.

— *stamens*. Not furnished with anthers; or with those which have no opening cells, or which are mere sketches or rudiments of anthers.

ABRUPT' leaf. A pinnate leaf, which has not an odd, or terminal leaflet.

— *root*. Appearing as if bitten off; as bird-foot violet.

Abrupt'ite. Abruptly.

Acalyc'inus. Without a calyx.

Acau'lis. Stemless.

AC'CESSORY. Additional. Annexed and of a different kind, often applied to the border of the receptacle of a lichen.

ACERO'SE leaf. Needle-form. Generally inserted on the sides of branches, as in the pines.

Acerosus. Acerose.

- Acicula'ris*. Form of a small needle.
- ACINAC'IFORM leaf. Sabre-form. One edge sharp and convex, the other thicker and strait or concave. Cutlass-form.
- Acinacifor'mis*. Acinaciform.
- AC'INE. One of the little globules constituting a compound berry; as of the raspberry.
- Ac'inus*. Acine
- ACOTYLED'ONOUS plants. Having no cotyledons, or seed-lobes: and consequently producing no seminal leaves. See Cotyledon and Seed-leaves.
- Aculed'tus* Prickly.
- Acu'leus*. Prickle.
- ACU'MINATE. When the leaf, calyx, &c. terminate suddenly in a point, which is more or less curved towards one edge of the leaf.
- Acumina'tus*. Awl-pointed. Acuminate.
- Acutangula'ris*. Sharp-cornered
- ACU'TE. Any part of a plant ending without a curved or rounded termination. An obuse angle or any other angle in mathematics, is acute in botanical language.
- Acu'te* Acutely. As *acute-dentatus*, sharply toothed.
- Acutius'culus* Acutish. That is, the apex, corner, &c. is hardly rounded so as to be called obtuse, and is rather too nearly round to be denominated acute. The termination *ish* as a diminutive is now sufficiently authorised by Smith, and others.
- ADEL'PHOUS. Applied to plants whose stamens are united by their filaments, whether in one, two, or more sets.
- ADNA'TE. Adhering. Any two or more parts of a plant being attached to each other, in cases where analogous parts are separate in other plants. As the bulbous offsets of Daffodil. The stipule in some cases is detached from the petiole, in others it is adnate, &c.
- Adna'tus*. Growing together. Adnate.
- Adpres'sus*. Appressed.
- Adscen'dens*. Ascending.
- AD'VERSE leaf. Presenting its under surface to the sun. One edge presented towards the stem
- Æquival'vis*. Valves of a capsule equal among themselves. It is also applied to valves (chaffs) of a glume calyx.
- Ærugino'sus*. Light bluish green, verdigris colour.
- Æstiva'tio*. Summer residence. See Æstivation.
- ÆSTIVA'TION. The manner in which petals lie in the flower-bud, and leaves in the leaf-bud, before they open. 1. *Convolute*, petals or leaves rolled all one way like a roll of paper or cloth. 2. *Imbricate*, petals or leaves lying over each other so as to break joints, like shingles on a roof. 3. *Conduplicate*, each petal or leaf having its edges rolled in, till the two opposite rolls meet on the midrib. 4. *Valvate*, when, just before they open, they stand like the husks of an ear of Indian corn. 5. *Unequal-valved*, when the petals differ in size. See Foliation.
- Affi'nis*. Having relation, or affinity, to something supposed to be previously known.
- Aga'mia*. (a without, *gamia* matrimony,) Necker's name for the class *cryptogamia*.
- AGES of plants. Some plants spring up, flower, ripen seed, and die in a few hours or a day, which are called *ephemeral*. Others live a few months, or a summer, which are called *annual*. Others spring up in one summer and ripen and die the next, which are called *biennial*. Others live an indefinite period, either with the whole stem and branches, or only by the root, which are called *perennial*.
- The ages of trees may be

known by counting the concentric rings, or grains. Our author, Richard, supposes that trees have three ages. 1. The age of increase, or growth. 2. The age of maturity, when there is no increase. 3. The age of decay. But is there not sufficient proof, that all trees, while in a living state, continue to deposit new layers of wood every year? If so, the age of maturity must be rejected.

AG'GREGATE. Many springing from the same point, or from the same receptacle. Sometimes this term is rather loosely applied to heaps or bundles.

Aggregate flowers are those where several stand on the same receptacle without united anthers. These flowers have rarely any inclination to yellow colour like compound flowers; but are blue, purple, or white. Applied to minerals it signifies that several simple minerals are united in a mass by adhesion, or by a cement.

AI'GRETTE, E'GRET. The flying, feathery or hairy crown of seeds; as the down of thistles and dandelions. It includes whatever remains on the top of the seed after the corol is removed.

— *stiped* (stipulatus) when it is supported on a foot-stem.

— *simple* (simplex) when it consists of a bundle of simple hairs, without branches.

— *plumose* (plumosus) when each hair has other little hairs arranged along its sides, like the beards on a feather.

— *membranous*, thin transparent leaves.

Martyn recommends this term under the word *pappus*; Barton adopts it, and Ives approves. On these authorities, it is introduced here from the French botanists.

I'GRETTE. Bearing egret.

la. See WING.

ALA'TED, Ala'tus. Having wings.

Al'bicans. Whitish, growing white.

ALBU'MEN. The farinaceous, fleshy, or horny substance, which constitutes the chief bulk of monocotyledonous seeds; as wheat, rye, &c.

Albur'num. See Aubier. Sapwood.

AL'GAE. Linneus comprised the plants of the orders Hepaticæ and Lichenes under this order.

A'LIENATED. When the first organs, as the stamens, leaves, &c. give place to others different from the natural habit of the plant.

ALLIACEOUS. Emitting the odour of garlick.

ALLUVION. Detritus, which is formed by the process of washing from the place of disintegration.

AL'PINE. Growing most naturally on high mountains.

ALTER'NATE. Branches, leaves, flowers, &c. are alternate, when arranged upon opposite sides of the stem, or whatever supports them; beginning at different distances from its base, and continuing in nearly equal series. Sometimes they are in three series.

ALTER'NATING. When one organ is arranged alternately respecting another; as the stamens, in the first ten classes, mostly alternate with the petals, or divisions of petals.

Alter'ne pinna'ta. Alternately pinnate.

ALVE'OLATE receptacle. Having cells so as to resemble a honeycomb, with more or less of each seed imbedded in it.

Alveola'tus. See alveolate.

ALUTACEOUS. Tan-colour. The colour of soal-leather.

AMBITUS. Periphery. The outer rim of a frond, receptacle, &c.

A'MENT. An assemblage of small flower-bearing scales, which serve as lateral calyces. These

- are arranged along a kind of rachis, and each encloses either the stamens or pistils of flowers. The pine, willow, oak, chesnut, walnut and nettles are good examples.
- Amenta'ceus*. Growing in aments, amentaceous.
- Amen'tum*. See ament.
- AMPHIBIOLOGY**. The department of Zoology, embracing animals which are capable of suspending respiration for a long time without producing bad effects. As frog, snake, tortoise, lizard.
- Amplexicau'lis*. See clasping. Embracing the stem.
- Am'plius*. Enlarged, abundant.
- Ampul'lus*. See utriculus. Bladder.
- ANAL**. Situated near the vent, or between it and the tail.
- ANALLUVION**. Applied to detritus which has not received its present character from being washed.
- ANAL'OGY**. In botany, it is frequently necessary to reason from analogy. That is, after becoming acquainted with those organs which usually accompany each other, if we discover one of them in analysing plants, we frequently assume the existence of others when the latter are too minute for inspection. This principle becomes indispensable in most cryptogamous plants.
- ANALYSIS**. To analyse a plant *botanically*, is to search out the name by the number, form, position, &c. of its organs, as they exist in a natural state.
- ANASTOMOSIS**. A meeting of mouths. When veins, tubes, &c. join in one, at, or towards, their extremities.
- An'ceps*. See ancipital. Two-edged.
- ANCIP'ITAL**. Two-edged. Having two opposite edges or angles.
- ANDROG'YNOUS** plants. Bearing staminate and pistillate flowers on the same root without any perfect ones; as the Indian corn.
- *spike*, has both staminate and pistillate flowers distinct on different parts of it.
- *flower*, has stamens or pistils only, and is on the same plant with other flowers having different organs from itself.
- Androg'ynus*. See androgynous.
- ANFRAC'TUOUS**. Winding by angular turnings.
- Angiocar'pus*. Fungi bearing seeds internally.
- AN'GULAR**. By means of intervening grooves, the stems, calyces, capsules, &c. often have ridges running lengthwise, which give them this appellation. Sometimes the angles project considerably; particularly the side-points or projections of leaves, which are also called angles.
- Angula'tus*. See angular.
- Angustifol'ius* Narrow-leaved.
- AN'NOTINE**. Of one year.
- AN'NUAL**. Which springs up, perfects fruit, and dies, in the same year. The herbage is often annual with a perennial root. But the root is always intended, unless the other parts are particularly mentioned.
- Annula'tus*. Having a ring around the capsules in ferns; or a fungus with a ringed stipe. See ring.
- An'nulus*. See ring.
- An'nuus*. See annual.
- ANOM'ALOUS**. (*a* without, *nomos* law.) Whatever forms an exception to the assumed rules or systems. In the attempts of old botanists at natural arrangement, many plants were necessarily thrown into anomalous groups.
- ANTENNAE**. The horns or jointed processes on the heads of insects.
- AN'THER**. See p. 5.
- ANTHERID'IUM**. Used by Nuttall for a mass of pollen.

- ANTHERIFEROUS.** *Antherif'era.* Flowers bearing sessile anthers; that is, anthers without filaments.
- ANTHEROID.** Having the appearance of an anther.
- Antho'dium.* See perianth calyx.
- Aper'tio.* See blooming.
- AP'ERTURE.** In conchology it is used for the mouth of a shell, or entrance to the animal's residence. It is of various forms, as angular, rounded, moon-form, linear, &c.
- APET'ALOUS.** A flower without a corol. See stameneous.
- AP'EX.** The tip or end. Summit of the spire of a shell.
- APHYL'LOUS.** Leafless.
- Apicula'tum.* Covered with fleshy, erect, short points.
- Apoph'ysis.* A process from the base of the theca of mosses.
- Apoth'e'cium.* The receptacle of lichens, being the part whereon the seeds are formed and ripened. The saucer-form cups on those greenish leathery scabs on fences and stones, are examples. See Border of Lichens.
- APPEN'DAGE.** As thorns, tendril. See p. 10.
- APPENDIC'ULATE.** Appendaged. Having something attached to a leaf, corol, &c. as a wing on a petiole, a nectary at the end of a petal as in some species of *Polygala*, &c.
- APPEN'DICULE.** Appendiculate. Having a little appendage.
- APPRES'SED.** Closely pressed; as leaves against the stem, &c.
- APPROX'IMATE.** Growing near each other, or near to a different part.
- AP'TEROUS.** Without wings.
- AQUAT'IC.** Growing most naturally in or near water.
- Arachnoi'deus.* Covered with interwoven hairs, so as to resemble a spider's web.
- Araneo'sus.* See arachnoideus.
- Ar'bor.* See tree.
- ARBO'REOUS.** Tree-like. Applied to mineral impressions.
- ARBORES'CENT.** Becoming woody when approaching maturity.
- Arbus'cula.* See suffrutex—some-what woody.
- Arbusti'vus.* Bush-like.
- ARCH'ED.** Curving above. See vaulted.
- AR'CUATE,** *Arcua'tus.* Bent like a bow. See bowed.
- Arcua'tim.* Archwise, curved.
- Arcna'rius.* Growing in sand.
- Areola'tus.* Raised a little so as to resemble a garden-bed. Cushion-like.
- Argen'teus.* Silver-coloured.
- Argu'tus.* See sharp.
- Argyro'comus.* Silky and silvery white.
- AR'ID,** *A'ridus.* Dry and rough.
- A'RIL,** *Aril'lus.* The outer coat of a seed, which, not contracting with it in ripening, falls off. Scopoli calls it *Theca*, but this name is now exclusively appropriated to the capsule of mosses.
- ARIS'TATE,** *Aris'ta* and *Arista'tus.* See awn and awned. Bearded.
- ARMS.** The spines and prickles of plants.
- Aroma'ticus.** Aromatic, sweet-scented.
- AR'ROW-FORM.** Shaped like an arrow-head. It differs from heart-form in having the hind-lobes acute.
- Artic'ulus.* See joint.
- ARTIC'ULATED.** Jointed; which see. Articulated division of animals includes those which have jointed abdomens; as angle-worms, lobsters, spiders, and wasps.
- Articula'te.* Jointedly.
- Arundina'ceus.* Resembling reeds.
- Arven'sis.* Growing in cultivated fields.
- ASCEN'DING.** Rising gradually between a horizontal and vertical position.
- Ascid'ium.* Bottle-form leaf or ap-

pendage; as on the *Sarracenia*.

AS'PERATE, *As'per*. See rugged. Rough.

Asperifolius. Rough-leaved.

ASSUR'GENT, *Assur'gens*. Rising in a curve from a declined base.

ASTI'PED. Pappus, or a fungus without a stem, or stipe.

Atropurpureus. Dark purple.

ATTEN'UATED, *Attenuatus*. Tapering gradually till it becomes slender. Long and slender.

AU'BIER. Sap-wood, the last year's deposit.

Auctus calyx. Having an outer row of leaflets; as the Dandelion.

Ave'nium Veinless.

AVERTEBRAL. Animals without back bones; as insects, oysters, angle-worms.

AULULET. Spurious wings. A tuft of 3 or 5 feathers on the outer fore-joint of a bird's wing.

Auranti'acus. Orange-coloured.

Aure'us. Gold-coloured.

AURICLES. Appendages to the heart; being small cavities above the ventricles.

Auricula'tus, or *auri'tus*. See eared. Ear-like.

Autumna'lis. Coming to maturity in autumn.

Autumna'tio. The effect of autumn on plants.

AWL'-FORM. Linear at, and adjoining, the base; and becoming sharp and more or less curved to one side at the point.

AWL'-POINTED. Acuminate.

AWN. A short slender process, or stiff beard, proceeding from the top or back of glumes, or chaff. Processes resembling awns are called by this name, which proceed from anthers or any other parts of vegetables.

AWN'ED. Having awns.

AWN'LESS. Without awns; sometimes it means a blunt pointless awn.

AX'E-FORM. Nearly cylindric to-

wards the base, with one side projecting towards the end; which projection is sharp-edged.

AX'IL. The arm-pit. Applied to vegetables, it means the angle formed by the meeting of a leaf or petiole with the stem, or of a branch with the main stem.

AX'ILLARY. Any thing growing from the axils.

Azu'reus. See *Cœruleus*. Blue.

B

Bac'ca. See berry.

Baccif'erus. Berry-bearing.

Baccil'lum. Pedicel of lichens.

BACK. The side of a univalve shell, which is opposite to the side in which the aperture is placed.

Ba'dius. Liver-brown.

BAN'NER. The upper petal in a papilionaceous flower.

BARB. A strait process armed with teeth pointing backwards.

Bar'ba. See beard.

Barba'tus. See bearded.

BARK. Properly the inner strong fibrous part of the covering of vegetables. But in a more extended sense it includes also the *cuticle* and *cellular integument*; which see. Also see *Cortex*.

BAR'REN. Producing no ripe seed. See *staminate*, *neutral* and *abortive*.

Bas'is. Base. The part of a stem, leaf, flower, &c. nearest to the place through which it derives its nutriment. The extreme end of a univalve shell, opposite to the apex of the spire; and the side or end opposite to the hinge of the bivalve shells.

BEAK. One side of the aperture of a univalve shell extended in the form of a beak; as *murex*. In a bivalve, it is the tip of the spiral part near the hinge.

BEAK'ED. Terminated by a process, formed like a bird's bill.

- BEARD.** Parallel hairs. It is applied to the filamentous nectaries on the petals of Iris. The lower lips of ringent corols are sometimes called beard. Tendril-like appendages near the mouth of the sturgeon and of some other fish.
- BE'ARDLESS.** Destitute of beard.
- BELL'-FORM.** Swelling out at the base and without a tube. Properly applied to monopetalous corols only; but it is frequently extended to liliaceous flowers, and some others.
- BELLY.** It is the swollen part of the body of a univalve shell. See Body.
- BEL'LYING.** See Ventricose. Inflated.
- BER'RY.** A pulpy pericarp enclosing seeds without capsules.
- Bib'ulus.* Sucking water.
- BICAP'SULAR.** Two capsules to one flower.
- Bicor'nis.* Anthers with two horns, or two horn-form processes.
- BICUS'PIDATE.** Having two lengthened points, each terminated with a small bristle.
- Bid'ens.* Having two teeth.
- BIEN'NIAL.** Springing up one summer, flowering and dying the next, as wheat.
- Bifa'rius.* Facing two ways, presenting two opposite series.
- BIF'EROUS.** Bearing twice in a year. Common in hot climates.
- BI'FID.** Two cleft, split into two divisions.
- Bif'idus.* Bifid.
- Biflo'rus.* See two-flowered.
- Bifar'us.* Having two openings or holes.
- Bifurca'tus* or *Bifur'cus.* Forked.
- BIGEM'INATE.** Twin-forked. Having a forked stem with two leaves on each part.
- BIGLAN'DULOUS.** Having two glands.
- BI'UGOUS.** A pinnate leaf with two pairs of leaves on each part.
- Bila'biata.* Corol with two lips; as in most of the class *didynamia*.
- BILAM'ELLATE.** Composed of two lamellæ; it applies to a flattened stigma split lengthwise.
- BILO'EATE.** Divided into two lobes.
- BILOC'ULAR.** Two-celled.
- BI'NATE.** Two standing up together on the top of one stalk. If they spread out horizontally, they are called *conjugate*.
- Biner'vis.* Two-nerved.
- BIPART'IBLE, OR BIPAR'TILE.** Naturally divisible into two parts.
- Biparti'tus.* Divided into two parts to the base, but still remaining in one piece; as the petals of *stellaria*.
- BIPIN'NATE.** Doubly pinnate.
- BIPINNAT'IFID.** Doubly pinnatifid.
- BIROS'TRATE.** Having two beaks.
- Bisceria'lis.* See Lamella. In two thin series.
- BISTRI'ATE.** Having two slender lines.
- BISUL'CATE.** Having two furrows or grooves.
- BITTER'NATE.** Doubly-ternate.
- BI'VALVE.** When a capsule is composed of two pieces, or valves; or when the glume calyx of grass, &c. consists of two chaffs, or husks. When used in Zoology, it refers to the two parts of the shell of such molluscous animals as oysters, clams, &c.
- Bivasscula'ris.* With two horn-form or cup-form cells.
- BLIS'TERED.** See bullate.
- BLOOM'ING.** The precise time when all parts of the flower are completely developed.
- BLOS'SOM.** The corol.
- BLUNT.** Round-obtuse.
- BOAT'-FORM.** Hollowed one side with a compressed longitudinal ridge on the opposite side.
- BODY.** It is the first whorl at the base of a univale shell; the most swollen part of which, is called the belly.

- BOLE.** The naked trunk of a tree.
- BOR'DER** in LICHENS. The edging of their receptacles (apothecium.) It is *proper*, when of the same substance and colour of the receptacle. It is *accessory*, when of a different substance or colour from the disk of the receptacle.
- BOR'DER** of corols, leaves, funguses, &c. The spreading brim.
- *tenuis*. Thin border of a fungus.
- *colorata*. Coloured border.
- *equalis*. When the stem of a fungus is in the centre.
- *crassa*. Thick border, &c.
- BOS'SED.** Bunched up in the centre; as in some *agarics*.
- BOTAN'ICAL NAMES** of plants. They should always have a Latin termination, in order to be equally convenient for all nations.
- Bot'rus**. A cluster, like grapes.
- BOUGH.** See branch.
- BOULDER.** A large fragment of a rock. This term is applied to all masses of rock, which are severed from a main rock, if the size is above that which is usually denominated a pebble.
- BOW'ED.** Curved over downwards.
- BOWL'-FORM.** About half of a hollow sphere.
- BRAC'HIALE.** Branches nearly horizontal and *decussate*.
- Brach'ium.** See Measures. Arms-length.
- BRACT.** *Brac'ted*. Floral leaf. A leaf near or among flowers, which differs in shape, or colour, or both, from the other leaves of the plant; as on the bass-wood, (*tilia*.)
- Bractea'tus.** Bracted, having bracts.
- Bractefor'mis.** Resembling bracts.
- BRANCH.** A division of the main stem, or main root.
- BRANCH'ED.** Divided into branches. Applied to roots of trees.
- BRANCH-LEAVES.** Leaves growing on branches.
- BRANCH'LET.** Subdivision of a branch; a twig.
- BRANCH-PE'DUNCLE.** A peduncle proceeding from a branch.
- Brev'is.** Short.
- Brevis'simus.** Very short.
- BRIST'LES.** Very stiff hairs. They are simple or hooked.
- BRIST'LE-FORM.** Nearly proportioned to a bristle in length and breadth.
- BRIST'LY.** Set with bristles.
- BRONCHIAL.** Applied to fish it means, pertaining to the gills.
- Brum'al'is.** See Hyemalis. Winter.
- BRUN'NEUS.** Brown, dusky, dun.
- BUD.** The winter residence of leaves and flowers. Generally wanting in hot countries. They are defended by imbricate scales and mostly by a clammy glutinous substance also. They are:
1. *Leaf-bearing.* Which are more slender and sharp.
 2. *Flow'er-bearing.* Which are thicker, not so hard nor so sharp.
 3. *Leaf and flow'er-bearing.* Which are generally smaller than either of the other kinds. See foliation.
- BULB.** *Bulbus.* Bulbous roots. Though we call the turnip, the onion, &c. roots, they are strictly buds; or the winter residence of the future plants. Some bulbs are borne above ground, as on several species of onion, (*allium*.)
- Bulbif'erous.** Producing bulbs above ground.
- Bulbo'sus.** Bulbous. Growing from bulbs.
- BULBOUS ROOT.** Fleshy and spherical.
- Bul'bulus.** Small lateral bulbs shooting from larger ones.
- BUL'LATE.** Raised in bunches or blisters; as when the parenchymous substance of a leaf rises up between the veins.
- BUN'DLE.** See fascicle.
- BUT'TERFLY-FORM.** See papilionaceous.
- BUT'TONS, Tri'ce.** That kind of receptacle of lichens which

when magnified resembles a coiled horse-hair. They are roundish, sessile, unexpanding, compact, black, and solid; continued along their whole surface. Upper side they are in concentric, or coiled, plaited and twisted folds; covered every where with the same membrane; containing seeds without cells, or cases. Smith.

BYSSUS. Flax-like, silky, or hair-like fibres at the hinge of some bivalve shells. It is applied to some fungi, &c.

C.

CADU'COUS. Any part of a plant is caducous, which falls off earlier, compared with other parts of the same plant, than is usual for similar parts in most plants. As the calyx of the *poppy* falls off before the corol is hardly expanded.

Cæ'sius. Sky-blue, pale-blue, grey.

CAES'PITOSE. Turfy. Several plants growing together, or from the same root, forming a turf.

Cal'amus. Reed-like.

Cal'car. A conic spur. See Spur.

CAL'CARATE. See spurred.

CALCIFEROUS. Bearing calx. An old term for carbonate of lime. Applied to sandrocks, &c. which contain carbonate of lime.

CALIC'IFORM. See Calyciform. Cup-like.

CALIC'ULATE, *Calicula'tus*. Having a smaller outer calyx. See auctus.

CA'LIX. See Calyx. Leaf-cup.

CALYC'IFORM. Resembling a perianth calyx.

CA'LYCINE. Appertaining to a calyx.

Calyc'inus or *Calic'inus*. See Calycine.

CA'LYCLE. The outer calyx-like part of the crown of some seeds. Also see auctus.

CA'LYCLED. See auctus. Having an outer calyx.

Calyc'ulus. See calycle.

Calyp'tra. Calyptré, or veil. The cap or hood of pistillate mosses; resembling in form and position an extinguisher set on a candle. It is ranked among calyxes, and so used in descriptions. But in reality it is the corol closed; which after being detached at the base like other corols, its form still keeps it on the capsule a while. See villose, also *Perichætium*, which is the true calyx of mosses.

Calyptra'tus. Having a calyptré.

CA'LYX. (*Kalux, Gr.*) That floral organ which proceeds from the germ, receptacle, or peduncle, below all the other organs.

If the stamens alternate with the leafets or divisions, Linneus calls it a corol; and if the stamens stand opposite to the leafets or divisions, he calls it a calyx, without regarding the colour or texture. Where the stamens are numerous, this rule cannot apply; neither has Linneus made it necessary in his descriptions.

Wildenow's rule. The calyx is hardly as long as the stamen; the corol quite as long or longer; the calyx green and firm; the corol coloured and tender. This rule is to apply where but one of the organs is present; and he allows a few exceptions to this.

— *double*. When one calyx is outside of another; as in the *holly-hock*, (*althea*.)

— *common*. When one calyx includes many florets, as the *thistle*

— *proper*. When a floret is included in a general calyx of its own.

There are seven kinds of calyx: 1. Perianth. 2. Involucre. 3. Spathe. 4. Glume. 5. Ament.

C E L

6. Calyptra. 7. Volva. See each.
- CAMB**, *Cam'bium*. Du Hamel's name for the mucilaginous or gelatinous substance between the wood and bark. See p. 7.
- CAMPAN'ULATE**, *Campanula'tus*. See bell-form.
- Campes'tris*. Growing in uncultivated fields.
- CANAL**. The channel or gutter along the beak of a univalve shell.
- Canalicula'tus*. See channelled.
- CAN'CELLATE**, *Cancella'tus*. See latticed.
- CANESCENT**. Becoming white or hoary.
- Capilla'ceus*. See capillary.
- CAP'ILLARY**, *Capilla'ris*, *Capilla'ceus*. Hair form; longer than bristle-form in proportion to its thickness.
- Capillus*. Hair. See pilus.
- CAP'ITATE**, *Capita'tus*. Head-form; growing in heads.
- Capit'ulum*. See head.
- Capre'olus*. See tendril.
- CAPRIFICA'TION**. The fertilizing of pistillate flowers by sprinkling pollen upon them. This is important in raising figs.
- CAP'SULE**, (*cap'sula*), a little chest. That kind of pericarp, which opens by valves and becomes dry when ripe; not including siliques nor legumes. When it is one-valved, it is called a **FOLLICLE**, *folliculus*, which see. It consists of *valves*, *partitions*, *columella*, and *cells*, which see. One kind of capsule never opens and is called *samara*.
- Cari'na*. See keel.
- CAR'INATE**. See keeled.
- Carina'tus*. See keeled.
- CAR'NEOUS**, *Car'neus*. Flesh-coloured. Nuttall uses it for fleshy.
- CARNO'SE**, *Carno'sus*. Fleshy.
- CAR'POGENA'TION**. (*Karpos*, fruit; *gennao*, to bring forth.) A substitute for the word *fructification*.
- CARTILAGE**. Flexible, fibrous, compact substance; often called gristle. Applied to animals mostly.
- CARTILAG'INOUS**. Hard and somewhat flexible. It applies to a leaf, when it is bound around with a strong margin, different from the disk of the leaf.
- CARUNCLE**. Fleshy protuberance on the heads of some birds, as turkies.
- CARYOPHYL'LEOUS**. Pink-like, as to the corol; having five petals with long claws, all regular and set in a tubular calyx.
- CATAPHRACTED**. Callous skin, or cartilaginous scabs.
- Castra'ta*. Filaments being without anthers.
- Cate'nula*. A thread in some mosses, serving to unite or chain together the seeds.
- CAT'KIN**, *Cat'ulus*. See ament.
- CAUDAL**. Pertaining to the tail or posterior extremity.
- CAU'DATE**, *Cau'da*. See tail.
- Cau'dex*. The main body of a tree or root.
- CAULES'CENT**, *caules'cens*. Having a *caulis*, or stem, exclusive of the peduncle or scape.
- CAU'LINE**, *cau'linus*. Growing on the main stem.
- Cau'lis*. The main herbage-bearing stem of all plants, except of the grassy kind; as trees, weeds, &c. We have no English name for this stem, unless we adopt the French, *tige*.
- CELL**. The hollow part, or cavity of a pericarp or anther. It is more generally applied to the cavities of pericarps, where seeds are lodged. According to the numbers of these the pericarps are called *one-celled*, *two-celled*, &c.
- CEL'LULAR INTEG'UMENT**. The parenchymatous substance between the cuticle and bark. This substance is generally green. It constitutes the most considerable part of leaves; in

which the juices are operated upon by air and light, and the peculiar secretions of vegetables principally elaborated.

CEL'LULES, cis'tulæ. That kind of receptacle of lichens, which is globose, terminal, and formed of the substance of the frond. It is filled with uncoated seeds, intermixed with fibres; at length it bursts irregularly. Smith.

Cellulo'sus Cellular. Having cavities within, which are small and irregular; and in which sometimes granules are nested.

Central'is. In the centre.

Cephalo'dia. See knobs.

CERE. Membrane covering the base of a bird's bill.

Cerea'lis. (*Cer'es*, goddess of corn.) Any grain of which bread is made.

Cer'nuus. When the apex or top only droops or bends down. See *nutans*, and the difference in the two terms.

CERVINUS. Fawn-coloured. The colour of the fine light hair of a deer. Very pale reddish yellow.

CES'PITOSE. See *Cæspitose*. Turfy.

CHAFF. Thin membranous covering of the seeds of grass, grain, &c. See *glume*. It is also applied to whatever resembles chaff; as the substance left on the receptacles of some compound flowers, after the seeds are removed; to the crown of some seeds, &c.

CHAF'FY. Bearing chaff.

CHAMBERS. The cells, or separate spaces, in shells. They are connected by a siphunculus.

CHAN'NELLED. Hollowed out longitudinally with a rounded groove of considerable depth.

CHAR'ACTER. That description of a plant, which distinguishes it from all others. In making out the character, situation, proportion, connection, number and figure, are considered.

The two last are not so constant as the other three.

Generic characters are limited to the flower and fruit.

Specific characters are restricted no farther, than to avoid running into the characters of the genus.

CHELATE CLAWS. At the end of fore-legs of some insects. They resemble forceps, like lobsters' claws.

CHO'RION. A clear limpid liquor contained in a seed in the time of flowering. This liquor, after the pollen is received, becomes a perfect embryo of a new plant, and takes the consistence usual in perfect seeds. But without the reception of the pollen, neither any thing like the embryo or perfect seed, is ever formed. Malpighi.

Chrysoe'omus. Golden locks; or a yellow bundle of threads.

CIC'ATRICE, Cica'trix. The mark or natural scar from whence the leaf has fallen.

CIL'IATE, cilia'tus. Edged with parallel hairs or bristles, resembling eye-lashes.

CINE'REOUS. of the colour of wood-ashes.

Cin'gens. Surrounding, girding around.

CIR'CINAL. Rolled in spirally beginning with the tip, which continually occupies the centre; as ferns.

Circina'tus. Circinal. Also compassed about.

Circumsi'sus Cut round. Opening transversely, not lengthwise; as the capsules of purslain.

Circumscrip'tio. The circumference of a leaf.

Cirrif'erus. Bearing tendrils.

CIRRO'SE, cirro'sus. Terminating in a tendril.

Cir'rus. (Curled bushy hair.) A tendril, or climber.

Cis'tulæ. See *Cellules*. Little hollows.

CLAM'MY. See viscid.

CLAS'PER. See tendril.

CLAS'PING. The base of the leaf being more or less heart-form and sessile, so that the two hind lobes partly surround the stem.

CLASS, *clas'sis*. The highest division of bodies in a system. Each class is defined to be the agreement of several genera in the parts of fructification, according to the principles of nature, distinguished by art. Linneus divided all plants by their stamens and pistils, into 24 classes; but Persoon and other approved sysematic writers have distributed the plants of the 18th and 23d classes among the others, and rejected these two; leaving but 22 classes. These are rejected on account of the liability of their characters to perpetual variations. On the same ground the class dodecandra may be rejected; leaving but 21 classes.

CLA'VATE, *clava'tus*. Club-form. Growing larger towards the end.

Clavic'ula. See tendril.

Clav'sus. Closed, shut up,

Clav'us. See spurred rye. Ergot.

CLAW. The lower narrow part of a petal by which it is fixed on the calyx or receptacle. It can exist only in polypetalous corols.

CLEFT. Split down, not exceeding half way to the base; with nearly strait edges on both sides of the fissure. The parts into which it is split are numbered in descriptions; as once split making two divisions, is called 2-cleft; two splits 3-cleft, &c.

CLEFTS, *lirell'æ*. That kind of receptacle of lichens, which is open, elongated, sessile, black, very narrow or linear, with a somewhat spongy disk; the border is parallel on each side and proper. Sometimes it has an accessory border from the crust

besides. The *clefts* are either simple and solitary; or aggregate, confluent and branched. Smith.

CLIM'PING. Ascending by means of tendrils, as grapes: by leaf-stalks, as virgin's bower; by cauline radicles, or rootlets, as the creeping American ivy, (*rhus radicans*.) It differs from *twining*, which see.

CLOACA. A general vent for eggs, urine, and foeces, as of birds, &c.

CLOUDS. They may be divided into the Regular and Irregular.

REGULAR CLOUDS.

1. *Strato'se clouds*. They are those stratified horizontal ranges of vapour, which often appear in the morning, near and adjoining the earth; usually called fog. When the sun shines upon them, they ascend gradually in a highly rarified state; and at length reunite in another form, and take the name of

2. *Cumulo'se clouds*. They are those bright shining clouds, which have their bases straitish with their upper sides in roundish brilliant heaps. They mostly float awhile near the horizon in detached masses, and then gradually break up and ascend still higher in fine flakes or sprays, and form

3. *Cirro'se clouds*. They are those fibrous clouds which resemble flax when it is gradually pulled from the distaff. They are the highest of all clouds; often forming at the height of five or six miles. After a few hours, they generally settle down gradually, and become

4. *Cir'ro-cumulo'se clouds*. They are those which are formed by the knotting or curdling of cirrose clouds. When first forming, they exhibit rows of small heaps, often in long regular curved lines very

near each other. Sometimes they become confluent, and at length cover the whole sky. This last variety furnishes the materials for long steady rains. But they generally break up in fair weather in the afternoon, and out of their fragments are made

5. *Cir'ro-strato'se clouds*. They are those stratified patches, seen near the horizon, mostly at evening; generally disappearing entirely after dark.

REMARK. This is the usual process during the pleasant part of spring, summer and autumn. In the year 1815, I kept an exact diary of clouds at Greenwich, in New-York, more than five months. I found this to be their regular course more than half of that period.

IRREGULAR CLOUDS.

6. *Nimbo'se clouds*. They are those dense clouds, which ascend from the horizon, at first with heads like the cumulose, which soon shoot into cirrose branches extending towards the zenith. They are usually called thunder-clouds, and almost always bring showers.

7. *Vello'se clouds*. They are those fleecy clouds, which fly swiftly about the sky, of an open texture, without any defined sides or bases. One variety of those clouds is called scud.

8. *Cu'mulo-strato'se clouds*. They are the most rare, as well as the most remarkable of clouds. But one appeared in the year 1815, and I have observed but two since, (13 years.) A cumulous-like cloud seems to rise up from the horizon in a compressed channel, and to become united with a cirrostratose cloud. Soon after this union, the cloud spreads out to great extent, and finally covers a great proportion

of the hemisphere; while its base or stem remains as at the commencement. Its form and sudden growth have given it the appellation of mushroom-cloud. I have never seen this cloud except at six or seven o'clock in the afternoon.

CLO'VEN. See cleft.

CLUB. The clavate part of a fungus, which supports the fruit or bears the seed.

CLUB'-FORM. See clavate.

CLUS'TERED. See racemed.

CLY'PEATE, *Clypea'tus*. Form of a buckler. See peltate.

COAD'UNATE. With united bases.

COAETA'NEOUS, *Coaeta'nus*. Existing at the same time. Applied to willows and to some other plants, it implies that the flowers and leaves appear at the same time.

CO'ALIT, *Coali'tus*. Thickened, increased, or pressed together, as the anthers of potatoe flowers

COARC'TATE. Compact. Pressed or squeezed close together.

COAT'ED. Consisting of concentric coats, layers or skins, as the bulbous roots of onions.

COB'WEBBED. See arachnoideus.

Coccin'eus. Scarlet-coloured.

Coc'cum. A grain or seed. Tricoccos, 3-seeded; pentacoccos, 5-seeded, &c.

COCH'LEATE, *cochlea'tus*. Coiled spirally, like a snail-shell.

Ceruleo purpu'reus. Bluish-purple, violet colour.

Coeru'leus. Blue.

Cohere'ns. Cohering, attached.

COIL'ED. Twisted like a rope; or rather resembling the form of one thread of a rope, after the other threads are removed.

Colli'nus. Growing on hills.

COL'oured. Of any hue except green; but in the language of botanists green parts are not coloured. See temperature, also glaucous.

Coloratus. Coloured.

COLUMEL'LA. That which connects the seeds to the inside of a pericarp. It is generally applied to a central pillar in a capsule; which takes its rise from the receptacle, and has seeds attached to it on all sides. In mosses it is called *sporangidium* by Willdenow; and he sometimes applies this term as a substitute for *columella*; and says it is found only in 2-valved capsules. Applied to shells, it means the pillar formed by the spire, commencing with the left lip.

COLUMN. Applied to a thick strong style.

COLUMNAR. See *terete*. Round and tapering.

Columnifera. Stamens and pistils disposed in the form of a column.

Com'a. (*Kom'e*, a head of hair.) A tuft of bracts on the top of a spike of flowers.

COMMIS'SURE. The place where one thing or part is joined to another. Nuttall applies it to sides or edges of two seeds, growing on unbelliferous plants, where they are joined together; as those of the carrot and fennel.

COM'MON. Any part is common, which serves to include or sustain several parts, similar among themselves.

— *perianth*. Including several florets; as in the thistle.

— *involucre*. Surrounding the base of the peduncles, in an umbel, which are subdivided above.

This term is often used for frequent also.

Communis. See common.

COMOSE. Having a coma, or lock of hair.

COMPACT. See *coarctus*.

COMPLETE, *completus*. Having both calyx and corol. When the corol is wanting, the flower is *incomplete*. When the calyx is wanting, the flower is *naked* if it has a corol.

COM'PLICATE, *complicatus*. Folded together.

Compositus. Compound.

COM'POUND. One whole, formed of many similar parts.

— *flowers*. Those comprised in the class *syngenesia*, with several florets on one receptacle, each with united anthers. See p. 6 & 10.

— *leaf*. When several leaflets grow on one petiole.

— *raceme*. When several racemes grow along the side of a peduncle.

— *spike*. When several spikelets grow along the side of a fruit-stalk, or general spike.

— *umbel*. Having the peduncles subdivided into peduncles of lesser umbels, &c.

— *petiole*. A divided leaf-stalk.

— *peduncle*. A divided flower-stalk.

COM'POUND TERMS. When any part of a plant is to be described, which does not agree with the definition of any term in use; two or more terms must be compounded, so as to convey to the mind correct descriptions. For example, the chesnut leaf has notches on the margin pointing towards the apex, which answers to the description of *serate* leaves; excepting that the notches are hollowed out. But these hollowed notches are not deep enough for sinuses; therefore the two terms are compounded, making *sinuate-serrate*. Compound terms are always united by a hyphen.

COMPRES'SED, *compres'sus*. Flattened, as if squeezed or pressed.

CON'CAVE, *con'cavus*. Hollowed a little on one side. It is sometimes applied to deeper hollows; though rarely.

Conceptaculum. See *follicle*, single-valved capsule.

CONCHOLOGY. The science of shells. It is divided into the Univalve, Bivalve, and Multi-

- valve; which see—also see the terms, apex, base, front, back, sides, body, whorl, spire, aperture, lip, beak, operculum, chambers, siphunculus, slope, lunule, hinge, ligament, cicatrix, &c.
- Con'color.* The same colour in all parts.
- CONDEN'SED.* See coarctate.
- CONDU'PLICATE.* That kind of foliation where the leaf, while in the bud, has its two sides shut together, like two leaves in a book.
- CONE, co'nus.* See strobile.
- CONFERT, confer'tus.* Thick-set; leaves, flowers, &c. standing so closely together, as to seem to crowd each other.
- CON'FLUENT.* Running together. It is applied more particularly to the receptacles of some lichens, which run together in disorder, and become indistinct.
- CONGE'NERES.* Plants of very similar habits, &c.
- Conges'tus.* See heaped.
- CONGLOM'ERATE.* See glomerate. When used in geology, it is applied to aggregates of rounded pebbles.
- CON'IC.* With a broad base and approaching a point towards the top.
- Conif'era.* Bearing cones.
- CONJUGATE.* See binate. In pairs.
- CONNA'TE.* Leaves being opposite with their bases growing together, so as to form the appearance of a single leaf. Anthers are sometimes connate also.
- CONNI'VENT, Conni'vens.* See converging.
- Consim'ilis.* Resembling.
- Contig'uus.* Near, next.
- CONTIN'UOUS.* Uninterrupted.
- CONTOR'TED, contor'tus.* Twisted. It is also applied to corols, which have the edge of one petal lying obliquely over the next.
- Contrac'tus.* Close, narrow.
- Contra'rium.* See partition.
- CONVER'GING.* Approaching, or bending towards each other.
- CON'VEX.* Swelling out in a roundish form.
- Convex'us.* Convex.
- CON'VOLUTE, convolu'tus.* Rolled into a cylindric form, like a roll of paper, lengthwise with the mid-rib. Applied to the situation of leaves in the bud.
- COR'CLE, cor'culum.* (*Cor*, the heart.) The embryo of the new plant in a seed, situated between the cotyledons in dicotyledonous seeds. It consists of the *plume* and *rostel*, which show themselves soon after vegetation commences. See plume and rostel.
- COR'DATE.* Heart-form; so called from its supposed resemblance to the heart. It is hollowed behind with the side-lobes rounded at the base. See arrow-form.
- COR'DATE-OB'LONG, COR'DATE-LANCE'OLATE, &c.* partake of the formation of both compounds.
- CORIA'CEOUS.* Leathery or parchment-like.
- COR'NERED.* Having angles or corners. Three-cornered, four-cornered, &c. is often expressed trigonus, &c.
- COR'NIFORM.* Horn-form.
- Cor'nu.* A horn or spur.
- CORNU'TE, Cornu'tus.* Horn-form, or having horns or spurs.
- Co'ROL, coroll'a.* (A diminutive of *corona*, a crown.) The inner delicate covering of the flower, which constitutes its principal ornament in most cases. In a few cases, as the *bartsia cocci-nea*, the corol is dull and unsightly, while the calyx is gaily coloured. See petal and nectary.
- COROL'LET, corollula.* A little corol.
- Corollif'erus.* Bearing the corol.

- Corollinus*. Resembling, or appertaining to, a corol.
- Coro'na*. See crown.
- Corona'rius*. Forming a crown.
- Corona'tus*. Crowned; as the thistle seed is crowned with down.
- Coro'nula*. A little crown.
- COR'RUGATED**, *Corrugat'us*. Wrinkled. Applied also to ridges, in some measure resembling wrinkles.
- COR'TEX**. The bark, which see. It consists of a number of layers equal to the number of years the tree has been growing; though they are often too thin to be numbered. The inmost layer is called the *liber*.
- COR'TICAL**, **COR'TICATE**. Having its origin from the bark, or having bark.
- Cortina*. Used by Persoon for a spiderweb-like valve, being very thin and filamentous.
- Coryda'lis*. (*Kor'os*, a helmet.) Plants with helmet-form corols.
- CO'RYMB**, *Corym'bus*. Flowers umbel-like in their general external appearance, but their peduncles or supporting stems stand at different distances down the main stem; as yarrow.
- Corymbif'era*. Bearing corymbs.
- COS'TATE**, *costa'tum*. Ribbed.
- Cot'tony*. See tomentose.
- COTYLE'DON**. See p. 6.
- COW'LED**. When the edges meet below and expand above, and generally separate; as the spathe of the *arum*, Indian turnip.
- Cras'sus*. Thick.
- CREE'PING**. Running along the ground, or along old logs, &c. nearly in a horizontal direction, and sending off rootlets.
- CRE'NATE**. Scolloped, on the rim or edge. Notches on the margin of a leaf, which do not point or incline towards either the apex or base. When large crenatures have smaller ones on them, they are doubly-crenate.
- CRE'NULATE**. Very finely crenated.
- CRES'CENT-FORM**. Resembling the form of the moon from its change to half-filled.
- CREST'ED**. Having an appendage somewhat resembling a cock's comb in form.
- Creta*. Growing on chalky land.
- CRIBROSE**. Sieve-like.
- Crini'tus*. Long-haired.
- Cris'pus*. See curled.
- CRIS'TATE**, *Crista'tus*. See crest-ed.
- CROSS'-ARMED**. See brachiate.
- CROWD'ED**. See confert.
- CROWN**. The calycle, hair, or feathers on the top of some seeds; as the dandelion.
- CROWN'ED**. See coronatus.
- CRU'CIATE**. Cruciform, or resembling the cruciform.
- Crucia'tim*. Crosswise. Opposite pairs of branches or leaves successively crossing each other. See decussate.
- CRU'CIFORM**. (*Crux*, a cross.) Corols with four petals, whose lamina form a cross. Plants with such corols belong to the class *tetradynamia*.
- CRUSTA'CEOUS**. Leafy appearance, but consisting of small crusty substances lying one upon another.
- CRYPTOGA'MIA**. (*Kruptos*, concealed; *gamos*, marriage.) See p. 3, 15.
- CRYPTOG'AMOUS**. (*Kruptos*, concealed, *gamos*, marriage.) Belonging to the class cryptogamia. Applied to plants whose stamens are never manifest under the highest magnifying power.
- CU'BIT**. A measure from the elbow to the end of the middle finger.
- CUCUL'LATE**. See cowled. Hood-form, as the spathe of the Indian turnip.
- CUCURBITA'CEOUS**. Resembling gourds or melons.
- CU'LINARY**. Suitable for kitchen cookery.
- CULM**, *Cul'mus*. The stem of gralu

and grass, when dry it is usually called straw. It is applied to all grassy plants; as Indian corn, sedge, sugar-cane, &c.

CULMIFEROUS. Having culms, as wheat, Indian corn.

CULMIN'EOUS. Like the roof of a house. Top.

CULTRATE. Coulter-form. The beak of a bird resembling a plough-coulter.

Cum'ulus. Heaped.

CUNE'IFORM, Cune'iforme. See wedge-form.

CUP'-FORM. Hollow within, resembling a little cup.

Cupula. Cup. The pileus of a fungus, which is open at the top; as those of the genus *Peziza*.

Cupula'ris. Cup-form.

CURL'ED. When the periphery of a leaf is too large for the disk, it becomes waved or curled.

CURV'ED. Bent inwards. See incurved.

CUSP. The bristle of a cuspidate leaf, calyx, &c. Nuttall.

CUSPIDATE. Eye-tooth. Having a sharpened point and that tipped with a bristle, a prickle, or lengthened apex, not curved. See mucronate and observe the distinction; also acuminate.

CUTICLE. The thin outside coat of the bark, which has no life and is very durable, often transparent. It greatly resembles the scarf-skin of animals. Very distinct on elder, currant and birch; on one species of birch it resembles paper.

Cya'neus. Blue.

Cyathifor'mis. Wineglass-form. Cylindric, widening gradually upwards, margin not revolute.

CYLIN'DRIC. A cylindrical shaft, of nearly equal diameter throughout its whole extent.

Gymbifor'mis. See boat-form.

CYME, cy'ma. Flowers umbel-like in their general external appearance. It agrees with an umbel in having its common stalks

spring from one centre; but differs in having those stalks variously and alternately subdivided; as the elder, (*sambucus*.) Smith.

Cymo'sus, CYMO'SE. Being in cymes.

Cyphel'lae. See pits.

D.

Dædal'cus. The end broad, waving and torn. Neatly formed.

DAGGER-POINTED. See cuspidate.

De'bilis. Weak, feeble, lax.

DEBRIS. Ruined rocks. The broken fragments of coarsely disintegrated rocks.

DECAGYN'IA. (*Deka*, ten; *gunc*, female.) See p 13.

DECANDROUS. Plants having ten stamens in each flower.

Dechaphyl'lus. Ten-leaved.

Decem'fidus. Cut into ten parts, or 10-cleft.

Decemlocula're. Ten-celled.

DECID'UOUS. Falling off in the usual season for similar parts to fall; as leaves falling at the decline of the year; corols falling off at the time the stamens fall, &c. See caducous and permanent.

DECIDENS. Terminating.

DECLI'NATE, DECLI'NED, declina'tus. Curved downwards arch-wise.

DECOMPOSITION. Separating the chemical elements of bodies. It differs from disintegration, which subdivides without decomposition.

DECOMPOUN'D, Decomposi'tus.—Doubly-compound. When a compound, or divided, petiole has a compound leaf on each part, the whole is a decomposed leaf. The same with umbels, &c. See supra-decompositus.

Decortica'bilis. Easily peeled.

DECUM'BENT, decum'bens. When the base is erect, and the re-

- mainder is procumbent. It applies to stems, stamens, &c.
- DECUR'ENT.** When the two edges of a leaf extend downwards below the points of insertion and become projecting wings to the stem. The gills of *agarics* are decurrent, when they run down the stipe in a single ridge.
- Decursi've.* Decurrently.
- DECUR'SIVELY PIN'NATE.** When the leaflets of a pinnate leaf run along the petiole with their extended bases.
- DECUS'SATE,** *decussa'tus.* When leaves or branches are opposite in pairs, and each pair stands at right angles with the next pair above or below on the same stem.
- DEFLEC'TED,** *deflex'us.* Bending down archwise.
- Deflora'tus.* Having discharged the pollen.
- DEFOLIA'TION,** *defolia'tio.* The shedding of leaves in the proper season.
- Defolia'tio no'tha.* The shedding of leaves before the proper time, on account of injuries received.
- DEHIS'CENT,** *dehiscen'tia.* The natural opening of capsules in the proper season.
- Deliqu'uum.* See debilis. Weak, watery.
- DEL'TOID,** *deltoid'eus.* A leaf with four corners; that is, one at the stem, one at the apex, and one each side; but the side ones are nearer to the base than to the apex. When the side angles are about as near to the apex as to the base, it is called a *rhomboïd* leaf. Both kinds are called *diamond-form* in English. Willdenow considers a deltoid leaf as a thick 3-sided leaf, a transverse section of which he supposes intended, as giving the deltoid form.
- Demer'sus.* See submersed. Under water.
- DENSE,** *den'sus.* Close, compact. A panicle with abundance of flowers very close is dense. See *thyrsé.*
- DEN'TATE,** *denta'tus.* Toothed.
— *leaf.* (This term is of such almost unlimited extent, it is best defined negatively.) Projections from the margin of a leaf, which are of its own substance; and not serratures, nor crenatures.
— *root.* That kind of granulated root, which resembles teeth strung together.
- DENTIC'ULATE.** Having very small teeth.
- DEN'TOID.** Remotely resembling teeth, or having processes somewhat of that form.
- DEN'TURE.** A tooth.
- DENU'DATE.** Plants whose flowers appear before the leaves, consequently have a naked appearance. Naked.
- Deor'sum.* Downwards.
- Depauperat'us.* Few-flowered.
- Depen'dens.* Hanging down.
- DEPRES'SED.** When the upper surface of a succulent leaf is a little concave. It applies to seeds also with flat tops.
- Descen'dens,* The entering of a root into the ground. The direction is *vertical*, as the beet; *horizontal*, as the mint; *oblique*, as the branching roots of most trees.
- DESCRIP'TIONS** of plants. In writing a complete description of a plant, begin with the fructification, and describe: 1. Calyx. 2. Corol. 3. Stamens. 4. Pistil. 5. Pericarp. 6. Seed. 7. Receptacle. Then go through with the root and herbage, thus: 1. Root. 2. Stem and Branches. 3. Buds, includin the Foliation. 4. Leaves. 5. The Appendages. 6. Inflorescence.
Then add the general appearance and size of the plant, and

what well known plant it most resembles. Give an account of the soil and situation where it grew; whether high or low, wet or dry; the precise time of flowering; colour of all parts; whether annual, biennial or perennial. Then close with the name of the town, county, &c. and what quantity of the same kind of plant is to be found there; and what name the common people call it by, if any. Accompany this description with several specimens, so selected as to exhibit the plant in all its parts.

There can be no better exercise for students, than to write several such descriptions every day. See Diagnosis.

Desiccatio. Dryness.

Desinens. Terminating.

DETRITUS. That part of the surface of the earth, which is neither rock nor recently decomposed animal or vegetable matter. Ground or worn-down rocks in the state of soil.

Dextror'sum. Twining from left to right; that is, with the apparent motion of the sun; as the hop-vine.

DIADEL'PHIA. (*Dis*, twice; *adelphos*, brother.) See p. 14.

DIADEL'PHOUS. Belonging to, or varying into, the class diadelphias.

Diagnosis. A short description containing only what is essential. Linneus made it his rule, never to let a specific description exceed twelve Latin words. Willdenow says more must be added if necessary. It should extend no farther than to express the difference between that and the other species.

DI'AMOND-FORM. See Deltoid.

DIAN'DRIA. (*Dis*, twice; *aner*, male.) See p. 12.

DIAPH'ANOUS. Admitting the transmission of light obscurely. Translucent.

DICHOT'OMOUS. Forked. Stem, &c. parted in pairs, each branch parted in pairs again, and so on. When it is parted but once it is more properly called forked, *furcatus*.

DICLIN'IA. (*Dis*, twice; *kline*, bed,) stamens in one flower and pistils in another, whether on the same or on different plants. This is the name of a class in Pursh's Flora, comprising most of the plants of the classes Monœcia and Diœcia.

This class Pursh divides into three orders, 1. *Segregata*, which includes plants, whose flowers are monœcious or diœcious; but are not in aments or strobiles. 2. *Amentacea*, which includes plants, whose flowers are in aments and not in strobiles. 3. *Conifera*, which includes plants, whose flowers are in strobiles.

DICLINIOUS. (*Dis*, two; *kline*, bed,) Plants, whose stamens and pistils are in different flowers, whether on the same plant, or on different plants.

DICOC'COUS. Two-grained. Consisting of cohering grains, or cells with one seed in each.

DICOTYLED'ONOUS. Plants with two cotyledons. See Cotyledon.

DID'YMOUS, di'dyma. Twinned, as some anthers.

DIDYNAM'IA. (*Dis*, twice; *dynamis*, power.) See p. 13.

DIDYN'AMOUS. Belonging to, or varying into, the class Didynamia.

Diffor'mis. Applied to a monopetalous corol, whose tube widens above gradually, and is divided into irregular or unequal parts. Willdenow, It is also applied to any distorted parts of a plant.

DIFFRACTED. Twice bent. Antennae are diffracted, when bent outwardly, then forward, at short turns.

DIFFU'SED, diffu'sus. Spreading.

- Expanded in an open loose manner.
- DIG'ITATE.** Fingered. When the base of several leaflets rest on the end of one petiole ; as the strawberry and fivefinger.
- DIGYN'IA.** (*Dis*, twice, *gune*, female.) See p. 16.
- Dilata'tus.** Expanded, widened.
- Dilu'te.** Prefixed to a colour implies, that it is reduced ; as dilute-purpureus, pale purple.
- Dimidia'tus.** See halved.
- DIA'ECIA.** (*Dis*, twice ; *oikos*, house.) See p. 15.
- DIA'ECIOUS, dioi'ca.** Belonging to, or varying into, the class *diæcia*.
- DIPET'ALOUS.** Having two petals.
- DIPHYL'LOUS.** Having two leaves.
- DIPTERYG'IA.** See wings. Winged seeds.
- DIS'COID.** Resembling a disk. A tuft of leaves spread out so as to resemble a disk. Having a disk without rays. Such compound flowers as are wholly made up of tubular florets ; that is, though they may have marginal florets differing from those in the disk in the essential organs, yet the corols will be all tubular, and not capitate.
- DISINTEGRATION.** The process of destroying the integral character of a body. Applied to geology it signifies, the process of crumbling down a rock, or reducing it to grains, pebbles or soil, by the two disintegrating agents, the variations of temperature and moisture.
- DISK, dis'cus.** The whole surface of a leaf, or of the top of a compound flower, as opposed to its edge or periphery. This term is also applied to the aggregate florets of an umbel, and to the broad or thickened top of a receptacle. It is applied to the outer surface of each valve of a shell.
- Disper'mus.** Containing but two seeds.
- Dissec'tus.** Gashed in deeply.
- DISSEP'IMENT, Dissepimen'tum.**
See partition.
- Dissil'iens.** A pericarp is dissili-ent, when it bursts open with a spring ; as the touch-me-not, (*impatiens*.)
- Dis'tans.** Standing off remotely.
- DIS'TICHALLY.** See distichus. This is a very odd adverb introduced by Nuttall.
- Di'stichus.** (*Dis*, twice ; *stichos*, row.) Two ranked. When branches, leaves, or flowers are arranged along opposite sides of the stem or spike, so as to point two opposite ways ; as the leaves of the hemlock tree, (*pinus canadensis*.)
- DISTINC'T, distinc'tus.** Separate, opposed to connate or confluent.
- DIVAR'ICATE, divarica'tus.** Branches spreading out from the stem so far, as to form more than a right angle with it above.
- DIVER'GING, Diver'gens.** Branches spreading out from the stem so far, as to form almost a right angle with it.
- Diur'nus.** Enduring but a day.
- DIVI'DED, divi'sus.** Severed into parts.
- DODECAN'DRIA.** (*Dodæka*, twelve ; *aner*, male.) See Rejected Classes.
- DODECAN'DROUS.** Belonging to, or varying into, the class *dodecandria*.
- Dodecaphyl'lus.** Having twelve leaflets.
- Do'drans.** Longspan. Distance between the ends of the thumb and little finger, both being extended.
- Dolabrisor'me.** See axe-form.
- DOR'SAL, dorsa'lis.** Fixed to the back. Back fins. Awns are dorsal, when proceeding from the outside of a glume and not from the tip.
- DORSIF'EROUS.** Bearing the fruit on the back ; as ferns.
- DOT'TED.** Besprinkled with dots. See punctate and perforated.

DOUB'LE. Two in the place where most plants have but one ; as the double calyx of the hollyhock, (althea.)

DOUB'LE-FLOW'ERED. See full-flowered.

DOUB'LY. See duplicate. In English it has its common appropriate meaning ; as doubly-crenate, when the crenatures are crenated, &c.

DOUB'LY-PIN'NATE. See bipinnate.

DOWN OR DOWN'Y. See tomentose.

DROOP'ING. See cernuus.

DRUPE, drup'a. That kind of pericarp which consists of a thick, fleshy, succulent, or cartilaginous coat, enclosing a nut or stone. It is *berry-like* (baccata) as in the cherry, or *dry* (exsucca) as in the walnut (*juglans*.)

DRUPA'CEOUS. Bearing drupes, or fruit resembling them.

DRUSES. Any cavities in minerals, which are lined with crystals.

Dub'ius. Doubtful.

Dul'cis. Sweet.

Dumo'sus. Bushy, or resembling bushes.

Duodecem'fidus. Cleft in 12 divisions.

Du'plex. Double.

Duplica'to. Doubly. This term is often prefixed to others, in all which cases it simply means doubly. As duplico-ternatum, doubly-ternate or biternate.

Duplica'tus. Doubled.

DURA'TION. See ages.

DYNAMOUS. Applied to plants whose flowers contain two, or four, stamens, longer than two others in the same flower.

E

EAR'ED. This term applies ; 1st, to the round extended, or appendaged lobes of a heart-form leaf : 2d, to the side lobes near the base of some leaves : and

3d, to twisted parts, in some ferns and some liverworts, which are supposed to resemble the conchus, or passage into the ear. Applied to shells, it means the flat processes near the hinge in bivalves ; as the pecten (scallop.)

Ebractea'tus. Without bracts.

Ebur'neus. Ivory white ; as the whole plant *monotropa*, called beechdrops, or birdsnest.

Ecalcara'tus. Without a spur.

ECHI'NATE, echina'tus. Hedgehog-like. Beset with erect prickles.

ECOS'TATE. Nerveless or ribless.

EFFLORES'CENTE. The powdery substance on some Lichens, composed of minute deciduous globules.

Efflorescent'ia. Flowering season of different sorts of plants. More simple flowers come out in June than in any other month, in North America. Very few compound flowers appear before August.

EFFOLIA'TION. Unnatural falling of leaves by means of improper culture, worms, &c.

EFFUSE. Open, or having an opening, so that seeds, liquids, &c. may be poured out.

EGG'-FORM. See ovate.

Eglandulo'sus. Glandless.

EGRET. See aigrette.

ELAS'TIC. See dissiliens. Springing.

ELIP'TIC. Longer than wide, rounded at or near both ends, and nearly equal in breadth towards both base and apex.

ELON'GATED. Lengthened out, as if extended beyond what is usual in similar parts.

ELYTRA. The outer, or upper, shelly wings of some orders of insects.

Emar'cidus. See withering.

EMAR'GINATE. Notched in the end at the termination of the midrib. See Retuse,

- EMBRA'GING. See clasping.
- EM'BRYON. See hilum. Eye of a bear, &c.
- EMERSED. Out of water.
- EMPA'LEMENT. See calyx.
- END'-BITTEN. See præmorsus.
- ENER'VATE. Nerveless.
- ENNEAN'DRIA. (*Ennea*, nine; *aner*, male.) See p. 13.
- ENNEAN'DROUS. Belonging to, or varying into, the class *enneandria*.
- Ennepetalus*. Nine-petalled.
- Enodis*, ENO'DE. Knotless. Having no joints; as the bulrush.
- EN'SATE, *ensatus*. Having sword-form leaves.
- EN'SIFORM. Sword-form. Two-edged, tapering from base to apex mostly, and a little arching towards one edge; as flag and cat-tail, (*Iris* and *Typha*.)
- ENTI'RE. Continued without interruption. A margin of a leaf, calyx, corol, &c. is entire, when it is neither serrate, toothed, notched, nor in any manner indented.
- ENTOMOLOGY. The science of insects. It embraces the whole articulated division, excepting *Annelida*.
- Ephemerus*. Of very short duration.
- Epicarpus*. On the germ. See superior.
- Epidermis*. See cuticle.
- Epiphragma*. A thin membrane stretched over the mouth of the moss, *polytrichum*.
- E'QUAL. Similar parts equal among themselves. The calyx, corol, &c. are equal, when the leaflets, petals, or subdivisions, are similar in form, size and direction. Opposed to unequal.
- EQUINOCTIAL FLOW'ERS. Opening at stated hours each day.
- EQ'UITANT. Opposite leaves embracing each other, so that they alternately enclose each other's edges; as the leaves near the roots of the *Iris* and yellow garden lilies, (*hemerocallis*;) also the position of the leaves in some unopened buds.
- EREC'T, *erectus*. Upright. Not so perfectly strait and unbending as *strictus*. When applied to any thing laterally attached to the stem, as leaves, &c. it implies that it makes a very acute angle with it.
- Erectiusculus*. Erectish.
- ER'GOT. See spurred rye.
- Erinaceus*. Hedge-hog-like.— See *echinatus*.
- ERO'SE, *erosus*. Gnawed. Unequally sinuated, as if the sinuses had been eaten by insects.
- ES'CULENT. Eatable.
- ESCHT'CHEON. A plate between the bases of wings of insects.
- ESSEN'TIAL character. See diagnosis.
- ESSEN'TIALS. The stamens and pistils.
- EV'ERGREENS. Such plants as retain their leaves throughout the year; as white pine, laurel, &c.
- EV'ERGREEN. Verdant throughout the year.
- EXAN'NULATE. Ferns whose capsules are without rings. This comprises one section of ferns. Those which have an apparent vestige of, but not in reality, a ring, form another section. Those with a ring, another. See *annulatus*.
- Exaratus*. See *sulcate*.
- Exasperatus*. See *roughened*.
- Excavatus*. Hollowed out.
- EXOT'IC, *exoticus*. Plants not growing spontaneously in a wild state in that particular country, or section of a country.
- EXPAN'DED, *expansus*. Spread.
- EXPANSILE. Capable of being spread.
- Explanatus*. Unfolded. Spread out flat.
- EXSERT', *exsertus*. Standing out. Stamens are *exsert* when protruded out of the corols. Peduncles of spikes in culmiferous

plants are exsert, when protruded out of the sheaths ; as carex folliculata and pubescens. Teeth may be exsert.

EXSTIP'ULATE. Without stipules.

Exsic'cus. Juiceless.

Ex'timus. At the very top, or extreme end.

EXTRAFOLIA'CEOUS. Outside of the leaf. A stipule is extrafoliaceous when it comes out a little lower than the leaf does.

Extrors'um. Outwardly.

EYE. See hilum.

F

Fac'ies. The general external appearance of a plant.

FACTITIOUS. Produced by art ; not natural.

FACTITIOUS character. A character, where the number of parts or some other circumstance, not of essential importance, are taken into it. It admits of fewer or more characteristic marks, than are absolutely necessary.

FAL'CATE. See acinaciform.

FAM'LIES. See gentes.

FAN'FORM. Spread out, or tapering towards the base like a fan.

Farc'tus. Stuffed, full. It is opposed to fistulous, hollow.

Fari'na. See pollen. Meal, flour.

Farino'sus. Mealy, powdery.

Fascia'tus. Having parallel bands, or coloured stripes.

FAS'CICLE, fascic'ulus. A bundle. Flowers level-topped, umbel-like in the general external appearance, with footstalks irregular in their origin and subdivision. The fascicle differs but little from the corymb, excepting in having shorter footstalks, which do not extend so far down the main stem. Sweet-william (dianthus) is a good example.

A bundle of tuberous roots is called a fascicle ; as the asparagus roots. Also a bundle of leaves ; as of the white pine.

FASCIC'ULATE. An unnatural bundle of branchlets.

FASTIG'IATE, fastigia'tus. Level-topped. Applied to aggregate flowers, which are elevated to an equal height or nearly so ; forming a level, convex, or concave top, differing but little from a plane. It is also applied to leaves ; as the hog-weed (ambrosia artemisifolia.)

Favo'sus. See alveolate. Resembling honey-comb.

Faux. Jaws. The throat or opening into a corol. That precise spot, where the tubular part of a ringent corol begins to separate or expand into lips or mouth, is the faux.

FEAT'HER. See Aigrette. The plumose crown of seeds.

FE'MALE, femin'eus. See pistillate.

FENCE. Involucre of Withering.

FEN'CED. Walled around, as the stamens are by the scales in brookweed (samolus.)

Fe're. Almost.

FERNS. See filices.

FERRIFEROUS. Containing iron.

FERRUGINOUS, ferrugin'eus. The colour of iron-rust. Applied to masses of minute quartz crystals.

FER'TILE. See pistillate.

FERTILIZA'TION. The application of the pollen, which is formed in the cells of anthers, to the stigma ; which is essential to the production of perfect seed. See chorion. Richard is too lengthy upon this subject for the plan of this Dictionary ; which is intended for definitions and illustrations, but not for physiological discussions.

FETTERED. Having entangling feathers on or near the legs.

FI'BRE, fi'bra. Any thread-form part. The small flexible thread-form roots of grasses and many other plants, are called fibres.

FI'BROUS. Composed of fibres.

FID'DLE-FORM. See panduriformis.

Fig'ra. See Icones. Figures, drawings.

Figura'tum. This term is applied to the mouth of the capsule of a moss, when it is set round with membranaceous teeth.

FILAMENT, filamen'tum. That part of the stamen which is between and connects together the anther and the receptacle, calyx or pistil. When the filament is wanting, the anther is sessile. In monocotyledonous corols, the filaments are generally inserted into, or are attached to, their bases.

FILICES, FERNS. See p. 18.

FILIFORM. Thread-like. Of nearly equal thickness throughout, round and cylindric. It is applied to spikes which are very long in proportion to their diameters. But it is generally confined to smaller parts.

Fimbria'tus. Fringed. Differs from ciliate in being less regular and of coarser parts.

Fimeta'rius. Growing naturally on manure heaps.

FIN'GERED. See digitate.

FISSILE. Easily split in the direction of the laminae.

FIS'SURE. A cleft or slitted aperture.

Fis'sus. See cleft.

FIS'TULOUS. Hollow like a pipe, flute or reed.

FLAB'ELLIFORM. See fanform.

FLAC'CID, flac'cidus. Too lax or limber to support its own weight. See lax.

Flagel'lum. See runner.

Flagellifor'mis. Resembling a whip-lash.

Flam'meus. Flame-coloured.

FLAT. See planus.

Fla'vus. Yellow.

FLESH'Y. Thick and filled with pulp within.

FLEX'IBLE, flex'ilis. Easily bent.

FLEXUO'SE. Bending and frequent-

ly changing direction. A stem is flexuose, or zigzag, which uniformly bends at regular intervals; as from joint to joint, branch to branch, leaf to leaf, &c.

Flex'us. Bent. This relates to but one bending. See geniculate.

FLO'ATING. See natant.

FLOCCO'SE. Woolly, or resembling the flocks sheared from cloth.

FLO'RAL. Relating to a flower.

— *bud.* Containing an unopened flower.

— *leaf.* See bract.

Florescent'ia. See efflorescentia.

FLO'RET. Little flower. Whether the flower is large or small, it is a floret, if it is one of a number all of which constitute an aggregate or compound. As the little flowers which make up the head of a thistle, a head of wheat, the umbel of a carrot, &c.

Floribun'dus. Abounding in flowers.

FLORIF'EROUS. Bearing flowers. A leaf is floriferous when a flower grows out of its disk or margin.

FLO'RIST. One whose employment is that of creating monsters; that is, double and various coloured corols; as carnations, double roses, &c. These meet a more ready sale than the most interesting plants in their native state, among persons of a coarse unscientific taste. Such persons, to be consistent, should prefer the high coloured daubings of a sign painter, to the delicate touches of a Savage, a Trumbull or a Vanderlin.

Flos. See flower.

FLOS'ULAR, flosculo'sus. See tubulous.

Floscu'lus. Tubular floret. Nuttall applies it to the florets of grasses; but ought not to be followed.

FLOW'ER. The stamens and pistils with their covering. These two organs, or rather their anthers and stigmas, are essential to all plants. But the calyx, corol, and even nectaries when present, are parts of the flower.

FLOW'ERING SE'ASON. See efflorescentia.

FLOW'ER STALK. See peduncle.

Fluvia'tilis. Growing naturally in rivers and brooks.

Fœ'tidus. Smelling disagreeably.

FOLD. Annexed to numerals denoting so often combined; as 5-fold leaves, growing in fives, &c.

FOLIA'CEOUS. See leafy.

FOLIA'RIS. A tendril on a leaf:

— *gemma.* A bud containing leaves only.

FOLIA'TION, folia'tio. The manner in which unopened leaves are situated within the bud. The modes of foliation are: 1. Involute. 2. Revolute. 3. Obvolute. 4. Convolute. 5. Imbricate. 6. Equitant. 7. Conduplicate. 8. Plaited. 9. Reclinate. 10. Circinal. See each in its proper place.

Folia'tus. Leafy.

Folif'erous. Particularly adapted to bearing leaves.

FOL'IOLE, foli'olum. See leafet. One of a compound leaf.

Folio'sus. See leafy.

Fol'ium. See leaf.

FOL'LICLE, Folicu'lus. A pericarp with one valve, which opens lengthwise on one side only; as milk-weed (*asclepias*.)

Fontina'lis. Growing naturally about springs.

FOOT'STALK. See *peduncle* and *petiole*, it is put for both.

FORA'MEN A hole.

Foraminulo'sus. Pierced with many small holes.

FORK'ED. See dichotomous.

FORMATION. A term used by geologists to express more or less than a definite stratum; as detritus is called alluvial forma-

tion, iron formation may apply to the ferriferous rocks and their iron contents.

Fornica'tus. Arched. See vaulted.

For'ea. A nectariferous cavity for the reception of honey. Honey-comb like.

Fovil'la. The fine substance contained in the particles of pollen. When the ripe pollen comes in contact with the moist stigma, it explodes and discharges the fovilla.

Frag'ilis. Breaking easily and not bending.

FREE. See libera.

Freq'uens. Very common, or frequent.

Fri'gidus. Growing naturally in cold countries.

FRING'ED. See fimbriatus.

FROND. An herbaceous, a leathery, a crustaceous, or gelatinous leaf, or somewhat of a leaf-like substance, from which or within which the fruit is produced. It is applied exclusively to the class cryptogamia—Smith. But formerly it was also applied to palms.

FronDESCEN'tia. See leafing.

FRONDO'SE, Frondo'sus. Leafy, or leaf-like. It is applied to mosses to distinguish them from liverworts by Willdenow; who retains them in the same order.

Frons. See frond.

FRONTLETT. The part back of the base of a bird's bill. Generally bristly.

Frutescent'ia. Applied to palms and such others as have a simple stem, and leaves only at top. Willdenow,

It is applied by Martyn to the time when vegetables scatter their ripe seeds.

FRUCTIF'EROUS. Bearing, or becoming, fruit.

FRUCTIFICA'TION, Fructifica'tio.—“The temporary part of vegetables, which is destined for the

- reproduction of the species, terminating the old individual and beginning the new."—Linneus. It consists of seven parts—1. Calyx. 2. Corol. 3. Stamen. 4. Pistil. 5. Pericarp. 6. Seed. 7. Receptacle. See each in its proper place.
- FRUIT, *fructus*.** The seed with its enclosing pericarp. If the seed grows naked, the seed alone is the fruit; as of the sage.
- FRUIT'-DOTS.** Assemblages of capsules on the backs of ferns. Also small assemblages of powdery bodies on the fronds of lichens, called *soredia*.
- FRUIT'-STALK.** See peduncle.
- FRUSTRA'NEA.** (*Frustra*, in vain,) *polygamia*. See p. 18.
- FRUTES'CENT, *frutes'cens*.** Woody; or from herbaceous becoming woody.
- Frut'ex.*** A shrub, which see.
- Frutico'sus.*** See shrubby.
- Fug'ax.*** Fugacious. Soon disappearing. Flying off. See ring.
- Fulcra'tus.*** Having appendages.
- Ful'crum.*** These are seven—1. Stipule. 2. Bract. 3. Thorn. 4. Prickle. 5. Sting. 6. Gland. 7. Tendril. See each in its proper place.
- FULIGINEUS.** Sooty, dark dull colour.
- FULL-FLOWERED.** When the petals of the corol are so multiplied as to exclude the stamens; which is effected by the stamens becoming petals; as the peony, rose, &c. This rarely takes place in monopetalous corols. Double flowers are totally unfit subjects for botanical exercises. See florist.
- FUL'VOUS, *Ful'vus*.** Yellowish, rust-colour.
- FUN'GI, funguses.** They are now known to be organized bodies, propagating their kind by seeds, like other vegetables. However unsightly a common toad-
- stool, the mould on old scraps of leather in damp places, or the blight in grain, may appear to the careless observer; they are all beautifully organized, and highly interesting to the student in Natural History. But "their sequestered and obscure habitation, their short duration, their mutability of form and substance, render them indeed more difficult of investigation than common plants."—Smith. See p. 19 & 25.
- FUNGO'SE** Fleishy and spongy.
- Fun'gus.*** This term is sometimes put for pileus.
- FU'NICULE, *Funic'ulus umbilical'is*.** The thread by which a seed is fastened at the hilum.
- FUN'NEL-FORM.** A corol with a tubular base, and a border opening gradually into the form of a reversed cone.
- Furca'tus.*** See dichotomous.
- FURFURACEUS.** Bran-like.
- FUR'ROWED.** See sulcate.
- Fus'cus.*** Sooty-yellow, dark-yellow.
- FU'SIFORM, *fusiformis*.** Spindle-form. A root thick at the top and tapering downward to the point is fusiform; as the beet and carrot. A worm, larva, shell, &c. may be fusiform.

G.

- Gal'ea.*** See labiate. A helmet.
- GA'LEATE, *Galca'tus*.** Resembling a helmet.
- GALLS, *Gal'læ*.** Excrescences produced by the stings of insects. The balls found on oaks which are used in dyeing, the common large green oak-balls, the singular green lumps found on the wild honey-suckle, &c. are examples. The irritation upon the delicate sap-vessels, produced by the sting and egg of the insect, causes a greater flow of sap in that direction. This

pressure of sap distends and distorts the capillary tubes and membranes, until those excrescences are formed around the egg. In due time the egg becomes a larva, or maggot, which after feeding a while upon the gall, changes into the pupa, or chrysalis, and at last escapes a perfect insect, or fly. Each fly produces a gall of a peculiar form.—Willdenow.

GANGUE. The part of a rock which lines a vein and embraces a mineral, and is unlike the rest of the rock.

GAPE. The opening between two lips of a labiate, or irregular, corol. Applied to mouths of birds.

GAP'ING. See hians.

GAS'HED. See incisus.

Gem'inus. See double. It is also used for paired, in pairs or twins.

Gem'ma. See bud.

Gemma'tio. Budding. The gemmation of plants comprehends the developement of a new plant from the bud, as well as the foliation; according to Richard. See foliation. Buds are of four kinds. 1. *Bud*, properly so called, which see. 2. *Turion*, the radical bud, or tender shoot which rises from the root in the spring, before it expands its leaves; as the early asparagus shoots. 3. *Bulb*, which see. 4. *Propago*, a longish round body proceeding from the mother plant in mosses, which itself becomes a new plant. This is placed among the buds by Richard: but Linneus calls it the seed; and Gærtner applies it to the seed of *Lichens* also.

GEMMIP'AROUS. Producing buds in the axils of leaves.

GEN'ERAL. See partial.

GEN'ERAL FENCE. Universal involucre.

GENER'IC CHAR'ACTER. The definition of a genus. It is confin-

ed entirely to the flower and fruit. It is *essential*, *factitious*, or *natural*; which see.

GENER'IC NAME. The name of a genus. Milne enumerates 21 rules respecting the naming of *genera*; which with his examples, occupy 40 pages. The principal names are founded upon some supposed virtues of plants, expressed in Latin or Greek—the habit, place of growth, &c. expressed in the same manner—given in honour of some distinguished botanist—or borrowed from the fables of poets.

It seems to be an established modern rule, that no *genus* shall have the name of a politician, or of any other character however distinguished, unless liberal patronage, or skill in the science of botany, will warrant it.

GENIC'ULATE. Kneed. Forming a very obtuse angle, like a moderate bending of the knee.

Gen'tes. Nations. Linneus divided plants into nine great natural tribes or casts. 1. **PALMS** (*palmae*;) as the date and cocoa-nut. 2. **GRASSES** (*gramina*;) as wheat, Indian-corn, sugar-cane, rice, timothy-grass, &c. 3. **LILIES** (*lilia*;) as lily, tulip, daffodil, &c. 4. **HERBS** (*herbæ*;) as thistles, nettles, peas, mint, potatoes, hemp, plantain, beets, and all other herbaceous plants except the above. 5. **TREES** (*arbores*;) as oak, chesnut, pine, willow, dogwood, currants, lilac, whortleberry, cranberry, and all other plants with a woody stem. 6. **FERNS** (*filices*;) as brake, polypod, maidenhair, ground pine, and all other plants of this order, which see. 7. **MOSSSES** (*musci*.) See the order. 8. **ALGÆ.** This tribe includes the plants of the orders, *hepaticæ*, *algæ* and *lichenes*, which see. 9. **FUNGI.** As mushroom, toad

stool, puff-ball, mould, blight, &c.

GE'NUS, (plural *gen'era*.) A number of plants which agree with one another in the structure of the flower and fruit.—Willdenow. The *classes* are divided into *orders*, and then the orders are divided into *genera*, the genera into species. This is the *analytic* method. The species are united into their respective *genera* by rejecting the specific distinctions; genera are united into their respective *orders*, by rejecting the generic distinctions; orders are united under their respective *classes* by rejecting the taxinal character. This is the *synthetic* method. Thus it will be readily perceived, that scientific botany is practical logic.

Plants of the same genus possess similar medical powers, though in very different degrees.—Milne. This rule is certainly liable to some exceptions.

GEODE. A cavity in a mineral whose sides within are more or less spherical. It may be empty, or may contain minerals different from the mineral containing the geode.

GERM, *germen*. That part of the pistil, which, after the pollen is received, soon contains the rudiment of one young plant, or more. Its whole substance becomes the pericarp and seed, as it enlarges itself.

When the calyx comes out below the germ, the germ is *superior*, and the calyx *inferior*; when the calyx comes out of the upper part of the germ, the germ is *inferior*, and the calyx *superior*.

The *mirabilis* and *sanguisorba*, have the germ between the calyx and corol. But Smith says, the corol can be traced to

the base of the germ in the *sanguisorba*; and the *mirabilis* (called the four-o'clock) may be treated in the same manner. It is therefore very doubtful, whether there is a plant, whose germ is between the calyx and corol.

GERMINATE. Appertaining to the germ.

GERMINA'TION. The swelling of a seed, and the unfolding of its embryo.

GIB'BOUS. Bunched out. When one or both sides are swelled out.

GIL-COVERS. The bony or cartilaginous covering placed over, or outside of, the gill-membranes.

GILL-MEMBRANES. The membranes immediately covering the gills.

GILLS. See lamella. Lungs of fish. *Gil'vus*. Iron-grey, and brick-colour.

Glabell'us. Bald. Without hairs.

GLA'BROUS, *glab'er*. Sleek. Having no pubescence. Glaber is often translated smooth, which in most cases conveys a correct idea; or at least does not lead to error. But a leaf with soft cottony pubescence is smooth, though it is not glabrous.

Gladiat'us. A sword-form legume is sometimes called gladiate. See ensiform.

GLAND, *glan'dula*. A round, or roundish appendage which serves for transpiration and secretion. They are situated on leaves, stems, calyxes, and particularly at the base of stamens in some cruciform flowers; as mustard. Glandular hairs, or hairs with glandular heads, are very abundant on the common hazlenut calyx, of North America, (*corylus americana*.)

GLAN'DULAR, GLAN'DULOUS, *glan'dulosus*. Having glands.

GLANDULIF'EROUS. Bearing glands.

GLASS'-FORM. See cyathiform.

GLAS'SY. See hyaline.

GLAU'COUS. Clothed with a sea-green mealiness, which is easily rubbed off. It is sometimes put for a greenish-grey colour. This colour, *ferruginous* and *hoary*, are so constant, that they are used in specific descriptions. All other colours are excluded on account of their being too variable to be relied on.

GLOBO'SE, *Globo'sus*. Spherical, round on all sides like a ball. This term is often applied in cases where the part is rather roundish than perfectly globular.

GLOB'ULES. That kind of receptacle of lichens, which is globose, solid and crustaceous, formed of the substance of the frond, and terminating its points or branches; from whence they fall off entire, leaving a pit or cavity. They are supposed to be covered all over with a coloured seed-bearing membrane. Smith.

GLOB'ULI. Globules.

GLO'CHIS. See barb.

GLOME. A roundish head of flowers.

GLOM'ERATE, *glomeratus*. When many branchlets are terminated by little heads.—Richard. A spike is glomerate when it consists of a collection of spherical heads.—Willdenow.

GLOM'ERULE, *glomerulus*. The small heads constituting a glome, or a small glome.

GLUMA'CEOUS. Glume-like, or bearing glumes.

GLUME, *gluma*. Consists of the scales of chaffs which surround or enclose the stamens and pistils in the flowers of grasses. The lower ones are called the calyx, all others the corol.

Each scale, chaff, or husk, is called a valve; which gives the names *bivalve*, with 2 husks or

chaffs; *univalve*, with one, &c.

When several flowers are arranged along a rachis in a spikelet with a valve or two, or more, below the lowest flower, these are called the common or general calyx (*gluma communis*;) and the glume to each floret on the spikelet above is called partial (*gluma partialis*.)

Richard says, glumes ought to be called bracts; as they are not properly either calyx or corol.

GLUMO'SE. Having glumes.

GLU'TINOUS. Having on some part more or less of adhesive moisture.

GNAW'ED. See erose.

GONGYLOUS, *Gongyulous*. A knot.

It is applied to a round, hard body, which falls off upon the death of the mother plant or animal, and becomes a new one; as in the *fucus* and some radiated animals.

GONOP'TERIDES. Angle-fruit fern.

One of the new orders of ferns. It is adopted by Pursh, Torrey and a few other writers on American botany. The receptacles of the fruit are polygons; as of the genus *Equisetum*.

GRAM'INA. The family of grasses.

See gentes. But in a limited sense, the sedges, rush-grasses, &c. are not included. See Natural Orders. Culmiferous is the most extensive term; and most of this vast family have three stamens in each flower, though many of them are monœcious. The rice, star-grass and rush-grass have six stamens to the flower.

Graminifolius. Having leaves resembling those of grasses.

Grandiflorus. Having large flowers.

Graniferus. Bearing grains or kernels; as those on the valves of dock-flowers.

GRAN'ULATE, *granulatus*. In the

form of grains. A granulate root consists of several little knobs strung together along the side of a filiform radicle. It differs from the knobbed tuberous roots in this; that the latter are strung together by rootlets which proceed from near the middle of one knob to another.

GRANULA'TIONS. Grain-like substances.

Grave'olens. Having a strong odour or scent.

GREGARIOUS. In flocks. Applied to fungi and other plants growing together in groups; but not so as to be cæspitose, or to form a turf mass.

GRESSORAL. Birds' feet, which are formed for running; having three toes forward and one back, and the two outer toes mostly joined towards the base.

GROOV'ED. See sulcate.

GROSSIFICA'TION. The enlarging of the fruit after the floescence.

GUITAR'-FORM. See panduriformis.

Gymnocar'pi fun'gi. Such as bear seeds in a naked *hymenium*, which see.

Gymnosper'mus. (*Gymnos*, naked; *sperma*, seed.) With seeds naked, or growing without pericarps.

GYNANDROUS. (*Gyne*, woman; *aner*, man.) Applied when stamens grow on pistils, but not in immediate connexion with the calyx or corol.

H.

Habia'tio. The native residence of plants; or the situation wherein they grow most naturally.

HAB'IT, habitus. The external appearance of a plant by a general view of which we know it without attending to any of its essential characters.

A knowledge of the habits of

plants is to be acquired; by first seeing them in a growing state, and then by repeatedly reviewing them in an **HERBARIUM**, which see.

HAIR. See pilus.

HAIR'-LIKE. See capillary.

HAIR'Y. See pilose.

HAL'BERT-FORM. See hastate.

HALTERS. Globules on slender stems under the wings of some two-winged insects, called pointers.

HALV'ED. One-sided, as if one half had been taken off; as the halved spathe of some Indian-turnips, one-sided involucre, &c.

Ha'mus. A hook, as the hooked spines on burdock.

Hamo'sus. Hooked.

Hamulo'sus. With very small hooks.

HAND'-FORM. See palmate.

HANG'ING. See pendent.

HAS'TATE. Halbert-form, or shaped like an espartoon. A leaf with processes near the base from each edge, which are acutish; as common sorrel leaves. When these processes point considerably backwards the leaf is sagittate.

HATCH'ET-FORM. See axe-form.

HEAD. Flowers heaped together in a roundish form with no peduncles or very short ones; as clover-heads. This term is applied to a globular stigma also.

HEAP'ED. Compact, but hardly so close as *dense*.

HEART. See corcle.

HEART'-FORM. See cordate.

HEDG'E-HOGGED. See ferinaceous.

HEL'MET. See labiate. Upper lip.

HELMINTHOLOGY. The science of of worms, including molluscous and radiated animals.

HELVOLUS. Pale red. Peach-bloom.

HEM'ISPHERE. Half a sphere.

HEPAT'ICÆ. See cryptogamia.

Liverworts, p. 19 & 26.

HEPTAGYN'IA. Seven-styled.

HEPTAN'DRIA. (*Hepta*, seven; *aner*, male.) See p. 12 & 17. Seven-stamened.

HEPTAN'DROUS. Belonging to, or varying into, the class heptandria.

HERB, her'ba. Any plant which has not a woody stem. But when applied to the nine families (see gentes) it includes neither grasses nor lilies.

HERBA'CEOUS. Not woody. Also applied to plants which perish annually down to the root.

HERB'AGE. All that part of vegetables which is bounded by the root below, and by the fructification above. It comprises all parts of every plant, except the root and fructification, whether herbaceous or woody. See partes.

HERBA'RIVM. A collection of dried plants. No person can ever become a good practical botanist without an herbarium.

The uses of an herbarium are principally these ;

1. *To revive in the memory the names and habits of plants.* No memory is sufficiently retentive to permit nothing to slip, relating to several hundred species of plants ; unless they are frequently presented to the eye.

2. *When plants are not in flower, they often want some of their most striking habits also.* It is therefore very convenient and satisfactory to compare the more minute parts, in order to insure correctness in relation to plants, which we have occasion to examine at various seasons of the year.

Directions for making an herbarium.

1. Provide yourself with about 100 old newspapers ; or

other coarse paper about equal to that in quantity and texture. Let these papers be very thoroughly dried. This will be a sufficient stock for the season.

2. Procure two smooth inch-boards of the size of half of a paper ; also a weight of lead, stone, or other substance, of twenty pounds.

3. Gather 3 or 4 specimens of each plant, as it comes in flower. If you collect but few specimens, and wish to preserve them in the most beautiful form, put them between the leaves of a port folio in the field. Let the specimens be so large as to include the various parts of the plant. If it be a small plant, take the root also. If large, take it in two pieces ; one to include the flower and parts adjoining, the other the root-leaves, if any, and those near the root. Place these between the folds of the papers, as nearly in their natural state as possible. If the plant curved, let it curve in the papers ; if the flower drooped in the field or woods, let it droop in the papers, &c. Lay the papers between the boards with the weight upon them. If 20 or 30 filled papers lie upon each other, it is all the same.

4. Twice or three times each week lay your papers, containing plants, separately in the sun, with small stones on the corners, for three or four hours. When taken in, put the plants in press again. This exposure to the sun is not necessary, however, with single specimens of small plants. Or if several leaves of paper be allowed to each specimen.

5. As fast as your plants become dry by absorption, put them up in books made of the same paper, with about a dozen sheets in each. Most plants will be

fit to put up, after sunning the papers five times, and pressing two weeks. When the roots are taken up, if bulbous, they should be split and immersed in boiling water, or they will be very long in drying. Most ever-greens and succulent plants, except aquatics, should be immersed in boiling water, or they will drop their flowers, &c.

6. After the season is past, (which is about the end of November,) make a large book of stiff printing paper; and fasten one or more of your best specimens of each species to the first page of each leaf. Put as many specimens on a leaf as will fill it up; leaving room for names, &c. under each. Some glue them on; others cut through the papers and raise upslips, like loops, and run the specimens under these loops. The latter method is best and cheapest.

It may be proper to observe, that if a long season of wet weather occur, or if you have not time or convenience for drying your papers in the sun, you may effect the same object by drying other papers thoroughly by a fire, and then shifting your plants into them.

Plants should never be dried so as to become brittle. The object in drying them between papers is; to prevent their crisping, to make them tough, and to retain their natural colour and texture. But still many plants cannot possibly be made to retain their natural colours.

Simple and woods flowers abound in the fore part of the season; compound and field flowers come most after the middle of July. An industrious collector will have 400 species by the first of July; and 250 species afterwards, before the season closes.

Herba'rius. An herbist. One who collects and sells plants.

HERMAPH'RODITE. See perfect flower.

HEXAG'ONAL, *hexago'nus.* Six-cornered.

HEXAGYN'IA. (*Hex, six; gune, female.*) See p. 16.

HEXAN'DRIA. (*Hex, six; aner, male.*) See p. 12

HEXAN'DROUS. Belonging to, or varying into, the class *hexandria.*

HEXAPET'ALOUS. Six-petalled. *Hexapetaloides.* A one-petalled corol so deeply divided as to appear 6-petalled.

Hexaphyll'us. 6-leaved.

Hi'ans. See gaping.

HI'LUM. The external scar or mark on a seed, where the funicle, or thread, is attached to it and conveys its nutriment till ripe.

HINGE. The part of a bivalve shell, where the two valves are united by a flexible cartilage.

HIRSU'TE, *hirsu'tus.* Rough-haired. Covered with stiffish hairs, but hardly stiff enough to be called bristles.

Hir'tus. Covered with short stiff hairs. Nearly the same as hirsute.

HISPID, *Hisp'idus.* Bristly. Beset with stiff hairs, or rather with bristles, which are very short. Perhaps it differs from hirtus only in having the hairs shorter and stiffer. It seems to be applied in some cases, however, where the bristles are not very short.

Hiulcus. Cracked open; a gaping chink.

HO'ARY. Whitish coloured, arising from a scaly mealiness. See glaucus.

HOLERA'CEUS. Suitable for a pot-herb.

HOL'LOWS, (*thalamia.*) That kind of receptacle of lichens, which is spherical, nearly closed, lodged in the substance of the frond,

lined with its proper coat, under which are cells 2 or 4-seeded. Each hollow finally opens by an orifice in the surface of the frond above.—Smith.

HON'EY-CUP. See nectary.

HOOD'ED. See cowled.

HOOK'-FORM. See unguilatus.

HOOK. See hamus.

Hora'rius. Continuing but an hour.

HORIZON'TAL. Parallel to the horizon. Leaves are horizontal, when they form right angles with erect stems.

HORN. See spur.

HORN'-FORM. Shaped like a horn, or rather like a cock's spur. See spur.

Horolog'ium. A botanist, who watches the progress of vegetables as they approach maturity, particularly the development of flowers, through every hour of the day. A table kept of such progress is called, by the French, *horologue*.

Hu'midus. Moist, humid.

HU'MIFUSE, *humifusus*. Spread over the ground. Richard defines it; spread on the ground and not rooting

Hum'ilis. Low, humble.

HUSK. The larger kind of glume; as the husks of Indian corn.

HY'ALINE, *hyali'nus*. Colourless. Transparent like glass or water; as quartz in granite.

HYBER'NICLE, *hybernac'ulum*. See bud.

Hybernalis. Growing in the winter season.

HYBRID, *hy'brida*. A mule. A vegetable produced by the mixture of two different species. The seeds of hybrids will not propagate. They are produced by sprinkling the stigma with the pollen of a different species. Care must be taken in such cases to prevent any pollen of its own species from falling on it first.

HYDROP'TERIDES. Water fern. A new order of ferns. It is adopted by Pursh, Torrey, &c. Isoetes, azolla and salvina are placed here.

Hyema'lis Growing in the winter season.

Hyme'nium. An exposed or naked, dilated, appropriate membrane of gymnocarp fungi, in which the seeds are imbedded.

HYPERDECANDROUS. Flowers containing more than ten stamens.

Hypocrateri'formis. See salverform.

HYPODECANDROUS. Flowers containing fewer than ten stamens.

Hypog'ynus. Under the style.

I. J.

JAG'GED. See lacinate.

JAWS. See faux.

ICHTHYOLOGY. The department of Zoology, which treats of fish. It includes those aquatic animals which have gills and fins.

I'cones planta'rum. Figures or drawings of plants.

ICOSAN'DRIA. (*Eikosi*, twenty; *aner*, male.) See p. 13.

The calyx is always monophyllous, and the claws of the petals fixed into the inside of it along with the stamens.

ICOSAN'DROUS. Belonging to, or varying into, the class *icosandria*.

Ic'terus. The change of colour in leaves in autumn.

IMAGO. A perfect, full-formed insect. It is applied to express the state of an insect, after it has passed from the crasis to the insect state.

Imber'bis. Beardless. See beard.

IMBRICATE, *imbricat'us*. Leaves, scales, &c. lying over each other, or one covering the place where two others meet, like the shingles or tyles on a roof.

IMMARGINATE. Having no border or peculiar margin.

IMMER'SED. See submersed.

Im'pari-pinna'tus. Unequally pinnate. When a pinnate leaf is terminated by a single or odd leaflet.

IMPER'FECT, *imperfec'tus*. Wanting the stamen or pistil. No flower is perfect without both organs; but with an anther and stigma the flower is perfect, though destitute of calyx and corol.

IMPUNC'TATE. See punctate.

Inæqua'lis. Unequal, which see.

Inæquivalva'tus. Valves of capsule or glume unequal.

Ina'nis. Having a spongy pith.

Inaper'tus. Hollow, but without any opening.

Inca'nus. See hoary.

Incarna'tus. Flesh-coloured.

INCI'SED, *Inci'sus*. Cut in like a gash with a knife, but not deep enough to be called a cleft. If the crenatures or serratures of a leaf are cut down, to appearance, with a slit or gash, this term applies.

INCISOR. Fore tooth. The flattish front cutting-teeth.

INCLI'NED, *inclina'tus*. Bent towards each other. Also bent towards something different.

INCLU'DING, *inclu'dens*. One thing containing another within it; as the calyx shutting up the seed, capsule or corol.

Inclu'sus. Enclosing. Opposed to exert.

INCOMPLE'TE. See complete.

Inconspic'uus. Not apparent without the aid of a magnifier.

INCRAS'SATE. Thickening. When a flower-stem grows thicker upwards towards the flower.

IN'CREMENT. The quantity of increase.

INCUMBENT, *incumbens*. Leaning upon or against. When an anther lies, as it were, somewhat horizontally upon the top of the filament.

IN'CURVED, *incurvatus*. Bent in-

wards. As a leaf bent in at the point towards the stem, a filament towards the pistil, a prickle towards the stem.

INDIG'ENOUS. Plants, growing naturally and originally in a country. It is often very difficult to determine, whether a plant is exotic or indigenous. Who can say, whether the chess (*bromus secalinus*) stone-seed (*lithospermum arvense*) and cockle (*agrostemma githago*) are native or exotic?

INDISTINCT. Applied to insects, whose heads and trunks are in one piece.

Indivi'sus. Undivided. Not cleft into parts. It may however be serrate, crenate or toothed; it is therefore not the same as entire.

IN'DURATED, *indures'cens*. Becoming hard, tough, or leathery.

Indu'sium. A shirt. It is used by some authors for the thin membranous covering on the fruit of ferns. But Smith prefers retaining the old name, *involucre*, which see.

Iner'mis. See unarmed.

Infer'ne. Downwards. Towards or near the base or root.

INFE'RIOR, *inferus*. Below. A calyx or corol is inferior when it comes out below the germ. See germ.

In'fimus. At the very bottom or base, lowest.

INFLA'TED, *infla'tus*. Appearing as if blown up with wind. A very small degree of inflation is sometimes noticed in descriptions; as the calyx in *silene*.

INFLEX'ED, *inflex'us*. The same as incurved.—Smith.

INFLORES'CENCE, *inflorescen'tia*. The mode by which flowers are connected to the plant by the peduncle. It is of 10 kinds. 1. Whorl. 2. Raceme. 3. Panicle. 4. Thyrses. 5. Spike. 6. Umbel. 7. Cyme. 8. Corymb. 9.

Fascicle. 10. Head. See each in its place.

Infrac'tus. Bent in with such an acute angle as to appear as if broken.

Infundibilifor'mis. See funnel-form.

Inodo'rus. Having no smell.

Inguinans. Stained. Applied to fungi, &c. when the colour appears as if painted on artificially.

Inser'tus. Inserted, fixed to or on.

Insi'dens. Sitting upon.

Insigni'tus. Marked.

Instruc'tus. Furnished with.

In'teger. See entire.

Integer'imus. Very entire, having no dentation whatever.

INTERFOLIA'CEOUS. Situated along the stem between the origin of the leaves, not opposite to them.

Intermed'ius. Between two extremes.

INTERNO'DE, interno'dius. The space between joints or knots.

Inter'nus. Within the inside.

Interpos'itus. Placed between.

Interrup'te. Interruptedly.

INTERRUP'TED, interrup'tus. A spike is interrupted, when leaves or smaller flowers are interposed at intervals.

INTERRUPTEDLY PIN'NATE. When smaller leaflets are interposed among the larger; as the potatoe and agrimony leaves.

INTERSCAPULARS. The back feathers of a bird, between the bases of the wings.

Inti'mus. Entirely within.

INTOR'SION, intor'sio. Twisting, twining or bending from a strait upright position. See twining, contorted and twisted.

Intor'tus. Twisted inwards.

INTRAFOLIA'CEOUS. Within the leaf. A stipule is intrafoliaceous, when it originates a little above the origin of the petiole, which brings it, as it were, within the bosom of the leaf.

INTRODU'CED. Not originally native. Brought from some other country.

Intror'sum. Inwardly.

INVER'SELY HEART'-FORM. See obcordate.

Inunda'tus. See submersus.

INVOLU'CRATE. See involucred.

INVOLU'CRE, involu'crum. That kind of calyx which comes out at a distance below the flower, and never encloses it like the spathe. It is further distinguished from the spathe in being of a leafy texture and colour, whereas the spathe is generally membranaceous or coloured. It is generally found at the origin of the peduncles of umbels; and sometimes attached to other aggregate flowers. When it is all on one side it is called *dimidiate*, halved. See partial.

Involucres of ferns generally lie on the tops of the capsules, like a piece of linen spread out to dry; hence they are called *indusium*, a shirt. They are denominated *corniculatum*, when cylindric, hollow and enclosing the seed.

INVOLU'CRE, involucre'tus. Having involucres.

INVOLU'CEL. A partial involucre, or a little involucre.

Invol'vens. Arching over.

INVOLUTE, involu'tus. Rolled inwards. A term in foliation; applied to leaves whose opposite margins are rolled in and continued rolling, till the two rolls meet on the midrib and parallel to it. Applied to shells, it signifies, that the spire is in whorls which are concealed within the shell, as cypraea.

JOINTS. Swelling knots, rings, or narrowed interstices, at regular intervals along culms, pods, spikes, leaves, &c.

JOINT'ED. Having joints.

IRID'EOUS, IRIDES'CENT. Reflect-

ing light somewhat like a rainbow.

IRREG'ULAR, *irregula'ris*. Differing in figure, size, or proportion of parts, among themselves.

IRRITABIL'ITY. The power of being excited so as to produce contractile motion. That there is such a thing as vegetable irritability is evident to every one, who examines the common barberry flower. Touch the inside of a stamen near its base with the end of a horse-hair, or any thing about the same size, and it will instantly strike its anther against the pistil and shoot a quantity of pollen upon the stigma, or in that direction.

ISH. See *acutiusculus*.

Isthmus. Long narrow joints in legumes or lomentis.

Jug'um. Yoke. In pairs.

Ju'lus. See *ament*.

K.

KEEL. The lower petal of a papilionaceous corol. The stamens and pistils lie enclosed in it.

KEEL'ED. Having a ridge resembling the keel of a boat or ship. A leaf, capsule, calyx, &c. is keeled when it has the midrib, angle, or peculiar process, running along the back of a compressed form, and attached by one edge.

KER'NEL. See *nucleus*.

KID'NEY-FORM. Hollowed in at the base with rounded lobes and rounded end. Its breadth is generally, as great as its length.

KNE'ED. See *geniculate*.

KNOB'BED. In thick lumps; as potatoes.

KNOBS. (*Cephalo'dia*.) That kind of receptacle of lichens, which is convex, more or less globular, covered externally with a coloured seed-bearing crust, and

placed generally at the extremities of stalks, originating from the frond, permanent; rarely sessile. Sometime they are at first *spangles* on filamentous lichens, and afterwards become convex irregular knobs. They are simple, compound or conglomerate.—Smith.

KNOT. A swelling joint. See *joints*.

KNOT'TED. Having swelling joints.

KNOT'LESS. Without swelling joints. See *enode*.

L.

LA'BIATE. Having lips; or a calyx or corol divided at top into two general parts, somewhat resembling the lips of a horse or other animal.

Labiata corols are divided into *ringent* and *personate*.

Ringent, such as have the lips open or gaping.

Personate, such as have the lips closed or muffled.

Labyrinthifor'mis. Winding and turning by various involutions and contortions like a labyrinth.

LAC'ERATED, *lac'erus*. Torn. Cut. or apparently torn, into irregular segments.

Lacin'ia. The division of a calyx, corol, leaf, &c. into which they are cleft, torn or divided.

LACIN'IATE, *lacinia'tus*. Jagged. Irregularly divided and subdivided, cut or torn. Hardly different from *lacerated*.

LACTES'CENTE, *lactescen'tia*. Milkiness. The milky juice of some plants; as the milkweed (*asclepias*.) It is also called by this name, when the juice is red; as in the bloodroot (*sanguinaria*.)

Lac'teus. Milk-white

LACU'NOSE, *Lacuno'sus*. Pitted. Hollow between the veins of a leaf. When the blisters are under side of the leaf instead of the upper. See *bullate*.

Lacu'stris. Growing most naturally in or about lakes.

La'vis. Smooth, even, polished; not striate, or wrinkled.

Lamel'la. A thin plate. Applied to the gills or vertical plates under the hat or pileus of the agaric fungus, or toadstool.

— *equa'lis*. When all the gills reach from the stem to the margin of the hat.

— *inequa'lis* or *interrup'tus*. When some reach but part of the way:

— *biseria'lis* When a long and short gill alternate.

— *triseria'lis*. When 2 long and 2 short gills alternate in pairs.

— *ramo'sa*. When several gills unite in one, so as to appear branched.

— *decur'rens*. When they run down the stem more or less.

— *venosæ*. When so narrow as to have the appearance of veins.

LAMEL'LATE. In the form of thin plates, or having thin plates.

LAM'INA. The broad upper part of the petal of a polypetalous corol. See petal.

LAMINATED. Consisting of several thin flat portions.

LA'NATE, *lana'tus*. Woolly. Covered with curly, crooked, close, thick pubescence. Not so fine, nor so closely matted together as *tomentose*.

LANCE'OLATE, *lanccola'tus*. In the form of the lance of the ancients. When the length greatly exceeds the breadth; and it tapers gradually from near the base to the apex.

LANCE-O'VATE, &c. *lanccola'to-ova'tus*, &c. Pertaking of the lanceolate form and of that with which it is compounded.

Lanu'go. Down, or wool.

Lappula'ceus. Burr-like.

LARVA. The caterpillar state of an insect. It is called maggot, skipper and grub, while in this state.

Laterifol'ius. Side-leaved.

LAT'ERAL, *latera'lis*. On one side.

Latifol'ius. Broad-leaved.

Lateri'tius. Brick-coloured.

Lat'itans. Hidden, concealed.

LAT'TICED. Resembling network.

LAX, *Lax'us*. Limber. See *flaccid*.

LEAF. That part of most vegetables, which presents more surface to the atmosphere, than all other parts; and consists principally of the cellular integument covered with the cuticle. Leaves imbibe and give out moisture; generally more with one surface than the other. Aquatic leaves perspire faster than dry-land leaves; which is the reason for their drying so much sooner. Some leaves imbibe sufficient moisture from the atmosphere for their support for a long time; as the common liveforever will grow, if broken off and stuck up in a dry place.

Leaves are divided into *simple*, when one leaf grows on one petiole; and *compound* when several leaflets grow on one petiole.

They are *ev'ergreen*, remaining through the winter; or *decid'uous*, falling off at the close of the year.

They are farther distinguished by their *forms*, *surfaces*, and *positions*. All of which are described under their peculiar names.

LEAF'ING SEASON. That time in the year when most leaves come out. In North America, the proper leafing season is in April.

LE'AFET, or LE'AFLET. One of the lesser leaves which, with others, constitute a compound leaf. A simple leaf is never a leaflet, however small.

LE'AFLESS. Destitute of leaves, naturally. This term does not

- apply in cases of *defoliation*, which see.
- LE'AF-STALK. See petiole.
- LE'AFY. Furnished with leaves. Abounding in leaves. Leaves intermixed with flowers on a spike.
- LEAT'HERY. See coriaceous.
- LEG'UME, *legu'men*. A pod, without a longitudinal partition, with its enclosed seeds attached to one suture only; as the pea. Those with transverse partitions are usually called *lomentis*, which see.
- LEGU'MINOUS. Bearing legumes.
- LENGTH and BREADTH. When applied to bivalve shells, *length* is measured from the beak or cartilage to the margin below, and *breadth* is taken in a transverse direction to the length.
- LENTIC'ULAR, *lenticula'ris*. Lentil-form. It is applied to a kind of glandular roughness on the surface of some plants. Form of a convex lens.
- Lepan'thium*. Used as a substitute for some kinds of nectary by Nuttall, De Lamark, &c.
- LEV'EL-TOP'PED. See fastigiate.
- LI'BER. The innermost layer of the bark, or the last year's deposit. Smith, page 25.
- Li'bera*. Free, not adnate, or attached.
- LIC'HENES. See p. 19 & 26.
- LID OF MOSSES. See operculum.
- LIGAMENT PERFORATION. A perforation through the shell of the *anomia* genus, by which it is attached to rocks, &c.
- LIGHT. Various motions and inclinations of plants prove the effect of light upon them. Trees present their leaves outward in quest of light, because it is darkest in the centre. Plants in a green-house all present the upper surfaces of their leaves towards the enlightened side of it. Wheat-heads hang towards the sun. Most compound flowers follow the sun through the day. Plants deprived of the light lose their green hue; as potatoe tops growing in a dark cellar.
- LIGNO'SE, *ligno'sus*. Woody.
- Lig'num*. See wood.
- LIG'ULA. A strap or strap-form organ. It is generally applied to the membrane or stipule at the top of the sheath of a grass-leaf.
- LIG'ULATE, *ligula'tus*. That kind of floret, in some compound flowers, which consists of a single strap-like petal which becomes tubular at the base only; as all the florets in a dandelion, and the ray florets in a sunflower.
- Li'lia*, LIL'IES. The family of lilies. See gentes.
- LILIA'CEOUS. A corol with six petals spreading gradually from the base, so as altogether to exhibit a bell-form appearance.
- LIMB, *lim'bus*. The broad spreading part of the petal of a monopetalous corol. When applied to shells it means the whole circumference or outlines of them.
- LINE, *li'nea*. The breadth of the crescent at the root of the finger nail.
- LIN'EAR, *linea'ris*. Continuing of the same breadth throughout most of the extent. Linear leaves always, or with very few exceptions, become narrowed or pointed at one or both ends.
- LIN'EATE, *linea'tus*. Marked with lines.
- Lin'guiform*. Tongue-like. Thick, fleshy, linear, blunt at the end.
- LI'ON-TOOTH'ED. See runcinate.
- LIP, or LIP'PED. See labiate. When applied to univalve shells, it means the outer expanded part of the opening.
- Lirel'lae*. See clefts.
- Littora'lis*. Growing on the sea-coast; also on the shores of rivers.

Lividus. Dark grey, inclining to violet.

LOBE, *lob'us*. Divisions, which are rounded, or parted by rounded or curved incisions. Sometimes it seems to be applied to cases where it has nothing to distinguish it from a segment cut off by a cleft incision, except by its being larger.

LOBED, *loba'tus*. Divided into lobes. Deeply parted, with the segments distant or spreading and large.

LOCULAMEN'tum. See cell. Cavities containing seeds.

LOC'ULUS. The little cell of an anther, which contains pollen.

LO'MENT, *lomen'tum*. A legume pod with transverse partitions. This term is generally applied to the legumes in the natural order Lomentacæ.

LONGIFOL'ius. Long-leaved. See relative proportions.

LONGIS'SIMUS. Very long.

LONG'US. Rather long. See relative proportions.

LOOSE. Open, not compact.

LORES. The naked lines or spots on a bird's head, between the eyes and the base of the bill.

LO'RULA. The long threads of *Usnea*. This lichen, so common on trees, is erroneously called moss by most people.

LUCIDUS. Bright, shining. Nearly the same as *nitidus*.

LUNULATE, *lunula'tus*. Shaped like a *crescent*, which see.

LUNULE. A half-moon-like depression just below the beak of a bivalve shell. It is anterior or posterior according to the slope it is on. See slope.

LURID, *lu'ridus*. Of a palish, dull, deathly colour. Most plants with lurid petals are more or less poisonous; as tobacco, henbane, thorn-apple.

LUSTRE. The peculiar appearance of reflected light, as presented by a mineral.

LUTES'CENT, *lutes'cens*. Approaching to a yellow colour.

LU'tENS. Yellow.

LUXU'RIANT, *luxur'ians*. See full-flowered.

LY'RATE, *lyra'tus*. Pinnatifid, with the divisions at the apex largest.

LY'RATE-PIN'NATE. Pinnate with the odd terminal leaflet largest.

M.

MACULA'tus. Spotted.

MAILED. Covered with a hard substance resembling armour.

MALE. See staminate.

MANDIBLES. The upper jaws of a bird's bill. It is also applied to the horizontal pincers attached to the mouths of some insects.

MANIFES'tus. Very apparent.

MA'NY. Whenever there are more than are usually numbered of that kind; as we say, 1-seeded, 2-seeded, 3-seeded, 4-seeded, many-seeded.

MARCES'CENT, *marces'cens*, or *mar'cidus*. See withering.

MAR'GINATED, *margin'a'tus*. Having a margin differing in some measure from the disk.

MAR'GIN, *mar'go*. The circumference or edge. See border. The circumference of a shell.

MARIT'IMUS. Growing naturally near the sea-board. It may be extended several miles from the water.

MAR'ROW. See pith.

MAS'culus. See staminate.

MAS'KED. Personate. See labiate.

MATRIX. Gangue. The mineral immediately embracing an ore, within a vein in a rock.

MATU'RE, *matu'rus*. Full-grown, but not entered upon a state of decay.

MEAS'URES. Proportion between parts is better than any measure. But when measures are adopt-

ed, they should be taken from parts of the hand and arm; because the parts of plants vary about as much as the hand; and in adopting these measures the same allowance should be made.

1. *Line*, the crescent at the root of the nail. About one-twelfth of an inch. 2. *Nail* (unguis.) Length of the nail. About half an inch. 3. *Inch* (pollex.) Length of the first joint of the thumb. 4. *Palm*. Breadth of the four fingers. About three inches. 5. *Short'-span* (spithama.) Distance between ends of thumb and fore-finger. About seven inches.

Long'-span (dodrans.) Distance between ends of thumb and little finger. About nine inches.

Foot (pes.) Distance between the point of the elbow and the second joint of the thumb. About twelve inches.

Cubit (cub'itus.) Distance between the point of the elbow and of the middle finger. About 18 inches.

Arm (brachium.) Distance between armpit and the end of middle finger. About 24 inches.

Fathom (orgya.) Distance between the ends of the middle fingers, when the arms are extended.

MEDIC'INAL, *medicina'lis*. Plants possessing principles sufficiently active to entitle them to a place in the *materia medica*. Many physicians daily trample under foot plants, which possess similar qualities with those which they purchase from Europe, and often the very same plants; but being ignorant of those botanical principles by which the names and properties of plants are ascertained, they are consequently ignorant of the absurdity. See qualities.

Medio'cris. Averaging in dimensions compared with other parts. See relative proportions.

Med'ius. In the middle. This term is used when one part is between the other parts, though sometimes much nearer one than the other; as a bract is in the middle of the peduncle, when it is much nearer the flower than to the base of the peduncle. This name is sometimes given to species holding a middle place between extremities, expressed by the names of other species of the same genus.

Medul'la. See pith.

MELLIF'EROUS, *mellif'era*. Producing or containing honey.

Melli'go. Honey-dew on leaves.

MEMBRANA'CEOUS. Made up, apparently, of the two plates of the cuticle, without any cellular integument between them. Nearly transparent, very thin and colourless.

Membrana'tus. Flattened and resembling a membrane.

Mensu'ra. See measures.

METH'OD, *method'us*. A mode of arranging plants in classes, orders, &c. Richard has 14 pages on this head; in which he gives the methods of Tournefort and Linneus at length. But as we have given the method of Linneus under Grammar of Botany, and throughout the Dictionary; and as Tournefort's method is no where adopted in this country; this article is principally omitted.

It may be observed that:

TOURNEFORT'S METHOD Divides plants into *herbs* and *trees*. The **HERBACEOUS** plants are divided into 17 classes. Fourteen of these are distinguished by the *form* of the *corols*; as, 1. *Infundibuliformis*. 2. *Personate*, &c. The other 3 classes are *apetalous* and distinguished by *having stamens*, but no apparent flow-

ers, nor apparent seed. The TREE kinds are divided into 5 classes.

MID'RIB. The main or middle rib of a leaf running from the stem to the apex.

Milia'ris. In the form of millet seed.

Minia'tus. Scarlet, vermilion colour.

Minutis'simus. Extremely small or minute.

MISSILE TONGUE. When the animal can thrust the tongue far out of the mouth.

Mi'TRE-FORM. Terminating in two divisions, in some measure resembling a bishop's mitre.

MOLARES. Grinders. Teeth farthest back—double teeth.

Molendina'cea. Many winged.

Mol'lis. Soft.

MOLLUSCOUS ANIMALS. Those that have the medulary masses, in which the sentient principle resides, enveloped in a soft body; as the oyster.

MONADEL'PHIA. (*Monos*, one; *adelphos*, brother.) See p. 13.

MONADEL'PHOUS. Belonging to, or varying into, the class *monadelphia*.

MONAN'DRIA. (*Monos*, one; *aner*, male.) See p. 12.

MONIL'IFORM. See granulate. Globular joints of antennae.

MONOCOTYLE'DONS. See cotyledon.

MONÆ'CIA. (*Monos*, one; *oikos*, house.) See p. 14.

MONÆ'CIUS, monoi'cus. Belonging to, or varying into the class *monœcia*.

MONOGYN'IA. (*Monos*, one; *gune*, female.) See p. 16.

MONOPET'ALOUS. The whole corol in one piece. Sometimes it is so deeply parted, that it appears to be polypetalous until it is pulled off and closely examined at the base. In most monopetalous corols, the stamens are attached to the tube. They are

divided into bell-form, funnel-form, salver-form, wheel-form, and labiate, which see.

MONOPHYL'LOUS. (*Mon'os*, one; *phullon*, a leaf.) One-leaved. A calyx all in one piece. All the calyxes in the class *icosandria* are of this kind. They are often so deeply divided, that a student may mistake them for polyphylous, without particular attention.

Monopteryg'ia. See wings. One-winged.

Monopyre'nus. Enclosing but one nut or stone.

Monosper'mus. One seed to a flower.

Monostac'hys. (*Monos*, one; *stachus*, spike.) Single spiked.

MON'STROUS. Plants producing any part different from the same part, when growing wild. As the rose has but five petals in a wild state; but, by rich cultivation in gardens, the stamens are mostly changed to petals. Carnations and peony are examples also. These are all monsters. See florist and full-flowered.

Montanus. Growing most naturally on mountains.

MOON-FORM. See crescent-form.

MOS'SES. See musci.

MOUTH. See faux.

Mu'cidus. Resembling mouldiness, or mucor.

MU'CRONATE, mucrona'tus. Having a rounded end, tipped with a prickle; which often appears rather an extension of the midrib.

MULE. See hybrid.

Multangula'ris. Many-angled. Having several corners or ridges.

Multicapsula'ris. Many-capsuled. Several capsules to each flower.

Multicaulis. Producing many stems.

Multidenta'tus. Many-toothed.

MUL'TIFID, *Multif'idus*. Many-cleft.
Multiflo'rus. Many-flowered.
Multil'obus. Many-lobed.
Multilocula'ris. Many-celled.
MULTIPAR'TITE, *Multiparti'tus*. Many-parted.
Mult'iplex. Many-fold. Having petals lying over each other in two rows.
MUL'TIPLIED, *multiplica'tus*. See full-flowered.
Multisiliquo'sus. Many pods proceeding from the same point.
MULTIVALVE, *multival'vis*. A glume with many chaffs or valves. Applied to shells it embraces the order, which has more than two shells to each animal.
Multot'ies. Often times.
Muniens. Leaves drooping down and hanging over the stem, &c. at night.
Munitus. See fenced.
MURICATE, *murica'tus*. Armed with sharp spines. Covered with subulate prickles.
MUS'CI, **MOSSSES**. The second order of the class *cryptogamia*. All mosses have lids on the capsules. See p. 18 & 27.
Mut'icus. See awnless.
MUTILATED, *mutila'tus*. Not producing parts with their full complete forms.

N.

NA'KED. Wanting a covering analagous to that of most plants. As stem without leaves, leaves without pubescent, corol without a calyx, seed without a pericarp, receptacle without chaff, pubescence, &c.
Nan'us. Dwarfish, very small.
NAP. See tomentose. Downy or like fur.
Napifor'mis. Resembling a turnip.
NA'TANT, *nat'ans*. Floating. When

the plant is fixed by the root at the bottom and its leaves float on the top of the water, as the pond lily, (*nymphæa*.) Animals with the faculty of swimming.
NA'TIONS. See gentes.
NA'TIVE. Originally of that country. Not introduced.
NAT'URAL CHAR'ACTER. The description of the parts of fructification at large ; without regard to any method : or at least so given as to be capable of being used under any method. See descriptions.
NAT'URAL CLASS. See natural orders.
NAT'URAL HIS'TORY. That department of science, which treats of the productions of nature as they come from the hand of the Creator ; without any decomposition or chemical changes.

It is generally divided into three branches.

1. **ZOOL'OGY**. Which includes all animals ; as Beasts, Birds, Reptiles, Fishes, Insects, Snails, Clams, Worms and Corals.

2. **BOT'ANY**. Which includes all plants As Palms, Grasses, Lillies, Herbs, Trees, Ferns, Mosses, Liverworts, Seaweeds and Mushrooms.

3. **MINERAL'OGY**. Which includes the unorganized mass of our globe. As Pit-coal, Common Salt, Flint, Lime, Clay, Iron-ore, Silver-ore, Lead-ore, &c.

NAT'URAL OR'DERS. An arrangement of plants according to their natural affinities. Such an arrangement is of great use both in finding out a plant, and examining its relations and qualities. See p. 22 & 25.

Linneus supposed that plants of the same natural order possessed similar medical qualities. But the odour of plants must be taken into consideration ; as all

- nauseous-scented umbelliferous plants are poisonous, while the sweet-scented are pleasant stomachics, &c.
- NA'VELLED. See umbilicatus.
- NAVIC'ULAR, *navicula'ris*. See boat-form.
- NAYANT. Floating. When animals float, without the effort of swimming, they are nayant.
- NECESSA'RIA, *polygamia*. See p. 18.
- NECK. The upper part of the tube of a corol.
- NECTARIF'EROUS. Bearing nectaries. Producing honey.
- NEC'TARY, *necta'rium*. The part of a flower, which secretes honey. It is either a distinct horn, gland, spur, scale, cup, &c. or the claw or some other part of the corol secreting honey. This name is applied to any appendage to the flower, which has no other name.
- Nemorosus*. Growing naturally in groves, where the under brush is cleared away.
- NERVO'SE, NER'VED, *nervo'sus*. Leaves are nerved, when they have rib-like fibres running from the base towards the apex. In numbering nerves for a specific character, the midrib is counted with the lateral nerves.
- NEU'TRAL. Having neither stamens nor pistils, consequently barren; as the ray-florets of the sun-flower.
- NICK'ED. See emarginate.
- NICTITANT MEMBRANE. A semi-transparent membrane, which covers the eyes of some animals at pleasure.
- Nidulus*. Nesting. When seeds are placed in cotton, &c. as in a nest.
- Nig'ea*. Black.
- Nig'ricans*. Blackish, sooty.
- Nigro-cerul'eus*. Dark-blue.
- Nisus formativus*. That principle of vital energy, which tends to restore lost or injured parts.
- Nit'idus*. Glossy, glittering.
- Niv'eus*. Snow-white.
- NOD'DING. See nutans.
- NODE, *No'dus*. See knot. Used by Barton for internode. Fl. Ph. p. 61.
- NODULE. A spheroidal mass of any mineral substance.
- No'men*, NAME. See generic name and specific name.
- NOTCH'ED. See crenate.
- Nu'bilus*. Grey and white, cloudy. Resembling cumulous clouds. See *cumulus*.
- Nucamen'tum*. See ament.
- NU'CIFORM. Resembling a nut.
- Nuc'leus*. Nut or kernel. The inner seed or kernel is properly the nucleus; and its hard shell is the putamen. But the whole including both putamen and nucleus, is the nut, *nux*.
- Nu'dus*. See naked.
- Nudius'culus*. Nakedish.
- Nul'lus*. None.
- Nu'mero'si*. Many. An indefinite number.
- Num'erus*. A determinate number.
- NUT, *nux*. See nucleus.
- NU'TANT, *Nu'tans*. Nodding. When above half of whatever it is applied to, droops or hangs down. See *pendulus*.
- Nuta'tio*. The various inclinations of the parts arising from the effect of the sun's rays.

O.

- Ob, obver'se*. Reversed or inverted. Often combined with ovate, cordate, &c. as obcordate, inversely heart-form.
- OBCON'IC. Conic with the point, or apex, downwards.
- OBCOR'DATE. Heart-form, with the apex next to the stem, or place of insertion.
- OBLANCE'OBATE. Lanceolate with the base the narrowest.
- OBLI'QUE, *obli'quus*. A position between horizontal and verti-

- cal; or between perpendicular and the plane of the base. It is also applied to leaves, petals, calyxes, &c. which are, as it were, cut obliquely; or whose bases are shorter on one side than on the other.
- OBLONG**, *oblon'gus*. Having the length twice or more than that of the breadth, with the opposite sides somewhat parallel.
- Oblongius'culus*. Somewhat oblong.
- OBOVAL**, *oboval'lis*. If it differs at all from obovate, it must be more nearly oval—having the ends nearer equal in width.
- OBOVATE**. Ovate, with the narrowest end towards the stem or place of insertion.
- Obscu're*. Obscurely.
- OBSOLETE**, **OBSOLETELY**, *obsole'tus*, *obsole'te*. When teeth, notches, serratures, &c. are obscure and appear as if worn out.
- Obtu'se*. Obtusely.
- OBTU'SE**. See obtusus.
- Obtu'se-acumina'tus*. Blunt with a small point.
- Obtusius'culus*. Obtusish.
- Obtu'sus*, **OBTU'SE**. Ending bluntly, or in an apex more or less rounded.
- Obver'sus*, *obver'se*. See ob.
- OBVOLUTE**, *obvolu'tus*. A term in foliation; applied to leaves where two opposite ones are conduplicate, with one edge of each leaf between the edges of the other.
- OCCIPITAL**. Pertaining to the back part of the head.
- OCELLATE**. Eye-like spots, as on the wings of some butterflies.
- Oclu'sus*. Closed.
- Och'rea*. A cylindric sheath or stipule. It is applied to the membranaceous stipules of most of the species of *Polygonum*; also of some species of *Cyperus*.
- OCTAN'DRIA**. (*Octo*, eight; *aner*, male.) See p. 13.
- OCTAN'DROUS**. Belonging to, or varying into, the class *octandria*.
- Octo'fidus*. Eight-cleft.
- OCTOGYN'IA**. (*Octo*, eight; *gune*, female.) See p. 16.
- Octolocula'ris*. 8-celled.
- Octopel'alus*. 8-petalled.
- Octophyl'lus*. 8-leaved.
- Odora'tus*. Scented, odorous.
- Officina'lis*. Such plants as are sold in the shops for some use, either in medicine or the arts.
- OID**, *Oi'des*. When this terminates a word it imports resemblance to the part or plant to whose name it is annexed. Petaloid, resembling a petal; thalictroides, resembling a *Thalictrum*, &c.
- Oligosper'mus*. Few-seeded.
- One-si'ded*. Flowers, &c. on one side of a stem, &c.
- OPA'QUE**, *opa'cus*. Neither transparent nor shining.
- OPER'ULATE**, *opercula'tus*. Having a lid.
- Oper'culum*. The lid or covering on the capsules of mosses. This is generally covered by the calyptra when young. After the calyptra is gone and the seeds are ripe, the lid falls also. This term is also applied to the covering of other capsules, resembling the lids of mosses. When applied to Conchology, it means a cartilaginous, crusty, or shelly appendage to the animal by which it closes its shell after its body is drawn into a univalve shell.
- OP'POSITE**, *opposi'tus*. Standing at the same height with base against base, on different sides of a stem.
- Oppos'ite*. Oppositely.
- Oppositifol'ius*. Set opposite to the base of a leaf; as some peduncles and stipules are placed.
- Oppos'ite-pinna'tus*. Leaflets of a pinnate leaf set opposite to each other.
- Orbicula'ris*. Nearly circular.

Orbil'la. See orbs. Little orbs.

ORBS. That kind of receptacle of lichens, which is flat, orbicular and dilated, of the substance of the frond, terminal, peltate, without a border, but often surrounded with radiating shoots. The membrane, or disk, under which the seeds are lodged, is smooth, nearly of the colour of the frond. Spurious orbs bordered like shields or spangles when young, are sometimes found in the genus *cornicularia*.—Smith,

ORCHID'EOUS CO'ROL. Like the orchis; having 4 arched petals, and the fifth longer.

OR'GYA. Fathom. See measures.

OR'IFICE. Any hole or opening into a capsule, corol, &c.

ORNITHOLOGY. That department of zoology, which treats of birds.

Os. See faux. Mouth, jaws.

OS'SEOUS. Bony, hard.

O'VAL, *ova'lis*. The length exceeding the breadth in any proportion, with the two ends of an equal breadth, curvature and form, or nearly so; the sides curving from end to end.

Ova'rium. Used by Nuttall for an ovate germ.

O'VATE. Egg-form. The length exceeding the breadth in any proportion, the end next to the stem, exceeding the other in breadth; the sides curving from end to end.

OVIPAROUS. Animals produced from eggs, as birds, fish, &c.

OVOIDAL. Somewhat egg-shaped.

O'VUM. An egg.

P.

Pa'gina. The surface of a leaf. The upper surface is *pagina superior*; the lower surface, *pagina inferior*.

PAL'ATE. A prominence, process or elevation in the lower lip of a labiate corol, which tends more or less to close the throat.

Pal'ca. See chaff,

PALEA'CEOUS. See chaffy.

Palma'ris. Hand's breadth.

PAL'MATE, *palma'tus*. Divided deeply and spreading, so as to resemble the hand with spread fingers. When the divisions are very narrow and almost down to the stem of a leaf, it is called *pedate*, from its supposed resemblance to a bird's foot. Some pedate leaves are hardly connected at all at the base, and almost run into the compound *digitate* leaf.

PALPI Feelers. Processes or fibres attached to the mouths of insects.

Palu'stris. Growing naturally in swamps and marshes.

Pandurifor'mis. Guitar-form, or fiddle-form. Oblong, broadish near the base and contracted on the sides.

PAN'ICLE, *panic'ula*. When the peduncles along the sides of the main peduncle of a raceme, are divided, it takes the name of panicle; as oats. But if it is still in a close, compact form, it is called a *thyrs*e, as the lilac.

PAN'ICLED, *panicula'tus*. Disposed in the form of a panicle; or bearing panicles.

PAPILIONA'CEOUS. (*Papilio*, a butterfly.) Butterfly-form; as the pea-flower. When complete, it consists of the *banner*, the upper petal which generally spreads over or above the others; the *wings*, the two side petals, next below the banner; the *keel*, the lower boat-form petal, generally enclosing the stamens and pistil. It is sometimes called the *pea-bloom* flower.

PAPILLA. Fleshy process or point.

PAPILLO'SE, *papillo'sus*. (*Papilla*, a nipple.) Covered with fleshy points or protuberances. See verrucose.

PAPPO'SE, *pappo'sus*. Bearing pappus or aigrette,

- Pap'pus.* See *aigrette*. Seed down.
- PAPULO'SE, *papulo'sus.* (*Papula*, a pimple.) Pimplly, bladdery or blistered.
- PARABOL'IC. Conic, with the top rounded off, considerably below where it would terminate in the apex, if completed in the conic form.
- PAR'ALLEL, *parallel'tus.* Two lines or opposite sides, running nearly equal distances from each other. The opposite edges of a leaf are parallel when the leaf is linear.
- PARASIT'IC. Drawing support from another plant. Growing out of another; as the dodder.
- Paren'chyma. A succulent vegetable substance; as the thick part of leaves between the opposite cuticles, the substance around the pith of herbs, the pulpy part of apples, &c.
- PARI'ETAL, *parieta'lis.* Walled around. Having an enclosing or encircling ring.
- PAR'TED, *parti'tus.* Deeply divided, almost to the base.
- Partes prima'riae.* The three primary parts of a vegetable are: 1. The *root*, or descending part. 2. The *herbage*, or ascending part, except; 3. The *fructification*, comprising the flower and fruit.
- PAR'TIAL, *partia'lis.* Particular, not general. Applying to an entire part of a general whole. The perianth, involucre, petiole, &c. of one floret, or of a separate part of all the florets, which with others constitute a compound or aggregate. The perianth, involucre, &c. to the whole is called general or *universal*.
- PAR'TIBLE, *parti'bilis.* Easily separating into parts. Bipartible, into 2 parts. Tripartible, into 3 parts, &c.
- PAR'TITION. The membrane, &c. which divides pericarps into cells. It is *parallel*, when it unites with the valves, where they unite with each other. It is *contrary* or *transverse*, when it meets a valve in the middle, or in any part not at its suture, or juncture with another.
- Patel'lulae. See *spangles*.
- Pa'tens. Spreading so as to form a moderately acute angle; considerably less than a right one, or a square.
- Patentis'simus. Spreading almost to a right angle.
- Pat'ulus. Somewhat spreading. Open, loose.
- Pau'ci. Few in number.
- Pauciflorus* and *paucifolius.* Few-flowered and few-leaved.
- PE'A-BLOOM. See *papilionaceous*.
- PEC'TINATE, PEC'TINATED, *pectina'tus.* So finely pinnate or pinnatifid as to resemble the teeth of a comb.
- PECTORAL FINS. A pair growing on each side of the thorax, or breast.
- Peda'lis. About a foot high.
- PE'DATE, *peda'tus.* See *palmate*. Bird-foot like.
- PEDAT'IFID, *pedatif'idus.* Nearly the same as *pedate*; perhaps hardly so deep-cut.
- PED'ICEL, *pedice'lus.* A partial peduncle.
- PED'ICELLED, PEDICEL'ATE, *pedicella'tus.* Having a pedicel.
- PE'DUNCLE. See *pedunculus*.— Flower stem.
- PE'DUNCLED, *peduncula'tus.* Having a peduncle.
- Peduncula'ris.* Appertaining to, or fixed on, a peduncle.
- Pedunculus*, PE'DUNCLE. The stem bearing the flower and fruit, which does not spring naked from the root. Those which spring immediately from the root without leaves, are called *scape*. As the dandelion has a *scape*, the apple a *peduncle*.
- PELL'ICLE, *pellic'ula.* A thin mem-

brane-like substance. The close covering of some seeds ; sometimes it is a little mucilaginous or downy.

PELLUCID. Transparent, translucent, or limpid.

Pell'æ. See targets.

PELTATE, *pelta'tus*. Having the petiole attached to the under side of the leaf. In all cases of leaves and flat stigmas, when the petiole or style is attached to the disk instead of the margin, they are peltate ; as the leaf of nasturtion and the stigma of the yellow water-lily.

PENDANT. Hanging down.

PENDULOUS. When the whole of the part droops, or hangs down.

PENCIL-FORM, *pennicil'ijor'mis*. Shaped like a painter's pencil, or little round paint-brush.

Pentacoc'cus. A 5-grained capsule.

PENTAGONAL, *pentugo'nus*. Five-cornered.

PENTAGYNIA. (*Pente*, five ; *gune*, female.) See p. 16.

PENTANDRIA. (*Pente*, five ; *aner*, male.) See p. 17.

Pentan'drous. Belonging to, or varying into, the class *pentandria*.

Pentapetalus. 5-petalled.

Pentapteryg'ia. See wings. Five-winged.

Pentaphyl'lus. 5-leaved.

PERCHING. A bird having grasping feet.

Peregri'nus. Foreign, strange, wandering.

PERENNIAL, *peren'nis*. Continuing more than two years.

Perexil'lis Slender.

PERFECT FLOWER. Having both stamens and pistils.

PERFOLIATE, *perfolia'tus*. Perforating a leaf. Having the stem running through the leaf. But the leaf is not formed by the union of opposite bases, as in the *boneset* (eupatorium ;) for in this case the leaves are connate.

It is applied to antennae when the main thread passes through the joints.

Perfoliate is sometimes the specific name where the leaves are nearly connate (as eupatorium *perfoliatum* ;) and even where the leaves are merely clasping (as *campanula perfoliata*.)

PERFORATE, **PERFORATED**, *perfora'tus*. Having holes as if pricked through. Punctate may differ in presenting spots like points, which are not holes. Pertuse perhaps is synonymous with perforated. These dots may be seen by holding St. John's wort and many other leaves to the light. This term is applied to stigmas, drupes, &c.

PERIANTH, *perian'thium*. (*Peri*, about ; *anthos*, flower.) That kind of calyx, which is immediately adjoining the corol, stamens and pistil, or to such of these organs as are present. It is *superior* when it grows on the germ ; it is *inferior*, when it grows out from below the germ. See monophyllous and polyphyllous.

PERICARP, *pericarpium*. (*Peri*, about ; *karpos*, fruit.) Seed-case. Any bag, shell, pod, pulp, berry, or other substance, enclosing the seed.

PERICHETH, *perichæ'tium*. (*Peri*, about ; *chaite*, crest.) An involucre surrounding the base of the peduncle of mosses, among the leaflets, but differing from them in form. See calyptra.

Perid'ium. A round membranous dry case, enclosing the seeds in some angiocarp fungus-es.

PERIGONE. A perianth calyx, or corol.

PERISPERM. A substitute for pericarp.—Nuttall.

PERISPOR'IUM. Capsule. Nuttall uses it to express a chaffy covering to seed.

- Peristomium*. The fringe, teeth, or membrane, around the mouth of the capsules of mosses, under the lid.
- Perithecium*. A perianth-like organ surrounding the seed-cases of lichens, or capsules of mosses and fungi.
- PER'MANENT. Any part of a plant is permanent, which remains longer compared with other parts of the same plant, than is usual for similar parts in most plants. As the calyx of the quince remains on the end of the fruit, till it ripens.
- Perpusillum*. Very little.
- Persilens*. See permanent and ring.
- PER'SONATE, *personatus*. See labiate. Muffled, lipped flower.
- PERTU'SE, *pertusus*. Punched. See perforated.
- Pes*. See measures. One foot.
- PE'TAL, *petalum*. The coloured leaf or leaves of the corol. The petal of a monopetalous corol is divided into the *tube* and *limb*; which see. Each petal of a polypetalous corol is divided into the *claw* and *lamina*; which see.
- PE'TAL-FORM, *petaliformis*. Resembling a petal in shape.
- Petalinus*. Attached to, or being part of, a petal.
- PE'TALOID, *petaloides*. Having petals, resembling petals.
- PE'TIOLE, *petiolus*. The footstalk of a leaf. Leaves which have no footstems are *sessile*.
- PETIOLA'TE, PE'TIOLED, *petiolatus*. Having a petiole.
- Petiolulus*. A partial petiole, which connects the leaflet to the main petiole; as the butternut.
- PHENOG'AMOUS, (of *phaino* to shew.) Having the stamens and pistils sufficiently apparent for classification. Applied to all plants, not included in the class cryptogamia.
- Phœniceus*. Purple, dark-red.
- PHYTOLOG'Y. (*Phute*, a plant; *logos*, a treatise or discourse.) The science which treats of the principles of vegetables. It is nearly synonymous with the *physiology of vegetables*.
- Piceus*. Blueish-black, resembling dark pitch.
- Pileus*. The hat of a fungus. The top and most spreading part. It may be without stype, and thus constitute the whole ascending part. It always contains the seeds, though it requires the highest magnifiers to discover them in most cases. See *Lamella*.
- Pilidia*. See puffs.
- PILIF'EROUS. Bearing hairs.
- PILLAR. *Columella*. The column of a univalve shell.
- PILO'SE, *pilosus*. Hairy. Having distinct straitish hairs. Pappus is pilose, or it is simple, when each hair is without any lateral branches. See *aigrette*.
- Pilus*. A hair. An excretory duct of a bristly form, leading off a fluid. See *sting*.
- PIM'PLED. See *papulose*.
- Pinna*. A wing-feather. It is applied to leaflets, which resemble feathers by their positions.
- PIN'NATE, *pinnaatus*. Winged, or feathered. Leaves are pinnate, when distinct leaflets are arranged along opposite sides of a simple petiole. See *bipinnate* and *tripinnate*.
- PINNAT'IFID, *pinnatifidus*. Cut-winged. Leaves are pinnatifid, when, instead of leaflets as in pinnate leaves, segments or divisions of a leaf are along opposite sides of the midrib. Pinnate are compound, but pinnatifid are simple; because the divisions never reach the midrib. When pinnatifid leaflets are on a pinnate leaf, it is called *pinnate-pinnatifid*.
- PIS'TILLATE FLOW'ER. Having pistils only, without stamens; as the flower of the fertile cucumber.

PIS'TIL, *pistil'lum*. The central organ of most flowers. It generally consists of the germ, style and stigma. But the style is frequently wanting; then the stigma is seated on the germ, or sessile. The stigma receives pollen from the anther, and, in some manner not yet discovered, fertilizes the germ. Without this operation, no perfect seeds are produced. See flower, style and stigma.

Pistillif'eros. See pistillate.

PITCH'ER-FORM. See urceolate.

PITH. The spongy substance in the centre of the stems and roots of most plants. Most woody stems have no appearance of a pith after they become old.

PITS, (syphellæ.) That kind of receptacle of lichens, which consists of open, cup-like, naked, white or yellow little spots, on the under side of the frond; which is generally downy. They are at first immersed, globose, minute dots, which at length burst with irregular margins, and discharge a powder.

PIT'TED. See lacunose.

Placcn'ta. Fleshy receptacle.

PLACENTA'TION. The disposition of the cotyledons in the germination of the seeds.

PLA'ITED. Folded somewhat like a fan, when nearly full spread. In foliation it is more closely folded.

PLANE. Flat, with an even surface.

PLA'NO-CON'VEX. Convex or roundish on one side and flat the other.

PLANT. Any substance growing from seed. As tree, grass, puff-ball, mould. See vegetable.

Plenus-flos. See full-flowered.

Plica'tus. See plaited. Folded like a fan.

PLUMO'SE. Feather-like.

PLUMO'SE, *pap'pus*. Feather-like down. When a hair has other

hairs arranged on opposite sides of it. Applied to a mineral having fibres diverging from a line or kind of midrib.

Plu'mula. The ascending part of a plant at its first germination.

Plu'rimus. Very many.

POD. That kind of pericarp which is composed of two valves with the seeds attached to one or both sutures, or a longitudinal partition at the edges immediately adjoining the sutures. The pod is either a legume or silique.

Ped'elia. The peduncles of lichens, whether hollow or solid.

POIN'TAL. See pistil. Central organs of a flower.

POISERS. Globules on slender stems under the wings of some dipterous insects.

POI'SONS. The definition of poisons and the manner of their operation has not yet been satisfactorily explained. It will here be no farther noticed, than as it respects vegetables. See natural orders, and p. 50.

POI'SONOUS VEG'ETABLES. Persons of all descriptions have frequent occasion to make some use of plants, when they are not in a situation minutely to investigate their nature and qualities. As many plants are narcotic and injurious to the human constitution, it is very convenient to have at hand, or in the memory, a few concise rules on this subject. Such have been selected with great care, and set down at p. 50.

POLLEN. See p. 5. On being viewed through a magnifier, they are found of various forms. In the sunflower, it is a prickly ball; in geranium, perforated; in comfrey, double; in mallows, a toothed wheel; in violet, angular; in daffodil, kidney-form, &c.

POLLIN'IA. Rolls or masses of pollen, not included in cells of an-

- thers of the common form and texture; as of the orchis, asclepias, &c.—Nuttall.
- POLLINIF'EROUS.** Bearing pollen.
- POLYADEL'PHIA.** (*Polus*, many; *adelphos*, brother.) See Rejected classes.
- POLYADEL'PHOUS.** Belonging to, or varying into, the class polyadelphia.
- POLYAN'DRIA.** (*Polus*, many; *aner*, male.) See p. 13.
- POLYAN'DROUS.** Belonging to, or varying into, the class *polyandria*.
- POLYCOTYLED'ONOUS.** Plants with more than two cotyledons. See cotyledon.
- POLYGA'MIA.** (*Polus*, many; *gamos*, marriage.) Many unions. The name of the twenty-third class as established by Linneus. It comprises all plants, which have some perfect flowers, and others which are staminate and pistillate, or both kinds. This class is divided into three orders. 1. *Monœcia*, having perfect flowers and either staminate or pistillate ones or both on the same plants. 2. *Diœcia*, having perfect flowers on some plants, and either staminate or pistillate flowers on others, of the same species. 3. *Triœcia*, having perfect flowers on some plants, staminate on others, and pistillate on others of the same species. This class, like the 18th, is abolished by Persoon and others, and the plants under it distributed among the other classes. President Smith thinks it ought to be discarded.
- POLYG'AMOUS.** Varying into, or inclining to, the class *polygamia*.
- Polygo'nus.* Many cornered, or many-angled.
- POLYGYN'IA.** (*Polus*, many; *gune*, female.) See p. 16.
- POLYMOR'PHOUS.** Presenting various forms and appearances.
- POLYPET'ALOUS.** Many-petalled.
- If the corol consists of more than one petal, it is polypetalous.
- POLYPHYL'LOUS.** Many-leaved. A calyx of more than one distinct piece is polyphyllous.
- Polypre'nus.* Enclosing more than one nut, or stone.
- Polysper'ma.* Many-seeded.
- Polystach'ius.* Many-spiked.
- POME, po'mum.** A pulpy pericarp without valves, which contains within it a capsule. See *berry*, and note the difference. Apples, quinces, &c. are pomes.
- Pomif'erus.* Bearing pomes, or apple-like fruit.
- PO'ROUS, poro'sus.** Full of holes, cellules, or tubular openings.
- Porrec'tus.* Lengthened out, stretched, straitened.
- POSTERIOR SLOPE.** See slope.
- Præ'cox.* Rare-ripe. Coming to maturity early in the season. Flowering before leafing.
- PRÆMOR'SE, Præmor'sus.** Bitten off. Terminating bluntly, as if bitten off. As the root of the pedate or birdfoot violet.
- Pras'inus.* Green, like a leek.
- Praten'sis.* Growing naturally in meadow land.
- PREHENSILE.** The tail of an animal, or other limb, formed for coiling around other bodies for the purpose of holding on by them.
- Prem'ens.* Pressing.
- PRICK'LE.** A sharp process fixed to the bark only, not to the wood; as on the raspberry, rose, barberry.
- PRISMAT'IC, prismat'icus.** Linear, with several flattish sides. A cylinder with flat sides.
- Probos'cides.* Proboscis-like. Resembling a projecting horn.
- PROBOSCIS.** An elongated nose or snout. It is a tubular process, whether a tubular continuation of the snout, as of the elephant, or a tubular sucker, as of the musquetoë, it is always adapted

to the structure of the animal in furnishing itself with food.

Proc'erus. Tall, elevated.

Proc'ess. A projecting part.

PROCUM'BENT, *procum'bens*. Lying on the ground.

Profun'de. Deeply.

PROLIF'EROUS, *pro'lifer*. Putting forth branches or flowers from the centre of the top of a preceding one.

PROM'INENT, *pro'minens*. Standing out more or less beyond what is usual in other plants.

Promin'ulus. A little prominent.

Pro'nus-dis'cus. The under side, or back of a leaf, upwards.

PROP. See *fulcrum*. Tendrils and other climbers.

PROPAGA'TION. See *flower*. Extending plants by seeds, roots, &c.

Propa'go. See *gemma*.

Propa'gula. See *efflorescence*.

Propen'dens. Apparently on the point of falling.

PROP'ER, *prop'erus*. See *partial*. Part of a whole.

PROSTRATE, *prostra'tus*. See *procumbent* and *humifuse*. Lying on the ground.

PROTRU'DED. See *exsert*. Projecting out.

PROTRUSILE. Capable of being protruded. It is applied to the heads of animals, which may be thrust out or forward, as that of the tortoise.

Prox'imus. Very near.

Fru'ina. The mealiness or hoariness on plums, peaches, &c.

PRUINOSE. Covered with a frost-like meal.

Pru'riens. Hairs which excite itching.

Pseu'do. When prefixed to a word, it implies obsolete or false.

PSEUDO-MORPHOUS. False faced. It is applied to crystals which are formed in, or upon, other crystals and take their form. As pseudo-morphous quartz crystals, are such as are formed in

the inner castings of disintegrated cubic crystals of iron pyrites, or on the outside of calc spar, fluor spar, &c.

PUBES'CENT, *pubes'cens*. Hairy, having hairs, wool, down, glandular hairs, &c.

PUFFS, (*pilidia*.) That kind of receptacle of lichens, which consists of little round bordered knobs, whose disk finally turns to powder. It is at first covered with a membrane and often clothed with a fine grey hoariness. These receptacles are elongated below into a stalk fixed to the crust, but totally different from it.

PUL'LUS. Dull brownish colour.

PULP'Y, *pulpo'sus*. Filled with a tenacious kind of parenchyma. Thick and succulent or spongy.

PULVER'ULENT, *pulverulen'tus*. Turning to dust.

PULVINATUS, *Cushion-like*. Applied to the pileus of a fungus, which is thick and corky or spongy.

Pulvi'nuli, (*garden beds*.) Cushions. Excrescences found on the surface of the fronds of some lichens, sometimes clustered or branched. Their use is unknown.

Pu'milus. Small, low.

PUNCH'ED. See *perforated*.

PUNC'TATE. Dotted or sprinkled with coloured, generally diaphanous, specks. See *perforated*.

PUNCTIC'ULATE. Having minute punctures.

PUN'GENT, *pun'gens*. Sharp, piercing, pricking.

Punic'cus. Scarlet-coloured.

PUPA. Chrysalis, nymph, amelia. The quiescent state of an insect after passing from the larva state and before it becomes a perfect insect.

Purpuras'cens. Inclining to a purple colour.

Purpur'eus. Purple.

Pusil'lus. Low, small, diminutive.

PUTA'MEN. Nut-shell. See nucleus.
Pyramida'lis. Conic, pyramid-form.
Pyrifor'mis. Pear-shaped.
 PYRITIFEROUS. Bearing iron pyrites. Containing sulphuret of iron.

Q.

QUADRAN'GULAR, *quadrangula'ris*. Having four corners, or angles.
 QUADRICAP'SULAR. Having four capsules.
Quadridenta'tus. Four-toothed.
Quadridenta'rius. Facing 4 ways.
 QUAD'RIFID, *quadrifidus*. Four-cleft.
Quadriflo'rus. Four-flowered.
Quadrifjugus. Four-paired.
Quadril'obus. Four-lobed.
Quadrilocula'ris. Four-celled.
Quadriner'vis. Four-nerved.
Quadrparti'tus. Four-parted.
Quadrival'vis. Four-valved.
Quadrivascula'ris. Four cup-form cells.
 QUAL'ITIÉS OF PLANTS. Richard says that plants of the same taste and odour, are generally possessed of similar qualities. Also that the smell and taste are always the same. He divides the odours of plants into, 1. *Fragrant*. 2. *Aromatic*. 3. *Ambrosiac* (resembling amber.) 4. *Allicaceous* (resembling garlic.) 5. *Fetid* (as asafetida, &c.) 6. *Nauseous* (causing the stomach to heave.) As the fragrant, the aromatic and ambrosiac, are always free from all hurtful qualities, and as the fetid and nauseous are generally poisonous; it seems that mankind have in some measure an instinctive principle by which their food is to be selected.
Quater'nus. Four together in a whorl.
Qui'nus. Five together in a whorl.

QUI'NATE, *quina'tus*. Five leaflets on one petiole.
Quinquangula'ris. Five-cornered. When a leaf has five points; as the cucumber.
Quinquecapsula'ris. Having five capsules
Quinquecos'late. Five-nerved.
Quinques'idus. Five-cleft.
Quinqueflo'rus. Five-flowered.
Quinquej'ugus. Five-paired.
Quinquel'obus. Five-lobed.
Quinquelocula'ris. Five-celled.
Quinquener'vis. Five-nerved.
Quinqueparti'tus. Five-parted.
Quinqueval'vis. Five-valved.
Quinquevascula'ris. Five cup-form cells.

R.

RACE'ME, *race'mus*. (*Rax*, a bunch of grapes.) That kind of inflorescence, wherein the florets have undivided pedicels arranged along the sides of a general peduncle. As currants.
 RACE'MED, *racemo'sus*. Flowers in racemes
 RAC'HIS, (*Rachis*, the back-bone.) The filiform receptacle connecting the florets in a spike. As in wheat-heads. It is sometimes put for the midrib in ferns.
 RA'DIAL. Belonging to the ray.
 RA'DIATE, *radia'tus*. The spreading florets around the margin of a compound flower. It is also applied to a division of animals; as the animals inhabiting coral rocks and sponges.
 RADIATED ANIMALS. Those whose sentient principle resides in a medulary globule, spheroid, or ring, with radiating branches; as the polypus which inhabits coral rocks, the tape-worm, &c.
 RAD'ICAL, *radical'is*. Proceeding from the root without the intervention of a stalk. As the leaves of plantain.

Ra'dicans. See rooting. Roots proceeding from stems, leaves, &c.

Radica'tus. Sending off roots.

RAD'ICLE, *radic'ula.* The little fibrous branches proceeding from the main-root; which imbibes the moisture and other nourishment for the plant.

Rad'ius. See ray. Edging florets.

Ra'dix. See root.

RAG'GED. See squarrose.

Ramen'tum. Applied to the loose scales frequently in the angles of petioles, &c. called in English, *raments.*

Ra'meum fol'ium. See branch leaves.

Rami'ferus. Producing branches.

Ramossis'simus. Very branching.

Ramo'sus, **RAMO'SE.** Branching.

Ra'mulus See branchlet. Little branch.

Ra'mus. See branch.

Rariflorus. Flowers few and distant.

Rarifolius. Leaves few and distant.

RAY. The outer margin or circumference of a compound flower. It is also applied to the peduncles and outer florets of an umbel; particularly when they differ in any respect from the inner, or disk, florets. Also to the bony spines of the fins and gill-membranes of fish.

RA'YED. Having rays

RECEPTACLE, *receptaculum.* The base by which the other parts of the fructification are connected and supported; being the end, or at the end, of the peduncle. It is considerably used in the generic characters of compound flowers; but very little noticed in any others. Perhaps this part may hereafter be noticed on account of the change, it in some way produces on the vegetable secretions. Dr. Smith mentions the wholesomeness of some fruits, while the other parts of

the plant are poisonous. See page 392. Every one has noticed the delicate flavour of the pond-lily, (*Nymphaea odorata*), while all back of the receptacle is extremely different. Numerous similar instances may be cited to prove the very great change in some way effected by the receptacle. When Persoon applies receptacle (*receptaculum*) to a capsule, he intends the columella.

RECLI'NED, *reclina'tus.* Bent down so that the apex of a leaf, &c. is lower than the base. Applied to the stem it implies that it is bowed towards the earth.

Recompos'itus. Twice compound.

Recon'ditus. Concealed.

Rectius'culus. Straitish.

Rec'tus. Strait.

RECUR'VED, *recurvat'us.* Curved downwards.

Recuti'tus. Appears as if peeled.

REFLEX'ED, *reflex'us.* Bent back, nearly or quite to touch the stem or peduncle.

REFRAC'TED, *refrac'tus.* Bent back in an angular form, so as to appear as if broken.

Reg'num vegetabile The vegetable kingdom as taken into view with the *animal* and *mineral*.

REG'ULAR, *regula'ris.* See equal.

REJECTED CLASSES Linneus distributed all plants into 24 artificial classes but his eleventh, eighteenth and twenty-third classes, are considered by many botanists, as very inconstant in their character. In the annexed Grammar of Botany, they are omitted, and the plants of each are distributed among the other classes.

The *rejected classes* being retained by Muhlenberg, Bigelow, and some other distinguished botanists, they are defined here

Dodecandria, the 11th class of Linneus.

It includes those plants whose flowers are perfect, and contain from twelve to nineteen stamens to each; as the wild ginger, purslane, agrimony, and houseleek.

Polyadelphia, the 18th class of Linneus.

It includes those plants whose flowers are perfect, and contain stamens united by their filaments in more than three parcels; as the St. John's wort.

Polygamia, the 23d class of Linneus.

It includes those plants whose flowers are perfect and staminate or pistillate on the same plant, or on different individuals of the same species; as the ginseng, itch-weed, maple tree, ash tree, and peperidge tree.

REJECTED ORDERS. Some of the artificial orders of Linneus are omitted in the annexed Grammar of Botany, and their plants distributed among other classes and orders. They are the following:

Monoгамia, the 6th order of Linneus in the class Syngenesia.

It includes those plants whose flowers are perfect and not compound, and contain stamens with united anthers; as the lobelia and touch-me-not.

Monoecia, *Dioecia*, and *Trioecia*, are the three orders of the rejected class Polygamia. The order *monoecia* includes those plants, which comprise all that is necessary for the character of the class in one plant—*dioecia*, in two plants—*trioecia*, in three plants.

The orders between *decagynia* and *polygynia*, also beyond *monadelphia*, are unnecessary. Their definitions are implied under their associate orders.

RELATIVE PROPORTIONS. When dimensions are expressed indefinitely, as long, very long, short,

large, &c. such expressions are to be understood as long, &c. compared with the proportion which similar parts usually bear to other parts, in plants generally. But when such terms are used for specific names, the proportion between the parts of species of the same genus, which were known when the names were given, are compared. Thus *Kalmia latifolia* has a broader leaf than *Kalmia angustifolia*; but it has a narrow leaf compared with any species of *trillium*.

REMO'UTE, *remo'tus*. See relative proportion.

RE'NI-FORM. See kidney-form.

REPAND', *repan'dus*. Having small sinuses, separated by teeth in the form of segments of small circles. Spread.

Re'pens. See creeping.

REPLACEMENT. Applied to a crystal when its angles or edges are wanting, and are supplied by a plane face or other angles.

Rep'tans. See creeping and runner.

Res'tans. See permanent. Remaining.

Resupina'tus. Upside down.

RETIC'ULATE. Netted. Having veins crossing each other like net-work.

RE'TI-FORM. Net-form, net-like.

RETRACTILE. When the head, or other organ, may be drawn back, as the drawing in of the head of a tortoise.

RET'ROFLEX, *retroflex'us*. Bending in various directions.

Retrofrac'tus. See refracted. Bent suddenly back.

Retror'so-denta'tus. See runcinate. Teeth bent back.

RETU'SE, *retu'sus*. Ending in a sinus generally hollowed out but very little. See emarginate.

REVER'SED. Bent back towards the base.

REV'OLUTE, *revolu'tus*. Rolled outwards. A term in foliation;

applied to leaves whose opposite margins are rolled outwards and continued rolling, till the two rolls meet on the back of the midrib and parallel to it. It is the reverse of *involute*.

Rhizosper'ma. Fruit on the root of some ferns.

RHOM'BIC, *rhom'beus*. See deltoid. Diamond-form.

Rhomboi'deus. Diamond-spot like.

RIB. A nerve-like support to a leaf.

RIB'BED. When the midrib sends off lateral ribs nearly strait to the margin. It is sometimes put for *nerved*.

Ric'tus. See gape. Opening of the mouth.

RIG'ID, *rig'idus*. Stiff, inflexible, or not pliable; or if attempted to be bent, will rather break.

RIMO'SE, *rimo'sus*. Chinked, abounding in cracks, as the outer surface of the pitch-pine tree.

RING. The band around the capsules of ferns, which is elastic. See *exanulatus*.

It is also the thin membrane attached to the stem of a fungus. When young it is attached to the pileus. It is *erect* when the upper edge is not fastened—*inverse*, when the lower edge is not fastened—*sessile*, when it is attached by one side only—*mobile*, when it may be pushed up and down—*persistent*, when it is as durable as the pileus—*fugacious*, when it disappears at the opening of the fungus.

RIN'GENT, *rin'gens*. See *labiate*. Grinning.

Ri'sing. See *assurgens*.

ROOT. The descending part of a vegetable, which enters the earth, or other substance, in search of nourishment for the plant. Roots are *annual*, *biennial*, or *perennial*. See *ages*. They are branching, fibrous, creeping, spindle-form, tuber-

ous, bulbous, or granulated. See each term in its place.

ROOT'ING. Bending or extending to the earth and striking root.

ROOT'-LEAF. See *radical*.

ROOT'LET. A fibre of a root.

Ro'ridus. Humid. Appearing as if covered with dew.

ROSA'CEOUS. A corol formed of roundish spreading petals, without claws or with extremely short ones.

Ros'cus. Rose-coloured.

ROS'TEL, *rostel'lum*. That pointed part, which tends downwards at the first germination of the seed. See *corcle*.

Rostra'tus. See *beaked*. Having a bill.

RO'TATE, *rota'tus*. See *wheel-form*.

Rotun'dus. Round. without angles.

ROUGH. Covered with dots, which are harsh to the touch, but not apparent to the naked eye. See *rugged*.

ROUND. See *rotundus*. Circular.

Ru'bra. Red.

Rubigino'sus. Rust-coloured.

Rudera'lis. Growing among rubbish about buildings, &c.

Ru'fous. Reddish yellow.

RUG'GED. Covered with invisible dots, which are harsh to the touch. See *rough*.

RUGO'SE. Wrinkled. Veins more contracted than the disk, so that the intermediate pyrenchyma rises up between them.

RUN'GINATE. Pinnatifid, with the divisions pointing backwards; as the dandelion.

RUN'NER. A shoot producing roots and leaves at the end only, and from that place giving rise to another plant.

Rupes'tris. Growing naturally among rocks.

Rutilus. Shining, bright, glossy.

S.

SABRE-FORM. See acinaciform.
SAC'ATE. Furnished with a little bag. Bag-like.
SAG'ITTATE, *sagitta'tus.* See arrow-form.
SALIFEROUS. Salt bearing. Applied to a secondary rock in which salt springs are found.
Sal'sus. Salt-tasted
SAL'VER-FORM. A monopetalous corol with a flat spreading limb proceeding from the top of a tube.
SAM'ARA. A winged pericarp not opening by valves; as the maple.
SAM'AROID. Resembling a samara, or winged capsule.
SAP. The watery fluid contained in the tubes, and cellules of vegetables, which furnishes the means, or is itself, the support of their growth and life, and their preservation from decay. That part of the sap which supplies materials for the growth, foliage and fructification, evidently ascends by way of the *camb.* See *camb.* But that, which fills the interstices among the woody fibres, and serves to preserve them from decay, is probably raised by capillary attraction. Freezing and thawing in some way or other suspends for a day or two the effect of capillary attraction. It then descends by its natural gravity; at which season only can the sap be obtained from the sugar maple. That it descends is evident from the fact, that no sap is obtained from below the incision, except a few drops at the first moment after it is made. That the sap descends from the woody fibres and not from the *camb* appears from inspection. That this sap serves only to preserve

the wood appears from the rapid decay of the wood in the sugar maple directly above the incision to the whole extent of the bole; while the incision produces but little effect below it. And the herbage of the tree with the outer layers of wood continue as flourishing after the tree has been drained of its sap annually for half a century, as its neighbours, which have never lost any sap. It may be observed further; that sap can never be drawn from the same vessels above the incision where it has been drawn in any preceding year; unless a new incision be made several feet above the old one. Nor even then, if the preceding draining had been very considerable, or, in other words, if the sugar-making season had been very favourable, and the incision large.

Sapin'dus. Having some kind of taste.

Sap'or. Having a relish, pleasant, any taste. Colour sometimes indicates the taste. White berries are generally sweet; red, sour; blue, sweet and sour; black, insipid and poisonous—Willdenow. But certainly our spicy wintergreen (*gaultheria*), partridge-berry (*mitchella*), and whortleberries (*vaccinium*) are exceptions to Willdenow's rules.

SARMENTO'SE, *sarmento'sus.* A running shoot, which strikes root at the knots or joints only. Generally applied to shrubs. See runner.

SAU'CE-FORM. Shaped like a common tea-saucer.

Scab'er, sca'brous. See rough.
Scabrit'ies. Roughness.

SCAL'LOPPED. See repand.

SCA'LY. Covered more or less with scaly appendages, as fern roots; or consisting of substances, in some measure resembling

- coarse fish-scales; as the scales of lily roots.
- Scandens*. See climbing.
- SCANSORAL. Having feet formed for climbing—two toes forward and two backward.
- SCAPE, *scap'us*. See peduncle. Flower stem from the root.
- SCAPULARS. The feathers, which descend down each side of the back.
- SCARIOUS, *scario'sus*. Dry and membranous, generally transparent.
- SCATTERED. Standing without any regular order; that is, neither opposite, alternate, nor in any definable series.
- SCHISMATOP'TERIDES. Dehiscent ferns. One of the new orders of ferns. It is adopted by Pursh, Torrey, &c. *Osmunda*, *lygodium* and *schizæa* are placed here.
- SC'ION. Shoots proceeding laterally from the roots or bulb of a root.
- SCO'RED. See sulcate. Furrowed.
- SCRAG. Back of a bird's neck.
- SCROBIC'ULATE, *scrobicula'tus*. Deep round pits on the receptacle gives it this name.
- Scutel'la*. See shields.
- Scutel'latus*. See saucer-form.
- SCYM'ITAR-FORM. See acinaciform. Cutlass-form.
- Scyph'ifer*, *Scyph'us*. Cup-bearing. See cyathiform.
- SEC'TION. The genera of some orders and the species of some genera are divided into sections. Sections judiciously constructed greatly facilitate the investigation of plants. But they often mislead; and must be sometimes disregarded, and the whole order read over; especially under those orders which are made up of natural families. See the orders *siloquosa* in the class *tetradynamia* of Linneus's system.
- Secun'dus*. Turned to one side. One-sided, one-ranked.
- SEED. The matured part of fructification, destined for the reproduction of the species. It contains the rudiment of a new plant and is analogous to the egg of animals. It consists of the corcle, cotyledons, tegument and hilum; which see.
- SEE'D-BUD. See germen.
- SEE'D-COAT. See aril. Shelly covering of seeds.
- SEE'D-LEAVES. The cotyledons expanded into leaves.
- SEE'D-LOBES. See cotyledons. fleshy part of seeds.
- SEE'D-VESSELS. See pericarp. Covering of seeds.
- SEG'MENT. The parts into which a calyx, corol, leaf, &c. is divided or cut.
- SEGREGA'TA *polygamia*. See p. 18.
- Se'jugus*. Six-paired.
- Se'men*. The seed.
- Semiamplexicau'lis*. Half clasping the stem.
- SEMICOLUM'NAR. See semiterete. Tapering half-cylinder.
- Semicylindra'ceus*. Half-cylindric. In form of a round ruler split lengthwise.
- Semiflos'culus*, SEMI-FLO'RET. See ligulate. Strap-like.
- semi-in'ferus*. Half-inferior.—When the calyx grows on the side of the germ, so that it is neither superior nor inferior.
- Semina'lis*. See seed-leaves. Cotyledonous leaves.
- Semina'tio*. The sowing of seeds.
- Seminif'era*. Bearing the seed.
- SEMIORBIC'ULAR, *semior'icula'tus*. In form of a half circle.
- Semiquinq'ue'idus*. Half 5-cleft.
- Semisagitta'tus*. Half-arrowform. That is, one side wanting; as in the *vicia pusilla*.
- semisex'fidus*. Half 6-cleft.
- SEMITER'ETE, *semiter'es*. Half terete. See terete.
- Semper'virans*. Leaving through

- the winter and retaining the leaves.
- Se'nus*. Six-fold. Growing in sixes.
- Sen'silis*, *SEN'SITIVE*. Moving on being touched. See irritability.
- Sensim*. Gradually, by little and little. Applied to a form, &c. which arises gradually from some other form.
- SENTIENT PRINCIPLE*. The knowing principle. That faculty by which animals are enabled to take notice of external objects.
- SEP'ALS*. The divisions of a calyx, or corol. *Raf.*
- SEPTIF'EROUS*. Supporting partitions.
- Seria'tus*. In a row, or in rows.
- Seric'eus*. Silky. Covered with soft close-pressed hairs.
- Seroti'nus*. Coming to maturity late in the season. Applied to willows, and to some other plants, it implies, that the time of flowering is after the leafing.
- SER'PENTINE MAR'GIN*. See *repand*. Waving edges.
- SER'RATE*, *serra'tus*. (*Serra*, a saw.) Having sharp notches, appearing as if cut, about the edge or margin, pointing towards the apex.
- SER'ULATE*, *serrula'tus*. When a serrate leaf has the teeth serrate again. It is also applied to any serratures, which are very fine.
- Sesquial'ter*. When a large fertile floret is accompanied by a small abortive one.
- SES'SILE*. Sitting down. When a leaf, flower, seed-down, pileus of a fungus, receptacle of a lichen, &c. are destitute of a petiole, peduncle, stipe, &c.
- Se'ta*. A bristle.
- Seta'ceus*. Bristle-form. Applied to antennae.
- Setig'erous*. Bearing bristles.
- Seto'sus*, *SETO'SE*. Bristly. Having the surface set with bristles, or stiff strait hairs.
- Sexangula'ris*. Six-angled.
- Sex'fidus*. Six-cleft.
- Sex'florus*. Six-flowered.
- Sex'jugus*. Six-paired.
- Sexlocula'ris*. Six-celled.
- Sex'us*, *SEX*. When Linneus first adopted the stamens and pistils as the organs of classification, he addressed his arguments to physicians, who were conversant with animal anatomy. He therefore took advantage of the analogy between animals and vegetables in the reproduction of their kind, in order to illustrate his theory. He called the stamens males, and the pistils females, &c. But nothing can be more ridiculous and disgusting than to keep up these references at this day.
- Sexval'vus*. Six-valved.
- SHAFT*. See *style*. A name for the central organ of a flower.
- SHAG'GY*. See *hirsute*. Rough tangled hair.
- SHARP*. Tapering to a point. Acute differs from sharp, as it may apply to the tip of a leaf, which becomes broad immediately back of the point.
- SHEATH*. The prolongation of a leaf down the stem, which it encloses; as in most culmiferous plants.
- SHE'ATHED*. Having a sheath.
- SHIELDS*, *scutel'lae*. That kind of receptacle of lichens, which is open, orbicular, saucer-like. The under side and border are of the substance and colour of the frond. The disk is of a different colour and substance from the border and frond, containing the seeds in extremely minute vertical cells. The shields are thick and tumid, when they are sessile; and membranous, when stalked or elevated. Very rarely they are perforated in the centre.—Smith.
- SHI'NING*. See *lucidus*.
- SHOOT*. Each tree and shrub sends forth annually a large shoot in

- the spring, called the *spring shoot*; and from the end of that a smaller one about the 24th of June, called St. John's shoot. There is always the appearance of a joint where the latter springs out, very perceptible after the whole shoot is matured.
- SHRIV'ELLING.** See withering.
- SHRUB.** A vegetable with a woody stem. It is generally put for that kind of woody plant, whose stem divides into branches near the ground, without being elevated by a bole, like trees. See tree and suffrutex.
- SHRUB'BY.** Having woody stems or branches.
- Sic'cus.** Dry, neither humid nor succulent.
- SICK'LE-FORM.** A very much curved keel.
- SIDES.** Applied to shells means the right and left, when viewed from the front, (opening side) or back.
- SIL'ICLE, silic'ula.** A little silique, whose length and breadth are nearly equal.
- SILICULO'SA.** See p. 16.
- SIL'IQUE, sil'iqua.** See p. 5.
- SIL'IQUE-FORM.** Shaped like a silique without its essential character.
- SILIQUO'SA.** See p. 17.
- SIL'KY.** See sericeus.
- SIM'PLE, sim'plex.** Undivided. Single, opposed to compound, aggregate, or branched.
- Simplicis'simus.** Very simple.
- SIN'GLE.** Only one. Also opposed to full-flowered.
- Sinistror'sum.** Twining from right to left, that is, contrary to the apparent motion of the sun; as the pole-bean.
- SIN'UATE, sinua'tus.** (*Sinus*, a bay.) Having rounded incisions. The margin hollowed out, resembling a bay; as the white oak leaf.
- SIN'UATE-SER'RATE.** Having ser-
- ratures hollowed out; as the chestnut.
- SI'NUS.** A roundish incision into the edge of a leaf or other organ.
- SIPHUNCULUS.** A canal, or succession of perforations, connecting the chambers of some univalve spiral shells.
- SIT'TING.** See sessile.
- Sit'us.** Situation; as opposite, alternate, &c.
- SLEEK.** See glabrous.
- SLEEP OF PLANTS.** The effect of night upon the external appearance of some plants; as the leaves of peas closing over the very young flowers.
- SLEN'DER.** See tenuis.
- SLOPES.** The edges of an oblique bivalve shell. *Anterior slope*, is the edge in which the ligament is situated. *Posterior slope*, is the edge in which the beaks of the shell turn forward; being the edge opposite to that in which the ligament is situated.
- Smarag'dinus.** Grass-green.
- SMOOTH.** Sometimes put for glabrous, but not synonymous with it. For glabrous means sleek or slippery; whereas smooth may be applied to fine chamois leather.
- SOBOLIF'EROUS.** Bearing shoots.
- SOL'ID, sol'idus.** Of an uniform substance, not naturally partible; as the turnip. See coated and scaly.
- SOL'ITARY, solita'rins.** Standing alone, or very distant from others of the same kind.
- Solu'tus.** Disengaged. Not adnate, or growing together.
- SOMEWHAT.** Used as a diminutive; implying in some degree, not fully. President Smith translates *sub*, by *somewhat*, when combined with an adjective; as *subtrifidus*, somewhat three-cleft.
- Somnus planta'rum.** See sleep of plants.

Sor'dide albicans. Dirty white.
So'rus and *Sore'dia*. See fruit dots. Clusters of the fruit of ferns.

Spadi'ceus. Chestnut brown.

SPA'DIX. An elongated receptacle proceeding from a spathe, or resembling such in texture and appearance.

SPAN'GLES, *patel'lulæ*. Open and orbicular, like shields, but sessile, and not formed of any part of the crust, from which they differ in colour, being most usually black. The seeds are lodged beneath the membrane that covers their disk, as in the former, and the disk is surrounded by a *proper* border. Their seeds are observed to be naked in the cellular substance of the disk, not enclosed in cases. Disk sometimes concave or flat, oftener convex, and even globose without any apparent border when in an advanced state.

Spatha'meus. A span high, or a span long.

SPA'THE. That kind of calyx, which first encloses the flower and after it expands is left at a distance below it. As daffodil, onion, Indian turnip.

SPA'THE-FORM. Resembling a spathe.

SPAT'ULATE, *spatula'tus*, or *spathula'tus*. Roundish and diminishing into a long, narrow, linear base.

SPE'CIES. The lowest division of vegetables. There have been about forty-five thousand species described. In North America about four thousand phenogamous species have been described; of these about twenty-five hundred are found to the north and northeast of Virginia. De Lamark and De Candolle make 4866 species of plants in France, including the cryptogamia. In the year 1822, in the third edition of the *Manual of*

Botany for the states north of Virginia, 3065 species were described. Common cultivated exotics and some cryptogamous plants are included in this number. About one thousand phenogamous species have been examined by Professor Ives in a wild state, within five miles of Yale College. Very few places of the same extent will afford more than eight hundred, and few less than six hundred, in the Northern States. Phelps gives a catalogue of thirteen hundred and forty phenogamous species as a complete list of all the British plants.

SPECIF'IC CHAR'ACTER. See diagnosis and descriptions.

SPECIF'IC NAME. In common use we apply this to what Linneus called the *trivial name*. The specific name he calls all those several descriptive words, which express the essential difference, or diagnosis.

The rage for changing specific names has become a great nuisance to the science. Richard proposes the establishment of a *literary tribunal*, having authority to fix the names in every department of science for the whole globe; in order to check the growth of this child of vanity and ignorance.

SPHA'CELATE. Withering, becoming blackened.

SPHAGNO'SE. Wet, mossy, swampy.

SPHERULE. Small globules of nearly a regular spherical form.

Spi'culus. See spikelet.

SPIKE, *spi'ca*. Having florets arranged along the sides of a general elongated peduncle or receptacle, without partial peduncles or with extremely short ones. As a wheat-head, or mullein.

SPI'KELET, *spi'cula*. One of the subdivisions of a spike,

SPIN'DLE-FORM. See fusiform.
SPINE, spi'na. See thorn.
SPINES'CENT, spines'cens. Becoming thorny.
SPINO'SE, spino'sus. Thorny.
SPI'RAL, spirallis. Twisted like a screw.
SPIRE Is applied to all the whorls of a univalve shell, which extend upwards above the first whorl, called the body or belly of the shell.
SPIT-POIN'TED. Barton substitutes this for cuspidate.
Spith'ama Short span. See measures
Spongio'sus. Spongy.
Spor'a. The seeds of lichens.
Sporan'ginum. A name given to the pericarp by Hedwig.
Sporangid'ium. Willdenow's name for the columella of mosses. See columella.
SPOT'TED. Having spots differing in colour from the principal part.
SPREAD'ING See patens.
SPUR. An elongated process from the base, or from near the base of the calyx or corol or nectary, somewhat resembling a horn or cock's spur. As the Larkspur, Orchis and Nasturtion.
SPUR'RED. Having a spur, or process from the base.
SPUR'RED-RY'E, or SPUR'RED-GRAIN. An enlarged, elongated seed, projecting out of a glume, of a black or violet colour, brittle texture, somewhat spur-form. It is that morbid swelling of the seed, called Ergot by the French. The black or dark coloured kind is called the *Malignant ergot*. "Large doses of which cause head-ache and febrile symptoms. Under proper regulations it may be considered a valuable addition to the present stock of medicinal agents. The dose usually administered is from ten grains to half a drachm, in decoction,"

Bigelow. The pale violet kind, called *simple ergot*, is harmless and inactive.—Willdenow.

Grain growing in low moist ground, or new land is most subject to it. Also spring grain more than winter grain; and rye more than wheat, barley or oats.

When crops are so much injured with it as greatly to injure them, the loss may be in a great measure made up by collecting the ergot, and selling it to druggists. It should be thoroughly winnowed out of the grain, as it is said to be very injurious in bread. The ergot may then be collected from the chaff.

SQUAMIFORM. Of the form of scabs or scales.

SQUAMULO'SE, squamo'sus, or squamatus See scaly.

SQUARRO'SE, squarro'sus. Ragged.

When the points of scales, &c. bend outwards, so as to make a ragged appearance. It is also used for scurfy, or when covered with a bran-like scurf.

STACHYOP'TERIDES. Spiked ferns.

One of the new order of Ferns. It is adopted by Pursh and others. *Lycopodium*, *Botrychium*, *Bernhardia* and *Ophioglossum* are placed here.

STALK. See stem.

STA'MEN. See p. 3.

STAMINATE Having stamens only, without a pistil. See p. 6.

Stamin'eus. Having no corol, the stamens serving in its stead.—Ray.

Staminif'erous. See staminate. Bearing stamens only.

STAN'DARD. See banner. Upper petal of pea-flowers.

STEL'LATE, stella'tus. Spreading out in a radiate manner. Leaves are stellate, when three or more surround the stem in a whorl. Flowers and the volva of a fungus are stellate, when the petals or segments spread out, so as to

resemble the vulgar representation of a star.

STEM. The main base or supporter of the fructification and herbage. It is either Tige, Culm, Scape, Peduncle, Petiole, Frond or Stipe; which see.

STEM-CLAS'PING. See clasping.

STEM'-LEAF. Inserted on the stem. See cauline.

STEM'LESS. Having no stem.

STEMMATA. Small globules, often lucid, resembling eyes. They are generally three in number on the top of the head.

STER'ILE, ster'ilis. Barren flower. Staminate flower.

STIFF. See rigid.

STIG'MA. The top of the pistil. It is generally moist when in full perfection, for the better reception of the pollen.

STINGS, stim'uli. Hair-like processes, which excite itching punctures; as on the Nettle. They are generally hollow with a sack at the base, containing an acrid liquor. By pushing against their points, the sacks are compressed, and thrust out the liquid.

STIPE, sti'pes. The lower part of the midrib of a fern; the stem of a fungus; or the stem of the down on the seeds of Dandelion; the stem of a germ elevating it above the receptacle; or any other stem-like organ, not otherwise particularly named.

STIP'ITATE, sti'ped, stipita'tus. Having a stipe.

STIP'ULE, stip'ula. A leaflet or scale at or near the base of a petiole, which in some respect differs from the leaves.

STIP'ULAR, stipula'ris. Formed of, or connected with, stipules.

STIP'ULED, stipula'tus, or stipula'ccous. Having stipules.

Stol'o See sucker.

Stolonif'erus. Putting forth suckers, or shoots.

STRAD'DLING. See divaricate.

STRAIGHT, or STRAIT. In nearly a right line.

STRA'ITISH. A little curving, but not sufficiently to take the appellation of curved.

Stramin'eus. Straw-coloured; straw-like.

STRAP'-FORM. See ligulate.

STRATUM. A layer. It is applied in a general or partial sense. A general stratum of rock, or of detritus, may include several partial strata. These partial strata, or sub-strata, should be called layers, to avoid circumlocution and confusion.

Stratum proligerum. The seed-bearing disk of the receptacle of lichens.

STRIAE. Marks or lines on minerals, on elytra of insects, &c.

STRI'ATE, STRE'AKED, stria'tus. Marked or grooved with slender lines.

Stric'tus. Both stiff and strait, or perfectly strait. See erect.

Strictis'simus. Very stiff and strait.

STRIGO'SE, strigo'sus. Armed with small, close, rigid bristles, which are thickest below.—Willdenow.

Strobila'ceus. In form resembling a strobile.

STRO'EILE, strob'ilus. An ament with woody scales; as the fruit of pine.

Strobilif'ormis. See strobilaceus.

STROMA. The layer or covering of some fungi.

STYLE, styl'us (Stulos, a column.) That part of a pistil, which is between the germ and stigma. It is often wanting; as in the Tulip.

Styl'oid. Resembling a style.

Sua'vis. Sweet, agreeable.

Sub. Used in combination as a diminutive. See somewhat.

SUBERO'SE, subero'sus. Corky.

SUBMER'SED, submer'sus. Growing under water.

Subter'raneus. Growing and flowering under ground. This may

- be applied to the shoots of the *Polygala rubella*.
- Sub'tus*. Beneath.
- SUB'ULATE*, *subula'tus*. See awl-form.
- Subuniflo'rus*. Generally one flowered, but sometimes more.
- Succulent'us*, *suc'cULENT*. Juicy, abounding in juice. It is also applied to a pulpy leaf, whether juicy or not.
- Suc'cus*. See sap.
- SUC'KER*. A shoot from the root by which the plant may be propagated.
- SUFFRU'TICOSE*, *suff'rutex*. An under-shrub. A plant whose branches annually die, but the lower part of the stem is woody and remains, as the *Spirea alba*, white steeple-bush; also Sage.
- Suffrutico'sus*. Undershrubby.
- SUL'cate*, *sulca'tus*. Furrowed. Marked with deep lines.
- Sulphur'cus*. Sulphur-coloured.
- Superans*. Exceeding in height.
- SUPERAX'ILLARY*. Above the axil.
- SUPERDECOMPOUND'*. See *supradecompositus*.
- SUPERFIC'IES*. See *pagina*.
- SUPER'FLUA* *polyga'mia*. See p. 18.
- Super'ne*. Upwards, towards the top.
- SUPE'RIOR*, *sup'erus*. A calyx or corol is superior when it proceeds from the upper part of the germ. See *germ*.
- Supi'nus*. Face upwards. See *resupinatus*. Upside down.
- SUPPO'RT*. See *fulcrum*.
- Supra-axilla'ris*. See *suprafoliaceus*.
- Supradecompos'itus*. More than decomposed; which see. When a petiole is divided and the divisions divided at least once more, and the last divisions have leaflets.
- Suprafolia'ceus*. Inserted above the axil, or base, of the leaf.
- Sur'culus*. A little branch or twig. Applied to the stem or shoot which bears the leaves of mosses.
- SU'TURE*, *sutu'ra*. A seam-like appearance at the meeting of two parts; as the valves of peapod, the parts of a skull, &c.
- SWIM'MING*. See *natant*.
- SWORD'-FORM*. See *ensiform*.
- Sylvati'cus*. Growing in woods.
- Sylves'tris*. Altogether wild; growing in wild woods.
- SYNGENESIOUS*. (*Syn*, together; *genesis*, springing up.) Anthers growing up together in an united tubular set. It is applied to all those plants, whose flowers are compound, having the anthers in each floret with more or less of their edges adnate; so that the whole (which are always 5) form a tube. See p. 14.
- SYNO'NYMS*, *synon'yma*. Different names for the same plant.
- SYNOP'SIS*. A condensed systematic view of a subject, or science.
- SYS'TEM*, *syste'ma*. An arrangement of natural bodies according to assumed characters; for the purpose of aiding the mind and memory in acquiring and retaining a knowledge of them, systems have been proposed in abundance. And we are still infested with system-makers and reformers, which are among the greatest evils incident to Natural Science. Any man of ordinary talents may make a tolerable system in half a day; that is, sixty systems per month. But why not adhere to that which is universally known and established? There may be improvements in the Linnean system. But let them be adopted with caution, and on the authority of the oldest and most experienced botanists.

T.

Tenia'nus. Ribbon-form. Tape-form.

TAIL. A filiform process terminating a seed, &c. As the Virgin's bower.

TAIL-COVERTS. A clump of feathers above the tails of birds, adjoining the bases.

TAIL-FEATHERS. The large feathers of the tails of birds—generally either 10, 18, 20, or 24—but 12 is the most common number.

Tale'a. Sucker.

TA'PERING. See attenuatus.

TAR'GETS, *pel'tæ*. That kind of receptacle of lichens which is flat, close-pressed, and attached to the frond by its whole underside, as if glued; sometimes attached to the bark of the frond. It is broad, kidney-form, or oblong, rarely irregular; covered with a thin coloured disk, with no border except occasionally a very minute accessory one, which seems to circumscribe it. In an early stage it is concave, and concealed by a thin gelatinous fugacious membrane, or veil.—Smith.

TAR'GET-FORM. See peltate.

TARSUS. The ankle and foot of an insect, excepting the hook or claw at the extremity.

TASTE. See sapor.

TECTRICS. Wing coverts The longest feathers of a bird's wing, next above the quills. *Minor tectrics* are sometimes found above the larger.

Tectus. Covered.

TEETH OF MOSSES. The outer fringe of the peristomium is generally in 4, 8, 16, 32, or 64 divisions, which are called teeth. See peristomium.

Teg'ens. Covering.

TEG'UMENT. The skin or bark of seeds; as appears very distinct on a boiled pea or bean.

TEM'PERATURE. The degree of heat and cold to which any place is subject. This is not limited to degrees of latitude; as high mountains in Pennsylvania produce many plants, most natural about Hudson's bay. In cold regions white and blue petals principally prevail; in warm regions red and other bright strong colours.

In the spring season white petals predominate; towards autumn the yellow are most prevalent.—Willdenow.

TEN'DRIL. That kind of appendage, which is filiform and reaches out to grasp bodies to climb by. As the climbers of grapes and peas.

Tenellus. Tender, delicate and fragile.

TENTACULA. The arms, or feelers, of insects, and of other animals.

Tenuifol'ius. Slender-leaved.

Ten'uis. Thin and slender.

Ter'es. See terete Tapering cylinder.

TER'ETE. Round, columnar, and tapering from the base to the other end.

Teretius'culus. Somewhat terete.

TERGEM'INUS, **TERGEM'INATE** Thrice paired. The petiole is forked. these branches forked, and the last branches with paired leaflets.

TERMS. Technical terms should be defined in a dictionary of each science and art. But words used in their common acceptation, whether Greek, Latin, English, French, &c. should not be defined in such a dictionary, however frequently applied in such science or art.

TER'MINAL, *terminal'is*. Proceeding from or occupying the end of a stem, branch, style, &c.

TERMINA'TIONS. In expressing resemblances it would greatly

- lengthen descriptions to introduce words drawing full-length comparisons. As a leaf resembling the form of an arrow. To avoid this, terminations united to the substantive word by a hyphen have been used; as arrow-shape, or arrow-form. I prefer the termination *form*, making the whole a compound adjective noun. There are cases where *like* becomes a convenient termination; as petal-like stigma in the Iris. Here *form* or *shaped* would be inadequate; as its resemblance consists rather in texture and general appearance, than in shape.
- TERNATE.** Three-fold. In threes. This term is also applied to compound leaves, where 3 leaflets proceed from the end of one petiole; as in the Strawberry. See biternate and triternate.
- TERRA'NEUS.** Appertaining to the earth.
- TER'REUS.** Earth-coloured.
- TES'SELATE, tessela'tus.** Chequered.
- TESTACEOUS.** Shelly, crusty. Applied to insects it generally means light brick-colour, approaching the colour of tanned sheepskin.
- TE'TER.** Having a disagreeable smell.
- TETRADYNAMIA.** (*Tessares*, four; *dunamis*, power.) See p. 13.
- TETRADYN'AMOUS.** Belonging to the class tetradynamia, or varying into it.
- TETRAGO'NUS.** Four-cornered.
- TETRAGYN'IA.** *Tessares*, four; *gune*, female.) See p. 16.
- TETRAN'DRIA.** (*Tessares*, four; *aner*, male.) See p. 12.
- TETRAN'DROUS.** Belonging to, or varying into, the class *tetrandria*.
- Tetrapet'alous.** Four-petalled.
- Tetraphyl'lus.** Calyx with four leaflets.
- Tetrapteryg'ia.** See wings.
- Tetrasper'nus.** Having 4 seeds to a flower.
- Tetræ'dra.** A 4-sided pod.
- Thalam'ia.** See hollows.
- THALLUS.** The frond of a lichen, being the bed or general receptacle whereon the proper receptacles are reposed, or in which they are imbedded.
- The'ca.** The capsules of mosses.
- The'cæ.** The frond, or whole herbage of lichens. The cases or cells containing the seeds in the disk of scutellæ and some other receptacles of lichens.
- THORN, or SPINE.** A sharp process from the woody part of a plant. It is an indurated imperfect bud, which, when the plant grows in a rich soil, changes to a branch. Pears bear thorns in a poor soil, which disappear in richer.—Willdenow.
- THREAD'-FORM.** See filiform.
- THREE'-FOLD.** See ternate.
- THRICE-PIN'NATE.** See tripinnate.
- THRICE-PINNATIFID.** See tripinnatifid.
- THROAT.** See faux. Jaws.
- Thyrsoi'des.** Flowers disposed in the form of a nosegay.
- THYRSE, thyr'sus.** See panicle.
- TIGE.** See caulis. The most common stem.
- Tincto'rius.** Plants suitable for dying or pigments.
- TOMENTO'SE, tomento'sus.** Covered with fine downy or cottony substance matted together. See lanate.
- TONG'UE-FORM.** See linguiform.
- TOOTH'ED.** See dentate.
- TOOTH'LETED.** See denticulate.
- TOP'-FORM.** See turbinate.
- TORN.** See lacerated.
- TORO'SE, toro'sus.** Protuberant. Raised in bunches or vein-like protuberances or ridges. Knobs on a toad.
- Tor'sio.** See intorsion. Turning inwards.
- Tor'tilis.** See coiled.

- TORULO'SE**, *torulo'sus*. With swelling ridges; like the muskmelon.
- Trachææ**. The air-vessels of Grew. They are spiral channels supposed by Grew to be designed for receiving and distributing air in vegetables.
- Trailing**. See procumbent. Lying or hanging down.
- TRANSLU'CENT**. Transmitting light faintly.
- TRANS'VERSE**, *trans'versus*. Crosswise. It is applied to a partition when it meets the valves of a pericarp in any other part than at the sutures.
- Trapezifor'mis**. Having four unequal sides.
- TREE**, (*arbor*.) A large woody plant. The word *large* is very indefinite; but the distinction between tree and shrub is very difficult to express. Perhaps *large* and *small*, interpreted according to the rules relating to parts under *Relative proportions*, will serve to distinguish trees and shrubs as well as an elaborate definition. These terms are not used in specific descriptions. See shrub and suffrutex.
- TRIAN'DRIA**. (*Tris*, thrice; *aner*, male.) See p. 12.
- TRIAN'DROUS**. Belonging to, or varying into, the class *trian-dria*.
- TRIAN'GULAR**, *triangula'ris*. Having three angles or corners. It is applied to a leaf with 3 points or corners.
- TRIBES**, *tri'bus*. See gentes and cotyledon.
- TRIBRAC'TEATE**. Having three bracts.
- Tricæ**. See buttons. Button-form.
- Trichot'omus**. Three-forked. See forked.
- Tricoc'cus**. A 3-seeded capsule; or rather 3-grained. It is applied to capsules, which appear as if three, of one cell and one seed each, were grown together.
- Tricuspidat'us**. Three pointed. See cuspidate.
- TRIDEN'TATE**. Three-toothed.
- Tri'duus**. Enduring 3 days.
- Trifa'rius**. Facing 3 ways.
- Trif'idus**. Three-cleft. See cleft.
- Triflor'us**. Three-flowered.
- Trifolia'tus**. Three-leaved.
- Triglo'chis**. Three-barbed. See barb.
- Trigo'nus**. Three-cornered. See triangular.
- TRIGYN'IA**. (*Tris*, thrice; *gunc*, female.) See p. 16.
- Trijugus**. Three-paired. Three-yoked.
- TRILOBA'CEOUS**, *tri'lobus*. Three-lobed. See lobed.
- TRILOC'ULAR**, *trilocula'ris*. Three-celled.
- Triner'vis**. Three-nerved. See nerved.
- Tri'nus**. Leaves in threes.
- Triparti'tus**. Deeply divided into three parts.
- Tripet'alus**. Three-petalled.
- Triphyl'lus**. Three leaflets to a calyx.
- TRIPIN'NATE**, *tripinnatus*. Having the petiole pinnated with other petioles; and this second range of petioles supporting a third range with leaflets.
- TRIPINNAT'IFID**, *tripinnatif'idus*. A pinnatifid leaf, with the divisions pinnatifid, and those latter divisions pinnatifid again. See pinnatifid and bipinnatifid.
- Triplinervis**. See trinervis. Three-nerved.
- TRIPLY-COM'POUND**. See Supradecompositus.
- Trip'teris**. Three-winged.
- TRIQUE'TROUS**, *trique'ter*. Three-sided.
- Trisper'ma**. Three-seeded.
- Tris'tis**. Dull-coloured, melancholy.
- TRITER'NATE**, *triterna'tus*. When a petiole is divided into three branches; and the branches again divided, each in three parts; and on each of the last

divisions three leaflets. See biternate.

Trival'vis. A pericarp with three valves.

Trivascula'ris. Having three cup-form cells.

TRIVIAL NAME, *trivia'liano'mina*. The name of a species, not including the descriptive terms. President Smith says, *trivial name* is now superfluous; as specific name is no longer used for the descriptive terms. See specific name.

TRUNCATE, *trunca'tus*. The end appearing as if cut off. Terminating in a straight edge, either perpendicularly or obliquely transverse.

TRUNK, *trun'cus*. The bole of a tree. See bole. It is also applied to the stem of plants not woody; and sometimes to the caudex of a root.

TUBE. The lower hollow cylinder of a monopetalous corol.

TUBERCLES, *tuber'cula*. That kind of receptacle of lichens, which is spherical or slightly conic, nearly closed, crustaceous, black; more or less immersed in the surface of the crustaceous frond, which it elevates; or sometimes it is exposed, being merely sessile. Each contains a ball, or mass, of connected seeds, destitute of cells, enveloped in a common membrane. The whole mass of seeds is at length discharged together by an orifice at the top of the tubercle. We often find these tubercles after the seeds are discharged.

TUBERCULATE, *tuber'cula*. See tubercles. This word is sometimes applied to rough points on leaves, &c.

TUBEROUS, *tubero'sus*. Roots, which are thick and fleshy, but not of any regularly globular form. They are *knobbed*, as potatoe; *oval*, as orchis and some

anemones; *Abrupt*, as the bird-foot violet; *Fascicled*, as the asparagus.

TU'BULAR, *tubula'tus*. Having a tube, or being in the form of a tube.

TU'BULOUS, TUBULO'SE, *tubulo'sus*. That corol of a compound flower, which forms a whole tube, not a ligulate floret. It is also applied to a perianth, if the whole or the lower part is a hollow cylinder.

TUFT'ED. See fascicle. In a bunch or bundle.

TU'NICATE. See coated. Covered as with a garment.

TUR'BINATE, *turbina'tus*. Top-form. A cone with the point downwards.

TUR'GID, *tur'gidus*. Thickened, swollen, but not inflated.

TU'RION, *tu'rio*. See gemmation. Budding.

TWIN. Two connected or growing together.

TWI'NING. Ascending spirally. See dextrorsum and sinistrorsum.

TWIS'TED. See coiled.

TWO-RANK'ED, OR TWO-ROW'ED. See distichus.

V.

Vagi'na. Sheath. That prolongation of a leaf, which forms a cylinder around the stem. See sheath.

Vagi'nans. Sheathing.

Vagina'tus. Sheathed.

Valva'tus. Resembling the valves of a glume.

VALVE, *val'va*. The several pieces of a pericarp, which separate naturally on ripening, are called valves. Also the leaves, or chaffs, of a glume. Each piece is called a valve. This name is sometimes applied to the scales, which close the tube in some corols.

VAL'VELET, *val'vula*. Little valve.

Varietalis. Variously coloured

VARI'ETY, *varietas*. The changes produced among plants of the same species by accidental causes; as by soil, situation, culture, climate, &c. These changes respect *magnitude, fullness of flowers, crisping of leaves, colour, taste, and smell*. If the same kind of plant can possibly be produced from the seed of other kinds, these are but varieties of the same species. All apples are but *varieties* of the same species; because if the seeds of a sour apple be planted, they will produce trees bearing sour, sweet, tart, red, green, large and small apples promiscuously. But the quince is a different species; because it cannot possibly be produced from apple seeds.

Va'sa, VESSELS. The sap-vessels of vegetables have formed the subject of much inquiry and discussion. The best summary of the various theories may be found in Smith's Elements. See sap and camb. By cutting very thin transverse segments of aquatic plants, and holding them to the light, considerable practical knowledge may be obtained on this subject.

VAUL'TED. Arched over like the roof of the mouth; as the upper lip of some labiate corals.

VEG'ETABLE. An organized substance, whose procreative organs decay before the individual dies. As in the pea; the stamens and pistils decay before the rest of the plant. It is divided into the fructification, root and herbage. See natural history.

VEG'ETABLE KING'DOM. This is the name Linneus gives to all the subjects of the science of botany. See natural history.

VEG'ETABLE SUB'STANCE. The ele-

mentary principles of vegetables are carbon, hydrogen, and oxygen; some contain nitrogen.

The *proximate principles* are very complicated, and belong to the department of chemistry.

VEIL. See calyptra, and volva.

Vel'lus. Fleecy, or a fleece. This term is also applied to that kind of clouds which float swiftly about the sky, without any strait side, and resemble an open fleece of wool. See clouds.

VEIN'ED, VENO'SE, *venosus*. A leaf with the ribs or tendinous fibres variously branched.

VENT. Aperture for the discharge of both feces and urine.

VENTRICLES. The large cavities of the heart. All animals of the classes mammalia and aves have two venticles to the heart — amphibia and pisces but one.

VENTRICO'SE, *ventricosus*. Swelling out as if blown up with wind. Or rather bellied out. See inflated.

Ventriculosus. A little ventricose.

VERMES. All avertebral animals, excepting insects.—Linneus.

Verna'lis. Coming forth early in the spring.

VERNA'TION, *verna'tio*. See foliation.

Verru'cæ. Variously formed protuberances, solid and usually smooth, on the crust of some lichens. Sometimes the receptacles grow on them.

VERRUCO'SE, *verucosus*. Warty. Having little warty knob-like substances on the surface.

VER'SATILE, *versa'tilis*. Lying horizontally and moving freely on a point. Particularly applied to anthers lying on the point of the filaments.

Ver'tex. The summit.

VER'TICAL, *vertica'lis*. Standing or hanging up and down at right angles with the horizon; or parallel to the stem.

VERTEBRAL ANIMALS. One of the four grand divisions of animals, characterised by having back bones. Avertebral animals have no back bones, as oysters, lobsters, &c.

Verticilla'tus. See whorled.

VESIC'ULAR, vesicula'ris. Containing, or consisting of, a cellular substance.

VES'SELS. See vasa.

Vexil'lum. See banner of pea-flowers.

VIBRISSAE. Smellers. Hairs of a peculiar kind, generally very stiffy, growing on or near the nostrils.

Vigilia' planta'rum. The determined hours of the day, when certain plants expand and shut their flowers. See sleep.

VILLO'SE, villo'sus. Having a superficial covering of long soft whitish hairs. The calyptra of some mosses consists wholly of a mat of hairs.

Vil'lus. Fine soft hairs.

Vi'men. A withe. A twig which is slender and flexible.

Viola'ceous. Violet coloured.

Vires'cens. Inclining to green.

VIR'GATE, virga'tus. Wand-like. Slender rod.

Vir'idis. Green.

Virgul'tum. Small twig.

Viro'sus. Nauseous disgusting smell.

VIS'CID, vis'cidus. Covered superficially with a tenacious juice.

VISCID'ITY, visco'sitas. Clamminess. Possessing an adhesive quality.

Vitel'linus. Yellow with a tinge of red.

Vitel'lus. A thin substance in the seeds of some plants, closely connected with the embryo, but never rising out of the ground with it in germination. It is never in plants with genuine ascending cotyledons; and per-

haps it may serve to perform the functions of cotyledons. It is between the albumen and embryo, when albumen is present. It composes the bulk of the seeds of mosses and ferns.—Smith.

Vit'reus. Glassy, colourless. See hyaline.

VIVIP'AROUS. Producing its offspring alive, either by bulbs instead of seeds, or by seeds germinating on the plant. It is applied to animals produced alive, not from the egg.

Uligino'sus. Growing in damp places.

Ul'na. Arm's length.

UMBEL, umbel'la. That kind of inflorescence, where several flower-stems diverge from one place, like the braces of an umbrella; bearing florets on their extremities. If these flower-stems are subdivided, a *partial umbel* is formed.

UMBELLIF'EROUS. Bearing umbels; as carrot, dill, fennel.

UM'BELLET, umbel'lula. A partial or lesser umbel.

Umbil'licus. A naval. Applied to shells, it means the perforation in the direction of the spire, as in the nerita, &c.

UMBIL'ICATE, umbilica'tus. Navelled. Having a kind of central roundish hollow or protuberance; as on the end of an apple, or of a pompion.

Umbona'tus. See bossed.

Umbrinus. Umber colour. Snuff-brown. A brown shade.

Unangula'tus. One-angled.

UNARM'ED. Having no thorns nor prickles.

Uncia'lis. As long as the thumb-nail.

UN'GINATE, uncina'tus. Hooked at the end. See hamus.

Unctuo'sus. Greasy, unctuous.

UN'DULATE, undula'tus or unda'tus. Wavy. Rising and falling, or

- extending and receding in waves.
- UN'DERSHRUB. See *suffrutex*.
- UNDIVI'DED. See *indivisus*.
- UNE'QUAL. The parts not corresponding in size, form and duration.
- UNGUIC'ULATE, *unguicula'tus*. A petal with a claw.
- Un'guis. A claw, which see.
- UN'GULATE, *ungula'tus*. In the form of a horse's hoof; as the common touch-wood, (*boleteus igniarius*.)
- Unicapsula'ris. Having one capsule to each flower.
- Un'nicus. Single. Only one.
- Uniflo'rus. One-flowered.
- Unifor'mis. All parts alike, or corresponding.
- Unilabia'tus. One-lipped.
- UNILAT'ERAL, *unilatera'lis*. See one-sided.
- Unilocula'ris. One-celled.
- UNINER'VIAL. One-nerved.
- Unisex'us. Either staminate or pistillate, not perfect.
- Unival'vis. One-valved.
- Univascula'ris. Having one cup-form cell.
- UNIVER'SAL, *universa'lis*. See partial, to which it is applied.
- VOL'VA. The ring or wrapper of some fungous plants, which contracts in size as the plant grows older; as the mushroom. Willdenow calls that the volva only, which encloses the fungus in the young state, and remains close upon the ground ever after. The ring around the stem above, he calls *annulus*. See ring.
- Volu'bilis. See twining.
- UPRI'GHT. See erect.
- URCEOLA'TE, *urceolatus*. Bellying out like a pitcher, and not contracting much at top.
- U'rens. Stinging, armed with stings.
- URN'-FORM. Swelling in the middle and contracting at the top; as the calyx of the rose.
- UROPYGIAL. Several long feathers above, on each side of the tail, differing in form from the others.
- Ustila'go. Smut in grain.
- U'TRICLES. The little bag-like reservoirs for sap, air, &c.
- Utric'ulus. A little bladder.
- Utrin'que acu'tus. Sharpening at both ends.
- glab'er villo'sus, &c. sleek, downy, &c. both sides.

W.

- WAND-LIKE. See *virgatus*.
- WATTLES. Pendant fleshy appendages under the chin of some swine and other animals.
- WA'VED, or WA'VY. See undulate.
- WEDG'E-FORM. Obovate with straitish sides.
- WHEEL'-FORM. A monopetalous corol with a spreading border, and an extremely short tube.
- WHORL'ED. Surrounding the stem in numbers at intervals; as the leaves of bedstraw, and the flowers of motherwort. It is applied to the spiral convolutions of univalve shells.
- WINGS. The two side petals in a papilionaceous corol.
- It is also applied to the membranes affixed to seeds or pericarps. *Monopterygia*, 1-winged. *Dipterygia*, 2-winged. *Triptyrgia*, 3-winged. *Tetrapterygia*, 4-winged. *Pentapterygia*, 5-winged. *Polypterygia*, many-winged.
- WITHE. See Vimen. A flexible wand.
- WHITH'ERING. Having a shrivelled and decaying appearance though not actually in a state of decay; as the flowers of elm, (*ulmus*.)
- WOOD. The most solid part of trunks and roots of trees and shrubs. It is also applied to the part of herbaceous plants between the bark and pith.

WOOD'Y. Not herbaceous.
 WOOL'LY. See lanate.
 WRINK'LED. See rugose.
 WRI'THED. See coiled. Twisted.

Z.

ZIGZAG. See flexuose.

ZOOLOGY. The science of animals.

ZOOPHYTES. Animal-plants. The radiated animals, which resemble plants in many respects. Such as the sea fan, &c.

CORRECTIONS,

To be made with the Pen.

- Page 20—3d line from bottom, "19" should be 16.
 25—5th line from top, "four" should be three.
 31—18th line from bottom, the words, SECTION I. *Flowers apetalous*, should be struck out, and printed with the pen in the space between where they now stand and the line above.
 33—18th line from bottom, the words, SECTION II. *Flowers monopetalous*, should be treated as above directed.
 39—7th line from the bottom, the words, SECTION III. *Flowers polypetalous*, should be treated as above directed.
 48—23d line from the bottom, the words, SECTION IV. *Diclinious or anomalous*, should be treated as above directed.

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