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A

MANUAL OF WEEDS,

OR THE

WEED EXTERMINATOR;

BEING

A DESCRIPTION, BOTANICAL AND FAMILIAR, OF A CENTURY
OF WEEDS INJURIOUS TO THE FARMER,

WITH

PRACTICAL SUGGESTIONS FOR THEIR EXTERMINATION.

BY E. MICHENER, M. D.

“I went by the field of the slothful; and by the vineyard of the man void of understanding; and lo, it was all grown over with thorns; nettles had covered the face thereof; and the stone wall was broken down.

“I looked upon it, and received instruction.”—*Solomon*.

PHILADELPHIA:
KING & BAIRD, PRINTERS, 607 SANSON STREET.

1872.

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TO THE
FARMERS' CLUBS,
TO THE
YOUNG, THE INTELLIGENT, THE ENTERPRISING CULTIVATORS
OF THE SOIL,
WHEREVER FOUND,

This Humble Offering is Affectionately Inscribed,

As a Tribute of Respect,

BY THE AUTHOR.

“The perfection of beauty, in a farm, consists in fertile fields, producing nothing but what is valuable to the proprietor ; with enclosures neat and strong ; and the very corners of the fences, clear of weeds and rubbish.”—(*Darlington.*)

“While the physical sciences, in every other department, are advancing with gigantic strides ; the proud profession of Agriculture, should disdain to be found loitering in the rear.—Let us then resolve to vindicate its just claims, to the rank of an intellectual pursuit.”—(*Ibid.*)

36704

ERRATA.

Want of experience in *proof-reading*; the unfamiliar technicalities of descriptive Botany; and my distance from the Printing office; have allowed a few typographical errors, to pass unnoticed. Such as have been observed, and are likely to mislead the reader, are mentioned below, and had better be corrected by him.

- Page 2, line 7, place a semicolon (;) after the word *inside*.
“ 3, “ 4, for pellate, read *pellate*.
“ “ 8, from the bottom for not, read *nut*.
“ 5, “ 9, “ “ “ for supal, read *sepal*.
“ 7, “ 13, for punctuate, read *punctate*.
“ 11, “ 6, from the bottom, place a semicolon (;) after
below.
“ 12, “ 11, “ “ “ for valvate, read *valvate*.
“ “ 9, “ “ “ for veniform, read *reniform*.
“ 21, “ 6, “ “ “ remove the comma (,) after
succulent.
“ 25, “ 5, for wooly, read *woolly*.
“ “ 9, for 5, read 3.
“ “ 16, for object, read *objects*.
“ 26, “ 7, from bottom, for pedicels, read *petioles*.
“ 28, “ 11, for alternate, read *ultimate*.
“ 33, “ last line, *per-annual* need not be italicised.
“ 40, “ 16, insert *annual*, before stem.
“ 41, “ 7, from bottom, place a comma (,) after *branched*.
“ 44, “ 14 and 16, for cilliate, read *ciliate*.
“ 47, “ 7, from bottom, *per-annual* need not be italicised.

A D D E N D A .

Page 42, line 6. “*Less common.*” The observations of the last summer require me to recall this ; and to say, that within the last year there has been a fearful increase of this, and other noxious weeds, in this portion, at least, of Chester county ; both in the fields, and along the public highways, and railroads. In relation to them, slothful indolence, and heartless indifference ; almost everywhere, reigns supreme. The highly reprehensible practice of throwing refuse weeds (Docks, Burs, &c., &c.,) into public roads, water courses, &c., &c., where they necessarily inflict serious injury, upon themselves, and others ; can not be too severely censured. Though the offenders may fail to adopt *this view* of the case ; the damage which they thus do, to a neighbor, may be greater, than what the *incendiary torch* would occasion. The *wrongs*, and *crimes*, of *omission* ; may be equally as great as those of *commission*.

SYNOPSIS OF THE MANUAL, &c.

It is not the wish of the writer, that this small, and unpretentious volume, should supersede the larger and more complete, AGRICULTURAL BOTANY, of his excellent friend, the late Dr. William Darlington. It, and the more elaborate FLORA CESTRICA, will continue to be, an honorable memento of his Botanical acumen, and scientific attainments.

To me is allotted the humbler task; to place in the hands of the young, and intelligent, culturist, whether on the farm, or in the garden, a cheap, and reliable HANDBOOK OF WEEDS.

To paint, in strong colors, a *finger-board*, which shall continually, direct his attention to the noxious plants which everywhere encumber his path.

To suggest means, based upon a practical study of the natural history, and habits, of the weeds themselves, for their successful extermination.

In the fulfilment of this important purpose, no apology will be required, for following closely, and copying largely, from the works referred to.

Nor can I too strongly recommend, to every one who desires to obtain a practical knowledge of the subject, to study, carefully, the elementary works of Prof. Asa Gray, especially his "HOW PLANTS GROW," and his "BOTANICAL TEXT-BOOK."

WHAT IS A WEED ?

Agriculture is a perpetual conflict with aggressive plants. A conflict which must ever constitute a material part of the labor necessary to be expended on a well-conducted farm. It is therefore, necessary, with a view to the economy, as well as the final success, of the operation ; that such labor should be wisely directed. Here, as elsewhere, knowledge is power. A knowledge of the general nature, and the peculiar habits, of the plant to be operated on, is indispensable, to direct the operator how, properly, to adapt the means at his disposal, to the intended purpose.

The term *weed*, as here used, is not applied to any particular plant, or assemblage of plants. All plants become weeds, in an agricultural sense, when found growing where they deteriorate other crops, needlessly exhaust the soil, or otherwise, bring loss to the agriculturist.

“Every plant, out of place is a Weed.”

Weeds may be either :

Herbaceous,	Fruticose,	or Arborescent.
Annual,	Bi-annual,	or Per-annual.
Rhizomatous,	Bulbiferous,	or Tuberiferous.

Weeds produce seeds and seeds produce weeds. The former are called seed-*ing*, the latter seed-*ling*, weeds.

The conditions, and habitudes of the numerous species of weeds, are so diversified as to require a separate study of each, in order to determine how it can be most successfully attacked. The means for their removal must not only be different, but sometimes directly opposite. Thus, the judicious use of the plow, and harrow, may effectually destroy a large majority of weeds : but there are others—

the Rhizomatous, Bulbiferous, and Tuberiferous, forms, which would be broken to pieces, separated, and widely dispersed, by such means, while each fragment left in the soil, would vegetate, and form a new plant, greatly aggravating the evil, as we shall have occasion more fully to consider.

The intelligent operator will first inquire, what is this weed? Is it an *annual*? a *bi-annual*? a *per-annual*? at what season does it *ripen* seed? has it any other mode of reproducing its kind? and *what*? what *crops* does it affect? are its fragmentary roots *vivacious*, and capable of producing new plants, when suffered to remain in the soil? when these, and similar inquiries have been duly answered, he will have learned two important lessons,

What to do, and How to do it.

To facilitate the acquisition of this knowledge, I have tabulated the species of plants embraced in this work, according to their respective duration, and other leading characteristics, which have a special relation to the means best adapted to their extermination. The plants composing each list, being analogous in these respects, may be considered as requiring the same general management: subject to such minor modifications as the habits of each species may suggest.

List No. I. ANNUALS.

The plants of this list, spring up, blossom, perfect their fruit, and perish, by the close of the first season. If prevented from ripening seeds, their destruction will be complete. This important, but plain and simple indication, can generally be fulfilled, either by tillage, by hand-

pulling, by the hoe, or by the scythe. Perseverance is always an essential element in the destruction of weeds. To this list belong:

- | | |
|------------------------------------------|----------------------------------|
| 3. Papaver dubium. | 43. Bidens bi-pinnatum. |
| 4. Argemone Mexicana. | 44. Maruta cotula. |
| 5. Camelina sativa. | 47. Erechites hieracifolia. |
| 6. Capsella bursa pastoris. | 58. Sonchus oleraceus. |
| 9. Lychnis githago. | 69. Lithospermum arvense. |
| 10. Portulacca oleracea. | 74. Datura stramonium. |
| 11. Abutilon avicennæ. | 75. Solanum nigrum. |
| 12. Sida spinosa. | 83. Chenopodium album. |
| 21. Sicyos angulata. | 84. Amaranthus hybridus. |
| 38. Ambrosia trifida. | 85. spinosus. |
| 39. artemissiaefolia. | 86. Polygonum arifolium. |
| 40. Xanthium strumarium. | 89. Euphorbia hypericifolia. |
| 41. spinosum. | 100. Cenchrus tribuloides. |
| 42. Bidens frondosum. | |
-

List No. II. BI-ANNUALS.

Plants of this division, spring from the seed, forming what is termed *seedling-plants*; but do not, usually, blossom, and produce fruit, until the second year; after which they soon perish, as the annual ones do. The indication is therefore much the same as for them. The labor may be bestowed upon the *seedling* plants of the first year, or on the *seedling* ones of the second. But where the time for operating is optional, it is much the safer, and better plan to root out the young and tender *seedlings*, than to await their more vigorous development. The work is much easier accomplished, the soil is left free from encumbrance for other crops, and if any of them should escape destruction, there is less danger from their production of seed.

It must be borne in mind, that the line between annuals, and bi-annuals, is so loosely defined, that some on either side may, occasionally trespass upon the other, by assuming its prerogative.

20. <i>Oenothera biennis</i> .	50. <i>Cirsium altissimum</i> .
22. <i>Daucus carota</i> .	51. <i>muticum</i> .
23. <i>Heracleum lanatum</i> .	52. <i>pumilum</i> .
24. <i>Arthemora rigida</i> .	53. <i>horridulum</i> .
25. <i>Archangelica atropurpurea</i> .	55. <i>Onopordon acanthium</i> .
27. <i>Aethusa cynapium</i> .	59. <i>Plantago major</i> .
28. <i>Cicuta maculata</i> .	60. <i>Verbascum thapsus</i> .
29. <i>Conium maculatum</i> .	61. <i>blattaria</i> .
31. <i>Dipsacus sylvestris</i> .	68. <i>Echium vulgare</i> .
32. <i>fullorum</i> .	97. <i>Bromus secalinus</i> .
48. <i>Cirsium lanceolatum</i> .	99. <i>Lolium temulentum</i> .
49. <i>discolor</i> .	

List No. III. PER-ANNUALS.

Plants of indefinite duration. When once matured, they continue to produce flowers, and fruit, for a series of years. In the herbaceous kinds, the leaves and stems mostly perish, annually, the root only, being per-annual, (*Rumex*, or *Dock*). In the fruticose, and arborescent forms, the leaves generally fall with the season, the more hard and woody stems being sometimes bi-annual, (*Rubus*, or *Blackberry*) and sometimes per-annual (*Rhus*, or *Sumach*).

It will be perceived that this list contains a very variable, and interesting group of weeds, which must, necessarily, require different modes of treatment for their removal. For many of them, *good tillage*, and *high farming* will be

found sufficient to control, or eradicate them. Others will require hand digging, &c.

In this list may be placed :

2. <i>Menespermum canadense</i> .	46. <i>Leucanthemum vulgare</i> .
7. <i>Hypericum perforatum</i> .	56. <i>Lappa major</i> .
13. <i>Malva rotundifolia</i> .	57. <i>Taraxacum dens leonis</i> .
14. <i>Rhus glabra</i> .	63. <i>Verbena hastata</i> .
15. <i>venenata</i> .	64. <i>urticæfolia</i> .
16. <i>toxicodendron</i> .	65. <i>Leonurus cardiaca</i> .
17. <i>Rubus villosus</i> .	66. <i>marrubiastrum</i> .
18. <i>canadensis</i> .	70. <i>Cynoglossum morissonii</i> .
19. <i>Rosa carolina</i> .	76. <i>Solanum dulcamara</i> .
33. <i>Vernonia novæboracensis</i> .	81. <i>Asclepias incarnata</i> .
34. <i>Eupatorium perfoliatum</i> .	82. <i>Phytolacca decandra</i> .
35. <i>purpureum</i> .	87. <i>Rumex crispus</i> .
36. <i>Aster ericoides</i> .	88. <i>obtusifolius</i> .
37. <i>Solidago nemoralis</i> .	90. <i>Symplocarpus fœtidus</i> .

List No. IV. BI-PER-ANNUALS.

The plants arranged in this list, really are both *bi-annual* and *per-annual*. By virtue of a *super-added* function, they combine the characters of the two divisions. They grow, produce fruit, and then die, as other bi-annuals do, but while that process is going on, they are also preparing to propagate their kind, by means of *root-stocks*, or *under-ground stems*, called *Rhizomas*. These rhizomes assume three different forms.

1. RHIZOMES proper. They are root-like stems, extending horizontally beneath the surface, provided with buds, and often, with scales, representing undeveloped leaves, and producing rootlets for their own sustenance. When

sufficiently matured, they send up stems to the surface, form a crown of leaves, and thus become, what we may call *Rhizomatous plants*, possessing all the essentials, *root stem* and *leaves*, of an independent existence; similar to seedling plants. The death of the parent root does not affect them.

2. BULBS. Which are only modifications of the rhizome, containing a germ of the new plant; and capable of complete development; but does not usually vegetate, until the next year. The major part of the bulb is composed of nutritious matter, stored away, by the provident parent, for the sustenance of the nascent germ, before its own rootlets can be made to nourish it. The kernel, or albuminous portion of seeds, is, in the same way, provided for the support of the included embryo. Bulbs are generally produced by bulb-rooted plants (*Ornithogalum*, or ten o'clock). Sometimes in the axils of the leaves (*Lilium bulbiferum*, or bulb-bearing lily). And sometimes the fructification is converted into bulbs (*Allium*, or garlic). However produced, when they vegetate, they assume the conditions of seedlings and may be called *bulbiferous plants*.

3. TUBERS. These are only another form of the rhizome, where instead of immediately developing new plants; the nutritious matter is deposited in the extremity of the root-stock, there to be preserved, to nourish the embryo, during its nascent growth, in the succeeding spring (*Solanum*, or potato). Although arranged, and developed, in a different manner, the functional conditions of bulbs and tubers, are very similar.

Hence the *bi-per-annual* plants naturally present three divisions of the list.

A. RHIZOMATOUS.

- | | |
|----------------------------|-----------------------------------|
| 8. Saponaria officinalis. | 72. Calystegia pubescens. |
| 26. Aegopidium podagraria. | 73. Convolvulus arvensis. |
| 30. Sambucus canadensis. | 77. Solanum carolinense. |
| 45. Achillea millefolium. | 78. Apocynum androsæmifolium |
| 54. Cirsium arvense. | 79. cannabinum. |
| 62. Linaria vulgaris. | 80. Aselepias phytolaccoides. |
| 67. Teucrium canadense. | 96. Cynodon dactylon. |
| 71. Calystegia sepium. | 93. Triticum repens. |

B. BULBIFEROUS.

- | | |
|------------------------------|------------------------|
| 1. Ranunculus bulbosus. | 92. Allium vineale. |
| 91. Ornithogalum umbellatum. | 93. Cyperus strigosus? |

C. TUBERIFEROUS.

- | | |
|---------------------|--------------------|
| 94. Cyperus repens. | 95. Cyperus hydra. |
|---------------------|--------------------|

The sagacious reader will perceive that the most pestiferous weeds, those most difficult to exterminate, and consequently, the most to be dreaded, obtain in this list. On further inquiry it will also appear, that their reproduction by means of rhizomes, is vastly more annoying to farmers, more difficult to contend against, than their reproduction by seeds.

The great importance of this subject may warrant some general observations, at the risk of their recurrence, in the details of the manual.

Rhizomes of every form, are very tenacious of life, and will generally bear a great deal of exposure, before they will perish.

Bulbs, and tubers, are almost as retentive of their vitality as seeds, and nuts.

Rhizomes proper, being well provided with buds, and mostly very friable; are readily broken into fragments,

when each piece which retains a bud, soon vegetates, and forms a new plant (*Cirsium*, or *Canada thistle*).

Bulbs, annually, form a corona of small *bulblets*, around the parent (*Allium*, or *garlic*). These bulblets are easily separated, and dispersed, where they speedily form new plants.

Tubers are sometimes produced even in much greater abundance (*Cyperus*, or *Coco grass*). From a kindred species of *Cyperus*, I collected 500 tubers, which were about the half of the annual product of one such tuber, planted in the spring.

A few general propositions of a practical character may not be out of place, in relation to weeds in general; but more especially, to those of the present division (*Bi-per-annuals*).

1. Never permit a noxious weed to mature, and sow, its seeds.

2. Whenever the *leprosy spot* appears, no matter whether it is measured by inches, or by acres; immediately circumscribe it, in such a way, that no process of tillage, no agricultural implements; or other means can carry its roots into healthy ground.

3. Whenever practicable, thorough hand-digging, and the destruction of the roots; should precede all other operations. Carefully watching for, and promptly removing, any remaining plants, as soon as they appear.

4. Vegetable physiology teaches, that the leaves of plants, are the essential organs of digestion, assimilation, and respiration. They are the vitalizing, life-sustaining organs of the plant. Hence it follows, as an obvious *corollary*, that the leaves, as they are the most accessible; so they are also, the most *vulnerable* part of the organism;

and presents a favorable point for the farmer to commence the work of extermination.

5. Prevent the formation of leaves, and the vital functions will soon cease to be performed. Arrest the vital functions, and the root will perish. This is the grand ARCANUM for the destruction of pestiferous, and highly vitalized weeds.

The following extract is worthy to be remembered by every farmer.

“By whatever means the foliage, or leaves and stalks of the plant, are continually, and frequently, destroyed, for one season, or two at most, during the months of June, July and September, will destroy the Canada thistle.

“It is a settled principle in physiology; that leaves are as essential to vegetables, as lungs are to animals; and that without the healthful exercise of these organs, both the vegetable, and the animal will become diseased, and ultimately die. Leaves are as necessary to the roots of plants, as roots are to the leaves. They are mutually dependent on each other; and one cannot long exist without the other. The repeated, and complete, defoliation of a plant, therefore, must soon be fatal to the roots; and an effectual mode of eradicating them.”

CALEB N. BEMENT,
Three-hills Farm, N. Y., July 4th, 1843.”
(*Farmer's Cabinet*, vol. 8, p. 87.)

6. There are various means which may be resorted to for preventing the formation, or reproduction, of leaves. These should be selected, according to their adaptability to the circumstances of each particular case. They are:

a. Garden culture. Hand-weeding, and the hoe.

b. Farm tillage. With plow, harrow, &c. Frequent stirring, and thorough pulverization of the soil.

c. Suffocation. By poisonous applications. By heavy mulching, with straw, bagasse, spent tan, &c., &c.

By high farming. Which means, heavy manuring, good tillage, and the production of an abundant growth of the grain and grass crops, so as thereby to smother out, and suffocate, all worthless and pernicious, products.

7. Other subordinate means should be resorted to, as circumstances may indicate, some of which will be noted in the progress of the work.

8. When, by watchful attention, and persevering industry, the offensive weeds have all been extirpated, a *truce* has been obtained, but the *victory* may not have been fully achieved. The soil may have been filled with the seeds of preceding years, which will very likely, vegetate, and cause renewed trouble, as the processes of tillage bring them successively to the surface, where they can feel the vitalizing influence of light and air. Hence, the necessity for continued watchfulness, and prompt action, so long as the danger exists.

FARMERS, ATTENTION!

Permit me, for a moment, to call your attention, to the **LEGAL ASPECT** of this *weedy question*.

Much anxiety, and alarm, exists at the present moment and not without abundant cause, among the more intelligent portion of the agricultural community, on account of the rapid increase, and spread, of noxious weeds, while, unhappily, the mass of the people, appear to be stolidly ignorant, and indifferent, alike, to the source, and the extent of the danger.

It is not a question merely, of individual, of local, or of agricultural interest. It is more than all these. It is national. National in all its bearings. A national disease. A national nuisance. A depreciation of the value of the national property, and consequently, must lessen the national resources.

A dreadful leprosy is rapidly spreading its deadening pall, over the agricultural interests of the country. Whole districts of our best lands, north, and south, have already, been rendered comparatively valueless, and unproductive, by the negligence, and supineness of their owners, in suffering them to become infested, and overrun, with pernicious weeds. Nor is this the extent of the mischief. Those foul lands, necessarily become the pestiferous centres, from which the loathsome malady is continually infecting the healthy districts around them, despite all the efforts of the owners to ward off the disease.

As the land is properly the basal representative of national greatness; so the products of the soil must represent the national resources. It must, therefore, be the duty, as it obviously is, the interest, of the nation, to

maintain, with sedulous care, the health, and the integrity, of its agriculture, and protect it against every contamination.

The tardy arm of the law, has been invoked for this purpose, but with small benefit. Law, to be effectual, must not, merely, confer the power to act, upon its agents; it must also, provide for them, the means for executing it. It is not likely, therefore, that any law will afford much relief, in the premises, until the State, and national *powers*, and *resources*, can be brought into requisition.

Our cities assert the right, and resolutely exercise it, to protect themselves against the invasion, and spread, of diseases, by means of quarantine laws, the abatement of nuisances, the rigid enforcement of hygienic regulations, and even the forcible exclusion of the occupants from their own premises, if occasion should require.

The farmers of a district possess the same rights, why should they not be allowed to exercise them? It is time for them to assert their claims to justice. It is time for them to demand the establishment of an AGRICULTURAL BOARD OF HEALTH in every district, invested with *ample powers*, and *resources*, to maintain a *healthy* agriculture. The subject may be *difficult*, but the difficulty is not equal to the *dangers* which threaten us. Let us act deliberately, cautiously, wisely, but with a determination that will insure redress.

The *sale* of impure seed, and grain, for sowing, is productive of much difficulty, and loss to the purchaser. It may be necessary to provide *inspection of seeds*, before they are allowed to be sold.

A *farm*, stocked with *Canada thistle* or other noxious weeds, in an agricultural district, is a horrible nuisance, both public, and private. It may be necessary to concen-

trate the *resources of the district* for its thorough cleansing.

The *sluggard occupant*, I will not call him "farmer," is often a worse nuisance, to neat farmers, than his foul, and neglected, fields. It may be necessary, to *remove him*, temporarily from his premises, and to place them in the hands of an *agent*, till they are fully ventilated, and cleansed from the infection. And the question may even arise, whether the agent shall receive his compensation out of the premises, or from some more general resources.

You may call these suggestions *bold*, what you please, but do not call them "*utopian*." They are not so. They are founded upon the solid, and universally acknowledged basis of equal, and reciprocal, rights, which underlie, and sustain, all rightly constituted, social, and political, organizations.

HAND BOOK OF WEEDS;
OR
WEED EXTERMINATOR.

SERIES I. Phænogamous; or Flowering Plants.

Vegetables bearing proper flowers, with stamens and pistils, and producing seeds, which contain an embryo, or rudimentary plantlet.

CLASS I Exogenous; or Dicotyledonous Plants.

Stems formed of distinct bark, wood, and pith; leaves mostly netted-veined; embryo with 2 (rarely more), opposite cotyledons.

SUB-CLASS I. Angiospermous; Exogenous Plants.

Pistil a closed ovary, containing ovules, and becoming the fruit; pollen applied to a stigma; cotyledons 2.

DIVISION 1. Dyalypetalous; Exogenous Plants.

Floral envelopes consisting, generally, of both calyx, and corolla, with the petals mostly distinct.

Order I. RANUNCULACEÆ.

Herbs, or woody vines, with a colorless, and often acrid, juice; leaves usually dissected; stipules none; petals sometimes wanting; and the calyx corolla-like, hypogynous; the sepals, petals, numerous stamens, and many, or few, (rarely single) pistils, all distinct, and unconnected; seeds with firm, fleshy albumen; embryo minute.

Tribe 1. RANUNCULEÆ.

Sepals imbricated in the bud; petals conspicuous, flat; carpels numerous, 1 seeded; stem-leaves alternate. Mostly per annual herbs.

Genus I. RANUNCULUS.—Linn.

Sepals 5; petals usually 5, mostly longer than the sepals, each with a little scale, or pit, at base, inside carpels in a head, compressed, pointed.

* Leaves ternately divided; petals longer than the sepals.

1. R. BULBOSUS.—Linn. Butter-cups. Crow-foot.

Hairy; stem erect, from a solid bulb; radical leaves 3 parted, the terminal division petiolulate; peduncles sulcate; calyx reflexed.

Per-annual. Stem 9 to 15 inches high, often cespitose, more or less branched; radical leaves ternate, and quinately pinnate, on petioles 2 or 3 to 6 inches long; stem leaves deeply, and pinnatifidly, incised; peduncles terminal, or opposite the leaves, 1 to 4 inches long, furrowed and angular; carpels with a short recurved beak.

Hab. In meadows. Exotic. *Fl.* May. *Fr.* July.

Obs. This, together with several co-ordinate species, have been introduced, and are gradually coming to be pernicious, and intractable, intruders. *R. bulbosus* is mostly observed in low grounds, along streams; and often in cultivated lots. There is a strong family resemblance of the species—so that a knowledge of one sort may lead to an acquaintance with all. The bulbous root, no doubt, makes this species more tenacious of life. Two crops of oats in immediate succession—or keeping the soil constantly stirred, so as not to allow any leaves—or lungs—to be

formed—are perhaps the most efficient means for its extermination.

Order II. MENESPERMACEÆ.

Suffruticose climbers; leaves pellate, or palmate, alternate, without stipules; sepals, and petals, similar, in 3, or more series, imbricated in the bud, hypogynous; polygamo-dioicous; pistils 3 to 6; fruit a drupe, seed 1, with a large, curved, embryo, and little albumen.

Genus II. MENESPERMUM.—*Linn.*

Flowers dioicous; sepals and petals, arranged in fours, in 2 or 3 series; stamens 12 to 20; anthers 4 celled; pistils 2 to 4, somewhat stipitate; drupes roundish reniform.

2. M. CANADENSE.—*Linn.* Moon-seed.

Leaves peltate near the base, 3 to 7 angled, or sub-lobed; flowers in axillary, paniculate, racemes.

Per-annual. Stem 3 to 15 feet long, slender, nearly simple, twining, or climbing over bushes, &c.; leaves 3 to 5 inches long, rather wider than long, sub-cordate at base; petioles 3 to 4 inches in length; flowers small, of a dingy, yellowish-green, tinged with purple; petals 8, smaller than the sepals; drupes black, with a bloom, when mature; not wrinkled, lunate.

Hab. In thickets, fence-rows, &c., rare. *June. Sept.*

Obs. The tempting, grape-like, fruit of this plant, renders it dangerous to children, who have sometimes lost their lives by eating of it. This will not seem strange when it is known that it is congeneric with the famous *Cocculus Indicus*, so much used for poisoning *fish*, and *whiskey drinkers*. It should be carefully exterminated.

Order III. PAPAVERACEÆ.

Herbs with a milky, or colored juice; flowers regular, polyandrous, hypogynous; sepals caducous; fruit mostly a 1 celled pod, or capsule, with 2, or more parietal placenta, which sometimes form imperfect partitions; seeds numerous, often crested; embryo small, at the base of fleshy, and oily, albumen.

* Juice white; seeds not crested.

Genus III. PAPAVER.—*Linn.*

Sepals mostly 2; petals 4; stigmas 4 to 20, sessile, united in a flat, radiated crown, on the summit of the ovary; capsule obovoid, with imperfect partitions, opening by chinks, or pores, under the edge of the stigmatic crown.

3. P. DUBIUM. *Linn.* Field poppy.

Leaves pinnatifid, hairy; peduncles clothed with appressed bristles; capsules clavate, smooth.

Annual. Stem 1 to 2 feet high, somewhat branching; leaves 2 to 5 inches long; flowers dull red, on flexuous peduncles 6 to 12 inches in length, nodding before they expand.

Hab. In fields. *Exotic.* *May.* *July.*

Obs. This little foreigner is rather pretty in the flower garden, but looks out of place in fields of grain and clover.

In such locations, *hand weeding* seems to be the only available means to eradicate it. It being an annual, the high cultivation of the grasses, will very much smother it out. The plant so much cultivated for the production of *opium*, belongs to this genus.

Genus IV. ARGEMONE.—*Linn.*

Sepals mostly 3, aculeate; petals 4 to 6; stigmas 3 to 6;

sub-sessile, radiately reflexed; capsule muricate, 1 celled, opening at apex by 3 to 6 valves;—seeds reticulate, with the raphe naked.

4. A. MEXICANA.—*Linn.* Prickly Poppy.

Leaves blotched with white, obovate-oblong, sinuate-lobed, with prickly teeth; juice yellow.

Annual. Stem about 2 feet high, branching; leaves 3 to 5 inches long, sessile, and sub-amplexicaule; flowers yellow, on leafy peduncles, or branches; sepals cucullate at apex, and terminated by a stout spine.

Hab. About gardens. *Fl.* June. *Fr.* Aug.

Obs. This coarse and forbidding Mexican weed has become very common, further south, and has extended its migration to Africa, Asia, and the South Sea Island. It is not very common with us, but without close watching may yet cause us much trouble. When plants possessing such *familiar habits*, are introduced into the flower garden, great care should be taken that they do not exceed their allotted bounds.

Order IV. CRUCIFERÆ.

Herbs with a pungent, watery juice; leaves alternate without stipules; flowers corymbose, or racemose; pedicels without bracts; sepals 4, deciduous; petals 4, cruciate; stamens 6, tetradynamous; fruit a silique or silicle; seeds without albumen; embryo mostly curved; the cotyledons bent over, with either their edge, or back, to the radicle.

Tribe I. CAMELINEÆ.

Silicle obovoid, or oblong; septum broad, parallel with the valves; cotyledons plane, incumbent, contrary to the septum.

Genus V. CAMELINA.—*Crantz.*

Silicle obovoid, or pyriform, turgid, mucronate, dehiscent, and splitting the style; seeds numerous, oblong, not margined.

5. C. SATIVA.—*Crantz.* **Wild Flax. False Flax.**

Leaves oblong-lanceolate, sagittate, sessile; silicles inflated, margined.

Annual. Stem 2 feet high, paniculate at summit, leaves 2 to 4 inches long; racemes corymbose-paniculate elongating; flowers pale-yellow, inconspicuous; style about half as long as the silicle, persistent, splitting with the dehiscent valves; seeds reddish-yellow.

Hab. In fields. Exotic. *June. July.*

Obs. This was once a common weed among flax; and by being often thrown down when gathering the crop, the soil became so filled with it, as in some localities, to cause much trouble. It was long, a vulgar notion that this plant, and the flax-vine (*Cuscuta epilina*) were both degenerate flax, and liable to be produced, at any time, by the application of ashes to the soil. I learn that it has become very troublesome in the northwestern parts of this, or the adjoining parts of Lancaster county.

Tribe 2. LEPIDINEÆ.

Silicle compressed contrary to the narrow septum; valves strongly boat-shaped, or keeled; cotyledons plane, mostly incumbent, parallel with the septum.

Genus VI. CAPSELLA.—*Vent.*

Silicle obovate-truncate; valves not winged; seeds numerous, oblong; cotyledons incumbent.

6. C. BURSA PASTORIS.—*Moench.* **Shepherd's Purse.**

Radical leaves mostly pinnatifid, stem-leaves sagittate, sessile.

Annual. Stem 4 to 18 inches long, often branched, more or less hirsute; radical leaves 2 to 8 inches long; racemes at first corymbose, finally much elongated; flowers white.

Hab. Fields and gardens. *Exotic.* *April. June.*

Obs. Being an annual it is only necessary to prevent the seeds from ripening. High farming is the remedy.

Order V. HYPERICACEÆ.

Herbs, or shrubs, with a limpid or resinous juice; leaves opposite, entire, punctuate, without stipules; flowers regular, hypogynous, polyadelphous; petals mostly convolute; capsules 1 celled, with 2 to 5 parietal placenta, and as many styles, or 3 to 5 celled, by the meeting of the placenta in the center; dehiscence septi-cidal; seeds numerous, with little, or no albumen.

Genus VII. HYPERICUM.—*Linn.*

Sepals 5, nearly equal; petals 5, oblique, or unequal sided; stamens united in 3 to 5 parcels, without interposed glands; capsule 1 to 3, or 5 celled; flowers yellow. Herbs or shrubs.

7. H. PERFORATUM.—*Linn.* **St. John's Wort.**

Stem somewhat ancipital; corymb-paniculate, leafy; leaves linear-elliptic, sessile; styles diverging.

Per-annual. Stem 1 to 2 feet high, often several from the same root; leaves an inch, or inch and half long,

rather obtuse, with numerous pellucid, puncture-like perforations.

Hab. In grass fields. Exotic. *June. July.*

Obs. Dr. Darlington says of this worse than worthless weed--“It was formerly supposed to be the cause of scabs, and cutaneous ulcers, among cattle; especially, *white* cows, and horses, and those with white feet, and noses. The fact was taken for granted, by the farmers; but it must be confessed, that although *the plant continues to be abundant*, the disease has nearly, if not entirely, disappeared. It may be worthy of remark, that in the year 1842, the St. John's Wort failed, entirely, to make its appearance, (in this county, and I believe, throughout Pennsylvania), even in fields where it had been most abundant. The succeeding year, it was quite rare, but has since become *about as common as ever*, in neglected fields. Why a *perennial* plant should have been thus affected, seemed rather mysterious.”

My observations do not exactly coincide with those of my friend. In 1841 there was a field in the Toughkenamon Valley, in which the grass had failed. As the summer advanced, one half of the field was so overgrown with this weed, as to be quite a conspicuous object, at the distance of half a mile, from its bright yellow color. When the field was mowed, in that portion, the swaths were of respectable size, but were not thought worth gathering. Here were acres, closely set with perennial roots; but in the next season (1842) not a plant was seen to spring up. Nor has there ever been any appreciable quantity up to the present time; either in that field, or in the surrounding neighborhood. Our good housewives have hardly been able to find enough St. John's Wort, for the last 30 years, to keep up a supply of “Red Oil”

for their corns, and burned fingers. May not the farmers have been right? And may not the disease of *white-skinned* animals have disappeared, only as the producing cause ceased to operate?

This noxious weed, cannot always be made amenable to the scythe, and the plough. In grass, the seed, too often ripens before it is cut. It may still be hand pulled and may be very much crowded out by promoting a thick, and vigorous growth of grass. Try it.

There are two or three other objectionable species in this order; but to become acquainted with one is to know them all.

Order VI. CARYOPHYLLACEÆ.

Herbs; stems nodose, usually tumid at the nodes; leaves mostly opposite, and entire, often sub-connate, rarely stipulate; flowers symmetrical, terminal, of 4 to 5 parts, the petals sometimes wanting; stamens as many, or often twice as many, as the sepals; styles 2 to 5; capsule 2 to 5 valved; seeds attached to the base, or central column of the capsule; embryo curved around the outside of mealy albumen.

Sub-order 1. Sileneæ.

Sepals united into a tubular calyx; petals 5, each with a long slender claw, inserted, with the stamens on the stipe (corpore) of the ovary; capsule partially 2 to 5 celled; stipules none.

* Calyx 5 toothed; petals sometimes crowned.

Genus VIII. SAPONARIA.—*Linn.*

Calyx cylindric; stamens 10; styles 2; capsules partly 2 celled at base, opening with 4 teeth, at apex.

8. S. OFFICINALIS.—*Linn.* Soap-wort.

Leaves oval-lanceolate ; flowers in corymbose fascicles ; petals crowned at throat.

Per-annual. Stem 12 to 18 inches high ; leaves an inch and a half to 3 inches long ; flowers pale red, or reddish white ; often becoming somewhat double.

Hab. About gardens. Exotic. *July. August.*

Obs. None but the negligent need to suffer from the incursions of *Bouncing Bet* upon their precincts.

* Calyx with 5 elongated, foliaceous segments.

Genus IX. LYCHNIS.—*Tourn.*

Calyx ovoid-oblong, coriaceous ; stamens 10 ; styles 5 ; capsule half 5 celled, opening with 5 or 10 teeth at summit.

9. L. GITHAGO.—*Lam.* Cockle. Rose Campion.

Hairy ; leaves lance-linear, acute ; petals obovate emarginate, not crowned.

Annual. Plant greyish, or glaucous green. Stem 2 to 4 feet high, dichotomously paniculate at summit ; leaves 3 to 5 inches long sessile, connate by a scabrous membrane ; flowers violet purple, on stout leafless peduncles, 4 to 8 inches long.

Hab. Fields, among wheat. Exotic. *June. July.*

Obs. Though diligently rooted out by all neat farmers, this foreigner obstinately maintains its ground in our grain fields. The remedy is *vigilance*. Though it is given as an *annual* plant it assumes to be *bi-annual* in our fields.

The means for its destruction are :

1. Sow clean seed.
2. Eradicate the plants as they appear. This may be

very effectually done in early spring. Those which remain should be carefully pulled, as the blossoms make their appearance. Do not, by any means "let both grow together, until the harvest." The parable was not intended for the *Lychnis githago*. If left till harvest the seeds are ripe, many of them are shed, in the field, where they remain in the soil, patiently awaiting the rotation of another wheat crop; while those taken to the barn remain among the wheat, or perhaps fall into the barn-yard to be returned to the field.

For forty years it has been my lot to inherit, after indolent cultivators; and to contend against the weeds which they had planted. I found it very convenient to have—and was seldom without—a *brush-heap*, as a place of deposit for seeding weeds; where they could be occasionally burned. Let every farmer do likewise.

Order VII. PORTULACCACEÆ.

Herbs; leaves entire, succulent; flowers regular, but unsymmetrical, viz., the sepals fewer than the petals; stamens opposite the petals, or more numerous; capsule 1 celled, few, or many, seeded; embryo curved around mealy albumen.

Genus X. PORTULACCA.—*Tourn.*

Sepals 2, united, and adhering to the ovary, below petals mostly 5, perigynous; stamens 8 to 20; styles 3 to 6, or 8, united at base; capsule circumscised, many seeded.

10. P. OLERACEA.—*Linn.* Common or garden Purslane.

Prostrate, smooth; leaves cuneate oblong, obtuse; flowers sessile.

Annual. Stem 6 to 12 or 15 inches long, terete, fleshy, purplish, branched; leaves half an inch, to an inch long, thickish, and fleshy, sub-sessile, alternate and opposite; flowers yellow, in small clusters, axillary, and terminal.

Hab. Garden, cultivated grounds. Exotic. *July. Sept.*

Obs. This humble intruder, is rather late in coming; but compensates for the loss of time, by a precocious development of flowers, and speedy maturation of seeds, in a continuous succession, as long as life continues. So great is the succulence of the *Purslane* that it will continue to perfect its seeds long after separation from its parent root. A day's sun will hardly wither the plant, but may ripen and shed many of its seeds. When pulled, or hoed, the inference is to remove it, immediately to a safe place of deposit. Hogs who are kept penned eat it eagerly.

Order VIII. MALVACEÆ.

Herbs, or shrubs; leaves alternate, stipulate; flowers regular; the calyx valvate; the corolla convolute, in the bud; stamens numerous, monadelphous in a column, the anthers 1 celled, veniform; seeds with little albumen; embryo curved, the foliaceous cotyledons variously doubled up.

* Calyx naked at base.

Genus XI. ABUTILON.—*Tourn*

Carpels mostly numerous, verticillate, and coherent, forming a compound capsule, spreading at summit, where each splits open along the inner edge; seeds about 3 in each carpel.

11. A VICENNÆ.—*Gertn.* Indian Mallow. Velvet-leaf.

Leaves orbicular-cordate, acuminate, velvety; peduncles axillary, shorter than the petioles.

Annual. Stem 2 to 5 feet high, branched; leaves 4 to 6 or 8 inches long, nearly circular, with a closed sinus, and slender acumination; petioles 3 to 5 inches long; stipules subulate, caducous; flowers yellow; carpels about 15 in a campanulate, truncate head, with oblique, radiating beaks at summit.

Hab. Cultivated grounds. Exotic. *July. Aug.*

Obs. This large, troublesome weed, being an annual may be readily kept in subjection. But the attempt often fails from the neglect of very small plants, which in this species, frequently produce seed when only a few inches high. When permitted to mature the plant is very prolific. It is a reproach to any farmer where it is found.

Genus XII. SIDA.—*Linn.*

Carpels 5 or more, 1 seeded, separable at maturity, each opening at summit; flowers perfect.

12. S. SPINOSA.—*Linn.* Spinose Sida.

Leaves ovate-lanceolate, with a sub-spinous tubercle at the base of the petiole.

Annual. Stem 9 to 18 inches high, slender, with a few spreading branches, near the base; leaves about 2 inches long, serrate-dentate; petioles half an inch, to three quarters in length; stipules filiform; flowers yellow; peduncles about half an inch long, 1 to 2 in each axil, articulated near the flower.

Hab. Road sides. India. *July. Sept.*

Obs. This small wiry looking weed, is entirely worthless, and should not be permitted to increase. I have

recently seen it quite injurious to a potato crop, from sheer negligence.

* Calyx involuclate at base.

Genus XIII. MALVA.—*Linn.*

Involucl mostly of 3 linear bracts; carpels numerous, verticillately arranged in a depressed orb, each mostly 1 seeded, and indehiscent.

13. M. ROTUNDIFOLIA.—*Linn.* **Running Mallow.**

Procumbent; leaves cordate-orbicular, obtusely 5 lobed, lobes crenate-dentate; flowers small.

Per-annual. Stem 9 to 18 inches long, branching only from the root; leaves 1 to 3 inches long; petioles 2 to 6 or 8 inches in length; flowers reddish-white, with purple veins; peduncles axillary, mostly in pairs, 1 to 2 inches long, unequal bent down in fruit.

Hab. Yards and fields. Europe. *May. Aug.*

Obs. This troublesome weed is frequent about farm building, reaching to the garden, and cultivated lots. In such places, when allowed to shed its seed, it requires the active use of the hoe, to eradicate it.

Order IX. ANACARDIACEÆ.

Shrubs and trees; with a resinous, or milky, acrid juice; leaves alternate, mostly compound, without stipules; flowers regular, pentandrous, small, often polygamo-dioicous; ovary (by abortion) 1 celled, and 1 ovuled, but with 3 styles, or stigmas; seeds without albumen.

Genus XIV. RHUS.—*Linn.*

Sepals 5, connected at base, persistent; petals 5, inserted with the stamens, on, or under the edge of a flattened disk; fruit small, a sort of dry drupe; common petioles enlarged at base, covering the buds of the ensuing year.

* Leaves odd pinnate.

† Young branches smooth.

14. R. GLABRA.—*Linn.* Common Sumach.

Leaflets lance-oblong, acuminate, serrate, whitish beneath.

Per-annual. Juice copious, milky; stem 3 to 8 feet high, irregularly branched, branches stout, with a large pith; leaflets 2 to 4 inches long, 10 to 15 pairs with a terminal one, turn to crimson in autumn; flowers yellowish-green, in dense, ovoid, terminal, panicles; fruit densely villous, finally bright purple, and sharply acid.

Hab. Fields and fence-rows. *June. Sept.*

Obs. This straggling, unsightly shrub still holds a place in the neglected fields of slovenly, would-be farmers. The birds probably disperse the seeds, as seedling plants may quite frequently be met within the grounds of tidy agriculturists.

A closely allied species, *R. Copallinum Linn*, sometimes called *dwarf sumach*, though often taller than *R. Glabra*, is frequently seen in unimproved lands.

15. R. VENENATA.—*D. C.* Swamp, or Poison Sumach.

Leaflets obovate-oblong, abruptly acuminate, the margin very entire, and slightly revolute.

Juice resinous; stem 10 to 20 feet high, branching above; leaflets 2 to 3 inches long, 4 to 6 pairs, with a terminal one; flowers greenish, in sub-terminal, and axillary

panicles; fruit smooth, and shining, pale yellowish-green, larger than in any of the preceding.

Hab. In swamps, and watery places. *June. Sept.*

Obs. This grows to be quite a tree. Its extremely poisonous properties renders it necessary that all should know it. For the want of this knowledge, many severe accidents have occurred

* Leaves ternate.

16. R. TOXICODENDRON.—*Linn.* **Poison Vine. Poison Ivy.**

Per-annual. Stem erect, or climbing by radicles; leaflets obliquely ovate, or rhomboid, acuminate entire, or angularly dentate.

Juice resinous; in the *erect variety* (Poison Oak), 2 to 6 feet high; with leaflets larger, and variously toothed, or lobed. In the climbing variety, the stem reaches 50, perhaps a 100 feet, ascending tall trees by means of rootlets; leaflets 3 to 5 inches long; flowers yellowish-green, in slender racemose, axillary panicles; fruit dry, smooth and shining, pale brown.

Hab. Woods, fence-rows. *May. Sept.*

Obs. Though less virulent than the preceding species, it is capable of poisoning many persons severely, and ought to be sedulously extirpated from fields and fences.

Very many persons, not discriminating between them, confound the *poison vine* with the *American ivy* (*Ampelopsis quinquefolia*). The distinction is very obvious. The poison vine has ternate leaves, that is 3 leaflets on the common petiole; while the American ivy has *quinate* leaves, that is 5 leaflets on the common petiole.

Order X. ROSACEÆ.

Trees, shrubs, or herbs. Leaves alternate, stipulate; flowers regular; stamens distinct, inserted on the calyx, mostly numerous; pistils 1 to many, free, or combined with the calyx tube; seeds 1 or few in each ovary; without albumen; radicle straight.

Sub-order. Rosaceæ proper.

Herbs, shrubs, or trees; leaves simple or compound; ovaries many or few, rarely single, free from the calyx, but sometimes included in its persistent tube; fruit either follicles, akenes, or little drupes; styles terminal or lateral.

Tribe. Dryadeæ.

Pistils becoming dry akenes, or sometimes little drupes, in fruit; when numerous, collected on a conical, or hemispherical, receptacle, calyx-tube dry, segments mostly valvate.

Genus XV. RUBUS.—Linn.

Calyx 5 parted, without bractlets at the clefts; petals 5; stamens numerous; pistils crowded on a convex, or oblong, spongy receptacle, and becoming small drupes; leaves mostly compound; flowers generally white, and the fruit edible. Perennial suffruticose plants.

* Fruit ovoid, or oblong, persistent on the juicy receptacle; leaves pedately 3 to 5 foliate.

† Stem erect, armed with stout prickles.

17. R. VILLOSUS.—Ait. Common Blackberry.

Stems angular; young branches, and racemes, glandu-

lar-villose ; leaflets ovate, and lance-oval ; racemes many flowered.

Bi-per-annual. Stem 3 to 8 feet high, stout, ridged or obtusely angled, branching ; leaflets 2 to 4 inches long : racemes rather large, sometimes leafy ; fruit ovoid oblong, or cylindrical, sometimes near an inch long, changing from green to red, or purple, finally black.

Hab. Fields, woods, &c. *May. July.*

Obs. To those who have a place for every thing, and can keep every thing in its place, the *blackberry brier* is a valuable acquisition ; but when out of place it comes to be a great nuisance, and requires careful eradication. Although all persons must have had some knowledge of this weed scratched into them, yet very many have not yet learned a peculiarity in its habits, not often observed in other genera. While the *root is per-annual* the *stem is strictly bi-annual*. The canes of last year produce their fruit in this, and provide a successor for the next. *It is bi-per-annual.*

‡ Stems procumbent ; prickles shorter.

18. R. CANADENSIS.—*Linn.* Running brier. Dewberry.

Stems trailing, fruticose, smoothish ; leaflets ovate, acute, thin ; fruit large, sweet.

Per-annual. Stem 3 to 10 feet long, slender, often several from the same root, running in different directions and giving off numerous, pubescent, leafy, flowering branches, which are nearly erect, and 2 to 6 inches high ; leaflets mostly ternate, an inch to inch and half long ; flowers somewhat corymbose on the short branches ; fruit oblong, or roundish, half to near an inch in diameter, black when mature, and very sweet.

Hab. In fields. Very common. *May. July.*

Obs. Of the fruit of the *Running brier* there is not much complaint; but the brier, when once established, is a great pest to the farmer, rendered doubly so by the difficulty of exterminating it. Why this difficulty? Let us see. The farmer ploughs his field, expecting to kill the *briers*; but they grow among his corn. He again ploughs, and they grow among his oats. He ploughs once more, and they grow among his wheat. And they continue to grow among the succeeding grass; perhaps more numerous than before. Why so? Not, I believe, owing to any unusual tenacity of life in the root, but first to the ploughing. With a *dull* share, and *shallow* furrow, the plough will probably *run round* more roots than it will *cut off*, and the runners will be left buried in the soil; they were ploughed *down*, instead of *up*, which was a grave mistake. Secondly, to the faculty of the detached stems to take root, when properly buried in the soil. This *planting* is very neatly done by the plough; a stem is caught and stretched on the land side, its whole length, and the next bout buries it under the furrow-slice, where the after tillage cannot drag it out. The plain inference is that the stems should be removed *before* plowing; and the roots *after* that process. Good tillage, and hand digging before ploughing is the true method.

Tribe Roseæ.

Pistils numerous, inserted on the hollow receptacle, which lines the fleshy calyx tube; calyx segments imbricated, often foliaceous at apex.

Genus XVI. ROSA.—*Tourn.*

Calyx-tube urceolate, finally berry-like; petals 5;

stamens numerous, inserted with the petals, on the rim of the calyx-tube; styles nearly included; ovaries distinct, hirsute, becoming bony akenes; leaves odd-pinnate; stipules adnate to the petiole. Shrubby, and prickly.

19. R. CAROLINA.—*Linn.* **Swamp Rose.**

Stem-prickles stout, recurved; flowers in terminal corymbs.

Per-annual. Stem 4 to 6 feet high, with numerous purple branches; leaflets mostly 5 or 7, 1 to 2 inches in length, generally elliptic-lanceolate; flowers red, or purple; fruit (that is the fleshy, or berry-like calyx tube, called a hip) depressed globose, somewhat glandular-hispid, dark red, and shining, when mature.

Hab. Moist grounds. *June.* *Sept.*

Obs. It lacks the enchantment of the rose, but possesses the repugnance of the brier; let it be rooted out.

Order XI. ONAGRACEÆ.

Herbs; leaves alternate, or opposite, simple, without stipules; flowers mostly tetramerous; calyx-tube adherent to the 2 celled ovary, its lobes valvate in the bud, or obsolete; petals convolute in the bud; stamens as many, or twice as many, as the petals, or calyx-lobes.

Sub-order. Onagraceæ proper.

Calyx-tube often longer than the ovary, bearing the petals (when present) and stamens, on its summit; stigma 2 to 4 lobed or capitate; capsule loculicidally 4 celled, and 4 valved, or indehiscent; placentæ in the axis; seeds without albumen.

* Petals 4; stamens twice as many.

Genus XVII. OENOTHERA.—*Linn.*

Calyx-tube longer than the ovary; petals mostly obovate; anthers linear, incumbent; pollen viscid; capsule oblong, or clavate; seeds not comose; leaves alternate.

20. O. BIENNIS.—*Linn.* **Evening Primrose.**

Stem stout, green; leaves ovate-lanceolate, repand-dentate; capsule oblong, obtusely 4 angled, sub-sessile.

Annual. Stem 3 to 6 feet high, branched, often rough-haired; leaves 2 to 6 inches long, lower ones short-petioled, upper ones sessile; flowers large, in a terminal leafy, or bracteate spike, yellow; calyx colored, tube cylindrical, 1 to 2 inches long, limb divided, reflexed, the segments partially cohering, and turned to one side, the limb, and tube, above, the ovary, caducous; capsule an inch to inch and half long.

Hab. About gardens. *July. Sept.*

Obs. This rather coarse plant often escapes from the garden and becomes an unsightly weed; especially as its flowers never expand until the shades of evening, and close, never more to open, before another day. It is nevertheless a curious and interesting sight, to stand by, and witness the rapid expansion of the flowers, one after another, in the evening twilight.

Order XII. CUCURBITACEÆ.

Herbaceous, mostly succulent, vines, with tendrils; leaves alternate, palmately veined, or lobed; flowers monoicous (sometimes dioicous); calyx-tube adhering to the 1 to 3 celled ovary; petals 5, more or less united, often completely so; stamens 5 or 3, somewhat united, as well by their tortuous anthers, as by the filaments; fruit

(Pepo) usually fleshy, sometimes woody, or membranaceous; seeds large, without albumen.

* Petals connected only at base.

Genus XVIII. SICYOS.—*Linn.*

Calyx campanulate; fruit ovate, compressed, dry and membranous, 1 seeded, beset with barbed prickly, bristles, in capitate clusters, climbing.

21. S. ANGULATUS.—*Linn.* Wild, or single-seed Cucumber.

Leaves angulate—5 lobed, cordate at base; fruit prickly, and villous, in small dense, pedunculate clusters.

Annual. Viscid-pubescent; stem 10 to 20 feet long, slender, branching; tendrils somewhat umbellately branched; leaves 3 to 5 inches long, and about as wide; peduncles 2 to 3 inches long; flowers greenish-white, clustered on axillary, common peduncles 1 to 4 inches long; the staminate ones corymbose-capitate, with the common peduncle longer; the pistillate ones in dense capitate clusters; fruit compressed, ovate, in stellately globose heads, an inch in diameter, armed with slender tawny spines.

Hab. About old gardens. *July. Sept.*

Obs. An unwelcome vagrant from the gardens which requires to be closely watched wherever it may occur.

Order XIII. UMBELLIFERÆ.

Herbs; flowers in (usually involucrate) umbels; calyx-tube entirely adherent to the ovary; petals 5; stamens 5, inserted (alternately) with the petals, on the disc that crowns the ovary, and surrounds the base of the 2 styles; fruit consisting of 2 seed-like dry carpels; seeds solitary,

suspended; embryo minute, in the apex of copious horny albumen; stems usually hollow; leaves alternate, generally much dissected, exstipulate, but the petioles more or less dilated, and sheathing at base.

Sub-order. ORTHOSPERMÆ.

Inner face (commissure) of the carpels straight and flat
 § Umbels perfectly compound.

a. Fruit beset with bristly prickles; carpels scarcely compressed.

Genus XIX. DAUCUS.—*Tourn.*

Calyx 5 toothed; corolla irregular; fruit ovoid-oblong, primary ribs slender, ciliate; secondary ribs winged, bristly-pectinate, each covering a single vitta; leaves multifid; umbels finally concave, involucrate.

[22. D. CAROTA.—*Linn.* Garden, and Wild Carrot.

Stem hirsute; leaves bi- or tri-pinnatifid; involucre nearly as long as the umbel.

Bi-annual. Plant grayish-green, pilose; root fusiform, fleshy and yellow, under culture; stem 2 to 4 feet high, slender, branched; leaves much incised, segments 1 inch long; petioles 1 to 2 inches long, sulcate above; umbels on long naked peduncles, flat, becoming concave in fruit; flowers whitish, or tinged with purple; the central floret often dark purple, and abortive; fruit very hispid, the prickles on the secondary ribs, somewhat barbed.

Hab. Gardens, field. Europe. *July. Sept.*

Obs. In its *wild* state everybody must know and detest this vile foreign intruder, and it will be well for us to consider how it can be most successfully eradicated. It is a *bi-annual* plant (in cultivation I have had it produce

seed the first year and scatter them in the adjoining grounds), consequently is best destroyed in the second, or flowering season. Hand-pulling, as fast as it produces flowers is the most, perhaps the only reliable means. Cutting will not answer the purpose fully, for such is the vitality of the roots, that if cut at any time before the fruit is matured, they will throw up shoots and ripen other seeds. This may occur among second crop clover, unobserved.

When you have pulled the carrot, or indeed any other noxious seeding plant; never throw it on the public highway, where the rains may carry it upon a neighbor. Never throw it in streams of water for a similar reason. Never throw it in a damp place, or in a heap where it will not speedily wither and die; lest it should ripen seed and defeat the important object in view. This is often seen in the Dock and the Mullein. With all such untrustworthy weeds, the only safe place of deposit is on a *brush-heap*, as I have mentioned under the head of *Lychnis*. With these precautions, you may secure success for your own labor; and perhaps avoid the infliction of a palpable wrong upon a neighbor.

If the seed of the *common Parsnip* did not so readily lose its vitality, I can see no reason why it might not soon become as great an agricultural pest, as the *Carrot*.

b. Fruit smooth.

* Carpels dorsally much compressed.

† Margins of the fruit single-winged.

Genus XX. HERACLEUM.--*Linn.*

Fruit broadly wing-margined; carpels slenderly 5 ribbed, the lateral ones close to the margin; vittæ clavate, shorter than the carpels.

Stout ; leaves large, ternately dissected ; petioles broad, and sheathing umbels large, flat ; involucre few-leaved, deciduous ; involucels many-leaved.

23. H. LANATUM.—*Mx.* Cow-Parsnip.

Woolly ; stem sulcate ; segments of the leaves broad, palmate lobed, sub-cordate at base.

Bi-annual. Stem 4 to 8 feet high, branched above ; segments of the leaves 4 to 12 inches long, and as wide as long ; the middle one often 5 lobed ; petioles 1 to 4 inches long ; umbels sometimes a foot or more in breadth, the rays 2 to 6 inches long ; involucels of 5 to 8 leaves which are lanceolate with a long, slender acumination ; flowers white.

Hab. Wet meadows. *May.* *July.*

Obs. This, and the two following, all coarse and conspicuous object, cannot fail to be observed by others, and must serve as an index of the neatness and attention of the owner.

Genus. XXI. ARCHEMORA.—*D. C.*

Fruit broadly margined ; carpels with 5 equidistant obtuse ribs, the lateral ones dilated into the margin ; channels with single vittæ ; commissure with 2 or more vittæ. Smooth per-annuals ; leaves odd-pinnately dissected ; the leaflets nearly entire, rather rigid ; flowers white ; involucre nearly none ; involucels many-leaved.

24. A. RIGIDA.—*D. C.* Cow's-bane.

Stems terete, striate ; leaflets 3 to 9, oblong-lanceolate or sub-linear, often sub-falcate, sparingly incised-dentate near the apex.

Per-annual. Stem 2 to 4 feet high, rather slender, sparingly branched; leaves 2 to 4 inches long; petioles 1 to 6 inches in length; umbels about 3, on long peduncles; involucels of 6 or 8 subulate-linear leaflets; fruit oval; channels filled to convexity, by the dark-purple vittæ; commissure slightly concave, lined with a white suberose coat.

Hab. Swampy pastures. *Aug. Oct.*

Obs. This plant is reputed poisonous to stock, as the common name signifies; and it probably would be, if they were to eat it; of which there seems but little danger, so long as they have enough better pasture.

* Margins of the fruit doubly-winged.

Genus XXII. ARCHANGELICA.—*Hoffm.*

Fruit elliptic; carpels each 3 ribbed on the back, the lateral ribs dilating into marginal wings; seed separating from the coating; vittæ numerous, often stout per-annuals, leaves bi-tri-ternately dissected; involucre scarcely any; involucels many-leaved.

25. A. ATROPURPUREA.—*Hoffm.* **Purple Archangelica.**

Stem large, smooth, dark purple; leaflets unequally incised-serrate; umbels globose, smoothish.

Bi-annual. Stem 4 to 6 feet high, and 1 to 2 inches in diameter, hollow, and branching above; leaflets 2 to 5 inches long, ovate; pedicels very broad, and inflated; umbels finally globose, 6 to 12 inches in diameter; umbellets globose, 1 to 2 inches diameter; flowers greenish-white.

Hab. Low wet grounds. *May. July.*

Obs. This very stout plant, as well as the smaller *Archangelica hirsuta* should not be allowed to encumber pasture meadows along our larger streams.

Sub-order. **CAMPYLOSPERMÆ.**

Inner face of the carpels grooved length-wise ; or margin turned in.

* Fruit neither prickly, nor winged on the margin.

a. Umbels mostly without involucre or involucels.

Genus XXIII. ÆGOPODIUM.—*Linn.*

Fruit oblong, crowned with the conical bases of the deflected styles ; carpels with 5 slender ridges, without oil-tubes ; leaves ternate, or bi-ternate, with broad, pointed, serrated, leaflets ; involucre, and involucels wanting.

26. **Æ. PODAGRARIA.**—*Linn.* Goats-foot, Ground-ash.

Root, creeping extensively ; stem robust, hollow, furrowed, glabrous ; leaflets ovate, or lanceolate, acuminate, unequally toothed ; the lower leaves on long petioles ; the upper merely 3 cleft ; umbels many-rayed ; petals white.

Per-annual. Stem 12 to 18 inches high ; fruit very seldom perfected.

Hab. Gardens, fields, hedges.

Obs. “ This, which is considered an exceedingly troublesome weed in England, has made its appearance in some parts of Pennsylvania, and proves to be a nuisance not easily abated. It has hitherto resisted all attempts to get rid of it.”

Don, in his general system of gardening, &c., says, that “ being a great creeper, it cannot be admitted into gardens ; for after it gets hold, it is next to impossible to eradicate it again.” The leaves are said to be used in the same way as parsley ; which accounts for *Don*’s cautioning against its introduction. Such an invader should be carefully watched, and its spread arrested. I have no personal knowledge of this, and the following plant.

b. Involucre 3 leaved ; involucel *none*.

Genus XXIV. ÆTHUSA.—*Linn.*

Calyx-teeth obsolete; fruit ovate, globose; carpels with 3 thick, sharply-keeled ridges; intervals with single oil-tubes; annual, erect, poisonous herbs, with 2 to 3 ternately compound, and many cleft leaves; involucre none; involucels 1 to 3 leaved, flowers white.

27. Æ. CYNAPIUM.—*Linn.* **Fools Parsley.**

Segments of the leaves wedge-lanceolate; involucel 3 leaved, long and narrow.

Annual. Stem 1 to 2 feet high, not spotted; leaves with alternate lobes, linear-lanceolate; umbels terminal and opposite the leaves; rays very unequal, the longest scarcely an inch in length; involucels 1 sided; fruit nearly as broad as long, with very prominent ribs.

Hab. Garden lots. Europe. *July. Sept.*

Obs. This poisonous plant is naturalized in New England; it somewhat resembles the *Poison Hemlock* (*Conium maculatum*), from which it is distinguished by its unspotted stem, the long, pendulous, one sided involucels, and the straight ridges of the fruit.

I possess no other knowledge of this, and the preceding, species, than what is here given from Prof. Thurber's edition of Darlington's *Agricultural Botany*, page 151. Both are noticed as *weeds* by English writers.

Genus XXV. CICUTA.—*Linn.*

Fruit sub-globose; carpels with 5 flattish, equal ribs; channels with single, prominent vittæ. Smooth, marsh per-annuals. Leaves tri-ternately dissected; involucre mostly none; involucels many leaved; flowers white.

28. C. MACULATA.—*Linn.* **Water Hemlock.**

Stem spotted or streaked; leaflets ovate-lanceolate, acuminate, mucronately serrate, the nerves running to the notches.

Per-annual. Stem 4 to 6 feet high, branching striate with green, and purple, or yellowish-brown; leaflets 2 to 3 inches long, petiolulate; common petioles, often with a membranous margin, produced into 2 lobes, at summit; umbels terminal, and axillary; ribs of the carpels rather broad, the channels reddish brown filled with aromatic oily matter.

Hab. In swamps. *July. Sept.*

Obs. This coarse plant possesses a pleasant anisate odor; but the root is a *deadly poison*; and children perhaps deceived by the smell have sometimes eaten thereof, and paid the forfeit with their lives. There will always be safety in its early destruction. Being a per-annual and not spreading by the root, this will be easily effected. Let the *grubber* be employed.

Genus XXVI. CONIUM.—*Linn.*

Fruit ovate, flattened at the sides; stylopodium flattened at the base; carpels with 5 equal, prominent, wavy-crenulate ribs; the inner face with a deep, narrow groove; vittæ none.

Bi-annuals, leaves large, tripinnately decomposed; involucre few-leaved; involucels halved, or unilateral, about 3 leaved; umbels spreading, many rayed; flowers white.

29. C. MACULATUM.—*Linn.* **Poison Hemlock.**

Smooth, stem rather stout, terete, spotted; leaflets

lanceolate-pinnatifid; involuclers shorter than the umbellets.

Bi-annual. Plant bluish-green, and sometimes, glaucous; root fusiform, often forked, fleshy, white; stem 2 to 4, or more feet high, branched, fistular, striate with green and yellow, often spotted with dark purple; fruit somewhat gibbous, crowned with the dilated base of the diverging styles; carpels with the faces inclining to separate, between the base, and apex; channels brown.

Hab. About gardens. Europe. *June. Sept.*

Obs. So far as my observations have extended, this highly poisonous plant was introduced into, and spread from, the larger botanical gardens of half a century ago. It appears too dangerous to man, and brute, to be tolerated, and had better be expunged, wherever it may occur.

DIVISION II. Gamopetalous Exogenous Plants.

Floral envelopes usually consisting of both calyx and corolla; the petals more or less united.

Order XIV. CAPRIFOLIACEÆ.

Shrubs, rarely herbs; leaves mostly opposite, and without stipules; calyx-tube adherent to the ovary; stamens usually, as many as the lobes of the corolla, and inserted on its tube; ovary 2 to 5 celled; fruit berry-like, or capsular; embryo in the axis of fleshy albumen.

Tribe SAMBUCEÆ.

Corolla rotate, regular, and deeply 5 lobed; stigmas mostly 3, sessile; inflorescence cymose, or thyrsoïd.

Genus XXVII. SAMBUCUS.

Calyx-segments minute; fruit a globular, berry-like,

juicy drupe, containing 3 to 5 seed-like nutlets; mostly shrubs, with large pith; leaves odd-pinnately dissected; leaflets serrate, or laciniate; flowers white.

30. S. CANADENSIS.--*Linn.* **Common Elder.**

Leaflets 7 to 11, oblong, acuminate, smooth, petiolulate; cymes flat, 5 parted; fruit purplish black.

Per-annual. Stem 5 to 10 feet high, suffruticose, and finally, woody, nodose, branching; leaflets 2 to 4 inches long, usually 3 pairs and an odd one.

Hab. Fence-rows, thickets. *June. Aug.*

Obs. This impudent, and intrusive loafer, is too exacting, and too filthy in his habits to be tolerated by any respectable agriculturist. Happily the timely, and efficient use of the grubbing hoe will soon abate the nuisance.

Order XV. DIPSACEÆ.

Herbs. Leaves mostly opposite, without stipules; flowers in dense, involucrate heads; calyx-tube adhering to the ovary, the border entire, or toothed; corolla tubular, 4 to 5 lobed; stamens mostly 4, distinct; styles filiform; stigma simple; fruit akene-like, 1 celled 1 seeded; seed pendulous; embryo nearly as long as the fleshy albumen.

Genus XXVIII. DIPSACUS.--*Tourn.*

Involucre many-leaved, longer than the bracts, (or subfoliaceous chaff) of the receptacle; florets each with a 4 sided calyx-like involucl, closely investing the ovary and fruit, border of the calyx, minute, cup-shaped, entire, corolla with 4 erect lobes.

Stout bi-annuals; leaves often connate; heads ovoid-

oblong, the florets commencing to open in a ring about the middle of the head, and proceeding in opposite directions.

31. D. SYLVESTRIS.—*Mill.* **Wild Teasel.**

Leaves lance-oblong, serrate; involucre longer than the head; bracts straight and flexible.

Bi-annual. Stem 3 to 5 feet high, branched, angular, prickly; radical leaves 8 to 12 inches long, crenate, stem leaves 3 or 4 to 6 or 8 inches long, sessile, connate, all more or less prickly on the midrib, and sometimes on the margin; leaves of the involucre, unequal, lance-linear, curved upward, and inward, pungent at apex; heads of flowers, ovoid-oblong, 2 to 3 inches in length; corolla pale purple; bracts (or chaff of the receptacle), oblong-cuneate, keeled, abruptly tapering into a straight, flexible, awn-like, acumination, longer than the florets.

Hab. Fence-rows. Europe. *July. Sept.*

Obs. In some instances this foreign weed has given a good deal of trouble for want of timely attention.

32. D. FULLORUM.—*Mill.* **Fuller's Teasel.**

Leaves obovate-oblong, the upper ones entire; involucre shorter than the head; bracts recurved at apex, rigid.

Bi-annual. Stem leaves, and general character, similar to the preceding; heads of flowers elliptical; bracts (or chaff of the receptacle) terminating in a rigid, subulate, recurved, acumination.

Hab. Garden lots. Europe. *July. Sept.*

Obs. Cultivated (though less than formerly) for the flower heads. These are used by Fullers; the rigid recurved points of the mature bracts serving as a kind of card to raise a nap on woollen cloth. As *weeds* there can be little choice between them. A little attention will prevent them maturing seeds.

Order XVI. COMPOSITÆ.

Mostly herbs ; leaves alternate, or opposite, often lobed, or dissected, never truly compound, not stipulate ; flowers in close heads, composed of many florets (perfect or imperfect) upon a common receptacle, and embraced by (mostly numerous) leaflets, or scales, which form a general involucre ; calyx-tube closely adherent to the ovary ; the limb, or border of the calyx (called pappus) consisting of hairs, awns, or scales, or sometimes obsolete ; corolla either tubular, and 5 lobed, or ligulate, and 5 toothed ; stamens mostly 5, inserted on the corolla, the anthers united, forming a tube round the style, which is two cleft at summit, with stigmatic glands, in lines, on the inner surface of the branches ; fruit an akene containing a single erect seed destitute of albumen.

Sub-order. TUBULIFLORÆ.

Flowers of the disc tubular, mostly perfect—of the ray, (when present) ligulate, either pistillate or neutral.

Tribe VERNONIACEÆ.

Heads discoid ; florets all alike, perfect, and tubular ; style-branches slender, filiform or subulate, hairy all over ; the stigmatic lines, only on the lower part.

Genus XXIX. VERNONIA.—*Schreb.*

Heads many-flowered, in corymbose cymes ; involucre shorter than the florets ; the scales imbricated, and appressed ; receptacle naked ; akenes clavate, ribbed ; pappus double ; the inner, of numerous capillary bristles ; the outer, short, and scale-like.

Per-annual ; leaves alternate ; flowers bright purple.

33. V. **NOVÆBORACENSIS.**—*Wild.* Iron Weed.

Leaves oblong-lanceolate; scales of the involucre, mostly, with a long, filiform, flexuous point.

Per-annual. Stem 2 to 6 or 7 feet high, sulcate-striate, roughish-pubescent, branching above, hard and sub-ligneous; leaves 3 to 6 inches long, sub-sessile, serrate, roughish, and sub-coriaceous; akenes scabrous with short hairs.

Hab. Moist grounds. *Aug.* *Sept.*

Obs. A worthless, and troublesome weed in moist bottom lands; unless carefully disposed of. Being a rank per-annual, the proper means is to destroy the root either by ploughing or grubbing. The grubber is much the most effective weapon.

Tribe **EUPATORIACEÆ.**

Style-branches obtuse, or clavate, usually elongated, pubescent on the outside: stigmatic lines below the middle of the branches; anthers not tailed at base.

Sub-tribe. **EUPATORIÆÆ.**

Heads discoid; florets all alike, perfect, and tubular, usually purple, or white, almost never yellow; receptacle naked.

Genus **XXX.** **EUPATORIUM.**—*Tourn.*

Heads 3 to many flowered, mostly corymbose; involucre oblong, scales imbricated in 2 or more series, or sometimes nearly equal, in a single series; florets tubular, scarcely dilated at the throat; akenes 5 angled; pappus, a single row of slender, roughish bristles; receptacle flat.

Per-annuals; leaves mostly opposite, or verticillate, often resinous-dotted; flowers white, or purple.

* Heads 5 to 10 flowered; scales closely imbricated, in

several series of unequal lengths; leaves verticillate, petiolate, flowers purplish.

34. E. PURPUREUM.—*Linn.* Purple Eupatorium.

Stem stout, simple; leaves 3 to 6 in a whorl, lance-oblong, or lance-ovate, serrate; corymb large, compound.

Per-annual. Stem 4 to 6 feet high, fistular, smoothish and glaucous-purple, or solid, with pith, spotted, and more or less pubescent; leaves 3 to 8 inches long; petioles half an inch to 2 inches; heads of flowers in a terminal corymb, of varying size, and shade of color.

Hab. Moist grounds. *Aug. Sept.*

Obs. This is perhaps the largest, and most perspicuous of our Eupatoriums. Coarse but rather showy; and disposed to occupy too much space, both in the *soil*, and in the *eye*, to satisfy a neat farmer. He will of course order its removal. Like the preceding, its strong and numerous roots yield reluctantly to any device short of the grubber.

** Heads 5 to 20 flowered; scales 8 to 15, unequal, more or less imbricated; leaves mostly opposite, sessile, sometimes connate; flowers white.

35. E. PERFOLIATUM.—*Linn.* Thorough stem. Bone-set.

Leaves oblong-lanceolate, connate-perfoliate, rugose-veined, crenate-serrate, very pubescent beneath; scales of the involucre lance-linear, acute.

Per-annual. Stem 2 to 4 feet high, rather stout, corymbose at summit, hirsutely pubescent; the branches whitish, and very pubescent; leaves 4 to 8 inches long, more or less completely united at base, rarely ternate, minutely resinous-dotted, beneath; heads of flowers clustered in large corymbs.

Hab. Low and swampy grounds. *July. Sept.*

Obs. This very abundant *rough* weed, is variously known as *Indian-sage*, *Bone-set*, &c., &c., all locking to its medical qualities. To say nothing of its real virtues; there are those who believe that it will operate, either upwards, as an emetic; or downwards, as a cathartic; as the leaves may have been stripped off the stem, up or down. A remnant of ignorance, credulity, and superstition, which still inheres in many minds.

The plant is too coarse and too aggressive, to be long tolerated in decent pastures. Like many other per-annual weeds, it requires the plough, or the hoe, for its eradication. Cutting can only save the seeding of the ground. When in flower, the stems are easily pulled off from the crown of the root; and from some recent experience, I have reason to believe, if thoroughly done, will cause the root to perish. If found to do so, this will be the appropriate remedy.

Several other species occur, which, if they prove troublesome should be treated in the same way.

I might here mention the beautiful and chaste *Conoclinium celestinum* (or Blue Eupatorium), but it would be a shame to associate its delicate form, with mere *weeds*.

Sub-tribe. **ASTERINEÆ.**

Heads mostly radiate; the disc florets perfect, and the ray florets pistillate; anthers not tailed at base; receptacle not chaffy, mostly flat, and alveolate, or punctate.

† Rays never yellow.

Genus **XXXI. ASTER.**

Heads many flowered; rays numerous, in a single series; involucre sub-campanulate; scales more or less im-

bricated, with herbaceous, or sub-foliaceous tips; akenes usually compressed, cuneate, pubescent; pappus simple, scabrous.

Mostly per-annuals; radical and lower leaves, often cordate, at base; heads of flowers corymbose, paniculate, or racemose; rays white, purple, violet, or blue.

* Scale-tips more or less spreading, and herbaceous.

†† Rays mostly white; heads small and numerous.

36. A. ERICOIDES.—*Linn.* Heath, or Field Aster.

Diffusely branched; branchlets sub-secund; leaves spathulate-oblong, and linear, nearly entire; involucre somewhat hemispherical, loosely imbricated; scales linear-oblong, acute.

Per-annual. Stem 1 to 3 feet high, smooth, or slightly pubescent, often quite bushy; radical leaves 1 to 4 inches, sparingly serrate, ciliate, tapering to a long petiole; stem-leaves 1 to 3 inches; those on the branches small, subulate-linear, acute at each end; heads of flowers small, numerous, solitary, on the ascending, somewhat secund, leafy, peduncles, or branchlets; rays tinged with purple; disc yellow; akenes minutely pubescent.

Hab. Poor, or neglected fields. *Aug. Oct.*

Obs. This is the most abundant of the Asters, and is quite aggressive on most soils when for any cause, the grass has been allowed to *run out*. The ground seems so stored with seeds, ready to spring up on any emergency, that a failure of the grass is supplied by the *Heath Aster*. The inferential rule would be, allow no more seed to ripen, and crowd out the plant by a full growth of grass, until the plough can be brought into requisition.

The physiognomical features of all our members of this

large family, are so similar, that to become acquainted with one, is to know them all, except the large *New England Aster* (*Aster novæ angliæ*), which is thought to be worthy of cultivation as a flowering plant

††† Rays almost always yellow.

Genus XXXII. SOLIDAGO.

Heads small, and few flowered ; rays about 5 in a single series ; involucre oblong ; scales generally appressed, and without herbaceous tips ; akenes subterete, many-ribbed ; pappus single, of equal papillary bristles ; receptacle naked.

Per-annuals ; stems commonly virgate ; leaves sub-sessile, never cordate ; heads commonly racemose-paniculate.

* Racemes secund, spreading, or recurved.

† Heads middle sized ; plants cinereous-pubescent.

37. S. NEMORALIS.—*Ait.* Field Solidago. Golden-rod.

Stems often corymbose at summit ; leaves spathulate-oblong, and oblanceolate, crenate-serrate, or entire ; roughish-pubescent.

Per-annual. Stem 1 to 3 feet high ; radical leaves 1 to 4 inches long, tapering to a petiole 1 to 3 inches in length ; stem-leaves narrower, tapering almost to a petiole ; heads of flowers in secund racemes, on recurved branches (often in axillary clusters) ; involucre smoothish, scales lance-oblong, obtuse ; rays 6 to 9, spathulate-oblong ; akenes pubescent with white hairs.

Hab. Sterile banks, field, &c. *Aug. Oct.*

Obs. This weed indicates, either a poor soil, or a poorer cultivator. It is easily eradicated by good tillage. This

is true of the numerous other, and larger species, also. But along fences and where the plow cannot come, some of them are too *ornamental*, and do not correspond with modern ideas of neat farming. The field fence corners cannot appropriately be used for flower gardens.

Tribe. SENECTIONIDEÆ.

Style-branches linear, externally convex, hairy, or pencil-tufted at apex, either truncate, or produced into a cone or hairy appendage; the stigmatic lines terminating at the base of the cone, or appendage, and not confluent; leaves opposite, or alternate.

Sub-tribe. MELAMPDINEÆ.

Florets all imperfect, staminate or pistillate, either in the same head, when the pistillate are in the border, or in separate heads; anthers without tails at base; pappus mostly none, sometimes 2 horned, never of capillary bristles; receptacle mostly chaffy.

Genus XXXIII. AMBROSIA.

Heads monoicous; the staminate ones 5 to 20 flowered, in terminal racemes; the pistillate 1 flowered in bracteate clusters of 2 or 3 to 5, sessile at the base of the racemes, or in the axils of the upper leaves; involucre of the staminate heads, flattish, scales several, united into a cup; florets all funnel-form; involucre of the pistillate florets turbinate, closely embracing the akenes, like a utricle, acuminate, with 4 to 8 (usually 5 or 6 pointed tubucles near the summit; corolla none; akenes obovoid.

Chiefly annuals; leaves opposite, and alternate, petio- late, lobed, or pinnatifidly dissected.

38. A. TRIFIDA.—*Linn.* Tall Rag-weed.

Stem tall, stout, rough-hairy; leaves palmately 3 to 5 lobed, lobes oval-lanceolate.

Annual. Stem 6 to 8 feet high, angular, branched; leaves 4 to 8 inches long, 3 lobed (sometimes undivided) opposite, hairy and scabrous, on slightly margined, ciliate petioles, about an inch long; staminate heads numerous, in long terminal, pedunculate racemes; florets whitish; involucre of the pistillate florets, strongly 5 to 6 ribbed, the ribs with as many acute points at top.

Hab. Low grounds. *Aug. Oct.*

Obs. This stately weed does not often intrude upon well tilled lands, like its congener, but often disfigures some nook, or fence row, in the meadow.

39. A. ARTEMISSIÆFOLIA.—*Linn.* Rag-weed Bitter-weed.

Stem rather slender, and diffusely branched, villous and roughish; leaves bipinnatifid, the upper ones simply pinnatifid.

Hab. Fields everywhere. *Aug. Oct.*

Obs. This may very aptly be termed *The Weed*, as it seems to abound, more than any other, in our farm lands. It is apt to spring up wherever the surface has been broken; but seems to have a remarkable aptitude for the autumnal stubble fields. By the next season it is said that the grasses will smother, or choke it out. This is true to a great extent. But, either the ground must abound in the seeds of former years, or there must be a large addition to them, annually. Whether would it not be better to use the mower in all pasture and stubble lands where they abound, and thus effect two good purposes, the clearing of the ground, and the destruction of

the seed. But by all means do this before the possible maturation of the reproductive germs. This must always be made the *sine qua non* of the conflict with weeds. I have seen the weeds, on a very foul farm, fully reduced to a moiety in a very few years, by such attention.

An aged, and highly respected housekeeper of a generation now passed away; confidently assured me that there had not a weed matured its seeds in her garden for seven years, and as a consequence, she was not much troubled by them in that department. Let our ambitious young farmers try it.

Genus XXXIV. XANTHIUM.—*Tourn.*

Heads monoicous, in spicate clusters, the staminate above, many-flowered; involucre of the staminate heads subglobose, scales distinct; florets clavate; pistillate heads 2 flowered, the involucre oblong, closed, coriaceous, armed with hooked prickles, and one or two, strong beaks at apex; corolla filiform; akenes oblong, compressed. Annuals; leaves alternate, petiolate, lobed or dentate.

40. X. STRUMARIUM.—*Linn.* Clot-Bur. Cockle-Bur.

Leaves broad-ovate, somewhat 3 lobed; petioles not spinose at base; pistillate involucre with 2 strong, straight beaks at apex.

Annual. Stem 1 to 3 feet high, angular, branched scabrous-pubescent, leaves 3 to 6 inches in length, and nearly as wide as long, sub-cordate at base, but connately produced in the center at the junction of the 3 principal nerves; petiole 3 to 4 inches long; heads of flowers in axillary, racemose clusters, the pistillate ones at the base of the racemes.

Hab. Yards, road-sides. Europe. *Aug. Oct.*

Obs. Prof. A. Gray considers this a native. Dr. Darlington calls it "an obnoxious weed, though not much inclined to spread, and with a little attention, is easily kept in subjection." I hope that others may find it so, I have not. But it does seem less common than it was 40 years ago, at least in some sections. Perhaps the sheep have not the same opportunities, they then had, to disperse the seeds. Close mowing, *before fruiting*, with a little hand weeding, and proper care to burn the refuse matter, will meet the emergency very well.

41. X. SPINOSUM.—*Linn.* Thorny Clot-Bur.

Leaves ovate-lanceolate, hoary-tomentose beneath; petioles triply spinose at base; pistillate involucre with a single inconspicuous beak, at apex.

Annual. Stems 2 to 3 feet high, terete, striate, pubescent, branched; leaves 1 to 2 inches long, sometimes 3 lobed, or with a lobe-like tooth on each side, narrowed at base, to a short, pubescent petiole, on each side of which, is a triple, or 3 forked, yellowish spine, the branches about an inch long, and very sharp; heads of flowers axillary, mostly solitary.

Hab. Waste places. Europe. *Sept. Oct.*

Obs. This execrable foreign weed has found its way into our county, but is, happily, yet rare; and it behooves every good citizen, to extirpate it, wherever it may appear. "Some years since, the authorities of one of our cities, where it was becoming a great nuisance, in the streets, enacted an ordinance against the plant; denouncing it by the name of the *Canada Thistle*. The misnomer, probably, did not impair the efficacy of the ordinance; but it would be more reputable to all concerned, if they

could avoid confounding objects which are essentially distinct, and learn to designate even *weeds* by their proper names." I found this repulsive weed entrenched among the cliffs which border the Susquehanna at Port Deposit; more than 30 years ago; and cultivated it from seed then obtained. But I have not met with it nearer home. When invaded by such a foe, every man should feel himself, an appointed guardian, and defender of his country's best interest, and battle nobly for its utter extermination. Associated efforts should be brought to bear upon the labor, when it is too great for individuals to accomplish. *United we stand, divided we fall*; has a significance, far away from the arena of political strife, or murderous warfare. I have often dismounted from my horse, or carriage, to pull up some stray, noxious weed, which had gained a footing by the public highway. Such, for instance, as the *Echium vulgare*, or Viper's Bugloss. If every agriculturist would do so, much prospective mischief would be anticipated, and prevented.

Sub-tribe. **HELIANTHÆÆ.**

Heads mostly radiate; disc-florets always perfect, anthers blackish, without tails at base; pappus none, or crown-form, or consisting of awns, or awn-like chaff, never capillary, nor of uniform, distinct chaffy scales; receptacle chaffy; leaves often opposite.

Genus **XXXV. BIDENS.**—*Linn.*

Heads, many (or sometimes few), flowered; ray-florets neutral, often few and inconspicuous, sometimes wanting; involueral scales in 2 series, the outer commonly, large, and foliaceous; akenes ob-compressed, or slender, and 4

sided; pappus 2 to 4 or 5, rigid, persistent, retrorsely hispid awns; receptacle flattish; chaff deciduous.

Mostly annuals; leaves opposite, penninerved; flowers generally yellow.

42. B. FRONDOSA.—*Linn.* Bur-Marigold.

Leaves odd-pinnately divided, in fives, or threes, the leaflets lanceolate, serrate; akenes 2 awned, cilliate with erect hairs.

Annual. Stem 2 to 5 feet high, angular, branched, sparsely pilose, often dark purple; leaflets 2 to 5 inches long, with short, margined petioles; common petiole 1 to 3 inches, margined; heads of flowers small, on long, naked, slender, axillary branches; involuere double, outer scales 8 to 12, foliaceous, unequal, longer than the heads, cilliate at base; rays none; akenes obovate-cuneate, antrorsely cilliate; awns longer than the florets.

Hab. Garden lots, &c. *Aug. Oct.*

Obs. A homely and troublesome weed. The *akenes*, of all the species, readily adhere to clothing by means of the *retrorsely setose* pappus, and prove themselves a great annoyance. Hand-weeding, and the judicious use of the scythe, are the proper means to abate it.

43. B. BI-PINNATA.—*Linn.* Spanish Needles.

Leaves bi-pinnately dissected, petiolate; rays about 3, small; akenes 3 or 4, awned, sublinear, sulcate, smoothish.

Annual. Stem 2 to 4 feet high, 4 angled, smooth, branched; leaves 2 to 5 inches long, deltoid-ovate, mostly cuneate-attenuate at base; petioles 1 to 4 inches in length; heads of flowers small, oblong, on long, naked, sulcate, angular, axillary, and terminal, peduncles; involuere

double, scales connate at base, outer ones about 8, shorter and narrower than the inner ones; rays obovate, yellow with dark veins; akenes about $\frac{3}{4}$ of an inch with erect hairs; pappus of 3 or 4 retrorse, hispid awns.

Hab. Gardens, lots, &c. *Aug.* *Oct.*

Obs. This, as the *form* of the akene shows, is properly the *Spanish Needle*. But the name appears to be applied to the other species also, which do not present the needle-form. They all indicate negligence in the cultivator.

Sub-tribe. ANTHEMIDEÆ.

Heads radiate, or discoid, never dioicous; disc-florets sometimes abortive; anthers without tails; pappus none or a very small crown; leaves alternate, often dissected.

† Heads of flowers radiate.

Genus XXXVI. MARUTA.—*Cassini*.

Heads many flowered; ray-florets mostly neutral; involucre hemispherical; akenes obovoid, ribbed, pappus none; receptacle prominently convex, chaffy all over, or only at summit.

Fœtid annuals; leaves bi-tri-pinnately dissected.

44. M. COTULA.—*D. C.* Dog's Fennel. Stinking Chamomile.

Involucral scales with whitish, scarious margins; receptacle chaffy at summit, only.

Annual. Stem 8 to 12 inches, mostly erect, leafy, bushily branched; leaves 1 to 2 inches long, sessile, green, pinnatifidly dissected, segments linear, acute; heads of flowers terminal, on leafless peduncles; rays white; disc yellow; receptacle oblong-conical; chaff subulate, shorter than the florets.

Hab. Yards, lanes, &c. Europe. *June. Aug.*

Obs. This worthless, and stinking weed used to be quite common in outer yards, and lanes, around farm buildings; but a better appreciation of the *olfactory sense*, has led to its partial destruction.

Genus XXXVI. ACHILLEA.—*Linn.*

Heads several-flowered; ray-florets few, and short-pistillate; tube of the disc-florets ob-compressed, margined; involucre obovoid-oblong; akenes ob-compressed, oblong, somewhat margined; pappus none; receptacle small, flatish, chaffy.

Perennials; leaves alternate, often pinnatifidly dissected; heads small, in flat dense corymbs.

45. A. MILLEFOLIUM.—*Linn.* *Yarrow. Milfoil.*

Stem mostly simple; leaves bi-pinnatifid, the segments linear, incised-serrate; rays 4 or 5, roundish-obovate.

Bi-per-annual. Stem 2 to 3 feet high, sulcate-striate, hairy, and somewhat lanuginous, leafy; leaves 2 to 6 inches long, subsessile, more or less pilose; heads of flowers numerous, fragrant; involueral scales with a prominent keel, or midrib; rays white, often tinged with purple; disc-florets whitish, the tube green, sprinkled with resinous particles; chaff of the receptacle, lance-oblong, acute.

Hab. Old pastures, &c. Europe. *June. Aug.*

Obs. Whatever may be its dubious claims, as a medicine; or as a pasture producing plant in Europe; the *Yarrow*, with us, is a pernicious, and aggressive weed, in pasture grounds and lawns, not subject to the plow. It send up numerous stems which fruit abundantly, if not timely removed. As if not satisfied with this; the root

simultaneously forms a great many *rhizomes* which radiate in all directions, and make their appearance, as so many off-sets from the parent plant. These come up 3 to 6 inches from the mother stem, as so many young plants for the next year's crop of seed. The fibrous roots from the *ground-stems* prevent them being effectually pulled, unless in loose light soils; necessitating the use of the hoe. Early summer is the proper season for this work, before the formation of the *rhizomes*.

Genus XXXVIII. LEUCANTHEMUM.

Heads many flowered; ray-florets numerous, pistillate; disc-florets ob-compressed; involucre almost flat, spreading; scales with scarious margins; akenes all similar, subterete, striate, or ribbed, smooth; pappus none; receptacle flattish, naked.

Per-annuals. leaves mostly pinnatifid or incised-dentate; heads rather large, solitary, and terminal; disc-yellow; rays white.

46. L. VULGARE.—*Lam.* Ox-eye Daisy. White-weed.

Stems erect, or inclined, often numerous, nearly simple, rather naked above; radical-leaves spathulate, petiolate; stem-leaves oblong, sessile and clasping, all incised dentate; involueral scales with narrow russet-brown margins.

Per-annual. Stem 1 to 2 feet high, angular, somewhat hairy, purplish on the angles; leaves 1 to 2 inches long; radical leaves on petioles 1 to 2 inches long; heads of flowers 1 to 2 inches in diameter, including the rays; akenes dark purple between the ribs.

Hab. Fields. Europe. *June.* *Aug.*

Obs. Wide as has been the dispersion of this *vile pest*;

there are still many districts, of variable extent ; many farms which have thus far been preserved from its incursions ; the *owners* of which desire to maintain their pre-emption right. Let these remember that "*Eternal vigilance is the price of Liberty.*" Happily, the invader is sure to herald his approach, by deceitfully displaying a *White Flag*. While this need not to deceive, it must warn of the danger, and should lead to prompt, and vigorous resistance.

It is a more grave question for decision. How to eradicate the daisy from land which has long been infested with it? That it can be done, admits of demonstration. How best to do it? is a problem for the *reason*.

Several years ago I came in possession of a spot of ground, the eighth part of an acre of which was very stony. In addition to a few scrub sapplings, was a plentiful growth of huckleberry bushes, and briars ; worse still, the daisy had obtained possession of it. I could neither dig, nor pull, the roots, nor mow the plants. With no further object than to prevent the shedding of the seed ; I carefully gathered all the *flowering stalks*, pulling them *off from the crown of the roots*. I was as much gratified, as surprised, to find that those roots perished without further trouble. The same result has followed the same method many times since. But where any young stems, that have started, have been overlooked they will continue to grow, and a *new crown will be formed*. The *fact* should not be forgotten.

My neighbor W. C. found his farm so stocked with daisy (in 1862) that the fields were already white unto the harvest, long before the harvest was ripe. With two small boys, and a determined will, he so unremittingly applied the gloves, the scythe, and the hoe ; in the fields,

and in the highway, in every place where the plow could not be immediately brought to bear; that in a very few years (8 or 10) there was comparatively very few *White Flags* to be seen on the premises. Why cannot others go and do likewise.

But it is not sufficient, that the *White Flag-staff* should be cut down, and the flag trampled in the dust. The farmer may industriously apply the *glove*—the *hoe*—the *scythe*—the *plow*; and do it with little advantage to himself; if he does not KNOW and act in accordance with his *knowledge*—THAT THE DAISY (as well as some other weeds) RIPENS ITS SEED WHILE YET IN BLOOM. In other words, it retains its *white petals* long after the proper *flowering season* has passed; and time allowed for maturing the seeds. With a knowledge of this fact, every one must draw the practical inference—That the refuse matter must not be suffered to remain upon the ground; or be carelessly thrown in the fence-corners—bye places—or public roads; only to be returned to the fields in due season—but that it must be effectually destroyed. Here again, the *brush-heap and fire*, may be brought into requisition successfully.

Sub-tribe. SENECTIONEÆ.

Heads discoid, or radiate, never dioicous; marginal florets pistillate; anthers without tails, at base; pappus capillary, often soft, and white; receptacle mostly naked; leaves generally alternate.

Genus XXXIX. ERECHTITES.—Raf.

Heads many flowered, discoid, the florets all fertile; involucre cylindric-oblong, smooth; scales in a single series, linear, acute, with subulate bractlets at base

akenes oblong, tapering at apex; pappus copious, soft and silky, very white.

Coarse annuals; leaves undivided; heads corymbose-paniculate; florets whitish, very slender.

47. E. HIERACIFOLIA.—*Raf.* Fire-weed.

Smoothish; stem striate sulcate, often virgate; leaves lance-oblong, acute, sessile, the upper ones auriculate at base, and somewhat clasping, unequally dentate.

Annuals. Stem 2 to 5 feet high, stout, succulent, and tender, when young, paniculately branched, or occasionally subsimple, and virgate; leaves 3 to 6 inches long; heads of flowers, in small cymose corymbs, terminating the paniculate branches.

Hab. Recent clearings. *July. Sept.*

Obs. Remarkable for its occurrence wherever brush-heaps have been burned—hence its popular name. Cut it down.

Tribe. CYNAREÆ.

Heads discoid, usually large, sometimes dioicous; involueral scales imbricated in many series; style in the perfect floret, often nodosely thickened, near the summit, branches distinct, or concrete, puberulent externally, the stigmatic lines extending to their apex, and there confluent.

Genus. XL. CIRSIUM.—*Tourn.*

Heads many-flowered; florets similar, and perfect, or rarely, imperfectly dioicous; involucre roundish-ovoid; scales mostly tipped with a spine; anthers with a linear-subulate appendage; filaments often hairy; style-branches concrete nearly to the apex; akenes oblong, compressed;

pappus of many hairs, united in a ring, at base, plumose to the middle; receptacle fibrillate.

Bi, or, Per-annuals. Leaves alternate, mostly sessile, often pinnatifid, and prickly; heads usually large, terminating the branches; flowers generally purplish.

† Involucral scales, all tipped with a spreading spine.

48. C. LANCEOLATUM.—*Scop.* **Common Thistle.**

Leaves pinnatifid, decurrent, (forming a prickly, winged, stem) prickly-hispid on the upper surface, cobwebby beneath, the segments lanceolate.

Bi-annual. Stem 2 to 4 feet high, stout, branching; leaves 4 to 10 inches long; the radical ones (as is usual with bi-annuals) much larger than the cauline; heads ovoid, about an inch in diameter; florets purple; anthers yellowish.

Hab. Pastures, road sides. *June. July.*

Obs. This is bi-annual, and can readily be extirpated by cutting it up with the hoe in such way as to remove the crown of the root, before flowering—if left long after this, the seeds are apt to mature and be scattered by the winds.

†† Inner scales unarmed, appressed. Filaments hairy.

* Leaves white-woolly beneath.

49. C. DISCOLOR.—*Spreng.* **Two-colored Thistle.**

Leaves all pinnatifid, smoothish, and green, above, densely tomentose, and bluish white beneath.

Bi-annual. Stem 2 to 5 feet high, with rather slender, spreading leafy branches, pubescent with crisped, membranous, hairs; leaves 4 to 12 inches long, those on the

branches small; heads ovoid-oblong, 1 to 2 inches in length; florets reddish-purple; anthers whitish.

Hab. Old fields, meadows. *Aug.* *Sept.*

Obs. Same as the last.

50. C. ALTISSIMUM.—*Spreng.* Tall Thistle.

Radical leaves pinnatifid, petiolate; stem leaves undivided, lance-oblong, dentate, roughish above; hoary—tomentose beneath.

Per-annual? Stem 4 to 8 feet high, branching, and slender above, roughish pubescent; radical leaves 12 to 18 inches long, and 3 to 6 wide, denticulate and ciliate, with spinescent bristles; heads oblong-ovoid, an inch in diameter, with linear-lanceolate spinescent-ciliate bracts, at base; involueral scales of a livid color, near the apex, terminating in a subulate spine; flowers purple, often palish.

Hab. Pastures, thickets. *Aug.* *Sept.*

Obs. This, like most other per-annuals, requires that the roots should be removed or otherwise destroyed. A sharp hoe is the proper exterminator.

** Leaves green on both sides, or lanuginous beneath; pinnatifid.

51. C. MUTICUM.—*Mx.* Pointless Thistle.

Stem tall, with slender, paniculate, rather naked branches; heads sub-globose; involueral scales unarmed, closely appressed, viscid and cob-webby.

Per-annuals? Stem 3 to 6 feet high, slender, angular sulcate, and striate-pubescent; branches virgate, few-leaved; leaves 4 to 12 inches long, segments lanceolate,

spinulose; heads half an inch to an inch in diameter; florets purple.

Hab. Swampy grounds. *Aug.* *Sept.*

Obs. Requiring care similar with the last.

52. C. PUMILUM.—*Spreng.* **Dwarf Thistle.**

Stem low, stout; leaves partly clasping, with irregular, undulate, very prickly segments; heads few, large, conspicuously bracteate; outer involueral scales with short spines; florets pale red.

Bi-annual. Plant pale greyish-green; stem 1 to 2 feet high, thick, and sparingly branched, striate, and hairy; leaves 4 to 12 inches long; (the radical ones large) densely hairy on the midrib beneath; heads usually 1 to 3, rounded-ovoid, 1 to 2 inches in diameter, with large, pinnatifid-spinose bracts at base; florets often 2 inches in length, pale redish-purple, with whitish anthers.

Hab. Old pastures &c. *July.* *Aug.*

Obs. Easy of extermination. Employ the hoe.

53. C. HORRIDULUM.—*Mx.* **Yellow Thistle.**

Stem stout; leaves partly clasping, acutely lobed, very spinose with yellowish prickles; heads few, large, with a verticil of pectinately spinose bracts, at base; involueral scales scarcely spinose; florets pale-yellow.

Per-annual? Stem 2 to 3 feet high, mostly simple, striate, lanuginose; leaves 4 to 10 inches long; heads often solitary, sometimes as large as in the preceding species; bracts about as long as the involucre; involueral scales tapering to a subulate point.

Hab. Margin of streams. *July.* *Aug.*

Obs. This remarkable thistle was first detected in this

county by the writer, in the Morton meadow, London Grove; and subsequently near the Red-clay creek.

Before leaving the subject I wish to say. The species of the thistle which I have doubtingly marked '*per-annual*' after Darlington, are probably only '*bi-annual*' which may have been temporarily changed by local causes.

54. C. ARVENSE.—*Scop.* Canada, or Field Thistle.

Creeping by rhizomas; stem slender, paniculate at summit; leaves sinuate-pinnatifid, ciliate-spinose, undulate; heads numerous, ovoid.

Bi-per-annual. Rhizomas creeping horizontally 6 to 8 inches below the surface, and sending up erect, *bi-annual* branches, or aerial stems, which become 18 inches, to 3 feet high; leaves 4 to 10 inches long, slightly decurrent; the radical ones curved, or wavy; heads about half an inch in diameter, subpedunculate; involueral scales smoothish, minutely ciliate; florets pale lilac-purple; anthers whitish, filaments nearly smooth; akenes linear-oblong, slightly four cornered; pappus, finally, longer than the florets.

Hab. Fields &c. Europe. *July. Aug.*

Obs. The singular *bi-per-annual* feature of this species was alluded to under *Achillea millefolium*, as being similar.

This unbidden guest, is justly regarded, as one of the vilest pests which has yet invaded our farms. It is therefore incumbent on us to carefully study its nature; and to make ourselves acquainted with the special laws of its development, whereby it becomes so detrimental: peradventure we may discover its more vulnerable points, and

learn the proper mode of attack. We will proceed step by step.

First. We will place this very small seed in the ground. It springs up and grows, like other seeds, and in autumn we have a root with a crown of leaves on its summit ; but no stem, or attempt to produce fruit—it is only a *seedling plant*. The winter kills the foliage, but the root endures, for it is a *Bi-annual*, or *two years* plant.

Second. On the return of spring the root sends up a new crown of leaves, larger and more vigorous than the first, and in their midst, a stem, or stems, which grow, and produce leaves, flowers, and fruit after their kind ; and after having completed the reproductive process, both root, and stem dies ; just as *bi-annual* plants usually do. This presents a simple view which would lead us to the plain, and practical inference ; that there is nothing more needed than to cut down this flowering stem, and the trouble would end. Not so. While the flower stem was growing, and maturing its fruit, a *secret mischief* was plotting at the root, in the form of *rhizomas*, radiating from the crown, in a horizontal direction. These, many, or few, after travelling far enough, ascend to the surface, and there form *rhizomatous plants*, very similar in appearance, and capacity for mischief, to our *seedling plant* of last year ; for be it remembered that these *rhizomatous* plants, have taken the precaution to provide roots for themselves, and therefore, do not die with the parent stem, of which they have now grown quite independent.

Third. Another winter passed, and all those *rhizomatous plants* put up leaves and fruiting stems, just as the *seedling plant* had done ; and having perfected their fruit, die in the same manner. But before doing this, they had each, and all of them, provided *rhizomatous plants* for

the ensuing summer. And so the mischief goes on *ad infinitum*.

Hence, by the aid of the *rhizomas*, our subject has become a *Bi-per-annual* production.

A friend at my elbow suggests, that one who is a close observer, has been more successful in the destruction of the Thistle by cutting and digging, the nearer he left the operation to the period of maturation of the fruit; owing, as he supposed, to the exhausted condition of the roots, by their effort to perfect the seeds. The suggestion is worthy of renewed attention. If the foregoing sketch of its development is correct, the parent stem, and its proper root, should naturally perish, without his assistance; but if I am not mistaken, the young rhizomas or root stocks, would not feel the exhaustion of which he speaks; and having an ample supply of their own rootlets, they would not mourn over the death of their parent stem, but rather, exult in their own independence.

With this history before us—remembering the almost infinite number of seeds which it produces—and knowing that the vitality of the roots is such, that each small fragment, left in the soil, is capable of producing a new plant;* we have the principal data to construct a *programme* for exterminating Canada Thistle.

I. Never permit a thistle to mature seed. This may be prevented by timely, and judicious cutting.

* This seems to be the common impression. I have not the means to determine whether all the *fibrous roots*, or only the *rhizomes*, possess this faculty. The same acknowledgment is due for some of the other *rhizomatous plants*. In the *Linaria vulgaris*, however, it is certain that the finest fibrous roots, are extremely vivacious.

II. Begin operations as soon as the plant has formed a *distinct stem*. The vitality of the plant is then most active in perfecting the fruit—and is not yet so much directed to the formation of rhizomas.*

If the subjects are few in number—and in this state; I would advise to take a sharp chisel-shaped tool, and cut the stem off obliquely, an inch below the surface; taking care to remove the earth, so as to leave a little cup-shaped cavity, with the fresh divided stem at the bottom. Into this cup immediately drop a small handful of a mixture of three parts of *common salt* (chloride of sodium) and one part of *Copperas* (sulphate of Iron), in powder. The hope is, that this would penetrate into, and kill, the parent, *before* the nascent rhizomes had acquired roots, and an independent vitality of their own—and that they too, would perish—the juices of the parent carrying the poison to its attached and still dependent offspring.

III. As the area widens, still embrace the *same* opportune season, to remove the parent stems, with their nascent rhizomes, either by the spade, or the plow; always using hand labor when practicable. The principal stocks should *always* be removed in this way.

The ground should then be thoroughly turned up; stirred and pulverized, by means of the fork-spade, plow, and harrow—taking special care to hand-pick and remove the roots, as they are brought to the surface. Keep the soil well stirred every few days (removing the roots as they may be turned up) throughout the season, so that no

* Renewed observations on some other rhizomatous plants renders it probable that the rhizomes of the Thistle begin to form quite early in the season. They must however, be in a tender, and dependent state, for some time.

plant shall have the opportunity of forming a leaf, (or *lung*); and the remaining roots will likely perish.

IV. The same care may be requisite the ensuing summer, that all the roots, and seeds, in the soil may be completely eliminated, before laying down to grass.

Lastly. Remember that success depends upon the *completeness* of the operation.

Other methods may be found available on a small scale especially that proposed for *Linaria vulgaris* (Toads-flax), where the means are at hand for smothering it out.

Genus XLI. ONOPORDON.—*Vaill.*

Heads, and florets, nearly as in *Cirsium*. Scales of the involucre coriaceous, tipped with a lanceolate, prickly, appendage; receptacle deeply honey-combed; akenes four angled, wrinkled; pappus of numerous bristles, slender, not plumose, united at base, in a horny ring.

Bi-annual? Coarse herbs; stem winged with the decurrent base of the prickly, lobed leaves.

55. C. ACANTHIUM.—*Linn.* Cotton Thistle.

Stem and leaves cotton-wooly; scales of the involucre linear awl shaped.

Bi-annual? Stem 2 to 4 (even 9) feet high, broadly winged by the decurrent edges of the leaves; leaves ovate-oblong, sinuate, and spinous, wooly on both sides, but most so beneath; flowers large, purple, solitary, at the end of the branches; involucre globose, of numerous lanceolate, very pungent, scales, green, with yellowish tips, the upper ones nearly erect, the middle ones spreading, the lower reflexed, all connected by a cottony web; pappus scarce half the length of the florets, jointed, rough downwards.

Hab. Road sides and fields. Europe. *July. Aug.*

Obs. Common in New England, and many other places. I introduced a single plant some twelve years ago, and although I thought that I had burned every seed it produced, yet one or more plants have appeared every year since (one which I suffered to grow last year reached the height of 9 feet) showing the danger of introducing *specimen plants* of a doubtful character. To me it seems to be a *bi-annual* plant—or readily becomes so.

Genus XLII. LAPPA.—*Tourn.*

Heads many flowered; florets all similar, and perfect; involucre globose; scales coriaceous, appressed at base, spreading, and abruptly subulate above, with rigid, incurved points; anthers with bristly appendages, or tips, and subulate tails at base; style-branches free, and divergent; akenes oblong, compressed, transversely rugose; pappus of numerous, short, rough, deciduous bristles; receptacle bristly.

Bi-annual? Leaves alternate, petiolate, large; heads rather small; florets purple, with bluish anthers.

56. L. MAJOR.—*Gærtn.* **Common Burdock.**

Lower leaves cordate-oblong, upper ones ovate; involucre smoothish, or loosely cobwebby.

Bi-annual. Stem 2 to 4 feet high, paniculately branched, roughish pubescent; leaves green and roughish, above, paler, and cobwebby, beneath; radical ones 1 to 2 feet long, wavy, and grossly dentate, on the margin (sometimes pinatifid, or deeply, and coarsely, dentate,); petioles 9 to 18 inches in length; stem-leaves gradually smaller, more or less, ovate; heads roundish-ovoid, $\frac{1}{2}$ to $\frac{3}{4}$ inch diameter, on short, terminal, and axillary, peduncles.

Hab. Neglected places. Europe. *July. Sept.*

Obs. This rough, and troublesome weed, being a *bi-annual*, requires but a single digging to extirpate it. A slovenly, and lazy man can hardly hang out a more appropriate shingle, than the Bur-Docks growing about his yard and fences, furnish.

Sub-order. **LIGULÆFLORÆ.**

Florets all ligulate and perfect; disposed in a radiati-form head.

Tribe. **CICHORACEÆ.**

Style, branches slender, rather obtuse, uniformly pubescent; stigmatic lines terminating near the middle.

Herbs with a milky juice; leaves alternate, or only radical; receptacle generally naked.

Genus **XLIII. TARAXACUM.**—*Haller.*

Heads many-flowered; involucral scales in two series—the outer, or lower ones short, the upper long, linear, erect; akenes oblong, ribbed, muricate on the ribs, and at summit, the apex finally produced into a long, filiform beak, which bears, at summit, a copious, white, capillary pappus.

Per-annuals. Stemless, consequently the leaves all radical, pinnatifid, or runcinate; heads large, solitary, on fistular scapes; florets yellow.

57. **T. DENS LEONIS.**—*Desf.* Dandelion.

Leaves lance-oblong, unequally, and acutely, runcinate; involucral scales not corniculate, at apex, the outer ones reflexed; akenes spinulose at summit.

Per-annual. Plant, at first pubescent, at length smooth; leaves 4 to 10 inches long; scapes several from the same root, 4 to 12 inches high, (elongating), terete; involucre oblong, the inner scales oppressed; with scarious margins; the outer reflexed, slightly ciliate—finally, the entire involucre reflexed; akenes terminating in a slender beak, which is short, at first, then suddenly elongating about $\frac{1}{4}$ of an inch, and diverging, with the pappus at summit, so as to form a globose head.

Hab. Every where. Europe. *April. May.*

Obs. I dissent from my friend Dr. Darlington that this is “not a very noxious weed.” It is fast becoming so; and is among the most difficult, of the whole catalogue of weeds, to exterminate. When we consider the tenacity of life, which the roots possess—their familiar adaptation to almost every soil, locality, and growing crop—their rapid, and continuous production of many-seeded heads—and the unrivable beauty, and completeness, of the pappus, or parachute, for the dispersion of the seeds; we may well despair of ever being able to effect its extermination. It may be kept in check in tillage lands—but where the plow is not allowed to come, its increase can hardly be prevented.

The most that I can recommend is high farming. That is to pre-occupy the ground by vigorous grass and grain crops and thus smother it out.

Genus. XLIV. SONCHUS.—*Linn.*

Heads many-flowered, tumid at base; involucreal scales more or less imbricated; akenes compressed, ribbed, not beaked; pappus copious, of very white, soft, fine, silky hairs.

Smoothish, glaucous herbs; florets yellow.

58. **S. OLERACEUS.**—*Linn.* **Common Sow Thistle.**

Leaves runcinate-pinnatifid, dentate, sagittate, and clasping; akenes transversely rugose.

Annual. Stem 2 to 3 feet high, branched, fistular, tender, glandular pilose above; leaves 3 to 8 inches long, the lower ones runcinate, on petioles 1 to 2 inches in length, upper ones clasping; heads of flowers in terminal, and axillary, cymose panicles; peduncles thickish, clothed, when young, with a loose, flocculent, white tomentum; involucre tumid, and orbicular, at base, abruptly contracted, above, to an acumination.

Hab. Gardens and lots. Europe. *Aug. Sept.*

Obs. Though not very detrimental, it is a coarse, unsightly, weed, and always grows in the wrong place. It can be readily eradicated by the scythe or garden hoe.

Order. XVII. PLANTAGINACEÆ.

Chiefly stemless herbs; leaves mostly, all radical, and rosulate, strongly ribbed; flowers spiked, on naked scapes, regular; the parts usually in fours; calyx free from the ovary; corolla membranaceous, and dry; stamens inserted on the corolla-tube, alternate with its lobes; capsule membranaceous, circumcised, two celled; cells one or several seeded; seeds with fleshy albumen.

Genus. XLV. PLANTAGO.—*Linn.*

Sepals persistent, slightly connected at base, the margins scarious; corolla tubular, with reflexed lobes, marcescent; stamens four, much exerted; flowers whitish, or ochroleucous, small, bracteate.

† Capsule 6 to 8 seeded.

59. *P. MAJOR*.—*Linn.* Common Plantain.

Leaves oval, or ovate, on long, channelled petioles; scape terete, smooth; spike long, cylindric.

Per-annual. Leaves 3 to 8 inches long, 5 to 7 ribbed, with an elastic filament in each rib, generally smoothish (sometimes quite hairy); petiole about as long as the leaf; scapes several, 6 to 18 inches high (including the spike); bracts lanceolate, keeled, appressed, shorter than the calyx; stamens twice the length of the corolla.

Hab. Yards, lots, &c. Europe. *June. Aug.*

Obs. Remarkable for accompanying civilization, to every part of the globe. An unbecoming intruder in yards, paths, and too often in cultivated grounds. The utmost care is needed to prevent it maturing seed.

Order. XVIII. SCROPHULARIACEÆ.

Chiefly herbs; leaves alternate, opposite, or verticillate, without stipules; flowers pentandrous, didynamous, or diandrous; corolla irregularly 5 lobed, subterete, personate, or bilabiate, the lobes imbricated in the bud; stamens inserted on the tube of the corolla; capsule two celled, mostly two valved, and many seeded; placentæ united in the axis; embryo small, in copious albumen.

Sub-order. ANTIRRHINIDEÆ.

Upper lip of the corolla outermost, covering the lobes of the lower, in the bud; capsule usually septicial.

† Corolla subrotate; leaves all alternate.

Genus XLVI. VERBASCUM.—Linn.

Calyx five parted; corolla nearly equally five lobed, concave-spreading; stamens five, declined; filaments unequal, all (or the three upper ones) hairy; capsule ovoid, or globose; seeds rugose-pitted.

Bi-annuals, chiefly. Flowers in dense spikes, or paniculate racemes.

60 V. THAPSUS.—Linn. Common Mullein.

Densely hoary-tomentose; stem stout, simple; leaves lance-oval, entire, the cauline ones decurrent; flowers in a thick, dense, terminal spike; two lower filaments smooth.

Bi-annual. Plant pale greyish-green; pubescence much branched; stem 3 to 6 feet high; radical-leaves 6 to 12 inches long, entire, subsessile; stem-leaves smaller; spike 6 to 15 inches long, cylindric, about an inch in diameter; flowers subsessile, bracteate, bright yellow.

Hab. Neglected fields. *June. Aug.*

Obs. Darlington justly observes, There is no surer evidence of a slovenly, negligent, farmer, than to see his fields overrun with Mulleins. As the weed produces a vast number of seeds, it can only be kept in subjection, by a careful eradication while young. This is easily accomplished by hand pulling, before the maturation of the seed.

61 V. BLATTARIA.—Linn. Moth Mullein.

Smoothish, and green; stem rather slender, often branched; leaves oblong, serrate, not decurrent; flowers racemose; filaments all hairy.

Bi-annual? Stem 2 to 4 feet high, angular; leaves 2

to 5 inches long, the lower ones petiolate, often sinuate-pinnatifid, the upper ones sessile, and clasping; racemes 6 to 18 inches long, leafy, or bracteate, glandular-pubescent; pedicels $\frac{1}{2}$ to 1 inch long; flowers greenish-white, with a tinge of purple—or bright yellow.

Hab. Grass fields. Europe. *June. Aug.*

Obs. Our Fathers not inappropriately, called this the Bullet Weed. It is an ugly customer, and by reason of the multitude of its seeds, is capable of rapid diffusion. It is quite conspicuous, and easily removed when in flower; but remember—in all the mulleins, one portion of the seed is ripe while another is only embryotic in the flower.

†† Corolla personate, with a spur, or sack, at base; capsule opening by chinks, or valve-like teeth.

Genus XLVII. LINARIA.—*Tourn.*

Calyx five parted; corolla with a prominent palate, closing the throat; upper lip bifid, the lobes folded back; stamens four; didynamous, with a minute rudiment of a fifth; capsule ovoid, or globose, thin, opening by one or two chinks, and by several teeth, at apex; seeds often margined; leaves mostly alternate; flowers racemose.

62 L. VULGARIS.—*Mill.* Toad Flax, Ranstead Weed.

Smooth and glaucous; stem erect, slender, often simple; leaves lance-linear, acute, numerous; racemes terminal, crowded; corolla spurred at base.

Per-annual. Root creeping, subligneous; stem 1 to 3 feet high, terete, leafy, sometimes branched, especially near the summit; usually growing in bunches, or small patches; leaves 1 to 2 inches long; flowers in a bracteate raceme, terminating the stem, and branches; corolla pale

greenish-yellow—the palate bright orange color; throat villous, spur subulate, about half an inch long; capsule ovoid-oblong; seeds with a dilated, orbicular margin.

Hab. Pastures. Europe. *June. Aug.*

Obs. Of *troublesome plants*, the venerable John Bartram writes, “The most mischievous of these, is the stinking, yellow *Linaria*. It is the most hurtful plant to our pastures, that can grow in our northern climate. Neither the spade, plough, nor hoe, can eradicate it, when it is spread in a pasture. Every little fibre, that is left, will soon increase prodigiously; nay some people have rolled great heaps of logs upon it, and burnt them to ashes, whereby the earth was burned, half a foot deep; yet it put up again, as fresh as ever, covering the ground so close as not to let any grass grow among it; and the cattle can’t abide it.”

I do not agree with Dr. Darlington that this is too severely true. I have labored pretty attentively for five years before I fully conquered a little patch in my garden where the ground was carefully cultivated every year. A fibre the size of a cambric thread, and an inch long, would come to the surface—and when pulled, would leave other fibres to do the same thing.

It often occurs in patches. These may be *smothered out*. I had such a patch some twenty-five years ago, about two rods square in a clearing, where the ground had not been ploughed. The weeds cut off a stubble field near by was spread over it to the depth of 5 feet, and fifty bushels of magnesian Lime thrown over it. In the autumn of the next year, the cattle tramped, and pulverized the whole mass; which was then spread on the field. I am happy to say that there has not been any return of the *Linaria* since.

Order XIX. VERBENACEÆ.

Herbs, shrubs and trees. Leaves mostly opposite, without stipules; corolla irregular, often bilabiate; stamens mostly didynamous; ovary free, entire, with the style terminal; fruit dry (sometimes drupaceous) 1 to 4 celled, usually splitting into as many one seeded nutlets; seeds with little or no albumen.

Genus XLVIII. VERBENA.—*Linn.*

Calyx tubular, five toothed,—one tooth often shorter; corolla tubular, often curved, salver-form,—the border rather unequally five lobed; stamens included, the upper pair sometimes without anthers; fruit splitting into four nutlets; flowers in terminal, often paniculate, bracteate spikes.

63. V. HASTATA.—*Linn.* Blue Vervain.

Leaves oblong-lanceolate, acuminate, doubly incised-serrate—the lower ones often hastate-lobed; spikes fascicled, or corymbose-paniculate, dense flowered.

Per-annual. Stem 3 to 5 feet high, roughish-pubescent, mostly purple, with rather short, erect, axillary branches, above; leaves 2 to 5 inches long; petioles $\frac{1}{2}$ to 1 inch in length; spikes 1 to 5 inches long; erect, shorter than the calyx; corolla bluish-purple, pubescent.

Hab. Bottom land. *July. Oct.*

Obs. In lands not tilled the roots of this weed ought to be carefully removed with the hoe.

64. V. URTICÆFOLIA.—*Linn.* Common Vervain.

Leaves lance-ovate, acute, coarsely serrate, spikes loosely paniculate, very slender, elongating; flowers rather distant, small.

Per-annual. Stem 2 to 4 feet high, hirsutely pubescent, with slender, axillary, spreading branches above; leaves 2 to 4 inches long, abruptly narrowed at base to a petiole $\frac{1}{2}$ to $\frac{3}{4}$ of an inch long; spikes 2 to 6 inches in length, green, filiform, and rather flaccid; flowers distinct, and finally, a little distant; bracts lanceolate, shorter than the calyx; corolla white, very small, the throat filled with a delicate white villus.

Hab. Pastures, road sides. *July.* *Sept.*

Obs. A coarse rough weed. A tidy farmer will not be likely to tolerate it on his premises.

Order XX. LABIATÆ.

Herbs chiefly. Stems square; leaves simple, opposite, or sometimes verticillate, generally aromatic; stipules none; flowers in axillary cymes, or aggregated in terminal spikes; corolla more, or less, bilabiate; anther-cells parallel, or often divaricate—sometimes separated by a long filiform connective; ovary four lobed, becoming, in fruit, four little seed-like nutlets, surrounding the base of the style, in the bottom of the persistent calyx; each lobe, or nutlet containing a single seed, with little, or no albumen.

Tribe. STACHYDEÆ.

Calyx usually campanulate, five to ten nerved, the orifice regular, or oblique; three to ten toothed, or bilabiate; corolla bilabiate, the upper lip arched, or flat, entire, or emarginate; lower lip variously three lobed; stamens ascending, didynamous, the upper pair shorter; nutlets erect, free at base.

§ *Lamiæ*: Stamens exerted from the tube of the corolla.

Nutlets truncate at apex.

Genus XLIX. LEONURUS.—*Linn.*

Calyx turbinate, five nerved, the border truncate, five toothed; teeth subulate, finally spinose, and spreading; corolla with the upper lip oblong, entire, somewhat arched; lower lip three lobed, the lateral lobes oblong, the middle one entire, or sometimes ob-cordate; anthers approximating in pairs, incumbent; cell: mostly parallel, opening transversely, by little valves, valvelets naked on the margin; nutlets triquetrous, with the angles acute.

Per-annuals, mostly. Leaves incisely lobed; cymules dense, and closely axillary.

65. L. CARDIACA.—*Linn.* Mother-wort.

Lower stem-leaves palmate-lobed, upper ones ovate, and cuneate-oblong, mostly trifid; corolla longer than the calyx teeth, the tube with a villous ring, within, at base; upper lip flattish, densely villous above; lower lip spreading, with the middle lobe, entire.

Per-annual. Stem 2 to 4 feet high, branched at base, and above, retrorsely pubescent, with a hairy ring at the nodes, often purplish at base; leaves 2 to 4 inches long, rugose, lower, or radical ones, nearly orbicular in outline; petioles 1 to 2 inches long; cymules 3 to 8 flowered, sessile, forming a terminal, interrupted, leafy, spike 6 to 12 inches long; bracts subulate; corolla pale purple.

Hab. Lanes, &c. Europe. *June. Aug.*

Obs. Since this weed lost its virtues, as indicated by its common name, it has not been worth its room, and had better be carefully extirpated.

66. **L. MARRUBIASTRUM.**—*Linn.*

Stem-leaves oblong-ovate, coarsely serrate; corolla shorter than the calyx-teeth, tube naked within; upper lip somewhat arched, the lower rather erect.

Per-annual. Stem 2 to 4 feet high, branched, with retrorse, cinereous pubescence; leaves 2 to 3 inches long, smaller above; radical ones ovate, crenate, long-petiolate; upper floral leaves lanceolate, incised-dentate; cymules many-flowered, sub-sessile, forming interrupted, leafy, spikes 6 to 18 inches long; bracts terete, needle-like; corolla whitish, tinged with red.

Hab. Lanes, fields. Europe. *July. Sept.*

Obs. Nearly related to the preceeding. It was introduced into the Jackson Garden many years ago, and became a common weed of the neighborhood, for miles around: especially down the neighboring stream.

Tribe. AJUGEÆ.

Corolla with the upper lip sometimes very short, sometimes deeply cleft, with the lobes descending, rarely erect, and arched; lower lip elongated; stamens mostly didynamous and much exerted; nutlets reticulately rugose, obliquely affixed, and sub-connate at base.

Genus. L. TEUCRIUM.—*Linn.*

Calyx tubular, slightly ventricose, nearly equally five toothed, or the upper ones a little broader; corolla with the four upper lobes nearly equal, oblong, and declined, the lower lobe largest, mostly concave; stamens exerted from the fissure on the upper side of the corolla; anther cells confluent; cymules few-flowered, in a terminal rather crowded, greyish-green spike.

67. **T. CANADENSE.**—*Limn.* Wood-sage. Germander.

Greyish-pubescent; leaves ovate-lanceolate, acute, serrate, on short petioles.

Per-annual. Stem 1 to 2 feet high, simple or sparingly branched, square with the sides concave, and the angles obtuse, retrorsely pubescent; leaves 3 to 5 inches long; petioles $\frac{1}{4}$ to $\frac{3}{4}$ of an inch; cymules 2 to 3 flowered, in a simple spicate raceme, 2 to 6 inches in length, sometimes axillary, and opposite; bracts about as long as the calyx; corolla pale purple.

Hab. Fences, road sides. *July. Aug.*

Obs. A farmer told Darlington that he had "found it a very troublesome *weed*, and moreover, exceedingly difficult to eradicate." I have had some experience with this weed; and think that the *farmer* was right. It spreads rapidly, by means of runners, or stolens, as well as by seeds. If once started it will require care, and attention, to get clear of it. It is quite a nuisance in some parts of the Toughkenamon valley.

Order. XXI. BORAGINACEÆ.

Chiefly hirsute herbs. Stem round; leaves alternate, entire, not aromatic; stipules none; flowers usually regular, and nearly symmetrical, mostly in one-sided racemes, or spikes, which are revolute, (circinate, or scorpioid), before developement; calyx five parted; corolla five lobed, with five stamens inserted on the tube; ovary deeply four parted, becoming, in fruit, four seed-like nutlets surrounding the base of the style; seeds single, pendulous, with little, or no, albumen.

§ Nutlets fixed to the receptacle (free from the style.)

† Corolla irregular.

Genus. LI. ECHIUM.—*Tourn.*

Corolla sub-companulate, unequally, and obliquely lobed; throat expanded, naked; stamens mostly exerted, unequal; nutlets rugose, or tuberculate, with a small, flat scar at base; flowers in paniced spikes, at first purplish, finally bright violet-blue.

68. E. VULGARE.—*Linn.* Viper's Bugloss. Blue Devils.

Stems tuberculate-hispid; leaves linear-lanceolate; flowers in short lateral spikes.

Bi-annual? Stem 1 to 3 feet high, branched above; radical leaves 5 to 8 inches long, petiolate; stem-leaves smaller, acute, sessile; spikes axillary, numerous; nutlets sub-ovoid, angular on the inner side, keeled on the back, acuminate, incurved, rough with greyish-brown tubercles.

Hab. Road-sides, fields. Europe. *June. Aug.*

Obs. This repulsive stand-off-looking weed, like *vice*

“Is of such hideous mein,
“That to be hated, needs but to be seen.”

Fortunately, the Viper's Bugloss is too conspicuous an object, long to elude observation; and being bi-annual, is easily eradicated, by timely care, before it sheds its seeds. I have several times found a solitary plant, on our public roads. Be vigilant.

§§ Nutlets with a small flat scar at base.

Genus. LII. LITHOSPERMUM.—*Tourn.*

Corolla funnel-form, or salver-form, with rounded lobes; throat naked, but mostly with five small, gibbous projections; anthers oblong, sub-sessile, included; styles

not exerted; nutlets ovoid, rugose, or smooth; flowers axillary, crowded at summit, in leafly racemes, or clusters.

† Corolla funnel-form, white; nutlets rugose.

69. L. ARVENSE.—*Linn.* Stone-seed. Pigeon-weed.
Gromwell.

Stem hairy; branched from the base; leaves lance-linear, rather acute, nerveless; flowers small, the lower ones rather distant.

Annual. Plant greyish-green, with short appressed hairs; stem 12 to 18 inches high, branched; leaves 1 to 2 inches long, with a midrib, but no lateral nerves, sessile; flowers axillary, sub-sessile; nutlets brown when mature.

Hab. In fields. Europe. *May. June.*

Obs. Our fathers called this erratic visitor, *pigeon-weed*. It was *then* much more common than *now*. And why? They did not then cultivate the grasses, consequently, the soil was left for weeds to grow in. Since the introduction of the grasses as a rotation crop, the *stone-seed* is seldom seen; or only where the grass is deficient. It was called pigeon-weed, from an opinion that it was brought by those birds from some remote region, in their migrations. Good tillage seems adequate to its extermination.

Genus. LIII. CYNOGLOSSUM.—*Tournef.*

Corolla funnel-form; lobes rounded; tube equal to the calyx; throat closed by five acute scales; stamens included; nutlets depressed, or convex, more or less covered with short, barbed, or hooked, prickles; flowers mostly in paniculate, or corymbose, naked racemes.

† Racemes bracteate.

70. **C. MORISONI.**—*D. C.* **Beggars' Lice.**

Stem hairy, leafy, divaricately branched, above; leaves ovate-lanceolate; racemes slender, paniculate, forked.

Annual. Stem 2 to 4 feet high; leaves 3 to 4 inches long, acute at each end, scabrous, the lower ones petio- late, upper one subsessile; racemes pedunculate, 1 to 3 inches long, terminating in slender, divaricate, branches, mostly dichotomous; pedicels about as long as the fruit, corolla bluish white; nutlets convex, densely covered with barbed prickles.

Hab. Thickets fence-rows &c. *July. Oct.*

Obs. The slovenly farmer is apt to acquire a practical knowledge of this obnoxious weed; by its bur-like fruit becoming entangled in the manes of his horses, or the wool of his sheep. Being an *annual*, timely cutting will save this annoyance.



Order. XXII. CONVULVACEÆ.

Mostly trailing, or twining herbs, often with a milky juice; leaves alternate, (rarely none) entire, or lobed, without stipules; flowers regular, often large; calyx of five imbricated persistent sepals; corolla five plaited, or four to five lobed, twisted, or convolute in the bud; stamens mostly five; capsule one to four celled, often septifragal, few-seeded; seeds with a little mucilaginous albumen; cotyledons sometimes (*i. e.*, in the leafless plant), wanting.

Sub-order. CONVULVULÆ.

Green leafy plants; cotyledons large, foliaceous, crum- pled, or corrugated; corolla large, plicate, obscurely lobed.

Genus. LIV. CALYSTEGIA. R. Br.

Calyx covered by two large, opposite, sub-cordate bracts; corolla campanulate; stamens included; stigmas two, oblong; ovary imperfectly two-celled; capsule one celled, four seeded.

Per-annual. Leaves entire, sagittate-cordate, at base; flowers solitary, on long, axillary peduncles.

71. C. SEPIUM. Hedge Bind-weed.

Stem long, trailing or twining, smoothish; leaves sagittate, with the lobes obliquely truncate.

Per-annual. Stem 3 to 6 feet long; leaves 2 to 4 inches long, oblong, or sub-triangular; petioles 1 to 3 inches long; peduncles 4 to 8 inches; bracts oblong-cordate, nearly one third the length of the corolla, and almost twice as long as the calyx; corolla about 3 inches long, white, tinged with rose-colour.

Hab. Fields, meadows, &c. *June. Aug.*

Obs. Fortunately not common, but daily spreading.

72. C. PUBESCENS. California, or Mexican Rose.

Stem trailing, or twining, rough-pubescent, striate; leaves oblong-lanceolate; hastate, the basal lobes widely divaricate, and deeply truncate, pubescent above and beneath.

Per-annuals. Stem 4 to 6 feet long; leaves 3 to 4 inches long, 1 inch wide, the basal lobes 2 or more inches; petioles 1 inch long; peduncles axillary, 2 to 3 inches long; bracts broad-lanceolate, $\frac{3}{4}$ inch in length; calyx shorter than the bracts; petals numerous (double-

flowered) two to three times longer than the bracts, pale reddish pink; resembles a rose.

Hab. Gardens and yards. *July.*

Obs. This plant has been recently introduced into the flower garden and house-yard, from which it is gradually spreading; and unless diligently watched, may soon become as great a pest as either of its congenerie bind-weeds.

Genus. LV. CONVULVULUS.

Calyx naked (the bracts being small, and remote from the flower); corolla companulate, or funnel-form; stamens mostly included—stigmas two, rarely three, linear, globular, or capitate.

Chiefly trailing, or climbing, often with milky juice; leaves more or less cordate; peduncles axillary, one-few flowered; flowers usually large.

73. C. ARVENSIS.—*Linn.* Field Bind-weed.

Stem procumbent, or twining; leaves ovate-oblong, obtuse, sagittate-cordate; petioles $\frac{1}{2}$ to 1 inch long; peduncles one to three flowered, bibracteate.

Per-annual. Stem 2 feet long, slender, branching, hairy; leaves 1 to $1\frac{1}{2}$ inches long, sometimes emarginate, a minute cusp terminating the midrib; petioles $\frac{1}{2}$ to 1 inch; peduncles 1 to 3 inches in length, with two small bracts remote from the flower; corolla $\frac{3}{4}$ inch, pale red, or reddish white.

Hab. Cultivated lots. Europe. *June. Aug.*

Obs. The *Flora Londinensis* says of this plant.

“I planted twelve feet of a bank in my garden, which was about four feet in height with some roots of it, early

in the spring. They quickly covered the whole surface of the bank to the almost total extirpation of every other plant. It being a generally received opinion, that if a plant was cut down close to the ground, it would thereby, be destroyed, or at least, very much weakened; I determined to try the validity of this opinion, by an experiment; and accordingly, the whole of the *convolvulus* was cut down, somewhat below the surface of the earth. In about a month, the bank was covered with it, thicker than before. I then had recourse to a second cutting; and afterwards, to a third. But all these were insufficient; for now (August) the bank is wholly covered with it; nor do I expect to destroy it, but by levelling the bank, and destroying the roots."

"This experiment seems to determine a matter of no small consequence to agriculture *viz.*: That cutting down those plants which have creeping roots, [rhizomes] rather tends to make them *spread further*, than to destroy them; and that nothing short of actual eradication, will effect the latter." He adds "many fields of corn [probably wheat and barley] are every year destroyed by it; or rendered of little value."

Let the reader fancy to himself, a climbing, twining plant, of such indomitable vitality, and growth, as this and the two preceding Bind-weeds possess; either in his mowing, or grain fields, and he will be able to fully appreciate the conclusion rendered in the above extract—THAT NOTHING SHORT OF ACTUAL ERADICATION will destroy the roots; and will be prepared to act accordingly. The only plausible method to accomplish this end is, by *suffocation*. On the small scale, by covering the plants with weeds or rubbish—and on the large scale, by the incessant stirring of the ground, so as to effect the same purpose—always

being very careful to keep the mischief in the narrowest possible circumscribed limits.

Order XXIII. SOLANACEÆ.

Mostly herbs; with a watery juice; leaves alternate, without stipules; flowers regular, chiefly pentamerous, and pentandrous; on bractless pedicels; corolla plicate, or infolded-valvate, in the bud; stamens inserted into the corolla, as many, and alternate with its lobes; fruit a many-seeded berry, or capsule; seed with fleshy albumen.

* Corolla tubular, or funnel-form; stamens separate.

† Fruit a capsule.

Genus LVI. DATURA.—*Linn.*

Calyx tubular, prismatic, separating transversely above the base, in fruit; corolla funnel-form, border plicate, five toothed; stamens included; stigma two lipped; capsule oval, or sub-globose, mostly prickly, four valved, four celled at base, two celled at summit; seeds reniform, rough dotted.

Annuals. Fœtid when bruised; leaves somewhat in opposite pairs; flowers large, solitary, or dichotomal, on short pedicels.

74. D. STRAMONIUM.—*Linn.* James-town Weed. Thorn Apple.

Smooth; stem branching dichotomously; leaves ovate-angulate, or sinuate-dentate, petiolate, capsules muricate, erect.

Annual. Stem 2 to 5 feet high, stout, terete, pale-yellowish-green; leaves 4 to 8 inches long; petioles 1 to 4 inches; calyx prominent five angled, nearly half as long

as the corolla, deciduous, leaving the persistent base, orbicular; corolla about 3 inches long, ochroleucous; capsule 1 inch in diameter.

In *var. Tatula*. Stem brownish-purple; corolla pale purple.

Hab. Neglected places. *July. Sept.*

Obs. No agricultural nuisance is easier abated than this.

** Corolla campanulate, or rotate; stamens connivent; fruit a berry.

† Anthers opening by terminal pores.

Genus LVII. SOLANUM.—*Linn.*

Calyx mostly five parted, spreading, persistent; corolla rotate; border plicate, usually five lobed; stamens exerted, often slightly cohering; being mostly two celled; leaves various; flowers mostly in pedunculate, cymose clusters.

§ Stem and leaves unarmed.

75. S. NIGRUM.—*Linn.* Common Night-shade.

Leaves ovate, obscurely repand-dentate; flowers in lateral, umbel-like cymes; fruit globose, small, black.

Annual. Stem 1 to 2 feet high, much branched, angular, or slightly winged; leaves 2 to 3 inches long; petioles 1 inch; cymes few-flowered, extra-axillary, nodding; corolla white, small; berries $\frac{1}{4}$ inch in diameter.

Hab. About yards, &c. Europe. *July. Sept.*

Obs. This weed has nothing to recommend it—but is highly objectionable, on account of its poisonous berries, so tempting to children. By all means eradicate it.

76. S. DULCAMARA.—*Linn.* Bitter-sweet.

Somewhat shrubby, and climbing; leaves cordate-ovate, the upper ones often hastate, or auriculate-lobed, at base; flowers in lateral cymes; fruit, oval, small, red.

Per-annual. Stem 6 to 8 feet long, flexuous, smoothish; leaves 2 to 4 inches long; petioles $\frac{1}{2}$ to 1 inch; cymes opposite the leaves, nodding; pedicels short, clavate; common penducle 2 inches long; corolla violet-purple, the lobes spreading, or reflected, each with two green dots, or tubercles, at base; berry near $\frac{1}{2}$ an inch long.

Hab. About houses. Europe. *July. Sept.*

Obs. The same objections lie against this, as the last—on account of its poisonous fruit, without any redeeming qualities—except it be, that our good mothers more than half a century ago, used to cut the half-succulent stems into short pieces, string them on threads, and apply them round their children's necks, as beads. They did probably prevent excoriations of the necks of fat children, like any other beads—but those good women evidently looked beyond this, to some *talismanic influence* which the plant was capable of exerting—whether to keep the worms *down*—to cure the belly-ache—or like the *blue woollen string*, to prevent bleeding at the nose; your deponent sayeth not.

§§ Stem, and leaves, more or less prickly.

77. S. CAROLINENSE.—*Linn.* Horse Nettle.

Stem suffruticose, branching; leaves ovate-oblong; acute, sinuate-angled, and often subhastate, prickly on both sides; flowers in loose, simple, lateral racemes; fruit globose, small, orange-yellow.

Per-annual. Stem 1 to 2 feet high, annual, but firm and almost shrubby, armed with sharp spreading prickles; leaves 4 to 6 inches long, stellately hirsute; petioles $\frac{1}{2}$ to $1\frac{1}{2}$ inches long; racemes opposite to, and often longer than the leaves; pedicels about half an inch; corolla purple, or bluish-white; berries $\frac{1}{2}$ inch diameter.

Hab. In fields. *July.* *Oct.*

Obs. The farmer can hardly have a more unpromising nuisance to contend with than this. I can not do better than refer the reader to the *Obs.* under *Cirsium arvense* (p. 54) for general treatment. Where it only exists in small well circumscribed patches, I would advise smothering it out, as mentioned under *Linaria vulgaris* (p. 65.)

The owner of land which has become foul with such a terrible pest, who will quietly fold his arms, and supinely look on, while it extends from acre to acre, of his own, and his neighbour's premises—and there are many such—is a far worse, and more difficult nuisance than the weed itself. A nuisance which can only be abated by removing him from the management of the land; and letting it to one who will faithfully perform his duty, and remunerate himself out of the products of the soil.

A law requiring this, would be no more arbitrary, nor unjust; and is as much needed, for the health of our Agriculture; as the quarantine laws are, for the physical health of our cities. (See p. xviii.)

Order XXIV. APOCYNACEÆ.

Plants with a milky juice; leaves entire, mostly opposite, without stipules; flowers regular, pentamerous, and pentandrous; corolla-lobes convolute, and twisted, in the bud; stamens alternate with the lobes; filaments mostly

distinct; pollen granular; fruit usually a follicle, with the seeds comose; sparingly albuminous.

Genus LVIII. APOCYNUM.

Calyx five parted; corolla campanulate, five lobed, with five triangular appendages in the throat, opposite the lobes; stamens inserted at the base of the corolla, short; anthers sagittate, connivent, slightly adherent to the stigmas; ovaries two, oblong, surrounded at the base by five glands; follicles in pairs, rigid, long and slender; seeds imbricated, linear, with a silky tuft (coma) at apex.

Per-annual. Herbs; flowers in axillary, or terminal, paniculate cymes.

78. A. ANDROSÆMIFOLIUM.—*Linn.* Dog's-bane.

Leaves ovate, rounded at base; cymes few-flowered; corolla-tube longer than the calyx—the lobes recurved.

Per-annual. Stem 2 to 3 feet high, smooth, purple, erect, with spreading branches; leaves 2 to 3 inches long, acute, mucronate; petioles $\frac{1}{4}$ inch; cymes mostly terminal; pedicels with subulate bracts at base; calyx-segments lance-ovate, about half as long as the corolla-tube; corolla pale red, or whitish, with purple stripes; ovaries distinct; stigmas united, large; follicles about 4 inches long, terete, attenuated at apex; seeds $\frac{1}{4}$ inch long, very narrow, truncate at apex.

Hab. In fields, &c. *June. Sept.*

Obs. The erratic roots of this weed, are very tenacious of life, and from their habit, rather difficult to extract from the soil. A small patch has, for several years resisted the plow, the scythe, and frequent hand-pulling. The next expedient will be the *Grubbing Hoe*.

79. A. CANNABINUM.—*Linn.* Indian Hemp.

Leaves lance-oblong, acute at each end; cymes many-flowered; corollo-tube equal to the calyx, lobes erect.

Per-annual. Stem 2 to 4 feet high, smooth, purplish, a little glaucous, with rather erect branches; leaves 2 to 5 inches long, ovate-lanceolate, to linear-oblong, acute, or conspicuously mucronate; petioles $\frac{1}{4}$ to $\frac{1}{2}$ an inch: cymes somewhat paniculate, one frequently dichotomal, near the summit; pedicels with lance-linear bracts at base; calyx segments lanceolate, about as long as the corolla-tube; corolla mostly greenish-white, sometimes tinged with red; follicles, as in the preceding, but more slender.

Hab. Borders of woods. *Aug.* *Sept.*

Obs. Less common than the last. Habits similar.

Order. XXV. ASCLEPIADACEÆ.

Per-annual. Herbs with a milky juice; leaves entire, usually opposite, sometimes, verticillate, or scattered; stipules none; flowers regular, pentamerous, and pentandrous; corolla-lobes mostly valvate in the bud; filaments mostly dilated, and connate in a tube, including the pistils—the tube augmented by a crown of five lobes, or scales, at summit; anthers erect, united in a pyramidal, five angled mass, truncate at apex, each two celled, cells opening perpendicularly, or transversely; pollen in waxy masses, which are attached in pairs, to five small processes at the angles of the stigma; ovaries two; styles distinct, co-allesced at summit, forming a five angled stigma, common to both; fruit a follicle; seeds imbricated, compressed, mostly margined, and comose; albumen thin.

Genus. LIX. ASCLEPIAS.—*Linn.*

Calyx deeply five parted, persistent, segments lanceolate spreading; corolla five parted, reflexed, deciduous; crown of five headed lobes, each containing a subulate, incurved process; anthers adherent to the stigma, tipped with membranaceous appendages, the cells opening perpendicularly, with rigid, projecting, wing-like margins; each cell containing a flattened, pyriform, waxy, pollen mass; the two contiguous pollen masses of adjacent anthers forming pairs, which hang by their slender summits, from five small, black, shining, cloven, tubercles, or glands at the angles of the stigmas; ovaries in pairs, one of them usually abortive; follicles rather ventricose, acuminate, soft; seeds numerous, each with a tuft of silky hairs at the hilum; flowers in simple, pedunculate umbels, terminal, and lateral.

80. A. PHYTOLACCOIDES.—*Pursh.* Poke-leaved
Asclepias.

Leaves ovate, or ovate-lanceolate, acuminate; umbels mostly lateral, long-pedicelled, and loose.

Per-annual. Stem 3 to 5 feet high, rather slender, somewhat pubescent in lines; leaves 6 to 9 inches long, acute at each end; petioles $\frac{1}{2}$ an inch; umbels lateral and terminal; common peduncles 2 to 3 inches; pedicels 1 to $1\frac{1}{2}$ inches in length, slender, and flaccid, with subulate-linear bracts at base; corolla greenish-white; crown with tinges of purple, at base; follicles 4 to 6 inches long, minutely pubescent.

Hab. Fields, &c. *June.* *Sept.*

Obs. I have found this large, showy plant quite obstinate in yielding to ordinary means of extermination. Its

runners gives it a wide range, and require more than ordinary care, to fully eliminate them from the soil.

81. A. INCARNATA.—*Linn.* Swamp Milk-weed.

Leaves oblong-lanceolate, acute, obtuse at base, petio- late; umbels numerous, terminal, and sub-terminal.

Per-annual. Stem 2 to 4 feet high, with somewhat corymbose branches, smoothish with pubescent lines; or sometimes coarsely tomentose-pubescent; leaves 3 to 6 inches long, often almost truncate at base; petioles $\frac{1}{4}$ to $\frac{1}{2}$ inch; umbels rather small; common peduncles 1 to 2 inches long, often densely pubescent; pedicels $\frac{1}{2}$ to $\frac{3}{4}$ inch long, with lance linear, caducous, bracts, at base; corolla reddish purple, crown paler; follicles about 3 inches long, pubescent.

Hab. Moist meadows. *July.* *Sept.*

Obs. This coarse, and homely plant is a useless incum- brance in low pastures, occupying a good deal of space, to the exclusion of the grasses. It ought to be ejected by the proprietor. It can be readily eradicated by the proper use of the grubber, where the plow, and after tillage may not come.

DIVISION. III. Apetalous Exogenous Plants.

Corolla usually none; the floral envelopes being, mostly, in a single series (calyx)—or sometimes wanting altogether.

Order. XXVI. PHYTOLACCACEÆ.

Herbs, or suffruticose plants; leaves alternate, entire, without stipules; flowers racemose; calyx of 4 to 5 petal- like slightly connected sepals; stamens as many, or twice

as many, as the sepals; ovary mostly composed of ten verticillate, confluent, one ovuled carpels; with the styles, or stigmas distinct; fruit baccate, or dry; embryo forming a ring round mealy albumen.

Genus. LX. PHYTOLACCA.—*Tournef.*

Flowers mostly perfect; sepals five roundish-ovate; persistent; stamens ten; anthers incumbent; fruit a depressed-globose, compound, five to ten celled berry.

Per-annual. Leaves petiolate, large; flowers in lateral racemes.

82. P. DECANDRA.—*Linn.* **Common Poke.**

Stout, smooth, often purple; leaves ovate-oblong; berries ten celled, juicy, dark-purple.

Per-annual. Stem 4 to 8 feet high, branching, terete, or obtusely ridged; leaves 5 to 10 inches long, thin, acute, or acuminate; petioles, 1 to 2 inches; racemes opposite the leaves, 3 to 6 inches long, simple; pedicels $\frac{1}{2}$ an inch, with a subulate bract at base; usually two smaller, sub-opposite ones near the middle; sepals white.

Hab. Fence corners, &c. *June. Aug.*

Obs. The seeds of this coarse weed, are annually carried by the birds, and dropped over our farms; but its destruction is always an easy task. Those who prefer *Poke* to *Asparagus* had better plant a bed of it in some secluded corner. This would be more economical, for the farmer, and convenient for the cook, than to cultivate it as a *field-crop*. It would then be quite easy to prevent the seed from being ripened, and carried over the farm.

Order. XXVII. CHENOPODIACEÆ.

Chiefly coarse herbs; leaves alternate, rather fleshy; stipules none; flowers inconspicuous, bractless; sometimes dioicous, or polygamous; calyx free from the ovary, two to five lobed, imbricate in the bud, persistent, embracing the fruit; stamens usually as many as the calyxlobes, and opposite to them; ovary one celled, becoming a one seeded utricle, or akene, in fruit; embryo peripheral, coiled round the farinaceous albumen.

Genus. LXI. CHENOPODIUM.—*Linn.*

Calyx five parted, lobes often keeled; ovary depressed; styles two, very short; utricle membranaceous, included in the five angled calyx; seed horizontal, lenticular, margin rather acute; embryo forming a complete ring round the albumen. Plant smooth, glaucous-mealy; flowers greenish, sessile, in spiked racemose, or panicled clusters.

83. C. ALBUM.—*Linn.* Lambs'-quarters. ?

Leaves glaucous beneath, rhomboid-ovate, sinuate-dentate, cuneate, and entire, at base; racemes compact, pulverulent, somewhat leafy.

Annual. Stem 3 to 6 feet high, angular, branched, often striped with green and yellow, or purplish; leaves 1 to 3 inches long; petioles 1 to 3 inches; flowers in clusters; calyx depressed, five angled, by the keels of the incurved lobes; seed dark purple, smooth, shining, lens-shaped, with a small notch on one side.

Hab. In garden lots. Europe. *July. Oct.*

Obs. A rank, troublesome weed in cultivated grounds; requiring much care to prevent it *seeding* the soil for another crop.

Order. XXVIII. AMARANTHACEÆ.

Herbs; characters nearly as those of the preceding order; but the flowers are imbricated, with dry, scarious, persistent, and usually colored, bracts; stamens as many as the sepals, and opposite them; fruit a utricle, one to several seeded, bursting irregularly; seeds lenticular-reniform, often vertical; embryo curved round farinaceous albumen.

Genus. LXII. AMARANTHUS.—*Linn.*

Monoicously polygamous; calyx of three or five sepals, mostly colored, and slightly connected at base; stigmas two or three; utricle circumsised, or indehiscent, one seeded; embryo forming a half circle round the albumen.

Annuals; flowers minute, in axillary, or terminal, spiked clusters.

84. A. HYBRIDUS.—*Linn.* Pig-weed.

Roughish pubescent, sparingly branched; dull green; leaves lance-ovate; flowers green, pentandrous, clustered in dense, compound, ovoid-oblong spikes.

Annual. Stem 2 to 5 feet high; leaves 2 to 5 inches long, tapering to the apex, point rather obtuse, setaceously mucronate; the base abruptly narrowed to a petiole 1 to 3 inches long; flowers sometimes purplish—the staminate and pistillate intermixed.

Hab. Cultivated lots. *Aug. Oct.*

Obs. A troublesome weed, like the preceding, and requiring the same respectful attention.

85. A. SPINOSUS.—*Linn.* **Thorny Amaranthus.**

Smoothish, bushy-branched, often purplish; leaves rhomboid-lanceolate; axils spinose; flowers pentandrous, clustered, in compound, oblong-terete spikes.

Annual. Stem 1 to 3 feet high; leaves 1 to 2 inches long, rather obtuse, mucronate, rough-dotted, with glaucous blotches beneath; petioles as long as the leaves, with two subulate spines at base, $\frac{1}{4}$ to $\frac{1}{2}$ inch long.

Hab. Waste grounds. India. *Aug. Oct.*

Obs. This is another vile pest, which *commerce* has brought to our sea-ports, whence it is rapidly spreading over the country. My specimens were gathered in Wilmington, Del., where it is abundant. Early and continued vigilance, alone, can prevent its spread, when once it has gained a foot-hold. The neglect of this, must end in a long, and arduous, struggle for its extermination.

Order XXIX. POLYGONACEÆ.

Herbs, with nodose stems; leaves alternate, usually entire, with stipules, sheathing the stem, above the leaves; flowers generally perfect; calyx of three, or six sepals, connected at base, and persistent; stamens four to twelve, inserted on the base of the calyx; ovary one celled; fruit akene-like—lenticular, when there are two styles—triquetrous, when there are three; embryo curved, or straightish; albumen mealy.

Genus LXIII. POLYGONUM.—*Linn.*

Calyx mostly five parted, often colored, embracing the fruit; stamens mostly eight, arranged singly, or in pairs, opposite the calyx-lobes; styles two to three, consequently

the akene either lenticular, or triquetreus; embryo in a groove of the albumen, and curved half way round it; flowers fasciculate, often with sheathing bracts; pedicels articulated.

§ Stems climbing, or twining.

† Stems retrorsely aciliate.

* Styles two; akenes lenticular.

86. P. ARIFOLIUM.—*Linn.* Halbert-leaved Tear-thumb.

Leaves hastate, acuminate, on long petioles; clusters racemose, few-flowered; peduncles glandular-hispid; stamens 6.

Annual. Stem 3 to 6 feet long, rather coarse, branching, sulcate-angled, often purplish; leaves 2 to 5 inches long; petioles $\frac{1}{2}$ to 3 inches; stipules ovate, clasping, ciliate; flowers purple, with paler edges; calyx mostly four parted; bracts hirsute.

Hab. Ditches, and swamps. *Aug. Sept.*

Obs. With proper drainage, and judicious management of bottom lands this rough weed will disappear.

The same remark will apply to other plants of this, and many other Genera which find the pabulum of their existence in the crude, neglected condition of meadow grounds. In most cases, these would afford a more generous remuneration for the labor of improvement, than almost any other portion of the farm; by increasing both the quantity, and the quality of their products. They would then cease to be—as they too frequently are—a *source* of noxious seeds, to *foul* the other portion of the farm. Farmers would be wise to consider this.

Genus LXIV. RUMEX.—*Linn.*

Flowers sometimes dioicous; calyx of six sepals, three inner ones larger, valvately connivent, often bearing a grain-like tubercle on the back; stamens six, in pairs, opposite the outer sepals; styles three, stigmas pencil-tufted; akenes triquetrous, free, not winged; embryo slightly curved, lying along, one side of the albumen.

Per-annuals. Petioles somewhat sheathing at base; flowers mostly green, verticillate in paniculate racemes.

* Inner sepals entire; all three graniferous.

87. R. CRISPUS.—*Linn.* Sour Dock. Curled Dock.

Radical leaves lance-oblong, rather acute, wavy, or curled, on the margin; verticils crowded.

Per-annual. Stem 2 to 4 feet high, sulcate-angled, smoothish, somewhat paniculately branched, above; radical leaves 8 to 15 inches long, and 1 to 3 wide; petioles 2 to 4 inches in length; stem leaves smaller, linear-lanceolate; flowers in crowded, verticillate fascicles, with scarious involucre at base; inner sepals much larger than the outer ones, entire, or obsoletely denticulate, near the base; each with an ovoid, acuminate, excrecence, on the back.

Hab. Fields and lots. Europe. *May. July.*

Obs. The *Docks* are among the most common evidences of a slovenly farmer. This species, having a straight spindle-shaped root, is easily drawn out by the hand, when the ground is wet—and this is the most speedy, and effective method of doing the work; always taking care to anticipate the ripening and shedding of the seed. Remember also, that dock-roots are retentive of life, when out of the ground, and are thus enabled to mature the seed, *after*

being pulled. To guard against this; keep the *Brush-heap* at hand, and place the docks *in* it as fast as gathered. Permit no new seed to enter the soil—and that which is already there, will soon become exhausted, and cease to cause trouble.

88. R. OBTUSIFOLIUS.—*Linn.* Bitter Dock.

Radical leaves sub-cordate-oblong, obtuse, crenulate; verticils loose, and rather distant.

Per-annual. Stem 2 to 4 feet high, sulcate-angled, roughish, paniculately branched; radical leaves 8 to 12 inches long, and 3 to 6 wide; petioles 3 to 6 inches long; flowers in interrupted, verticillate fascicles; inner sepals with long, acute teeth, near the base, and one of them bearing a large grain on the back.

Hab. Fields and lots. Europe. *June. Aug.*

Obs. The foregoing observation applies equally to this species, except, that it is a much coarser plant, whose larger, and *branched roots* require the aid of the *Dock-spit* to wrench them from the earth. The after care need not be repeated.

Order XXX. EUPHORBIACEÆ.

Plants usually with an acrid, milky juice; leaves mostly simple; stipules small, and deciduous, or wanting; flowers commonly monoicous; calyx valvate in the bud; sometimes wanting; stamens definite, or indefinite; fruit capsular, lobed, or compounded of two or three, or many carpels, united; seed suspended, mostly caruncled; embryo in fleshy albumen.

Genera LXV. EUPHORBIA.—*Linn.*

Flowers included in a cup-shaped, four to five lobed, involucre, resembling a calyx, or corolla, with glands at its sinuses; staminate flowers numerous, lining the base of the involucre, each from the axil of a little bract, and consisting of a single stamen, jointed on a pedicel; anther cells globular, separate; pistillate flowers solitary, in the middle of the involucre, consisting of a naked, three lobed, three celled, pedicellate ovary; styles three, bifid; capsule separating into three carpels, which severally split, elastically, into two valves; carpels one seeded; peduncles often umbellate clustered.

89. E. HYPERICIFOLIA.—*Linn.* Field Euphorbia.

Stem oblique, or leaning, with divergent branches, smoothish; leaves obliquely oblong, or sub-falcate, serrate; fruit smooth; seeds blackish.

Annual. Stem 9 to 18 inches high, slender; branches somewhat dichotomous, mostly pubescent on one side; leaves $\frac{1}{2}$ to $1\frac{1}{4}$ inches long, linear-dotted, often blotched along the midrib; petioles one line long; stipules scale-like; involucre axillary, and dichotomal, pedicellate, forming small corymbose clusters at the extremities of the branches; glands on small, roundish, subsessile, petal-like appendages, which are white, or purple edged with white.

Hab. Thin grass fields. *July. Sept.*

Obs. This is often a troublesome weed in corn fields and cultivated lots, where the hand, and horse-hoes, with sufficient muscle, are its most destructive enemies. It often abounds in pastures, with a thin growth of grass; where it has been accused of causing the salivation or

slobbering of horses. The acrid qualities of the *Euphorbias*, might readily be supposed to produce an effect similar to that of tobacco on another animal of note ; but the horse being the wiser of the two, will not knowingly eat of either plant ; and therefore does not voluntarily, and *intelligently* render himself *filthy* and *disgusting* to his associates. It is yet a controverted question, but *I* am satisfied that the salivation is caused by the clover itself, more frequently than by any other food. Whether the noxious quality inheres *in* the plant, or is only deposited *on* its surface, I will not venture to determine. It seems most probable that the poison is *extrinsic* to the clover, and dependent on certain *meteoric* conditions of the atmosphere. The immediate cause may be either insectiferous, or fungoid. It is yet undetermined.

CLASS II. Endogenous or Monocotyledonous Plants. *

Stems not distinguishable into *bark*, *wood* and *pitch* ; leaves mostly parallel-lined, alternate, and entire ; embryo with a single cotyledon.

Order XXXI. ARACEÆ.

Mostly herbaceous, stemless, with acrid, or pungent juice ; leaves radical, sometimes dissected ; petioles sheathing at base ; flowers dioicous, monoicous, or all perfect, crowded on a spadix, which is frequently surrounded by a spathe ; sepals four to six or none ; petals none ; fruit usually a berry ; seeds with fleshy albumen, or sometimes, a large fleshy embryo without albumen.

§ Spadix surrounded by a spath.

† Flowers perfect ; sepals 4 ; ovaries coalescing.

Genus LXVI. SYMPLOCARPUS.—*Salisb.*

Spathe conch-shaped, acuminate; spadix on a short peduncle-like scape, oval, densely covered, and tessellated, with flowers; stamens four, opposite the fleshy, cucullate sepals; ovary one celled; stile four sided, tapering to a minute stigma; fruit an oval, fleshy, berry-like mass, coalesced with the base of the persistent sepals, and imbedded in the spongy receptacle; seed globular, without albumen.

Per-annual, stemless herbs, with a strong, blended odor of skunk, and garlic; rhizoma thick; leaves radical, enlarging; spathe sub-sessile, preceding the leaves, spotted with purple-brown, and yellow.

90. S. FŒTIDUS.—*Salisb.* **Swamp Cabbage. Skunk-weed.**

Leaves, at first, orbicular-cordate, finally cordate-oval, on short petioles; spadix much shorter than the spathe.

Per-annual. Root in verticils of fleshy fibres, from a thick, truncate rhizoma; aerial stem none; leaves appearing after the spadix has flowered; orbicular-cordate, at length cordate-oval, very large, entire, smooth; stipules expanding, ovate-oblong, acuminate, often spatulate; spathe sub-sessile spotted with purplish-brown, green, and yellow; spadix an inch in diameter, on a short, thick, peduncle; flowers compact, appearing tessellated, sepals dark-brown, fleshy; style projecting above the sepals; fruit fleshy, coalesced with the base of the persistent sepals; and imbedded in the surface of the receptacle; seeds globose, size of a garden pea.

Hab. Wet grounds. *March. Sept.*

Obs. This is unsightly, and occupies much room; for

which its early bloom can hardly compensate. The strong roots require the grubber for their removal.

Order XXXII. LILIACEÆ.

Roots often bulb-bearing; leaves sessile, or sheathing, flowers perfect, regular; the perianth mostly with six (rarely four) lobes, or petal-like parts, free from the ovary; stamens as many as the lobes of the perianth; anthers introrse, erect, or incumbent; styles united; stigmas three, sometimes united; fruit a three celled loculicidal capsule, or sometimes, a berry; seeds few, or several; embryo in fleshy albumen.

Tribe. ASPHODELEÆ.

Roots fasciated, or bulb-bearing; perianth-lobes more or less united below; fruit a three celled, loculicidal capsule; mostly few seeded.

† Bulb-bearing; perianth lobes slightly united.

Genus LXVII. ORNITHOGALUM.—*Tour.*

Perianth-lobes almost distinct, partly colored (white) spreading, several-nerved; filaments dilated, subulate; style triquetrous; stigma obtuse; capsule membranaceous, obtusely trigonous; seeds few, sub-globose.

Per-annuals. Bulbs coated; leaves linear, channelled; flowers racemose, or corymbose, on a naked scape.

91. O. UMBELLATUM.—*Linn.* Ten-o'clock.

Racemes corymbose; peduncles longer than the bracts; perianth-lobes white within, green outside, with white margins; filaments simple.

Bi-per-annual. Bulbs bi-annual. Bulbs small, white ; leaves 6 to 12 inches long, numerous, very smooth ; scape 6 to 9 inches high, terete ; peduncles 1 to 2 inches long, alternate, and rather corymbose, than umbellate, each with a skinny, acuminate bract, at base.

Hab. Pastures, lots, &c. Europe. *May. July.*

Obs. This seems an appropriate place for some general observations on bulb-producing weeds ; *Ten o'clock, Blue-bottles* and *Garlic*. Especially, as the same remarks will apply equally to the present plant, and the one following.

It should be known to every one, that *bulbs* possess, in a large degree, and are very retentive of, vitality ; and consequently, will bear a great amount of sun, and exposure, before they lose the faculty of rejuvenation. It should also be known, that there is a cluster of young *bulblets* formed around the parent bulb, every year, which are easily parted from it, and in turn, become the parent bulb of the next year. If the ground is left undisturbed, a cluster of bulbs will be produced, increasing in number from year to year, until it will count hundreds, or thousands. But where the ground is frequently tilled, the clusters will be broken up, and scattered, where each detached bulb will commence to form a new cluster, or colony, ready to be dispersed by the next course of tillage. Thus, instead of a single cluster, there may be a hundred, and they, widely scattered. It must, therefore, be obvious, that ordinary tillage is not the remedy for bulb-producing weeds. Some particular mode of tillage may, however, be found serviceable.

Some forty-three years ago I came in possession of a field that was completely stocked with this perplexing weed. It had been in corn, the previous year. When plowed, and put down to oats, the surface was literally

covered with the young stems and bulbs of the *Ten o'clock*; and when bleached by the sun, they were conspicuous as far as the field could be seen. Fortunately, a change of inclosures, made it convenient to put the same ground in oats, another year. I was the more willing to do this, for reasons which will be rendered, in the next article. Suffice it to say, that, after this course, the *ten o'clocks* disappeared, and have not been troublesome since. It may be difficult to account for the change; but I can hardly entertain a doubt, that the—TWICE IN OATS—was the cause of their sudden exit. Let others try the experiment, and report the result. (*See the next article.*)

Genus LXVIII. ALLIUM.—*Linx.*

Perianth-lobes entirely colored, one nerved, becoming dry, more or less persistent; filaments subulate, dilated below, the inner, or alternate ones, sometimes, with a slender cusp, or short tooth on each side; style filiform; stigma simple, or trifid; capsule membranaceous, trigonous, or somewhat three lobed; seeds few, roundish, black, rough-dotted.

Per-annuals, bulbs bi-annual. Strong-scented; scape, and leaves, from a coated bulb; leaves flat, or terete, and fistular, distichously arranged; flowers in a dense, terminal, umbel, or head (sometimes the flowers changing to bulblets) embraced by a membranaceous, one or two-valved spathe.

§ Umbels often densely bulb-bearing; with or without flowers.

† Leaves terete, and fistular.

92. A. VINEALE — *Linn.* Field Garlic.

Scape slender, sub-cylindrical, sparingly leafy, to the middle; leaves cylindrical, with a narrow channel on the upper side; spathe one valved, acuminate.

Bi-per-annual. Bulbs small; scape 2 to 3 feet high; leaves 8 to 15 inches long; umbels globose, an inch in diameter (smaller and densely capitate, when bearing bulblets, these often vegetating while in the head); perianth deep purple, tinged with green.

Hab. Fields. Europe. *June. Aug.*

Obs. Two qualities possessed by this foreigner renders it more obnoxious than the other bulb-bearing weeds under notice.

1. The plant when eaten by cows, renders their milk, and butter, unfit for the table.

2. The *bulblets* which replace the flowers, when mingled with wheat, makes the manufacture of flour difficult, and renders it unfit for good bread.

Garlicky milk, butter, or bread is quite unpalatable.

It therefore becomes an object of considerable importance to be able to eradicate so *distasteful* a weed from the pasture, and grain producing lands. We said in the last article how *ordinary tillage*, only made the matter worse. While a method of *special tillage* was apparently quite successful. For the origin of that method, reference was made to this article.

Towards the conclusion of the last century, my Father possessed a field, remote from the homestead, which had, for a long time, lain a neglected common. It was overgrown with Briers—Mulleins—St. John's Wort—and Garlic. In process of time the three former were measurably subdued—but the latter continued to hold undisputed posses-

sion. It afforded admirable, early sheep pasture—hardly any thing more.

No doubt, *High Farming*, may be made available to smother up, and crowd out many noxious weeds; even garlie itself, to a certain extent—but in that day the application of Lime and Plaster was little known—and the farrago of modern fertilizers, had not yet come to the birth—hence, *High Farming* was then, an impracticability. For some years the condition of the field remained *statu quo*.

At length, for some reason not now known, the field was put down to oats, two successive years; and, as occurred with the *Ten o'clocks*, the Garlic was *almost entirely killed out*; and has never been a serious annoyance since. About the same time, or soon after, the application of lime commenced, with the cultivation of better grasses, &c. But it is worthy of remark, that while the *grass crop* may be a check to the Garlic; the conditions of the *wheat crop*, are highly favorable to its development. High tillage with the grasses will do much.

Order. XXXIII. CYPERACEÆ.

Herbs, grass like, often caespitose; rhizomes fibrous, creeping, often tuberiferous; culm solid, with pith, subnodose, often angular; leaves distichously alternate, sessile, grass-like; petioles dilated, and forming an entire sheath; blade sometimes wanting; flowers perfect, or monoicous (rarely dioicous) in little bracteate clusters, or spikelets; usually one flower, in the axil of each of the glume-like, imbricated bracts, or scales; perianth (perigynium) none; stamens usually three; ovary one celled, with a single erect ovule; in fruit becoming an akene (or coryopsis)

which is lenticular, or triquetrous, as the style is bifid, or trifid; embryo minute, inclosed in the base of copious, farinaceous, albumen.

Tribe. CYPEREÆ.

Flowers perfect; spikelets usually many-flowered, with the bracts distichously imbricated; perigynium mostly none; sometimes consisting of retrorsely hispid bristles; styles rarely bulbous at base.

Genus. LXIX. CYPERUS.—Linn.

Spikelets usually compressed; variously aggregated and arranged. Scales often decurrent at base; perigynium wanting; stamens sometimes two, or one.

Per-annual? Culms cespitose, triquetrous, leafy at base, and with an unequal, foliaceous, involucre at summit; peduncles unequal, sheathed at base.

§ Spikelets compressed, linear, or lance-oblong, many flowered.

† Stamens three; style trifid.

93. C. STRIGOSUS.—Linn. Bristly Galingale.

Spikelets subulate-linear, spreading all around in loose, oblong, pedunculate spikes; sheaths of the peduncles bifid, two bristled; involucre about six leaved.

Bi-per-annual? Culm 1 to 3 feet high, rather stout, tuberous at base; leaves nearly as long as the culm, keeled; umbel three to nine rayed, rays unequal, two to six inches, the central one suppressed (i. e. spike sessile) spikes 1 to 2 inches long, often compound, yellowish; spikelets numerous twenty, sixty, to eighty, about $\frac{3}{4}$ inch

long, eight to ten flowered, spreading on all sides, finally a little reflexed ; akenes triquerous, oblong, rough-dotted.

Hab. Wet meadows, &c. *Aug. Sept.*

Obs. The plants of this Genus are variously rendered in the books, but I think that they are all *annuals*, and *bi-annuals*, except the tuberiferous species, which become spurious *per-annuals* by reason of their *bi-annual tubers*.

This plant is a useless incumbrance in damp meadows ; but is more particularly introduced here on account of its near relatives—*C. repens*, and *C. hydra*—which are deserving of special notice.

94. *C. REPENS*.—*Elliott.* Nut Grass.

Rhizomas fibrous, creeping, tuberiferous, at the extremities ; spikelets linear, obtuse, rather crowded, in somewhat distichous spikes ; involucre three or four leaved.

Bi-per-annual? Tubers of the rhizomes, about the size of a pea ; culms 1 to 2 feet high, glabrous ; leaves 10 to 20 inches long, keeled ; umbel four to six rayed ; rays 1 to 3 inches in length ; spikes 1 to 2 inches long ; spikelets $\frac{1}{2}$ to $\frac{3}{4}$ inch, ten to fourteen in each spike, somewhat spreading, each twelve to twenty flowered ; akenes triquetrous, minutely punctate.

Hab. Fields, lots. *Aug. Sept.*

Obs. I have no good and authentic specimen of this, or the following plant, nor have I had the opportunity to examine their habits. Dr. Darlington says : “ This is a great pest, where it gets possession of the soil—and requires prompt attention, for it multiplies rapidly. It is not however, quite so bad as the *C. Hydra* of the South. It is now becoming rather alarmingly abundant, in some localities.” “ West-town. West Chester.”

95. C. HYDRA.—*Mix.* Coco Grass.

Rhizoma creeping, tuberiferous; umbel mostly simple, three to four rayed; involucre two to three leaved, about as long as the rays; spikes distichous; spikelets four to nine on each ray, lance-linear, acute, much compressed, ten to forty flowered, dark chesnut-purple.

Bi-per-annual? Rhizomas terminating in tubers, nearly half-an-inch in diameter; culm 2 to 12 inches high, smooth, triangular, naked; leaves all radical, shorter than the culm, about two lines wide, acute, slightly channelled, often recurved, somewhat glaucous; involucre sometimes, shorter than the umbel; rays of the umbel 2 to 3 inches long, erect, or slightly spreading; spikes near an inch long, alternate and distichous, along the upper part of the rays; the scales closely imbricated, bright chesnut-color, with a green keel, not nerved, mucronate; styles three, united below, distinct at summit; akenes triquetrous.

Hab. Fields and waste places.

Obs. *Elliott* as quoted by *Darlington* says—"This is becoming a great scourge to our planters. It shoots from the base of its stem, a thread-like fibre, which descends perpendicularly 6 to 18 inches, and then produces a small tuber. From this, horizontal fibres extend in every direction, producing new tubers at intervals of 6 to 8 inches, and these immediately send up stems to the surface of the earth; and throw out lateral fibres to form a new progeny. This process is interminable—and it is curious to see what a chain, or network, of plants, and tubers, can, with some care, be dug up, in a loose soil. The only process yet discovered, by which this grass can be extirpated, is to plow, or hoe the spots in which it grows, every day, through the whole season. In their perpetual efforts

to throw their leaves to the light, the roots become exhausted, and perish. Or if a few appear, the next spring, they can easily be dug up."

Through the same channel, *J. S. Skinner* says, that the *Coco Grass* "Is the vilest of all pests, which has taken possession of, and caused to be abandoned; some of the best sugar estates in Louisiana. Of all things, it is said to be the most tenacious of life; and nothing serves so well to propagate it, as to plow, and re-plow, with a view to destroy it.

Order. XXXIV. GRAMINEÆ.

True Grasses, mostly with hollow, cylindrical, and jointed, stems (culms); leaves alternate, two rowed, parallel nerved, the dilated petiole (sheath) surrounding the culm, and split open on the side opposite to the blade, and furnished, at the junction with the blade, with a more, or less, manifest scarious appendage (ligule); Flowers perfect, polygamous, or monoicous (rarely dioicous; imbricated with two ranked glumes or bracts—the outer pair (glumes) subtending a spikelet of one, or several flowers—the inner pair (paleæ) enclosing each particular Flower, which is destitute of a proper perianth;—stamens one to six, usually three;—anthers verticillate; ovary one celled, one ovuled, usually with two to three scales (squamulæ) at base; styles mostly two, or two parted; stigmas plumose, or hairy—Fruit a seed-like grain (caryopsis);—embryo small, at the base, and on the outside of copious, farinaceous albumen.

Annuals or Per-annuals.—With fibrous roots, often cespitose, spikelets paniculate, or spiked; upper (inner) paleæ two nerved, or two keeled.

This vast family of plants—while it furnishes most of the *Food-plants* for man, and the larger animals:—also inflicts upon the agriculturalist some of the worst pests which have ever invaded his premises, as the sequel will show.

Tribe CHLORIDEÆ.

Spikelets rarely one—usually several flowered, with the upper, or terminal, floret imperfect; disposed in one-sided, racemose, or digitate spikes; glumes persistent—the upper, appearing as the outer one; rachis not jointed; stamens two to three.

Genus. LXX. CYNODON.—Rich.

Spikes digitate, in pairs, or racemose; spikelets with one perfect floret, and sometimes the subulate pedicel, or abortive rudiment of a second, superior floret; glumes, keeled, awnless, nearly equal, the upper one exterior; paleæ membranaceous, the lower one keeled, acute, awnless, or sometimes mucronulate, the upper one two keeled;—scales two, fleshy, mostly connate; stamens three;—ovary sessile, glabrous; styles two, terminal;—stigmas plumose, with simple hairs; caryopsis free, inclosed in the paleæ.

96. C. DACTYLON Pers. Bermuda Grass. Dog-tooth Grass.

Spikes three to five, digitate, spreading; paleæ longer than the glumes, glabrous, somewhat ciliate, with a beardless bristle at the base of the inner one.

Per-annual. Root fibrous, creeping, with numerous slender rhizomes; stem procumbent, radicating 6 to 12 or 15 inches long, terete, smooth; leaves 1 or 2, to 4 inches long, acute, somewhat distichous, and rigid, slightly hairy, and

scabrous; sheaths longer than the internodes, hairy; ligule beard-like; spikes three to five, (usually four)—1 to 2 inches long; rachis flexuous, and angular, not winged; scales obovate, half as long as the ovary; stigma dark purple.

Hab. Loose sandy soils *June. Aug.*

Obs. I have copied *Darlington* from *Elliott*. But the latter says, "We have two varieties of this plant—one coarser (perhaps a species) growing in damp soils, native; the other, described above, said to be imported, a tender, delicate, grass, growing over, and binding, the most arid, and loose lands in our country; and, apparently, preferred by stock of all descriptions, to every other grass. * * * But it grows in every soil; and no grass, in close, rich land, is more formidable to the cultivator; it must, therefore, be introduced with caution."

The latter remarks may have been intended to apply to the *coarser form*, of the plant; and fully corresponds with my own observations in eastern Virginia. The *smaller form* I have not seen; but they seem to differ, mainly, in their proportions. One, the stem 6 to 15 inches long, the other (collected on the James River, at Richmond, full 5 feet long, and branched. This may be the result of soil and circumstances.

In the autumn of 1846, I had an opportunity of seeing this grass in its full proportions, on the farm of my friend Dr. Dupuy, near Petersburg, Va. Being both *rhizomatous* and *stoloniferous*, it is doubly armed, for mischief. While the *rhizomes* are spreading below the surface, and sending up new plants, the *stolons* are creeping above the surface, rooting at their numerous nodes, and sending up vertical stems, for flowers and fruit.

Dr. Dupuy had, sometime previous to my visit (I think

four weeks) plowed, harrowed, and thoroughly tilled, a piece of ground, preparatory to wheat. In the short time which had elapsed, the lot had been completely overrun, and covered, with a new growth of the *Bermuda Grass*. It seemed to have taken complete possession of the soil. The *rhizomes* were already coming to the surface, to form new plants; while the *stolons*, or creeping stems, now 12 to 18 inches long, had formed roots, at their numerous joints, and were sending up, erect stems for flowers, and fruit.

There was much labor due to this ground, before it could be seeded, with any prospect of a crop. This could only be applied, by the judicious use of the plow, harrow, rake, and fork, to drag out, and collect the *squitch*.

Whether such a nuisance can be thoroughly eradicated, I do not know. But each noxious weed, as it passes in review, repeats the imperative lesson, of early and strict vigilance, to crush the first buddings of mischief.

Tribe. **FESTUCINEÆ.**

Spikelets several flowered, often with the uppermost—rarely with the lowest—florete, imperfect, or abortive; usually disposed in open panicles; paleæ pointless—or the lower one sometimes tipped with a straight awn, or bristle; stamens one to five; scales two.

Genus. **LXXI. BROMUS.**—*Linn.*

Spikelets ovate, or oblong-lanceolate, compressed, five to many-flowered, in a loose panicle; glumes unequal, the lower, one to five nerved—the upper, three to nine nerved; lower paleæ convex, bifid at apex, usually awned a little below the tip; upper paleæ pectinate-ciliate on the two keels, finally adhering to the grooves of the linear-oblong grain; stamens three.

Coarse grasses, with rather large spikelets, which are finally nodding.

Culm 2 to 4 feet high, smooth above; nodes black; leaves 6 to 12 inches long, pilose on the upper surface; sheaths nerved, the lower ones retrorsely pilose, the upper ones smooth; panicle very loose, the branches in pairs, or three to five, slender, subdivided, flexuous, and sharply scabrous; spikelets about ten flowered; lower glumes smaller, almost subulate, one nerved; the upper one three nerved; lower paleæ seven nerved.

97. B. SECALINUS—*Linn.* Cheat-grass. Chess.

Panicle-branches nearly simple; spikelets ovate-oblong, somewhat turgid; florets smooth, distinct, longer than the flexuous awns.

Annual. Culm three to four feet high, smooth, nodes pubescent; leaves 6 to 12 inches long, rough, and pilose on the upper surface; sheaths smooth; ligule oblong, laciniate-dentate; panicle 4 to 8 inches long, the branches semi-verticillate, rough and pubescent; spikelets eight to ten flowered; lower glume shorter, five nerved, sometimes mucronate; the upper one seven nerved, obtuse, or emarginate; lower paleæ obscurely seven nerved, slightly pubescent near the apex, the awn sometimes wanting, or a mere rudiment; grain closely embraced by the lower paleæ; the upper paleæ doubled in the grove, and adherent.

Hab. Among wheat, &c. Europe. *June. July.*

Obs. All wheat growers are familiar with this universal pest; and many have, no doubt, taxed their ingenuity to abate the nuisance; with what degree of success, their wheat fields will testify. The Motto of all good Farmers should ever be—*Clean Seed—Clean Manure—Clean*

Soil—without which he can not rationally expect to have *clean crops*.

There are some sorts of weeds which occasionally appear suddenly, in great abundance—or having been abundant, as suddenly disappear. The *Pigeon Weed*, and *St. John's Wort*, have been mentioned as examples. Our *Cheat Grass* sometimes assumes the same erratic habit. They have been called *Meteoric*, from a fancied connexion between some peculiar condition of the atmosphere, and those changes.

In the autumn of 1848 I put down a field of $6\frac{1}{2}$ acres, to wheat and grass; and in order to secure a good pasture, I sowed a very liberal allowance of Timothy—Orchard—and Green Grass seed, and in the spring, clover. The Wheat crop was the best I ever raised, (an average of 25 bushels per acre); and the growth of straw was very heavy; but the grass was a complete failure; being apparently smothered out by the redundant growth, and tangled condition, of the straw. In the spring, however, there was a considerable promise of young grass. But, as the season advanced, it was found to consist, wholly, of *cheat grass*. I sold the crop to my neighbor Job Yerkes to be cut for hay, for \$6 per acre (\$39) on condition of it being carefully cut before the seed was matured. This was a pretty heavy *cheat* transaction, but my friend appeared to be well satisfied to be *cheated* in that manner; although I do not suppose that he obtained fifty pounds of anything but *cheat*.

I am not a believer in the transmutation of either animals or plants. I ever have, with unaffected modesty, declined the ancestral honor of a direct lineal descent from some renowned Grandpaternal *Oyster*, or *Bull-frog*. Nor can I admit, with any better grace, that my crop of *cheat*

was a transmuted growth from Wheat, scattered in gathering the harvest. Whence it came I do not know; and prefer to be *truly ignorant*, than *falsely wise*.

Tribe. HORDEINEÆ.

Spikelets several flowered, sessile, on opposite sides of a flexuous, toothed rachis, forming a solitary spike; the terminal, or lateral florets often abortive, glume sometimes collateral, or wanting; paleæ awned, or awnless; stamens mostly three.

Genus. LXXII. TRITICUM.—Linn.

Spikelets three to seven flowered, compressed, with the flat side against the rachis; florets distichous; glumes nearly equal, and opposite; lower paleæ very like the glumes, convex, awned, or merely mucronate; the upper one flat, bristly-ciliate on the two keels, free, or adherent to the groove of the grain; ovary pubescent at summit.

98. T. REPENS.—Linn. Couch Grass. Squitch Grass.

Rhizomas creeping; spike compressed; spikelets four to eight flowered, lance-oblong, acute; florets mostly awnless.

Per-annual. Rhizomas jointed, white; plant sometimes, bluish glaucous: culms 2 feet high, smooth; leaves 4 to 12 inches long; sheaths smooth; ligule short, truncate; spike 3 to 5 inches long; rachis flexuous, flat, mostly scabrous on the margins; glumes acuminate, keeled, strongly five to seven nerved, roughish, the outer margin broader; lower paleæ acuminate, or mucronate, five nerved, smooth.

Hab. Fields, &c. Europe. *July. Aug.*

Obs. This is properly, the Couch—Quitch—or Squitch grass, of English writers; although in Agricultural phraseology, they include several *weeds*, of somewhat similar habits, and apply either term to the refuse mass, which is gathered out of their foul lands.

The Botanical Editor of Reeses Cyclopædia says of this grass—“The long, and deep creeping roots, are, of all things, the most difficult to extirpate.” In many of the best lands in England it is so rampant that they seem to despair of ever eradicating it; but by a sort of compromise, agree to surrender something like every seventh crop, to a *Summer Fallow*, in order so far to clear the soil of *Squitch*, that they can obtain the other six crops, with less detriment.

When it occurs only in small patches, the timely application of some of the methods suggested in this work, will be found adequate to accomplish its destruction. More especially those for *Toad Flax* and *Canada Thistle*. But where it occurs on a broad scale, it will require the united aid of the Brotherhood for its eradication.

Genus. LXXIII. LOLIUM.

Spikelets many-flowered, alternate, distichously arranged in a simple, terminal spike, with the edge of the spikelets to the common rachis; glumes, (except at the terminal spikelet) only one, and that on the outer side; for the rest, much resembling the Couch Grass. Grain adherent to the upper paleæ, smooth.

99. L. TEMULENTUM.—*Linn.* Darnel. Bearded Darnel.

Glumes awnless, longer than the spikelets; spikelets five to seven flowered, ovate, compressed; florets each with a short awn.

Annual. Root fibrous; culms few, two to three feet high, smooth below, rough above; leaves ribbed, rough; stipules short, crenate.

Hab. Among Grain. Europe. *June. July.*

Obs. The *Darnel*, being an annual weed, of quick growth, it is indifferent whether the seed was sown with the Grain, or inhered in the soil, it readily springs up with, and accommodates itself to, the grain crops, wheat, rye, &c.

It is feared that little can be done to separate the *Tares* from the *Wheat*, while growing in the field. But this cannot be too carefully attended to, when brought into the barn. The separation must be made, and the foul seeds *destroyed* (not allowed to pass into the barn-yard); or the consequences will become, more and more disastrous.

This separation of the *Darnel seeds*, acquires greater significance, from the fact, that they are, and have long been, reputed to possess, noxious, or poisonous, qualities, when made up into bread.

Lindley says, "Its effects are undoubtedly deleterious."

Another—"The seeds are said to be intoxicating, to men, beasts, and birds; and even to bring on convulsions and death."

Linnaeus, gave the specific name *temulentum*—with a direct reference to its intoxicating qualities. And even *Virgil*, wrote "*infelix Lolium.*"

This *deleterious* question can only be decided by direct experiments; and as the Eastern Pennsylvania Model Farm is thought to have the most ample material; I hope its managers will give their attention to the subject. It is cause of deep regret, that this, or any other, noxious weed, should find a HOME on the FARM. It would seem to be within the province of the MODEL, to guard, with sedu-

lous care, against the introduction, or the dispersion, of noxious seeds. And should any such, unfortunately, gain admission; to exemplify the most certain, and expeditious means for their eradication. If these precautions be not observed, instead of its being a valuable adjunct to the agricultural interests of the District; it may yet come to be the *salient point* of an unmitigated nuisance.

Genus. LXXIV. CENCHRUS.—Linn.

Spikelets, as in *Panicum*; awnless, but inclosed (one to five together) in a globular, bristly, or spinous, involucre, which becomes coriaceous, forming a deciduous bur, in fruit; involucre sessile, in a terminal spike; scales none, styles united below; grain free, included in the paleæ.

100. C. TRIBULOIDES.—Linn. Bur-Grass. Hedge-hog Grass.

Culms branched at base, geniculate, ascending, or procumbent; spike oblong; involucre spinose, pubescent, split on one side.

Annual. Culm 9 to 18 inches high, smooth; leaves 3 to 8 inches long;—sheathes loose, smooth; ligule beard-like; spike terminal, consisting of six to twelve, or more, alternate, involucre, heads, or clusters; rachis angular, flexuous, slightly scabrous; involucre ureolate, or subglobose, laciniate, armed externally with, subulate, scabrous, spines, villous within, embracing one to three spikelets; sterile floret mostly staminate.

Hab. Fields. Sands. *Aug. Sept.*

Obs. Those who have experienced the annoyance which this “pestiferous” weed occasions, would hardly consider any labor too great for its destruction. With a quick

growth, and plenty of seed, it will soon insinuate itself into every nook and corner, and bid defiance to any ordinary means for dispossessing it. Though it seems to belong to sands, it develops itself in all soils in proportion to their fertility. I have gathered it in the sands of Jersey 2 inches high; and in the Hockesson valley 18 inches.

I can only recommend careful tillage, with plenty of hand-hoeing, and hand-weeding. Unless these means be assiduously employed; whatever may be the effect upon the horses; their drivers may find themselves somewhat affected with the *scratches*.

GLOSSARY

OF THE

PRINCIPAL BOTANICAL TERMS USED IN THIS WORK.

The reader will bear in mind, that where *compound* descriptive terms are employed in this work, the *last member* of the compound word is intended to give the *predominant character*,—and that the word or syllable *prefixed*, merely indicates a *modification* of that character:—as, for example,—“*ovate-lanceolate*” signifies *lanceolate*, but *inclining somewhat to ovate*; while “*lance-ovate*” means *ovate with something of the lanceolate form*, &c. So of colors: “*yellowish-green*,” “*bluish-green*,” &c., signify that *green* is the prevailing hue,—but that it is *tinged* with a shade of *yellow*, *blue*, &c. Terms indicative of the *size* of any organ, or portion of a plant—as “*large*,” “*small*,” or “*middle-sized*”—are, of course, relative,—and have reference to the *usual* or average size of such parts, or organs, in other species of the same genus, or family

- Abortion*, an imperfect development of any organ.
Abortive, not arriving at perfection; producing no fruit.
Abrupt, not gradual; sudden.
Abruptly acuminate, suddenly narrowed to an acumination.
Abruptly pinnate. See *Even-pinnate*.
Acaulescent, apparently stemless.
Accessory, additional, or supernumerary.
Accumbent cotyledons, having the radicle applied to the cleft, or recurved along the *edges* of the cotyledons (represented by this sign, o=),—as in some Tetradyamous or Cruciferous plants.
Acrose, linear and needle-like,—as Juniper leaves, &c.
Achenium. See *Akene*.
Acicular, needle-shaped.
Acrogenous plants. Plants which grow or develop from the apex or summit, only, of the stem.
Acrogens. Apex-growers, or *acrogenous* plants;—which see.
Aculeate, prickly; armed with prickles.
Aculeolate, armed with little prickles.
Acuminate, ending in a produced tapering point.
Acumination. An extended tapering point.
Acute, sharp; ending in an angle, or point; not rounded.
- Adherent*, attached to, or united with, another different organ,—as the calyx tube to the ovary, &c. See *coherent*.
Adnate, adhering laterally; fixed or growing to.
Adventitious, happening irregularly; not produced naturally, or usually.
Aestivation. The mode in which *sepals* and *petals* are arranged in the flower-bud, before they expand.
Aftermath. The second growth of the grasses in the same season, after being cut off.
Aggregated, crowded, or standing together on the same receptacle.
Akene (or *Achenium*). A 1-seeded fruit with a dry indehiscent pericarp,—often bony or nutlike.
Alac. Wings, or membranous expansions.
Alate, winged; having a membranous border.
Albumen. A deposit of nutritive inorganic matter, distinct from the embryo, found in many *seeds*,—and sometimes (as in the grasses) constituting their chief bulk.
Albuminous seeds, furnished with, or containing albumen.
Alternate, not opposite; placed alternately on the axis, or receptacle.
Alveolate, having pits, or cells like a honeycomb.
Ament. A slender spike of naked and

- usually declinuous flowers, with imbricated scales or bracts.
- Amplexicaul*, embracing or clasping the stem.
- Analogue*. A body or organ resembling, substituted for, or equivalent to, another body or organ.
- Anastomosing*, applied to branching vessels which inosculate, or unite again, like net-work.
- Anatropous* ovule, or seed. Turned; inverted on the funiculus, so that the orifice, or apex, points towards the placenta.
- Ancipital*, two-edged; somewhat flattened with opposite edges.
- Androgynous*, having staminate and pistillate flowers distinct, but on the same spike, or plant.
- Angiospermous*, having the seeds contained in a distinct pericarp or seed-vessel.
- Angulate*, having angles, or corners, mostly of a determinate number.
- Anisate*, resembling anise-seed, in taste or odor.
- Annularis*, applied to leaves, &c., which are annual, or renewed every year.
- Annual*, living or enduring but one year.
- Annular*, in the form of a ring.
- Annulate*, having a ring, or belt.
- Anomalous*, not according to rule or system; forming an exception to usual appearances, or structure.
- Anterior*, in front,—as that part of a flower next to the bract, or farthest from the axis of inflorescence.
- Anther*. The knob, or capsule, containing the pollen,—usually supported on a filament.
- Antheridia*. The analogues, equivalents, or representatives of Anthers.
- Anthiferous*, bearing Anthers.
- Apetalous*, destitute of petals; not having a corolla.
- Apex*. The summit, upper or outer end.
- Aphyllous*, destitute of leaves.
- Apothecia*. The cups, or shield-like receptacles of the fructification of the Lichens.
- Appendiculate*, having some appendage annexed.
- Appressed*, pressed to, or lying close against.
- Approximate*, growing or situated near each other.
- Aquatic*, growing naturally in water, or in wet places.
- Arachnoid*, resembling a spider's web.
- Arborescent*, approaching the size or height of a tree.
- Arcuate*, curved, or bent like a bow.
- Arcola*. A small cavity,—as in the base of some akenes.
- Arid*, dry, as if destitute of sap.
- Arillate*, having an arillus.
- Arillus*. An expansion of the funiculus or seed-stalk, forming a loose (and often fleshy) coating of the seed.
- Aristate*, awned; having awns, or bristle-like processes.
- Armed*, having thorns or prickles.
- Aromatic*, having a spicy flavor or fragrance.
- Articulated*, jointed; connected by joints, or places of separation.
- Articulations*. Joints; the places at which articulated members are separable.
- Ascending*, rising from the ground obliquely.
- Assurgent*, rising in a curve from a declined base.
- Attenuated*, tapering gradually until it becomes slender.
- Auriculate*, having rounded appendages at base, like ears.
- Awn*. A slender bristle-like process,—common on the chaff of grasses; sometimes on anthers, &c.
- Awned*, furnished with awns, or bristle-like appendages.
- Awnless*, destitute of awns.
- Axil*. The angle between a leaf and stem, or branch, on the upper side.
- Axillary*, growing in, or proceeding from, the axil.
- Axis*. A central stem, or peduncle; or, a real or imaginary central line extending from the base to the summit.
- Baccate*, berried.—becoming fleshy or succulent, like a berry.
- Bald* akenes, naked at summit; destitute of pappus or crown.
- Barb*. A straight process, armed with one or more teeth pointing backwards.
- Basilar*, originating at, or affixed to the base of another organ.
- Beak*. A terminal process, like a bird's bill.
- Beaked*, having, or terminating in, a beak.
- Bearded*, crested or furnished with parallel hairs: the term is applied, also, to *awned wheat*, &c.
- Berry*. A pulpy valveless fruit, in which the seeds are imbedded.
- Bi-annual*, continuing for two years; producing flowers, and fruit the second season, and then perishing.
- Bibracteate*, having two bracts.
- Bibracteolate*, having two small bracts, bractlets, or bracteoles.
- Bicuspidate*, ending in two sharp points, or cusps.
- Bidentate*, furnished with two teeth.

Biennial, same as *bi annual*.

Bifarious, in two series, or opposite rows; pointing in two directions.

Bifid, two-cleft, or split into two segments.

Bifoliate, having or producing two leaves.

Bifurcate, forked; ending in two equal branches.

Bigibbous, having two hunches, or gibbous productions.

Bi-glandular, having or producing two glands.

Bi labiate, having two lips.

Bilamellate, having two lamellae, or thin plates.

Bilocular, having two cells.

Bipartible, separable into two parts.

Bipartite, two-parted.

Bi-per annual. Applied to certain plants which are essentially *bi-annuals*, in flowers, fruit, and decline; but by virtue of a super added function; the production of Rhizomes, in the form of root-stocks, bulbs and tubers; they become per annuals.

Bipinnate leaf. Twice pinnate; the common petiole having opposite branches, and those branches bearing opposite articulated leaflets.

Bipinnatifid leaf. The common petiole bearing opposite pinnatifid segments.

Bi rostrate, having two beaks.

Bi-setose, having two bristles.

Bisulcate, having two grooves or furrows.

Biternate leaf, twice ternate; the common petiole three-parted, and each division or branch, bearing three leaflets.

Bivalved, having two valves.

Biventricose, having two bellied or distended portions.

Bloom. A fine powdery coating on certain fruits &c, as the plum.

Bowl shaped, hemispherical and concave, or hollow, like a bowl.

Brachiate, having the branches spreading, opposite and decussate.

Bract. A floral leaf; a modified leaf, from the axil of which arises the flower-branch, or peduncle.

Bracteate, furnished with bracts, or modified leaves among or near the flowers.

Bracteoles, or *Bractlets*. Small bracts.

Bractless, destitute of bracts.

Branchlets. Small branches, or subdivisions of branches.

Bristles. Stiffish elastic hairs, straight or hooked.

Bud. A growing point, or undeveloped axis, covered with the rudiments of leaves.

Bulb. A kind of bud, formed of fleshy scales, or coats, and usually seated on the neck of the root,—sometimes in the axils of the leaves.

Bulbiferous, bearing or producing bulbs.

Bulbous, formed of, or like, a bulb.

Bullate leaf, having *bubble-like* convexities on the upper surface, with corresponding cavities beneath.

Caducous, falling off immediately, or earlier than usual for such organs.

Calcarate, spurred; having a process like a horn, or spur,—usually hollow.

Callous, firm and gristle-like.

Callus. A compact gristle-like tubercle, or substance.

Calyxiform, shaped like a calyx.

Calyculate, having an additional (usually small) outer calyx, or calyculus.

Calyptra. The cap, or hood (resembling the extinguisher of a candle,) on the fructification of the mosses.

Calyx. The flower-cup, or outer (and sometimes the only) covering of a flower, usually green.

Campanulate, in the form of a bell.

Campylotropous ovule, or seed. Where the ovule curves upon itself, and thus brings the orifice, or apex, near to the funiculus.

Canaliculate, channelled or furrowed.

Canescent, hoary; clothed with a whitish or gray pubescence

Capillaceous, or *capillary*, long and fine, or slender, like a hair.

Capitate, head-form; growing in a head, or globular mass.

Capitaliform, in the form of a little head.

Capsular, resembling, or being, a capsule.

Capsule. A dry hollow seed vessel,—usually opening by regular valves, and definite seams.

Carinal, belonging to the keel, or midrib.

Covinate, keeled; having a ridge on the back, like the keel of a boat.

Carnose, fleshy; more firm than pulp.

Carpel. A little fruit; usually a partial pistil, or constituent portion of a compound fruit.

Carpophore. A slender central axis, bearing the carpels,—as in *UMBELLIFERAE*.

Carpophylls. The modified leaves which form the pericarp,—as in the capsule of the *Gentian* family.

Cartilaginous, hard yet somewhat flexible, like gristle.

Caruncle. A fleshy excrecence, sometimes found at the hilum of seeds.

Caryopsis. A fruit where the pericarp is very thin, indehiscent, and closely adherent to the surface of the seed,—

- as in the grasses, cyperaceae, &c. See *utricle*.
- Cauda*. A tail. *Caudate*, having a tail, or tail-like appendage.
- Cauliscent*, having an evident or true stem.
- Cauline*, belonging to, or growing on, the main stem.
- Cellular*, made up of little cells, or cavities, formed of membranaceous sacs.
- Cellular plants*. The lower orders of plants (including the mosses, and those below them), composed exclusively of cellular tissue.
- Centrifugal* inflorescence,—where the central flower of a cyme precedes the others,—i. e. the flowering commences at the centre and extends successively to the circumference.
- Centripetal* inflorescence, where the outer flowers of a corymb or umbel precede the inner ones,—i. e. the flowers expand in succession, from the circumference to the centre.
- Cephalotia*. The knobs, or head-shaped fructifications, of some of the LICHENS.
- Cereal*, pertaining to *Ceres*; belonging to those farinaceous grains, or seeds, of which bread is made,—and over which the Goddess *Ceres* was supposed, by the ancients, to preside.
- Cernuous*, nodding; the apex or summit drooping, or turned downwards.
- Cespitose*, having many stems growing from the same root, forming a tuft, or tussock.
- Chaff*. A dry membrane,—usually the small husks, or seed-covers, of the grasses; also the bracts on the receptacle of many compound and other aggregated flowers.
- Chaffy*, bearing chaff; also resembling chaff.
- Channels*. Longitudinal grooves; the interstices between the ribs on the fruit of umbelliferous plants.
- Channelled*, grooved or furrowed.
- Character* (in Natural History). The features of objects, or classes of objects, by which they are known, and distinguished from each other.
- Chartaceous*, of a texture resembling that of paper.
- Cicatrice*. A scar,—such as that left at the place of articulation, after the fall of a leaf, &c.
- Cilia*. Hairs arranged like eye lashes, along the margin of a surface.
- Ciliate*, fringed, or edged with parallel hairs, like eye-lashes.
- Ciliate-serrate*, having serratures resembling cilia, or short eye-lashes.
- Cinereous*, of the color of wood ashes.
- Circinate*, with the apex rolled back on itself, like the young fronds of a fern.
- Circumscissed*, cut round transversely, or opening horizontally, like a snuff-box.
- Cirrhose*, bearing tendrils, or terminating in a tendril.
- Cirrus*. A tendril,—which see.
- Class*. One of the higher or primary divisions of plants, or other natural objects, in a systematic arrangement.
- Clavate*, club-shaped; thicker towards the summit, or outer end.
- Clavellate*, in the form of a little club,—i. e. larger at summit.
- Claw* of a petal. The slender tapering portion at base, or below the middle.
- Cleft*, split, or divided, less than half way to the base: sometimes the division itself is called a *cleft*.
- Clypeate*, in the form of an ancient shield or buckler.
- Coactaneous* flowers, appearing at the same time with the leaves.
- Coarctate*, contracted, or crowded into a narrow compass.
- Coccus* plural *cocci*). A kind of semi-baccate indehiscent carpel.
- Cochleate*, coiled like a snail-shell.
- Coherent*, united with an organ of the same kind,—as stamens coherent with each other, &c. See *adherent*.
- Collateral*, placed side by side; or on the same side of another organ.
- Colored*, of any other color than green.
- Columnella*. A little column.
- Column*. The axis or central pillar of a capsule: or the combined filaments and style of a Gynandrous or Orchidaceous plant.
- Coma*. A terminal tuft of hair, bracts, &c.
- Commissure*. The line of junction of two bodies,—as the face of the carpels (or *mericarps*), in UMBELLIFERAE.
- Common* (petiole, peduncle, &c.), belonging to, or sustaining, several similar subordinate parts.
- Comose*, having a tuft or top-knot of hairs, bracts, or leaves, at summit, or at one end.
- Compact*, condensed, or pressed to gether.
- Complete* flower, having both calyx and corolla.
- Compound*, not simple,—but made up of similar simple parts.
- Compound flower*. An aggregated cluster, or head of syngenesious florets, seated on a common receptacle, and embraced by an involuere, or many-leaved common calyx.
- Compound leaf*. Consisting of several leaflets, or laminae, each articulated with the common petiole, and ultimately falling from it.

- Compound Ovary.* Consisting of two or more carpels, or simple ovaries, cohering together.
- Compound Umbel.* An umbel in which each primary peduncle, or ray, bears a small umbel at summit.
- Compressed,* flattened, as if squeezed or pressed.
- Compressed Akene* (in compound flowers), flattened, with one edge to the front, or periphery. See *obcompressed*.
- Concave,* presenting a hollow or depressed surface.
- Concentric layers,* or circles. Circles of different sizes, or diameters, with a common centre.
- Concrete,* grown together, or united.
- Conduplicate.* doubled lengthwise, or folded together like a sheet of paper, or the leaves of a book.
- Conc.* The woody ament of the pines; also the fruit of the hop, &c.
- Conic, Conical,* or Conoid, having the figure of a cone.
- Confluent,* blended, or running together; forming a junction.
- Congener.* A plant belonging to the same genus; nearly related.
- Conglomerate,* clustered or heaped together.
- Conjugate,* in pairs; coupled.
- Connate,* growing together, or cohering.
- Connective,* or *Connectivum.* The organ which connects the two cells of an anther, conspicuous in some of the LABIATAE.
- Conjunct,* the summits meeting, or bending towards each other.
- Constant,* invariable; also never failing, or wanting.
- Contiguous,* so near as to seem to touch.
- Continuous,* without interruption, or articulation.
- Contorted,* twisted; or obliquely overlapping.
- Contracted,* narrowed, or reduced into a smaller compass.
- Contrary dissepiment.* Not parallel, but at right angles, or nearly so, with the valves of the pericarp.
- Convex,* presenting an elevated rounded surface.
- Concolute,* rolled into a cylindrical form.
- Coraloid,* resembling coral, in appearance.
- Cordate,* heart-shaped, with the sinus or notch at the base.
- Cordate oblong,* oblong, with a cordate base.
- Coriaceous,* tough and leather-like.
- Cormophytes.* Plants having a stem, or axis of growth.
- Cormus.* A fleshy subterraneous stem, of a round or oval figure, and an uniform compact texture, as in the *Arum*, or Indian turnip.
- Corneous,* having the consistence or appearance of horn.
- Corniculate,* having little horns or spurs.
- Coronate,* having appendages like horns.
- Corolla.* The delicate inner covering of the flower, between the calyx and stamens, mostly colored.
- Coroniform,* in the shape of a crown.
- Corrugated,* contracted into wrinkles.
- Cortical,* belonging to the bark.
- Corymb.* A mode of flowering; a kind of raceme, with the lower peduncles elongated so as to form a level top.
- Corymbose,* in the manner of a corymb.
- Corymbulose,* having the flowers in little corymbs.
- Costate,* ribbed.
- Cotyledons.* The seed-lobes, or first crude leaves of a plant,—formed in the seed; and sometimes becoming green leaves in vegetation.
- Creeeping,* running along the ground, and putting forth small roots.
- Crenate,* notched on the edge, with the segments rounded, and not inclining towards either extremity.
- Crenulate,* very finely crenate.
- Crested,* having an appendage resembling a cock's comb.
- Crisp,* curled, or wavy at the edges.
- Cristate,* crested; having a crest.
- Cross,* or *cross-breed.* A hybrid, or mule,—produced by the mixing of two nearly allied species.
- Crowded,* thickly set; standing in close order.
- Crown.* A circular series of petaloid appendages at the throat of a corolla; also of chafly scales at the summit of an akene.
- Crowned,* having appendages resembling a crown.
- Crown shaped,* resembling the figure of a crown.
- Cruciate,* or *cruciform,* having four petals arranged in form of a cross,—as in Tetradynamous flowers.
- Crustaceous,* having a dry brittle shell.
- Cryptogamous plants.* Plants which are destitute of visible genuine flowers.
- Cucullate,* in the form of a cowl; the edges rolled in so as to meet at base, and spreading above,—like a hood thrown back.
- Culm.* The stem of the grasses, and Cyperaceous plants.
- Cuneate* or *cuneiform,* wedge-shaped; tapering with straight edges to the base.
- Cupule.* The cuplike involucre of the acorn, &c.

- Cusp.* A stiffish tapering sharp point.
- Cuspidate.* tapering to a straight stiffish sharp point.
- Cuticle.* The outer skin,—usually thin and membranaceous.
- Cylindric,* long, round, and of uniform diameter.
- Cyme.* A kind of panicle, depressed nearly to the form of an umbel,—with the principal peduncles rising from the same centre, but the subdivisions irregular.
- Cymose,* with the flowers in cymes, or approaching that form.
- Cymules.* The reduced cymes, or cymose clusters, of the labiatae; sometimes called *Verticillasters*.
- Decandrous,* having ten distinct stamens.
- Deciduous,* falling off at the usual time, or at the end of the season; more durable than *Caducous*,—which see.
- Declinate, or declined,* bent off horizontally; or curved downwards.
- Decomposed,* twice compound; composed of compound parts.
- Decumbent,* leaning upon the ground, with the base only erect.
- Decurrence.* A running or extending down, or backwards.
- Decurrent leaf* When the two edges are continued down the stem, like wings.
- Decussate,* growing in opposite pairs, and alternately crossing each other.
- Definite,* clearly defined, or limited; also of a constant or determinate (and not large) number.
- Deflecte*d, bent off, or downwards.
- Dehiscent,* gaping, or opening naturally by seams, at maturity.
- Deltoid,* triangular in the outline,—like the Greek letter *Delta*.
- Demersed,* growing or being under water.
- Dense,* closely arranged; compact.
- Dentate,* toothed; edged with tooth-like projections.
- Denticulate,* having very small teeth.
- Depauperated,* with a starved or stunted inflorescence; few-flowered.
- Depressed,* flattened vertically, or pressed down at summit.
- Depressed-globose,* globular, with the base and apex flattened.
- Diadelphous,* having the filaments united in two parcels; usually nine and one, with a papilionaceous corolla.
- Diaandrous,* having two stamens.
- Diaphanous,* transparent; permitting light to pass through.
- Dichotomal flower.* Situated in the fork of a dichotomous stem or branch.
- Dichotomous,* fork; regularly divided and sub-divided, in two equal branches.
- Declinous,* having the stamens and pistils in distinct flowers,—whether on the same or different plants.
- Dicotyledonous plants.* Where the embryo has two lobes, or cotyledons.
- Didymous,* twin; growing in pairs, and more or less united.
- Didynamous,* having two long and two shorter stamens, mostly in a bilabiate, ringent, or personate corolla.
- Diffuse,* spreading widely in a loose irregular manner.
- Digitate leaf.* Where a simple petiole connects several distinct leaflets, *finger-like*, at its summit,—as in the horse chestnut.
- Digynous,* having two pistils, or two distinct stigmas.
- Dilatate,* made wider; stretched or expanded.
- Dimerous,* composed of two parts,—as a dimerous calyx or corolla, when there are two sepals or petals.
- Dimittate,* halved—as if one side, or half had been cut off.
- Dimpy,* of a dull, soiled, smoky, or leaden-brown color.
- Dioicous,* having staminate and pistillate flowers on distinct plants.
- Dioicously polygamous,* having perfect and imperfect flowers on different plants.
- Dipetalous,* having two petals.
- Discoid flower, or head.* A disk of compound flowers, without ray-florets.
- Disepalous,* having two sepals.
- Disk.* The surface of the leaf; also the face, or central part, of a head of compound flowers.
- Dissected,* cut into segments, or lobes.
- Dissepiment.* The partition between the cells of seed-vessels.
- Distant,* having a larger intervening space than usual.
- Distichous,* two-rowed; bearing leaves, flowers, &c., in two opposite rows.
- Distinct,* separate; not connected with each other, nor with any contiguous organ.
- Divaricate branches.* Spreading so as to form more than a right angle with the stem above.
- Divergent,* spreading widely; making a right angle, or nearly so, with the stem.
- Divided,* separated or cleft to the base,—or to the midrib, if a leaf.
- Dorsal,* belonging to, or growing on, the back.
- Dorsal suture.* The line or seam on the *back* of a carpel, or folded leaf,—being at the place of the midrib, the opposite of *central suture*; which see.

- Dorsally* compressed, flattened on the back.
- Dots*. Minute tubercles, or specks.
- Dotted*, covered with dots, specks, or minute and slightly elevated points.
- Downy*, clothed with soft fine hairs.
- Drooping*, inclining downwards, more than nodding.
- Drupaceous*, drupe-like,—of a structure resembling a drupe, or what is usually called *stone-fruit*.
- Drupe*. A fleshy succulent, or spongy pericarp, without valves, containing a one or two-seeded nut, or stone.
- Drupelet*. A little drupe; a constituent portion of a compound berry,—such as that of *rubus*.
- Ebracteate*, destitute of bracts.
- Ebracteolate*, destitute of bractlets.
- Ecaudate*, destitute of a *cauda*, or tail.
- Echinate*, hedge hog like; covered with prickles.
- Elaters*. Minute club-shaped filaments, which are coiled round the spores of certain cryptogamous plants: and by unrolling, assist in dispersing those spores.
- Elliptic*, or *elliptical*. oval; longer than wide, with the two ends narrowing equally.
- Elongated*, exceeding the usual or average length.
- Elongating*, becoming gradually and finally elongated.
- Emarginate*, having a notch or sinus at the end.
- Embryo*. The young plant in the rudimentary state, as it exists in the seed.
- Emerged*, raised out of water.
- Endocarp*. That membranous or bony portion of the pericarp which lines the cavity, or forms the cells for the seeds (*ex. gr.* the stone, or hard shell, in a drupe).
- Endogenous* plants. Those which have a single cotyledon,—and grow by *central deposits* of new matter, distending or pushing the older deposits outwards.
- Endogens*. Inside-growers; plants which increase by central or internal deposits of new matter. See *Endogenous* plants.
- Enneandrous*, having nine stamens.
- Ensiform*, sword-shaped; two-edged and tapering from base to apex.
- Entire*, having a continuous even margin; without incision, notch, or tooth.
- Envelope*. An integument, or covering.
- Ephemeral*, diurnal; enduring one day only.
- Epicarp*. The outer coating of the pericarp, or fruit.
- Epi gynous*, adnate to the ovary so that the upper portion is apparently inserted on its summit,—as sepals, petals, and more especially stamens: exemplified in *Umbelliferae* and *Arabiæca*.
- Epipetalous*, inserted on the petals.
- Equal*, similar parts equal among themselves,—as calyx-segments, sepals, petals, stamens, &c.
- Equitant* leaves. When alternate distichous leaves are infolded lengthwise and towards each other, the outer ones inclosing or embracing the inner.
- Ercet* ovules, or seeds. When they arise from the bottom of the ovary, or base of the cell, and point upwards.
- Erodel*, or *erose*, irregularly notched, as if gnawed by insects.
- Esculent*, eatable; fit or safe to be eaten.
- Etiolation* the blanching of plants,—or rendering them white by the exclusion of light; as practised with *celery*, *endive*, &c.
- Eu*, a Greek adverb, meaning *clearly*, or *certainly*,—often prefixed to the names of sub tribes, or divisions, indicating their genuineness, or close affinity to the typical genus.
- Evauescent*, disappearing; speedily vanishing.
- Even-pinnate* leaf. With the leaflets all in pairs, or without a terminal odd one; often termed *abruptly pinnate*.
- Evergreen*, continuing green, and persisting all the year.
- Exalbuminous*, destitute of albumen.
- Excentric*, deviating from the axis, or centre.
- Exfoliate*, to throw off layers or plates,—as bark, &c.
- Exogenous* plants. Those which have two (or sometimes more) cotyledons,—and grow by annual layers of wood (or new matter) on the *outside*, between the old wood and bark.
- Exogens*. Outside-growers; plants which increase by annual additions to the outside. See *exogenous* plants.
- Exsert*, or *exserted*, projecting, or protruding out,—as stamens from the tube of the corolla.
- Exstipulate*, destitute of stipules.
- Extrorse* anthers. Having the cells turned outwards, or from the pistils,—and the filament, or connective, extending up the inner side.
- Falcate*, sickle-shaped; curved like a sickle, or scythe.
- Family* of plants. A definite group of kindred plants, called also an *order*,—sometimes of numerous genera and species—sometimes comprising but a single genus.

- Fan-shaped*, cuneate below, and spreading above,—like a lady's fan.
- Farinaceous*, mealy; reducible to a meal-like powder.
- Fascicle*. A little bundle, or bunch, of flowers, leaves, &c., originating from nearly the same point.
- Fasciculate*, growing in bundles, or bunches, from the same point.
- Fastigate*, level-topped; the summits of the branches all rising to the same height.
- Favose*, deeply pitted; somewhat like a honey-comb.
- Feather-veined leaf*. Where the lateral veins (or nerves) diverge regularly from each side of the midrib,—like the plumage of a quill.
- Ferruginous*, of the color of rust of iron; reddish-brown.
- Fertile*, having perfect pistils, and producing fruit.
- Fibrous*, composed of fibres, or thread-like processes.
- Fide*, on the faith, or authority, of.
- Filament*. That part of the stamen (usually thread-like) which supports the anther.
- Filicoid*, fern-like; belonging to or resembling ferns.
- Filiform*, very slender and terete, like a thread.
- Fimbriac*. Fringes, or fringe-like processes.
- Fimbriate*, finely divided at the edge, like a fringe.
- Fimbriolate*, clothed with *fimbriac* (i. e. membranaceous, linear or subulate, filaments)—as the receptacle of thistles, &c.
- Fissure*. A slit, crack, or narrow opening.
- Fistular*, hollow and terete, like a pipe, tubular.
- Flabelliform*, fan-shaped,—which see.
- Flaccid*, so limber as to bend by its own weight.
- Flagelliform*, long, slender, and pliable,—like a whip lash.
- Flexuose*, serpentine, or with a succession of short alternating curves.
- Floccose*, or *flocculent*, covered with *flocks*, or flakes, or little matted bunches of partly detached tomentum.
- Floral*, belonging to, or situated near, a flower.
- Floral envelopes*. The verticils, or coverings of flowers,—usually known as calyx and corolla, sometimes as chaff.
- Floret*. A little flower; usually one of the number in compound or aggregated flowers.
- Floriferous*, bearing flowers.
- Foliaceous*, of a leaf-like form and texture; resembling a leaf.
- Follicle*. A capsular fruit opening longitudinally by a suture on one side.
- Follicular*, resembling, constructed like, or being, a follicle.
- Foramen* (plural, *foramina*), a roundish hole, or opening.
- Free*, not adhering to each other, nor to any adjacent organ.
- Fruond*. The leaf, or leaf-like expansion, of Cryptogamous plants.
- Fruondose*, leafy or with leaf like appendages.
- Fructification*. The flower and fruit, with their parts.
- Fruit*. The mature ovary or seed-vessel, and its contents.
- Frutescent*, becoming shrubby, or hard and woody.
- Fruticose*, shrub like, or shrubby.
- Fugacious*, fleeting; of short duration.
- Fulvous*, tawny, fox or tan colored.
- Fungous*, of rapid growth and soft texture, like the *fungi*.
- Funiculus*. The *little cord* by which seeds are attached to the placenta.
- Funnel-form*, tubular below, and expanding above,—like a funnel.
- Fuscous*, greyish-brown, or deep brown with a tinge of green.
- Fusiform*, spindle-shaped, terete and tapering to a point.
- Galea*. A helmet; the arched upper lip of a ringent corolla.
- Galante*, helmeted; resembling a casque, or helmet.
- Gamopetalous*, having the petals all more or less united,—forming what is called (rather incorrectly) a monopetalous corolla.
- Gamosepalous*, having the sepals all more or less united,—forming a monosepalous calyx.
- Generic*, pertaining or relating to a genus.
- Gonicate*, forming an angle at the joints, like a bent knee.
- Genus* (plural *genera*). A group of species which agree with each other in the structure or essential characters of the flower and fruit: sometimes a genus comprises but a single species.
- Germ*. The growing part of a bud.
- Germen*. The old name for the ovary.
- Germination*, the sprouting, or incipient growth, of a seed.
- Gibbous*, hunched, or swelled out, on one or both sides.
- Gills*. The fruit-bearing membranes of the *agarics*, or mushrooms.
- Glabrous*, very smooth; without any roughness or pubescence.
- Gland*. A small roundish organ, or appendage, which often secretes a fluid.

Glandular, furnished with glands.

Glandular-hispid, or *glandular-pubescent*, hairy or pubescent, and the hairs tipped with glands.

Glaucous, silvery; pale bluish, or greenish-white; covered with a greenish-white mealiness.

Globose, or *globular*, spherical; round on all sides.

Glomerate, densely clustered in small heaps, or irregular heads.

Glomerules. Small dense roundish clusters.

Glumaceous, chaff-like; resembling chaff or glumes.

Glumes. The bracts, or outer chaff, embracing the spikelets of the grasses (calyx, of *linn.*) See *palea*.

Glumose, having glumes (or, sometimes, having conspicuous glumes).

Glutinous, viscid; covered with an adhesive fluid.

Gramineous, grass-like; resembling grasses.

Graniferos, bearing a grain, or grains.

Granular, formed of grains, or small particles.

Gymnospermous, having the seeds naked—*i. e.* not inclosed in a pericarp.

Gynandrous, having the stamens growing on, or adhering to, the pistil.

Gynostgium. The *pistil-covering*, or tube, formed by the connate filaments of the *Asclepias* family.

Habit of plants. Their general external appearance and mode of growth, by which they are recognized at sight.

Habitat, or *hab. tatio*. The natural or native place of growth.

Halvel, one-sided,—as if one half had been cut off.

Hastate, shaped like a halbert; lanceolate, with a divaricate lobe on each side of the base.

Head. A dense roundish cluster of sessile flowers.

Heptandrous, having seven stamens.

Herbaceous, not woody; of a tender consistence, and usually destructible by frost.

Herbarium. A collection of dried specimens of plants.

Herbs. Plants which are not woody—of a more tender structure than trees and shrubs, and usually killed by frost.

Heterocephalous flowers. Heads of syngenesious florets of different sexual character (*i. e.* staminate and pistillate heads distinct) on the same plant,—as in *ambrosia*, &c.

Heterogamous heads. Heads of syngenesious flowers, containing florets

of different structure and sexual character.

Heterophyllous, having leaves of different forms.

Hexamerous, consisting of six parts.

Hexandrous, having six stamens or equal length.

Hilum. The scar left on a seed, at the point of attachment to the funiculus.

Hirsute, rough-haired; clothed with stiffish hairs.

Hispid, bristly; beset with rigid, spreading, bristle-like hairs.

Hoary, covered with a white or whitish pubescence.

Homogamous heads. Heads of syngenesious flowers, in which all the florets are of similar structure and the same sexual character.

Hooded. See *cucullate*.

Horizontal ovules. When they project from the side of the cell, pointing neither to base nor apex.

Horn. A process or elongation resembling a horn. See *spur*.

Horny, of a texture or consistence like horn. See *corneous*.

Humus. The mould, or soil, formed by the decomposition of vegetable matter.

Hyaline, transparent, like glass.

Hybrid. A mule; a cross-breed between two varieties, or nearly allied species, partaking of each but different from both.

Hymenium. The membrane containing the sporules of certain Fungi; the plates, or gills, on the under side of the *pileus* of the agarics.

Hypogaeal, situated, growing, or remaining, under ground.

Hypogenous, inserted beneath the ovary,—*i. e.* on the receptacle, and free from the surrounding organs.

Icon. An image, figure, or representation.

Icosandrous having about twenty stamens, which are perigynous,—*i. e.* growing to, or apparently inserted on the rim of, the calyx.

Imbricate, or *imbricated*, the edges lying closely and regularly over the next series,—like shingles on a roof, or scales on a fish.

Imperfect flower. When either stamens or pistils are deficient.

Incised, cut, or gashed; separated by incisions.

Inclinate, or *inclined*, bent over towards the ground, or some other object.

Included, wholly contained within a tube, or cavity; the opposite of *exserted*.

- Incomplete flower.* When either calyx or corolla is wanting.
- Incrassate*, thickened upwards, or towards the summit.
- Incumbent*, lying upon, against, or across.
- Incumbent anther.* Attached at or near its middle, and lying horizontally across the summit of the filament.
- Incumbent cotyledons.* Having the radicle bent over and applied to the back of one of the cotyledons (represented by this sign, o||).
- Incurved*, bent or curved inwards.
- Indefinite*, not distinctly limited, or defined; numerous, and of no constant or determinate number.
- Indehiscent*, not opening at maturity.
- Indigenous*, native; growing naturally, or originally, in a country.
- Induplicate*, folded inwards.
- Indurated*, hardened; become hard.
- Indusium.* The membrane, or veil, which covers the young *sorus* (or cluster of fruit) on the ferns.
- Inferior calyx.* Having the ovary above, and free from the calyx.
- Inferior ovary.* Situated apparently below the calyx, or rather its segments.—*i. e.* adnate to the tube of the calyx, and consequently bearing the segments (if any) at its summit.
- Inflated*, distended or swelled like a blown bladder.
- Inflexed*, or *inflexed*, bent suddenly inwards.
- Inflorescence.* The disposition of arrangement of flowers and their foot-stalks on a plant,—such as umbel, panicle, raceme, &c.
- Inserted*, fixed upon, or growing out of.
- Internode.* That portion of a stem, or stem, between the nodes or joints.
- Interpetiolar stipules.* Situated or originating between the petioles of opposite leaves.
- Interrupted*, having intervals; or the continuity broken.
- Interruptedly pinnate*, having smaller pinnæ, or leaflets, between each pair of larger ones.
- Intra-petiolar stipules.* Situated within and above the petioles.—usually sheathing the branch above the axil of the leaf; as in *platanus*.
- Introrse anthers.* Having the cells turned inwards, or towards the pistils.—and the filament, or connective, extending up to the outer side.
- Inversely*, in a contrary position; end for end, or upside down.
- Involucel.* The verticil of leaflets at the base of an umbellet.
- Involucelate*, having involucels.
- Involucrate*, having an involucre.
- Involucre.* An assemblage of modified leaves accompanying certain forms of inflorescence,—usually verticillate at the base of an umbel,—or in imbricated series beneath or around the heads of aggregated flowers.
- Invoid*, rolled inwards.
- Irregular*, the component parts differing in size and shape.
- Keel.* A longitudinal central ridge on the back of a leaf, sepal, &c., resembling the keel of a boat: Also, the lower pair of united petals in a papilionaceous flower.
- Keel ed.* having a keel. See *carinate*.
- Kernel.* The nucleus, or seed contained in a nut.
- Knot.* A node; a solid, inseparable, and often swelling joint,—as in the stem of the grasses, &c.
- Lacerate*, divided into irregular segments as if torn.
- Laciniate*, jagged: the margin irregularly cut into unequal segments.
- Lactes ent.* milky; containing a milky or whitish juice.
- Lame lac.* The plates or gills (*hymenium*) of the *agaric*, or common mushroom.
- Lamellate*, divided or dilated into thin plates.
- Lamina.* A thin layer or plate; the expanded or flat portion of a leaf, or petal, as distinguished from the petiole, or claw.
- Lanate*, woolly; clothed with wool.
- Lanceolate*, tapering gradually from near the base to the apex,—like the head of an ancient lance, or spear.
- Lance-linear, lance ovate*, &c., linear, ovate, &c., with something of the lanceolate form.
- Lance ovoid*, egg-shaped, or terete, with a swelling base and tapering apex.
- Lanuginous*, clothed with a loose wool.
- Lateral*, at the side.
- Laterally* compressed, flattened on the sides; the lateral edges pressed towards each other.
- Latticed*, obliquely cross-barred, with open spaces like net-work.
- Lax*, loose, or limber; not compact.
- Leaflets.* Partial leaves; the constituent leaves of a compound leaf.
- Leaf-like (foliaceous)*, having a texture and expansion resembling a leaf.
- Leafy, (foliosus)*, furnished or abounding with leaves.
- Legume.* A bean,—or fruit formed of a single carpel of two valves, with the seeds affixed along the upper suture, only.
- Leguminous*, having the structure of a legume; bearing or producing the fruit called a legume, or bean

- Lenticular*. having the form of a lens; orbicular and compressed, but convex on both faces.
- Ligneous*, woody; of a firm woody texture.
- Lignescant*. becoming somewhat woody.
- Ligulate*, strap-shaped, or ribbon-shaped; flat and linear.
- Ligule*. The usually membranous appendage at the base of the leaf, or summit of the sheath, in the grasses.
- Limb*. The summit of a monosepalous calyx; or the upper spreading part of a monopetalous corolla.
- Line*. The twelfth part of an inch.
- Linear*, of an uniform width; long and narrow with parallel sides.
- Linear lanceolate*, &c., partaking of both forms, but more of the latter.
- Lip*. The upper or under division of a labiate flower; or the lower perianth-segment of many orchidaceous flowers.
- Lobe*. The division, or segment, of a petal, or leaf: the free portion of a gamopetalous corolla.
- Lobate*, or *lobed*, cut or divided into lobes.
- Loculicidal dehiscence*. When the pericarp opens naturally on the back of a cell (*i. e.* at the dorsal suture) directly into the cavity.
- Loment*. An indehiscent two or several-seeded legume, contracted between each seed, and finally separating at the joint-like contractions.
- Lomentaceous* legume, or pod. A pod of two or more seeds, with a joint-like contraction, or transverse partition, between the seeds.
- Longitudinal*, lengthwise; parallel with the axis,—or in a direction from the base towards the summit or apex.
- Lunate*, or *lunulate*, having the figure of a new moon.
- Lyrate*, lyre-shaped; pinnatifid, with the terminal segment largest and mostly rounded.
- Marcrescent*, withering and shrivelling on the stem, instead of falling off.
- Margin*. The edge or circumference of a leaf, or other expansion; also, the thin wing-like border of certain seeds, &c.
- Marginal*, belonging to, or situated at, the margin.
- Marginate*, or *marginated*, having a border or edging of a texture or color different from that of the disk; surrounded by a wing-like expansion or narrow membrane.
- Medullary rays*. Bands or thin plates of cellular tissue, which pass from the pith to the bark, in woody stems.
- Melliferous*, producing or containing honey.
- Membranaceous*, or *membranous*, thin, flexible, and often slightly translucent.
- Mericarp*. A name given to the indehiscent carpel of the UMBELLIFERÆ.
- Micropyle*. The small foramen, or opening in the proper coats of a seed, to which the radicle always points.
- Midrib*. The main central nerve of a leaf,—apparently a continuation of the petiole.
- Monadelphous*, having the filaments all united in one set,—usually forming a tube.
- Monandrous*, having a single stamen.
- Moniliform*, arranged like, or resembling the beads of a necklace.
- Monoclinous*, having the stamens and pistils in the same flower.
- Monocotyledonous* plants. Where the embryo has but a single lobe, or cotyledon.
- Monograph*. A description (usually ample and elaborate) of a single thing, or class of things,—as of a genus, tribe, or family, &c.
- Monogynous*, having but one pistil.
- Monoicous*, having staminate and pistillate flowers distinct, but on the same plant.
- Monoicously polygamous*, having perfect and imperfect flowers on the same plant.
- Monopetalous*, having but one petal; or, more correctly, the petals united into one. See *gamopetalous*.
- Monophyllous*, consisting of a single leaf.
- Monosepalous*, consisting of one sepal,—or rather, several sepals united more or less completely. See *gamosepalous*.
- Mucronate*, terminated by a *mucro*, or small projecting point,—usually the prolongation of the midrib, in leaves.
- Mucronulate*, having a small *mucro*, or terminal projecting point.
- Multifid*, many-cleft; cut into numerous segments.
- Multiple*. A number containing another number several times without a fraction, or remainder;—as nine is a multiple of three.
- Multiple* fruits. Where there is a combination of several flowers into one aggregate mass.—as in the pine-apple, mulberry, &c.
- Muricate*, armed or covered with short spreading points, or acute excrescences,—like a *murex*.
- Mutic*, or *muticous*, awnless or pointless: the opposite of mucronate.

- Naked*, destitute of the usual covering, or appendage,—as a *stem* without leaves, or scales—*leaves* without pubescence—*corolla* without a calyx, or crown—*seeds* without a pericarp—a *receptacle* without chaff, or hairs—an *umbel* without an involucre, &c.
- Napiform*, turnip-shaped.
- Natural order*, family, or tribe. An association or group of kindred genera—or of plants which are nearly related in their structure, and most important characters.
- Nectary*. That organ, or portion of a flower, which secretes honey; a term formerly applied to all disguised or modified forms of petals and stamens.
- Nerved*, having nerves, or coarse rib-like fibres.
- Nerves*. Rib like fibres (in leaves, &c.), which usually extend from the base to, or towards, the apex.
- Neuter*, or *neutral* flower. Having neither stamen nor pistil.
- Nodding*, turning downwards; somewhat drooping.
- Node*. The knot, or solid and often tumid joint, of a stem or branch.
- Nodose*, having numerous nodes, or tumid joints.
- Normal*, according to rule; agreeing with the pattern or type.
- Nuciform* nut like; resembling a nut.
- Nucleus*. A central body; the seed, or kernel of a nut.
- Nucules*. Little nuts, or nut like fruit.
- Nut*. A hard one celled indehiscent fruit, usually containing a single seed.
- Ob*, a preposition which inverts the usual meaning of the word to which it is prefixed.
- Obcompressed* akenes (in the *COMPOSITÆ*). Flattish, with the greatest diameter from right to left,—or with the flattened side to the front, or periphery of the head.
- Obconic*, inversely conical.—*i. e.*, with the point or apex downwards.
- Obcordate*, heart-form, with the sinus at summit, and the narrowed point at place of insertion.
- Oblanceolate*, inversely lanceolate,—or with the widest part above the middle, and tapering gradually to the base.
- Oblique*, a position between horizontal and erect; also descriptive of the base of a leaf, &c., when it is unequal, or produced on one side.
- Oblong*, longer than wide, with the sides parallel, or nearly so.
- Obovate*, inversely ovate,—or with the broadest end above.
- Obovoid*, inversely ovoid.
- Obsolete*, indistinct, as if worn out.
- Obtuse*, blunt, or rounded.
- Obversely*, turned contrary to the usual position.
- Obvolute* leaves. When one of the margins of each folded leaf is exterior, the other interior; also termed *half-equitant*. See *equitant*.
- Ochirea*. A membranous stipular sheath, embracing the stem like a boot-leg; as in *polygonum*, &c.
- Ochroleucous*, yellowish-white, or cream colored.
- Octandrous*, having eight stamens.
- Odd-pinnate* leaf. Having the leaflets in opposite pairs with a terminal odd one; or ten termed *impari-pinnate*.
- Official*, used in, or belonging to, a shop, or medical office.
- Oleraceous*, of the nature or quality of pot herbs.
- Opaque*, not transparent.
- Opercular*, opening like a lid that is fixed by a hinge at one side.
- Opposite*, situated directly against each other, or at the same height, on contrary sides of the stem.
- Orbicular*, circular and flat, like a coin the length and breadth equal and the circumference an even circular line; a term applied to leaves, or flattened bodies. See *terete*.
- Orchidaceous*, or *Orchideous*, belonging to, or resembling, plants of the *Orchis* family.
- Order*. A family or group of allied natural objects; a sub-division of a class, embracing kindred genera.
- Ordinal*, belonging to the orders, or to an order.
- Ordinal names*. The names of the natural orders, or families of plants.
- Orthotrochous* ovule, or seed. Straight; not curved, nor turned from its original or natural direction.
- Oval*, longer than broad, with the two ends of equal breadth and curvature, and the sides curving from end to end.
- Ovary*. The young seed-vessel, or fruit; the hollow portion at the base of the pistil, containing the *ovules*, or bodies destined to become seeds.
- Ovate*, flat, with the outline of a longitudinal section of an egg; a somewhat oval figure, but broader near the base.
- Ovate-lanceolate*, lanceolate, inclining to ovate at base.
- Ovate-oblong*, oblong, with an ovate dilatation near the base.
- Ovoid*, egg-shaped; terete, and swelling near the base—*i. e.*, having the outline of an entire egg.

- Ovoid-oblong*, the ovoid form lengthened out.
- Ovules*. The rudiments of future seeds, contained in the *ovary*, or young fruit.
- Palate*. The prominence in the lower lip of a personate corolla.
- Palea* (plu al, *paleæ*). Chaff; a term applied to the inner, or immediate floral covering of the grasses. (Croll'a. o' *linn*). See *glumes*.
- Paleaceous*, chaffy; of a chaffy texture, —or furnished with chaff-like scales.
- Palmate* hand-shaped; deeply divided, with the segments nearly equal and spreading like fingers on the open hand.
- Palmately veined*, or cleft, —having the veins or segments divergent, like the spreading fingers of an open hand.
- Panduræiform*, fiddle-shaped; oblong with the sides contracted, like a violin.
- Panicle*. A loose irregular compound raceme, —in which the peduncles are unequally elongated, and variously and irregularly sub-divided; as in oats, &c.
- Paniculate*, disposed in the form of a panicle.
- Papilionaceous*, corolla. Butterfly-shaped; when complete, consisting of five petals, —the upper one (mostly largest) called the *vevillum* or banner, —the two lateral ones termed the *alæ* or wings, —the two lower ones more or less cohering by their lower margins, and, from their form, denominated the *keel*.
- Papilate*, or *Papillose*, having the surface covered with fleshy dots, or points, like minute teats.
- Pappus*. The crown of the fruit, —being the segments, or free portion of an adherent calyx, in the *Compositæ*, and some other plants. —usually hair-like, or plumose. —sometimes in the form of minute chaff, or scales.
- Parasite*. A plant growing on, or deriving sustenance from, another plant; as dodder, mi-selto, &c.
- Parasitic*, being or relating to, a parasite.
- Parenchyma*. The soft spongy cellular tissue (often green), which forms the pith of stems, the pulp of leaves and young fruit, and fills the interstices of woody or vascular fibres.
- Paries*, (p.ural, *parietes*). The outside wall, or inclosing shell, which circumscribes the cavity of a pericarp.
- Parietal*, affixed to, or belonging to, the *paries* or outer wall of the seed-cell of a pericarp.
- Parieta. placentæ*. When the placen-
- tae are borne upon the *walls*, instead of the axis, of the ovary, or pericarp.
- Parted*, divided deeply, almost to the base.
- Partial*, a term applied to constituent portions of a compound whole.
- Partition*. See *dissemination*.
- Patellulæ*. Small orbicular *receptacles* of the *LICHENES*, resembling *little dishes*; sometimes termed spangles.
- Pectinate*, finely, regularly and deeply cleft, so as to resemble the teeth of a comb.
- Pedate leaf*. Like a bird's foot; divided nearly to the petiole in narrow segments, with the lateral ones diverging.
- Pedicel*. A partial peduncle; the ultimate branch, or division (next to the flower, or fruit), in a compound inflorescence.
- Pedicellate*, having, or being supported on, a pedicel.
- Peduncle*. A simple flower-stem. also, the common footstalk of a compound inflorescence.
- Pedunculata*, having a peduncle; not sessile.
- Pellucid*, transparent; pervious to light.
- Pellucid punctate*, having punctures which permit light to pass through.
- Peltæ*. Little flat *re-ceptacles* on the *LICHENES*, resembling targets, or shields.
- Peltate*, like a shield; having the footstalk affixed to the under surface, and not to the margin.
- Pencil form*, resembling a painter's pencil, or little brush.
- Pendu'ous* hanging down; attached at one end, and swinging loosely.
- Pendu'ous* ovules, or seeds. When their direction is downwards.
- Pencilillate* tipped or tufted with hairs, like a painter's pencil.
- Penninerved leaf*. Having the lateral nerves pinnately arranged, or feather-like. See *feather-veined*.
- Pentagonal*, having five angles, or corners.
- Pentagynous*, having five pistils.
- Pe' tamerous*, composed of five parts.
- Pentand'ous* having five stamens.
- Pentapetalous*, having five petals.
- Penultimate*, next to the last; the one next to the terminal one.
- Pepo*. An indehiscent, fleshy or internally pulpy fruit, usually composed of three carpels invested by the calyx-tube, and with a firm rind; as the melon, &c.
- Per-annual*, of indefinite duration; producing flowers, and fruit for a series of years.
- Perennial*, same as *per annual*.

- Perfect flower.** Having both stamen and pistil (one or more of each), and producing fruit.
- Perfoliat**; having the stem apparently pierced through the leaf.
- Perianth.** A term for the envelopes of a flower, where the calyx and corolla are not clearly distinguishable.
- Pericarp.** The seed-vessel, or fruit; the ovary in the mature state.
- Perichaeth**, or **Perichaetium.** The verticil or cluster of bract-like leaves, round the base of the *seta*, or foot-stalk of the urn, in *mosses*,—often called *perichaetial leaves*.
- Peridium.** A term applied to the outer sac, or envelope of the sporanges, in some of the *Fungi*.
- Perigonium.** A name for the envelope of the flower,—said to be *double* when there is both calyx and corolla; but often used synonymously with *perianth*—which see.
- Perigynium.** The sac (formed by the union of two bractlets) which encloses the ovary of the *carices*.
- Perigynous petals and stamens.** Inserted on the calyx,—or rather adhering to the inner surface of the calyx-tube—and thus surrounding the pistils.
- Peripheral**, fixed or coiled round the circumference, or periphery.
- Perisperm.** A deposit in many seeds, affixed to, or surrounding, the embryo—synonymous with *albumen*—which see.
- Peristome.** The circle of teeth, or bristle-like processes, which surround the orifice of the *theca* or capsule of the *mosses*.
- Persistent**, not falling off; remaining beyond the time when similar organs usually fall off.
- Persinate corolla.** Masked; having the throat closed by a prominent palate.—as in *linaria*.
- Petiole.** The (usually) delicate colored flower-leaf. In a flower of one petal (or united petals), the corolla and petal are the same: in a flower of more than one petal, the corolla is the whole, and the petals are the parts.
- Petaloid**, petal-like; delicate and colored, or expanded, like a petal.
- Petiolar**, seated on, or belonging to, the petiole.
- Petiolate**, having, or being supported on, a petiole; not sessile.
- Petiole.** The stem or footstalk of a leaf.
- Petioulate**, having a partial or subdivided petiole.
- Petiolule.** A little or partial petiole; the footstalk of a leaflet.
- Phænogamous**, or **Phanerogamous**, having visible genuine stamens or pistils; bearing true flowers.
- Phyllodium.** The imitation, analogue, or substitute of a leaf,—usually the dilated foliaceous petiole of an abortive compound leaf.
- Pileus.** The cap, or hat-like *receptacle*, borne on the stipe of a mushroom; as in the *agarics*.
- Pilose**, hairy; composed of, or clothed with, distinct straightish hairs.
- Pinnæ.** The paired or opposite leaflets of a pinnate leaf.
- Pinnate leaf.** Having distinct articulated leaflets in pairs, on opposite sides of a simple petiole.
- Pinnatifid leaf, or frond.** Cleft in a pinnate manner, but the segments united or confluent at base.
- Pinnatifidly**, in a pinnatifid manner.
- Pinnat sect.** pinnately dissected or divided,—but the segments not articulated with the petiole.
- Pinnules.** The leaflets or sub-divisions of a bi-tri or multi pinnate leaf, or frond.
- Pistil.** The central organ of a fertile flower,—consisting usually of *ovary*, *style*, and *stigma*: sometimes the *style* is wanting—or, in other words, the *stigma* is sessile.
- Pistillate flowers.** Those which have pistils, but no stamens.
- Pistillidia.** Small bottle-shaped bodies,—the analogues or substitutes of pistils, in the *mosses*.
- Pistilliferous.** bearing pistils.
- Placenta** (plural, *Placentæ*). That part of a pericarp to which the seeds are attached; the line, or ridge projecting in the cavity of the ovary, which bears the ovules.
- Placental**, pertaining to the placenta.
- Placentiferous.** bearing the placenta.
- Plane**, flat, and with an even surface.
- Plano-convex**, flat on one side and convex on the other.
- Plcate**, plated; folded or crimped, like a fan, or ruffle.
- Plumose**, feather-like. A *proppus* is plumose, when each hair has other hairs arranged on opposite sides of it.—as in *cirsium*.
- Pod.** A dry seed-vessel, narrow and more or less elongated, and usually of two valves. The term is often applied indiscriminately to both *legumes* and *siliques*.
- Pocticia.** The pedicels or footstalks which support the knobs (*cephalodia*) of the *LICHENES*.
- Pollen.** The fertilizing powder contained in the anthers.
- Pollen-masses**, or **Pollinia.** The waxy

- masses of pollen, in the *Asclepias* and *Orchis* families.
- Polyadelphous*, having the filaments united in three or more parcels.
- Polyandrous*, having more than ten hypogynous stamens.
- Polygamo dioicous*, having perfect and imperfect (or fertile and sterile) flowers on distinct plants.
- Polygamous*, having some flowers perfect, and others either staminate, pistillate, or neuter.
- Polygoneae*. The tribe of POLYGONACEAE specially typified by the genus *polygonum*.
- Polymorphus*, variable; assuming, or apt to assume, many different forms.
- Polypetalous*, having many distinct petals,—or, at least, more than one.
- Polysepalous*, having many distinct sepals,—or more than one.
- Pome*. An apple; a fleshy fruit formed of several cartilaginous or bony carpels, imbedded in pulp and invested by the tube of the adherent calyx.
- Porous*, full of holes, cells, or tubular openings.
- Praenose*, end-bitten; ending blunt, as if bitten off.
- Prickle*. A sharp process arising from the bark, only,—and not originating in the wood.
- Primary*, first in a series, in order of time, or in importance,—opposed to *secondary*.
- Primordial*, first in order; usually applied to the first genuine leaves,—or those which are next above the cotyledons or seminal leaves.
- Prismatic*, like a prism; having several angles and intermediate flat faces.
- Process*. A protuberance, eminence, or projecting part.
- Procumbent*, lying on the ground, without putting forth roots.
- Prodromus*. A herald, or harbinger,—usually the fore-runner of another more complete and extensive work on the same subject.
- Produced*, extended, or lengthened out.
- Proliferous*, producing its like in an unusual way,—as lateral bulbs; or putting forth a young and unusual accessory growth, from the centre of an umbel, flower, &c.
- Prostrate*, lying flat, or close on the ground.
- Protophytes*. First plants; a term applied to the ALGAE which are supposed to have been the earliest created tenants of our earth.
- Pruinose*, covered with a glaucous meakiness, like a *plum*.
- Pseudo-pinnate*, falsely or imperfectly pinnate,—the leaflets (or rather segments) not articulated at base. See *pinnatisect*.
- Puberulent*, covered with a minute, short and fine pubescence.
- Pubescence*. A general term for the hairy covering of plants.
- Pubescent*, clothed with hairs.—especially with short weak hairs.
- Pulp*. A soft, fleshy or juicy mass.
- Pulverulent*, dusty; composed of, or covered with, a fine powder.
- Punctate*, appearing as if pricked full of small holes, or covered with indented points.
- Punctulate*, having very minute punctures, or indented points.
- Pungent*, sharp-pointed, or prickly at apex; also acrid.
- Pyramidal*, tapering upwards; usually applied to four-sided solids which diminish to the apex.
- Pyriform*, shaped like a pear; largest at the upper end.
- Quadrangular*, four-angled.
- Quadrifarious*, in four rows, or directions facing or pointing four ways.
- Quadrifid*, four-cleft.
- Quaternate*, four together; arranged in fours.
- Quinate*, five together; arranged in fives.
- Quinqueplicate*, having five plaits or folds.
- Race* of plants. A fixed and peculiar form or modification,—produced by the crossing or blending of distinct varieties: or sometimes, perhaps accidental forms rendered permanent by culture, or other influences.
- Raceme*. A mode of flowering, in which the common peduncle is elongated, with the flowers on short lateral simple pedicels.
- Racemose*, having the flowers in racemes.
- Rachis*. The common peduncle, or elongated receptacle, on which florets are collected in a spike; also the midrib of a pinnatisect frond.
- Radiate*, having rays (*i. e.*, spreading ligulate florets) at the circumference, as the heads of many *compositae*.
- Radiate-veined*, where the veins of a leaf diverge from a common centre, or point, at the summit of the petiole.
- Radiatiform*, a term applied to heads of compound flowers in which all the florets are ligulate, and directed towards the circumference.
- Radicat*, belonging to, or growing immediately from, the root.
- Radicating*, sending out roots, or striking root at the nodes.

- Radicle.** A little root; the slender fibrous branch of a root.
- Ramical,** pertaining or belonging to the branches.
- Ramentaceous,** covered with *ramenta*—*i. e.*, the scales, or persistent remains (vestiges, or *debris*), of leaves, or other previously existing organs.
- Ramification.** The branching or division of an organ into several parts.
- Ramose,** branching.
- Rank.** A row, or arrangement in a line.
- Raphe.** The line, or little ridge, on one side of an anatropous (*i. e.*, inverted) ovules and seeds,—formed by the adhesion of a portion of the funiculus.
- Ratoon** (Span. *Retomo*). A sprout from the root of a plant which has been cut off (chiefly used in reference to the sugar-cane).
- Rays.** The spreading ligulate florets round the disk of a compound flower: also, the footstalks, and enlarged marginal flowers, of an umbel.
- Receptacle.** The apex of the peduncle (much dilated in the *Compositæ*), on which the parts of a flower (or entire florets) are inserted; the *seat* of the fruit, or of seeds and their equivalents.
- Recurved,** curved backwards.
- Reduplicate,** with the edges folded or turned outwards.
- Reflexed,** bent or doubled backwards.
- Regular,** having the parts uniform and equal among themselves,—as the lobes or petals of a corolla.
- Remote,** seated or growing at an unusual distance.
- Reniform,** kidney-shaped.
- Reperand,** having the margin slightly indented with shallow sinuses.
- Replicate,** folded back on itself.
- Repl. m.** A name given to parietal placentae when separated from the valves; also, the persistent border of a fallen legume.
- Resupinate,** turned upside down.
- Reticulate,** netted; having veins or nerves crossing each other, or branching and reuniting, like network.
- Reversse,** or **Retrorsely,** pointing backwards or downwards.
- Retuse,** having a shallow sinus at the end.
- Revolvate,** rolled backwards, or outwards.
- Rhizoma.** A root stock,—or root-like subterraneous stem.
- Rhomboid,** rhomb-shaped; having four sides, with unequal angles.
- Ribbed,** having ribs, or longitudinal parallel ridges.
- Ribs.** Parallel ridges, or nerves, extending from the base to, or towards, the apex.
- Rigid,** stiff, inflexible, or not pliable.
- Ringent,** gaping, with an open throat.
- Root-stock.** See *rhizoma*.
- Rostrate,** beaked; having a process resembling the beak of a bird.
- Rosulate,** in a rosette; arranged in circular series, like the petals of a double rose.
- Rotate corolla.** Wheel-shaped; monopetalous (or gamopetalous) and spreading almost flat, with a very short tube.
- Rough** covered with dots, points, or short hairs, which are harsh to the touch.
- Round,** circular, or globular; not angular. See *globose*, *orbicular*, and *terete*.
- Rudiment.** An imperfectly developed organ.
- Rufescent,** becoming reddish-brown, or rust-colored.
- Rufous,** reddish-brown, or rust colored.
- Rugose,** wrinkled. *Rugulose*, finely wrinkled.
- Ruminated,** a term applied to a variegated albumen,—*i. e.* when its substance is wrinkled or plicate, and the investing membrane prolonged within the folds.
- Runcinate,** resembling the teeth of a mill-saw; somewhat pinnatifid, with the segments acute and pointing backwards.
- Runner.** A slender shoot, producing roots and leaves at the end, only,—and at that point giving rise to another plant; exemplified in the strawberry-plant.
- Sac.** A membranous bag, or boundary of a cavity.
- Saccate,** having, or being in the form of, a sac, or pouch.
- Sagittate,** arrow-shaped; notched at base, with the lobes (and frequently the sinus) acute.
- Salver-form,** or *Salver-shaped*, tubular, with the limb abruptly and flauy or horizontally expanded.
- Samara.** A kind of akene, or dry indehiscent pericarp, having a winged apex, or margin,—as the maple, ash, elm, &c.
- Samaroid,** winged or margined like a samara.
- Sarcocarp.** The fleshy portion of a pericarp (*ex. gr.*, of a drupe) between the *epicarp* and the *endocarp*.
- Sarmentose** having, or sending forth, or being in the form of, runners.
- Sarmentum.** A runner—which see.

- Scabrous**, rough with little points, or hairs.
- Scalcs**. Small thin plates, or leaf-like processes; also the leaflets of the involucre, in the *COMPOSITÆ*.
- Scandent**, climbing,—usually by means of tendrils.
- Scape**. A peduncle proceeding directly from the root, and mostly naked.
- Scarious**, dry and skinny,—generally transparent.
- Scattered**, disposed or distributed thinly, without any regular order.
- Scrobiculate**, having the surface excavated into little pits, or hollows.
- Scutellæ**. The little shield-like orbicular sessile *receptacles* of some of the *LICHENES*.
- Scutellate**, shaped like, or resembling, a target or shield.
- Scam**. See *Suture*.
- Secund**, one-ranked; all seated on, or turned to, the same side.
- Seymeid**. The division, or separated portion, of a cleft calyx, leaf, &c.
- Semi**, half; as *semi-bivalved*, half two-valved,—*semi-terete*, half round, &c.
- Sempervirent**, always green; living through the winter, and retaining its verdure.
- Sepal**. The leaflet, or distinct portion, of a calyx.
- Sepaloid**, resembling sepal; green and not petal-like.
- Septicidal dehiscence**. When a compound pericarp opens by splitting the dissepiments,—i. e., the carpels separate from each other, and open to the seeds by the ventral suture.
- Septiferous**, bearing a septum.
- Septifragul dehiscence**. When the dissepiments remain attached to the axis, while the valves break away from them.
- Septum**. The partition which divides the cells of fruit.
- Sericous**, silky; covered with soft smooth glossy appressed hairs.
- Series**. A division, or comprehensive group, of objects in natural history; also, a continued succession of things of the same order.
- Serrate**, sawed; having sharp teeth on the margin, pointing towards the apex.
- Serratures**. The teeth, or sharp segments of a serrate margin.
- Serrulate**, finely serrate; having small teeth or serratures.
- Sessile**, sitting closely; without any footstalk or pedicel.
- Seta** (plural, *Setæ*). A bristle; a stiffish elastic hair.
- Setaceous**, bristle-like; resembling a bristle in size and figure.
- Setose**, bristly; having the surface covered with bristles.
- Sheath**. A membranous expansion which is tubular, or convolute, and inclosing or embracing a stem.
- Sheathed**, inclosed or embraced by a sheath.
- Sheathing**, embracing the stem with a sheath.
- Shining**, glossy smooth and bright.
- Shrub**. A small woody plant, branching near the ground,—often without any principal stem.
- Shrubby**, hard and woody; of the texture and size of a shrub.
- Silicle**. A little or short silique, nearly as wide as long.
- Silique**. A long slender pod, or membranous seed-vessel of two valves, having the seeds fixed alternately along both sutures.
- Siliquose**, having siliques,—or resembling a silique.
- Simple**, undivided; not branched; not compound.
- Simple Umbel**. When each ray terminates in a single flower,—instead of a secondary or partial umbel.
- Sinuate**, having sinuses, scalons, or gashes which are open and rounded at bottom.
- Sinuate dentate**.—*Sinuate-serrate*, having teeth, or serratures, with the clefts or openings rounded at bottom.
- Simus**. An open notch; a rounded incision, or scallop.
- Soboliferous**, producing young plants from the roots.
- Solitary**, standing alone; one only in a place.
- Sori** (plural of *Sorus*). Small clusters of granules, or *sporangies*, on the back of the fronds of ferns.
- Spadix**. A sort of dense-flowered, fleshy or club-like spike.—usually enveloped by, or proceeding from, a sheathing involucre called a spathe.
- Spathaceous**, having a spathe, or resembling a spathe.
- Spathic**. A sheathing kind of bract, common calyx, or involucre, open on one side,—often containing the spadix.
- Spathulate**, or *spatulate*, like a spatula; obovate-oblong, or larger and rounded at the end, and tapering to the base.
- Species**. The lowest permanent division of natural objects, in a systematic arrangement; a group comprising all similar individuals.
- Specific**, belonging to, or distinguishing, the species.

- Spermoderm.* The proper coating of a seed.
- Sphaerate*, dark colored, as if gangrenous, or dead.
- Sphagnous*, full of bog-moss, or *Sphagnum*.
- Spicate*, in the form, or after the manner, of a spike.
- Sp ke.* A kind of inflorescence in which the flowers are sessile on the sides of a long common peduncle, or rachis.
- Spikelet.* A little spike, — or subdivision of a compound spike.
- Spine.* A thorn; a sharp process originating in the wood — i. e., a pointed abortive branch.
- Spinulose*, armed with minute spines.
- Spinescent*, becoming thorny, — or inclining to be thorny.
- Spinose*, thorny; armed with thorns.
- Spinulose*, covered with small spines.
- Spongioles.* The delicate sponge like tissue, forming the growing points of roots.
- Sporange.* The pericarp of the cryptogamous plants; the membranaceous envelope of the sporules.
- Spores*, or *Sporules.* The seminal equivalents, or analogues of seeds, in cryptogamous plants.
- Sporidia.* Spore-like bodies; or sometimes the cells, or sacs, which contain the sporules of the Fungi.
- Sporocarp*, a synonym of *Sporange*.
- Sporules.* Dimm. of *Spores*; which see.
- Spur.* A tapering hollow production of the base of a petal, or sepal, — usually called a nectary.
- Spurred*, having a spur, or spur-like elongations.
- Squamose*, scaly; covered more or less with scales.
- Squarrose*, jagged; having spreading tips, or divaricate, points, all round, — as the scales of some involucres.
- Stamen.* The organ of a flower which prepares the pollen, — usually consisting of a *filament* and *anther*, and situated between the corolla and the pistil.
- Staminate flower.* Having stamens, but not pistils.
- Staminiferous*, bearing or supporting the stamens.
- Staminodia.* Imperfect organs occupying the position of, and resembling *Stamens*, — being in the transition stage between petals and stamens.
- Stellate*, like a star; arranged like the rays of a star.
- Stellular*, radiating after the manner of little stars.
- Stellular pubescence.* Compound or fasciculate hairs, with the branches spreading like rays.
- Stem.* The main axis or body of a plant; the common supporter of branches, leaves, flowers and fruit.
- Stemless*, having no visible or aerial stem: applied to plants where the stem is suppressed, or so short as to be apparently wanting.
- Sterile.* barren, or unproductive; applied to flowers which produce no fruit.
- Stigma.* The summit of the style, — or that portion of the pistil through which the pollen acts.
- Stigmatic*, belonging or relating to the stigma.
- Stigmatiferous*, or *stigmatose*, bearing, or belonging to, the stigma.
- Stipe.* A little pedicle, or footstalk, of seeds, &c., also, the petiole of the frond, in ferns.
- Stipellate*, furnished with *stipelles*. — i. e., the stipules of leaflets, in compound leaves.
- Stipules.* The stipular appendages, or little stipules, of leaflets, in compound leaves.
- Stipitate*, having a stipe; supported on a little pedicel.
- Stipitiform*, resembling a stipe.
- Stipular*, belonging or relating to stipules.
- Stipulate*, furnished with stipules.
- Stipules.* Leaflets, or leaf-like appendages, at the base of a petiole, or leaf.
- Stole* (corruptly, *stool*), to put forth stoles (or *stolones*), i. e., suckers, or branches, from the root: usually applied to young wheat, in autumn and spring.
- Stole-bearing*, producing stoles See *Stoloniferous*.
- Stoles* (i. e., *stolones* — corruptly, *stools*). The shoots, suckers, or off-sets, from the base of the stem, or roots, of plants: usually applied to young winter grain, — as wheat, &c. See *Titter*.
- Stoloniferous*, having suckers, off-sets, or running shoots (*stolones*), from the base of the stem, or crown of the root.
- Striae.* Fine parallel ridges, or lines.
- Striate*, marked with longitudinal lines, or stripes.
- Striate-salcate*, scored with minute longitudinal grooves and ridges.
- Strict*, straight and rigidly upright.
- Strigose*, armed with spreading bristly hairs, which taper from base to apex.
- Stroble.* The cone, or collective fruit, of the pines, firs, &c.
- Strophiole.* A little crown, or fungous appendage to the hilum of a seed.

- Style*. The columnar (usually slender) portion of the pistil, between the ovary and the stigma,—sometimes wanting.
- Styliferous*, bearing or producing a style, or styles.
- Stylopodium*. The foot or thickened base of the style (or united styles), at the junction with the epigynous disk,—as in *UMBELLIFERÆ*.
- Stylostegium*. The hood or covering of the style,—as in the *Asclepius* family. See *Gynostegium*.
- Sub*—a preposition signifying *under*, or a *division*—as a *sub class*, *sub-order*, &c.; also employed as a diminutive, or qualifying term, equivalent to *almost*, *somewhat*, or *about*,—as *sub-sessile*, nearly sessile, &c.
- Suberose*, of a texture resembling cork.
- Subulate*, shaped like an awl-blade; linear or cylindrical below, angular and tapering to a sharp point at summit.
- Succulent*, juicy; full of juice.
- Sucker*. A shoot, or offset, from the root, or base of the stem.
- Suffruticose*, almost shrubby.
- Suffruticosa*, somewhat shrubby; shrubby at base.
- Sulcate*, furrowed, or grooved.
- Super*, or *supra*, a preposition signifying *above* or *upon*, *beyond* or *more than*,—as *super-axillary*, situated above the axil.
- Super*—or *Supra-decompound*, more than decompound; many times subdivided, or compounded.
- Superior*, above; a term applied to the *ovary*, when it is above the calyx, or *free* in the flower; also to the *calyx*, when the tube is adherent to the ovary, and the segments borne on its summit.
- Suppression*, the non-production, or failure in the development, of an organ.
- Sarculose*, bearing suckers, or off-sets.
- Spende* ovules, or seeds. When they are attached to the summit of the ovary, or pericarp, and hang perpendicularly in the cavity.
- Suture*. The line, or seam, formed by the junction of two margins.
- Symmetrical* flower. When there is an equal number of parts in each series, or verticil.
- Synœneous*, having the anthers united,—as in the *COMPOSITÆ*.
- Synonym*. Another name for the same thing.
- Tenacious*, sticky or adhesive; also, holding on by means of little hooked points.
- Tendril*. A filiform twining branch, or appendage, by which some plants climb, or sustain themselves: in the grape vine, it is an abortive raceme.
- Terete*, round like a column,—and either cylindrical or tapering; applied to stems, or stem-like bodies. See *orbicular*.
- Terminal*, situated at, or proceeding from, the end or summit.
- Ternary* arranged in threes; consisting of three parts, or elements.
- Ternate*, three-fold; three together,—as the leaflets of clover, &c.
- Tessellated*, resembling mosaic work; in little squares, or checkers, like a chess-board.
- Testa*. The outer integument, or proper coat, of a seed.
- Tetralynamous*, having four long and two short stamens, in a cruciate flower.
- Tetragonous*, four-cornered, or having four angles.
- Trimerous*, consisting of four parts, or constituent portions.
- Tetraumbrous*, having four stamens of equal length.
- Thallogenous* plants. Plants destitute of stem, or axis; consisting of *Thalli*, or mere expansions of cellular vegetable growth.
- Thallophytes*. A *Class* of flowerless plants,—consisting wholly of *Thallus*, or vegetable leaf-like expansion.
- Thalus*. A name for the stemless, frond-like expansion, of which many Cryptogamous plants are entirely composed.
- Theca* (plural. *Theræ*). A name for the little case, sac, or capsule, (*sporangium*), containing the spores of certain cryptogamous plants (*ex. gr.*, the Mosses).
- Thorn*. A sharp process from the woody part of a plant,—being a stunted, or abortive branch.
- Throat*. The orifice or passage into the tube of a corolla.
- Thyrsoid*, resembling, or being in the form of, a *Thyrsus*.
- Thyrsus*. A kind of contracted, or dense, ovoid panicle,—as in the *Lilac*, *Horse-chesnut*, &c.
- Tiller*. A sucker, or young shoot, of *Wheat*, *Rye*, &c.
- Tiller*, or *tillow*, to put forth suckers, or new shoots, from the root, or base of the stem—as *Wheat*, &c. See *Stole*, or *stool*.
- Tissue*. Web, or fabric; the intimate organic structure, or composition, of bodies,—especially those which are, or have been, alive.
- Tomentose*, covered with a curled, or matted, cottony pubescence.

- Tomentum*. A matted downy or cottony pubescence.
- Toothed*. See *dentate*.
- Torose*, or *torulose*, swelled out in obtuse ridges.
- Tortuous*, bent in different directions.
- Torus*. The bed, or receptacle, at the apex of a flowerstalk, on which are inserted all the parts of the flower.
- Translucent*, clear, or transmitting light faintly.
- Transverse*, *transversely*, across; crosswise; at right angles with lengthwise.
- Triadelphous*, having the filaments united in three parcels.
- Tricandrous*, having three stamens.
- Triangular*, having three angles, corners, or points.
- Tribes*. Groups of kindred plants, intermediate between Orders and Genera.
- Tribracteate*, having three bracts.
- Trichotomous*, three-forked; dividing by three equal branches.
- Trioecous*, composed of three separable indehiscent carpels (or *cocci*).
- Tricuspidate*, having, or terminating in, three sharp points.
- Trifurcious*, facing, or pointing, in three directions.
- Trifid*, three-cleft; partially cut or divided into three segments.
- Trifoliolate*, having three leaves; or the leaves arranged in threes.
- Trigonus*, three-cornered.
- Trigynous*, having three pistils.
- Trilobate*, three-lobed.
- Trinervis*, consisting of three parts.
- Tripartite*, three-parted.
- Tripetalous*, having three petals.
- Tripinnate*, three-pinnate; the common petiole three times divided, or with bipinnate divisions on each side.
- Tripinnatifid*, pinnately dissected, with the primary divisions twice pinnatifid.
- Triplinerve*, having three principal nerves from the base.
- Triquetrous*, having three angles and three flat sides,—as the culms of many *CYPERACEÆ*.
- Trisepalous*, having three sepals.
- Triterminal* leaf. When the petiole is twice divided ternately, and each final branch bears three leaves.
- Truncate*, having the end blunt, as if transversely cut off.
- Tube*, a pipe, or hollow cylinder.
- Taber*. A solid fleshy knob, attached to roots.
- Tuberete*. A small excrescence, knob, or point, on a surface—making it rough, or uneven.
- Tubercula*. The partial receptacles of some of the *LICHENES*.
- Tuberculate*, covered with tubercles.
- Tuberiferous*, bearing or producing tubers.
- Tuberous*, consisting of, or fleshy and solid like tubers.
- Tubular*, having a tube, or constructed like a tube.
- Tuft*. A bunch, or fascicle, growing from the same root, or originating nearly at the same point.
- Tumid*, swelled, or enlarged like a swelling.
- Tunicate*, coated; having concentric coats, or thin layers.
- Turbinate*, top-shaped; resembling an inverted cone.
- Turf*. The green sward, or grassy sod.
- Turgid*, swelled, but not inflated.
- Turion*. A thick, tender, young shoot of a plant,—as of *Asparagus*, *Hop*, &c.
- Tussock*. A dense tuft or bunch, formed at the root,—as in some species of *Carex*, *Grasses*, &c.
- Twin*, two of the same kind connected, or growing together.
- Twining*, winding round and ascending spirally.
- Two-ranked* (or *row'd*). See *Distichous*.
- Umbel*. A kind of inflorescence, in which the flower-stalks proceed from a common centre, like rays, or the braces of an umbrella. Umbels are *simple* or *compound*: which see.
- Umbellate*, in the form or manner of an umbel.
- Umbellet*. A partial umbel; one of the subdivisions of a *compound umbel*: which see.
- Umbelliferous*, bearing the flowers in umbels.
- Umbilicate*, navel-like; having a central pit, or depression.
- Unarmed*, without thorns or prickles.
- Uncinate*, hook-shaped; hooked at the end.
- Undulate*, wavy; curved, or rising and depressed, like waves.
- Unequal*, the parts not corresponding in length, size, form or duration.
- Unguiculate*, having a slender or narrow base, like an *unguis*, or claw.
- Uniform*, or *uniformly*, in one form, or manner; equally and alike.
- Unilateral*, on one side; growing, or inserted, all on one side of a stem, or common peduncle.
- Unisexual*, of some sex—*i. e.*, staminate, or pistillate, only.
- Urceolate*, pitcher-shaped, or urn-shaped; swelling below, and contracted to a neck, above.
- Utricle*. A little sac, or thin membranaceous pericarp, when enclosed,

- but does *not* adhere to, the seed. See *Caryopsis*.
- Valvate** aestivation. When the sepals or petals are folded together, and fit by their edges, without overlapping.
- Valves**. The several parts of a regularly dehiscent pericarp,—especially of a capsule: also, the scales which close the tube, in some corollas; and the chaffy pieces which cover the flowers of the Grasses.
- Var** (*Varietas*), a variety, or modification of a species.
- Variety**. A new or unusual form, or modification of a plant, produced by accidental causes,—such as crossing, soil, climate, &c., but not permanently, or at least, not *specifically*, distinct.
- Vascular** plants. The higher orders of plants (including all above the *Mosses*),—composed more or less of woody fibres, and elongated cells, or *vessels*, in the form of slender tubes.
- Vaulted**, arched over, like the roof of the mouth.
- Veil** (of the Fungi). A delicate membrane or fringe, in certain *Agarics*, which in an early stage connects the margin of the pileus with the stipe.
- Veined** having the vessels variously branching, over the surface.
- Venation** of a leaf. The distribution of the veins, or frame work, in the lamina or blade.
- Ventral**, contained in, or belonging to, the belly.
- Ventral suture**. The line or seam of a carpel, or folded leaf, formed by the union of its margins: the opposite of *dorsal*.
- Ventricose**, bellied; swelling out in the middle, or below it.
- Vernation**. The mode in which young leaves are folded and packed in a bud.
- Verrucose**, warty; covered with wart-like excrescences.
- Versatile** anther. When it is fixed by the middle on the point of the filament, and moves round lightly and readily,—as in the Grasses, &c.
- Vertical**, or *vertically*, in a perpendicular direction; from the *zenith*, or highest point, directly downwards.
- Vertical leaves**. When they stand edge up, or present their margins—and not their faces—to the earth and sky: indicative rather of *Phyllotia*, than of true leaves.
- Verticil**. A whorl; flowers, leaves, or other organs, arranged in a horizontal ring, round a stem, or at its summit.
- Verticillaster**. A spurious verticil; a condensed cyme, or cluster resembling a verticil,—as in many *LABIATAE*.
- Verticillate**, growing or arranged in a verticil, whorl, or horizontal ring.
- Vesicles**. Little bladder-like vessels.
- Vesicular**, or *vesiculose*, made of, or resembling, little bladders.
- Vespertine** flowers. Those which expand in the evening.
- Vexillum**. The banner, or broad upper petal of a papilionaceous corolla.
- Villose**, or *villous*, velvety; clothed with numerous, and rather long, soft hairs.
- Villus** (plural, *villi*). The velvet-like pubescence on a villous plant.
- Virescent**, inclining to, or becoming, green.
- Viviparous**, wand-like; long, slender, and straight.
- Vivid**, greenish.
- Viscid**, clammy; covered with a sticky or adhesive moisture.
- Vittae**. Fillets; linear receptacles of oily matter on the carpels of Umbelliferous plants.
- Viviparous**, producing a collateral offspring by means of bulbs; or having the seeds to germinate before they are detached from the parent plant.
- Vouabile** ascending spirally, or climbing by embracing another object. See *Twining*.
- Volva**. The wrapper, or outer covering of a young Mushroom (*Agaric*),—which bursts by the rapid development of the plant, leaving its remains adherent to the base of the stipe.
- Vulgo**, commonly called (in the vernacular); in common parlance.
- Wavy**.—See *undulate*.
- Whorl**.—See *verticil*.
- Winged**, having a thin extended margin.
- Wings**. The side-petals of a papilionaceous corolla: also, the membranous expansion at the summit or margin of certain pericarps, and on the sides of some petioles.
- Woolly**, clothed with a long, curled, or matted pubescence, resembling wool.

INDEX.

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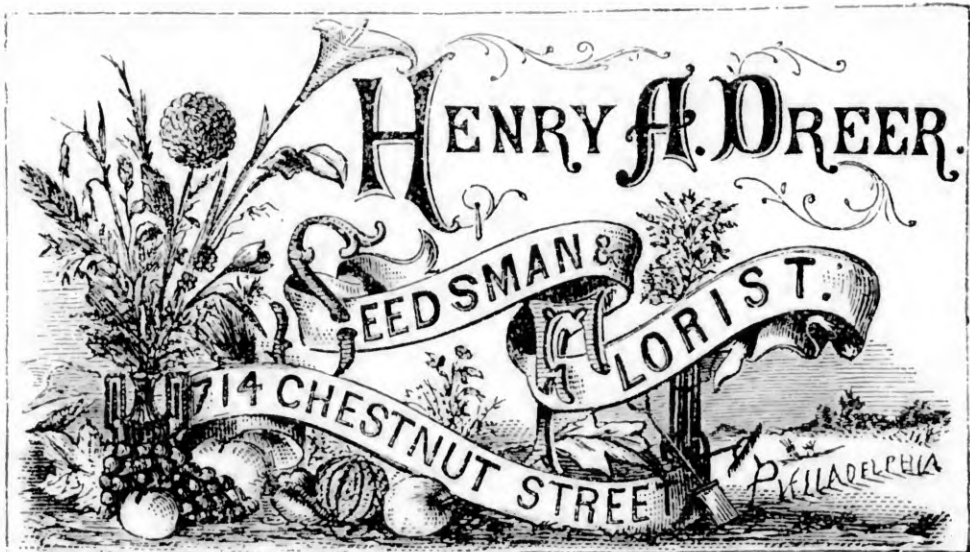
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