









B O T A N Y

OF THE

UNITED STATES NORTH OF VIRGINIA;

COMPRISING

DESCRIPTIONS OF THE FLOWERING AND FERN-LIKE
PLANTS HITHERTO FOUND IN THOSE STATES,

ARRANGED ACCORDING TO THE NATURAL SYSTEM.

WITH

A SYNOPSIS OF THE GENERA ACCORDING TO THE LINNÆAN SYSTEM,
A SKETCH OF THE RUDIMENTS OF BOTANY, AND A
GLOSSARY OF TERMS.

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SECOND EDITION, REVISED AND ENLARGED.  
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NEW YORK:
HARPER & BROTHERS, PUBLISHERS.

1848.



Entered according to the Act of Congress, in the year 1848, by
HARPER & BROTHERS,
In the Clerk's Office of the District Court of the United States,
for the Southern District of New York.

QK117
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PREFACE TO THE SECOND EDITION.

THIS volume is intended as a Class-book for the beginner, and a convenient Manual for the more advanced botanist. It contains scientific and popular descriptions of the Flowering and Fern-like plants found in the United States north of Virginia, with their English names, and brief notices of their uses. The arrangement is according to the Natural System, which is now so generally adopted in works of this kind. But in order to secure all the advantages of the Linnæan system, a Synopsis of the Genera in accordance with it is prefixed, containing references to the Natural Orders, and to the page where the species are described. And fully to carry out the design of the work, there have also been introduced, a Sketch of the Rudiments of Botany, a Glossary of Botanical Terms, and a Table explanatory of the Linnæan Classes and Orders.

While the original plan of the work has been adhered to, I have endeavored, in this edition, to bring it up to the present advanced state of botanical science. There is scarcely a page which has not been amended, and many parts have been entirely re-written. Brevity has in all cases been consulted, as far as was deemed consistent with that clearness of description so important in the study of plants.

In the names and characters of the Natural Orders, I have chiefly followed Dr. Lindley's late work, entitled "The Vegetable Kingdom;" although the general arrangement adopted in the first edition has not been materially changed. I should also particularly acknowledge my indebtedness to De Candolle's "Prodromus" (10 vols.), Torrey and Gray's "Flora of North America," Torrey's "Flora of the State of New York," and

Darlington's "Flora Cestrica." In determining the geographical range of the species, I have derived great assistance from the various local catalogues of plants which have been published within the last ten years. I have also consulted with much advantage several valuable papers which have from time to time appeared in Silliman's Journal, and in other scientific periodicals. Particular references to the sources of information will in all cases be found in their appropriate places.

The favorable reception which this work has met with, and the kind expressions of botanists in various parts of the country, encourage me to hope that this revision will be no less acceptable.

RUTGERS COLLEGE, N. J.

February, 1848.

ABBREVIATIONS AND AUTHORITIES.

<i>Adans.</i>	Adanson.	<i>Mich.</i>	Michaux.
<i>Ait.</i>	Aiton.	<i>Mich. f.</i>	Michaux the younger.
<i>All.</i>	Allioni.	<i>Moq.-Tand.</i>	Moquin-Tandon.
<i>Bart.</i>	Barton.	<i>Muhl.</i>	Muhlenberg.
<i>Beauv.</i>	P. de Beauvois.	<i>Nees.</i>	Nees ab Esenbeck.
<i>Benth.</i>	Bentham.	<i>Nutt.</i>	Nuttall.
<i>Big.</i>	Bigelow.	<i>Pers.</i>	Persoon.
<i>Cass.</i>	Cassini.	<i>Poir.</i>	Poiret.
<i>D. C.</i>	De Candolle.	<i>Raf.</i>	Rafinesque.
<i>Desf.</i>	Desfontaines.	<i>R. & S.</i>	Rømer and Schultes.
<i>Desv.</i>	Desvaux.	<i>Rich.</i>	Richard.
<i>Darlingt.</i>	Darlington.	<i>Salisb.</i>	Salisbury.
<i>Eat.</i>	Eaton.	<i>Schk.</i>	Schkuhr.
<i>Ell.</i>	Elliott.	<i>Schreb.</i>	Schreber.
<i>Ehrh.</i>	Ehrhart.	<i>Schw.</i>	Schweinitz.
<i>Gært.</i>	Gærtner.	<i>Scop.</i>	Scopoli.
<i>Good.</i>	Goodenough.	<i>Spreng.</i>	Sprengel.
<i>Gron.</i>	Gronovius.	<i>Torr.</i>	Torrey.
<i>Hook.</i>	Hooker.	<i>Torr. & Gr.</i>	Torrey and Gray.
<i>Juss.</i>	Jussieu.	<i>Tourn.</i>	Tournefort.
<i>Lam.</i>	J. B. de la Marck.	<i>Trin.</i>	Trinius.
<i>Lamb.</i>	Lambert.	<i>Walt.</i>	Walter.
<i>Lehm.</i>	Lehmann.	<i>Wang.</i>	Wangenheim.
<i>L'Herit.</i>	L'Heritier.	<i>Willd.</i>	Willdenow.
<i>Lind.</i>	Lindley.	<i>Vent.</i>	Ventenat.
<i>Linn.</i>	Linnæus.		

① Annual.

¼ Perennial.

② Biennial.

½ Shrubby or arboreous.

Arct. Amer. Arctic America—Ala. Alabama—Can. Canada—Car. South Carolina—Conn. Connecticut—Del. Delaware—Geor. Georgia—Ken. Kentucky—Louis. Louisiana—Mass. Massachusetts—N. Car. North Carolina—N. H. New Hampshire—N. Y. New York—N. J. New Jersey—Penn. Pennsylvania—Tenn. Tennessee—Ver. Vermont—Virg. Virginia.

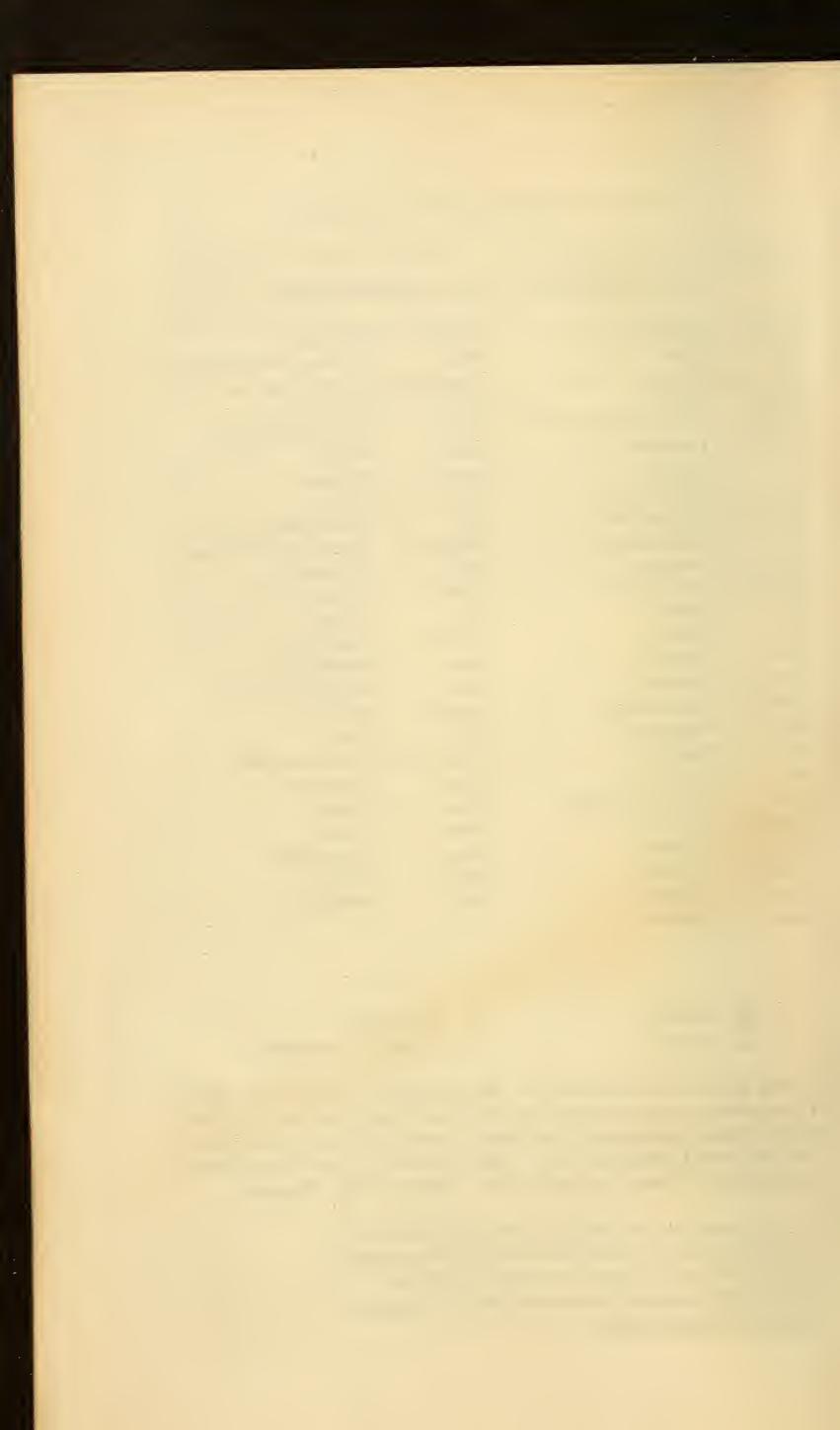
W. to Miss.—As far West as the State of Missouri.

W. to the Miss.—As far West as the Mississippi River.

W. to Ill.—As far West as the State of Illinois.

W. to Mich.—As far West as the State of Michigan.

N. S.—Northern States.



SKETCH OF THE RUDIMENTS OF BOTANY.

ELEMENTARY ORGANS.

1. The tissue of which plants consist, appears under four forms, viz: cellular tissue, woody fibre, vascular tissue, and ducts. These are called elementary organs.

2. *Cellular tissue* or *parenchyma* is composed of transparent vesicles, variously cohering with each other. It is the only form universally found in plants; the other forms being often partially or entirely wanting.

3. *Woody fibre* is a tissue consisting of elongated tubes, similar to the vesicles of cellular tissue, and is therefore often called, *elongated cellular tissue*.

4. *Vascular tissue*, of which the *spiral vessels* are usually taken as the type, consists of tubes of variable length, with delicate walls, to the inside of which a spirally coiled fibre adheres, capable of being unrolled. It enters into the composition of all plants of higher organization, (all above the mosses.)

5. *Ducts* are elongated, transparent tubes, composed of tissue that is not capable of being unrolled.

6. All these forms are covered by a membrane called the *epidermis* or *cuticle*.

7. From peculiar combinations of the elementary organs are formed the *compound organs*.

ROOT.

8. The *root* is formed by the descending and dividing fibres of the stem; and by it plants are with few exceptions fixed to the earth, and supplied with a portion of their nourishment.

9. It is distinguished from the stem by the absence of leaves, of pith even in those plants in which it is abundant in the stem, and of spiral vessels.

10. It usually consists of three parts; the *neck*, (*collum*) or line of separation from the stem; the *body* or middle portion; and the *fibres* or little roots, through which the nourishment is principally derived.

11. The following are the principal kinds of roots:

a. *Conical*, or principal *tap root*, as it is sometimes called; tapering downwards and emitting fibres from various parts of its surface; as in the Carrot.

b. *Fusiform*, when the conical root is attenuated towards the neck, as well as below; as in the Radish.

c. *Napiform*, when it is swollen out extremely in the upper part and suddenly attenuated below; as in the Turnip.

- d. Abrupt*, when the fusiform root is as it were cut off suddenly.
- e. Fibrous*, a collection or bundle of fibres connected by a common head and often merely by the base of the stem; as in the Grasses.
- f. Fasciculated*, when the fibres swell out slightly in the middle.
- g. Tuberos* or *tuberiferous*, when some of the branches or fibres assume the form of rounded knobs. These should not be confounded with true *tubers*, which are properly short subterranean stems, usually containing eyes or buds from which new plants arise.
- h. Palmate*, when the knobs of the tuberiferous root are branched.
- 12. The *direction* of the root is usually towards the centre of the earth; but it is sometimes *contorted* or bent upwards and downwards in a zigzag manner; or *creeping* when it proceeds laterally at right angles from this. These have often been confounded with subterranean branches; the last of which only are troublesome to the agriculturalist.

STEM.

13. This is the part which springs upwards during the germination of a seed; it is the intermediate body between the root and the leaves.

14. When the stem of a plant arising from a seed is evident, the plant is termed *caulescent*; and when not apparent, or scarcely so, the plants have received the name of *acaules*, or *stemless*.

15. When the stem instead of ascending, stretches either wholly or in part, under ground, emitting here and there roots from below and branches or leaves which rise upwards, it is called a *rhizoma*; or if it do not emit fibres, a *cornus* or *corm*. The *bulb* is a very short stem, consisting of a number of scales, which in growing shoots forth a flowering stem from the centre, and sends out roots from the base.

16. *Stolons* or *runners* are long stems of a peculiar nature issuing horizontally from a plant, and emitting only from the extremity roots and leafy buds; as in the Strawberry.

17. The stem varies in structure, in three principal modes.

18. In vascular plants it is either formed by successive additions to the outside of the wood, when it is called *Exogenous*; or by successive additions to its centre, when it is called *Endogenous*. In cellular plants it is formed by the union of the base of the leaves, or by a simple elongation or dilatation where no leaves or buds exist.

19. The stem of *Exogenous* plants may be distinguished into the pith, the medullary sheath, the wood, the bark, the medullary rays, and the cambium.

20. The *pith* is a mass of spongy cellular tissue occupying the centre of the stem.

21. The *medullary sheath* surrounds the pith, and consists of spiral vessels and ducts. It communicates on one side with the pith and on the other with the medullary rays, leaf-buds and veins of the leaves.

22. The *wood* lies upon the medullary sheath and consists of concentric layers, one of which is formed every year. These layers are composed of cellular tissue, woody fibre and ducts, and are traversed by the *medullary rays* composed of cellular tissue, and connecting the centre with the circumference.—The fully formed or central layers are called the *heart-wood*, and the exterior the *alburnum*.

23. The *bark* surrounds the wood, and when fully formed consists in its inner portion of a layer of woody and vascular tissue in the form of rough woody fibre, constituting the *liber*. The outer portion which covers the liber is then also distinguishable into the *green layer*, and the *corky envelope*. The whole is covered by the *epidermis*.

24. The *cambium* is a viscid secretion which is formed in the spring, between the liber and alburnum.

25. The stem of *Endogenous* plants presents no distinction of pith, medullary rays, wood and bark, but is formed of bundles of ducts and spiral vessels interspersed through a cellular tissue; and this is surrounded by a stratum of cellular tissue and woody fibre different from bark, inasmuch as it cannot be separated from the stem itself. Such plants have their diameter increased by the addition of central vascular tissue and ducts.

26. Projections from the medullary sheaths sometimes reach the circumference of the stem and branches, forming what are called *nodes*, to which are attached leaves and leaf-buds, and the spaces between these are called *internodes*.

27. Whatever is produced by the evolution of a leaf-bud is a branch: a *spine* therefore is a kind of branch; it differs from the *prickle* which is an indurated process of the epidermis.

28. The stem peculiar to the grasses and other allied tribes is termed a *culm*. This is simple or rarely branched, generally hollow within or fistulous, and separated at intervals by knots or partitions from which issue the leaves.

29. The stem may be simple or branched, and with the branches may be *cylindrical*, or *conical*; *round*, (*terete*.) or *angled*; *smooth*, *furrowed*, or *rough*, or *hairy*, &c.

30. With regard to duration the stem is

a. *Annual*, (①) when it is completely developed and decays during the same season.

b. *Biennial*, (②) when it produces fruit the second season and then decays.

c. *Perennial*, (④) when it produces flowers and fruit during many successive seasons.

31. The term *herb* or *herbaceous* employed in opposition to *perennial*, denotes that the stem generally dies down to the ground every year.

LEAF-BUDS.

32. Buds are of two kinds, leaf-buds and flower-buds.

33. *Leaf-buds* consist of rudimentary leaves surrounding a vital point, the tissue of which is capable of elongation; upwards in the form of stem, and downwards in the form of wood or root.

34. *Flower-buds* consist of rudimentary leaves surrounding a point, which does not elongate after it is once developed, and assumes when fully developed, the form of reproductive apparatus.

35. Leaf-buds are of two kinds; the *regular* only found in the axils of the leaves; and the *adventitious* which may be produced wherever there is an anastomosis of woody fibre.

36. Leaf-buds have sometimes been confounded with roots by the old botanists. A *bulb* is a leaf-bud.

LEAVES.

37. *Leaves* are those expansions which issue laterally from the stem and branches of plants. They take their origin from the bark, and are always to be observed, whether perfect or rudimentary, immediately below the leaf-buds.

38. Those leaves situated near the root are often larger, and of a different shape from those higher up the stem; the former are termed *radical*, the latter *cauline*.

39. A leaf consists of a petiole, a lamina or limb, and a pair of stipules; but sometimes only one of these three parts can be observed.

40. The *petiole* is the channel through which the vessels of the leaf are connected with those of the stem; it is formed of one or more bundles of spiral vessels and woody fibre, enclosed in a cellular integument.

41. The *lamina* of a leaf is an expansion of the parenchyma of the petiole, and is transversed by veins which are ramifications or extensions of the bundles of vascular tissue of the petiole, or when there is no petiole, of the stem.

42. These veins either branch in various directions among the parenchyma, anastomosing and forming a kind of network, or they run parallel to each other, being connected by single transverse unbranched veins; the former structure being characteristic of *Exogenous*, and the latter, of *Endogenous* plants. To this the *Coniferæ* and *Cycadææ* form perhaps the only exceptions; these having the stems of the *Exogenous*, but the same arrangement of the veins as in the *Endogenous* ones.

43. The principal vein of the leaf is a continuation of the petiole, running in a direct line from the base to the apex of the lamina, and is called the *midrib*.

44. The lamina is variously divided and formed; it is usually thin and membranous, with a distinct upper and under surface, but sometimes becomes succulent, when the surfaces cannot be distinguished.

45. A leaf is either simple or compound; *simple* when its lamina is undivided, or when, if separated into several divisions, these segments are not articulated with the petiole; *compound* when the lamina is articulated with the petiole.

46. The modes in which leaves are divided are distinguished by particular names, as *pinnate*, *pinnatifid*, *bipinnate*, *bipinnatifid*, &c. &c. These terms apply to the mode of division, and are equally applicable to simple and compound leaves.

47. *Stipules* are those small foliaceous organs sometimes situated on each side at the base of the petiole. They never occur in the *Endogenæ*, nor in any *Exogenous* plants that have sheathing petioles, and are rarely found in genera with opposite leaves. They are sometimes transformed into leaves; they sometimes have leaf-buds in their axils; and sometimes also they are changed into spines.

48. Leaves are originally continuous with the stem, but afterwards, from a cause which is still unknown, an articulation more or less complete takes place and the *fall of the leaf* ensues.

49. The mode in which leaves are arranged within their bud is called *vernation* or *gemination*. This varies much in different groups of plants.

FLOWER-BUDS.

50. The *flower-bud* consists of imbricated rudimentary or metamorphosed leaves, the external or inferior of which are usually alternate, and the internal or superior always verticillate or opposite; the latter are called *floral envelopes* and *reproductive organs*.

51. The leaves, from the axils of which the flower-buds arise are called *bracts* or *floral leaves*; and those leaves which appear on the pedicel between the bracts and calyx, are called *bracteoles*. These, although essentially distinct, are often confounded with the former.

52. When a single bract is rolled together, highly developed, and colored, and is placed at the base of the form of inflorescence called a *spadix*, it is named a *spathe*.

53. When several bracts are verticillate or densely imbricated around the base of the forms of inflorescence called the umbel or head, they are termed an *involucre*; and those at the base of each partial umbel, are called *involucels*.

54. Small imbricated bracts are often called *scales*; as in the *Compositæ*.

55. Bracts, when placed immediately below the stamens and pistils, as in apetalous flowers, are only distinguished from the calyx by being alternate with each other, and not verticillate; hence the *glumes* and *paleæ* of grasses are bracts, and not calyces.

56. The elongation of the axis of the flower-bud from the point of its connection with the stem, as far as the floral envelopes, is called the *peduncle*.

57. When several peduncles spring from the axis near to each other, the axis is termed a *rachis*, and the peduncles themselves are called *pedicels*.

58. Those axes which spring from the earth and bear no true leaves, are denominated *scapes*.

59. The modes in which the flower-buds are arranged are called *forms of inflorescence*; and the order in which they unfold, is called the *order of expansion*.

INFLORESCENCE.

60. When a flower-bud gives rise to only one flower, terminal on its peduncle, and the axis of the plant does not elongate beyond the bud, the flower is commonly said to be *terminal* and *solitary*.

61. When the axis, however, continues to elongate and the bract retains the form and size of a leaf, the flower is termed *axillary* and *solitary*.

62. If the buds instead of giving rise to one terminal flower have the axis elongated, bearing several flowers, and each flower on a peduncle, a *raceme* is formed.

63. When each flower is sessile or placed in the axil of the bracts, without a peduncle, a *spike* is produced. Hence the only difference between a spike and raceme is, that in the former the flowers are sessile and the latter stalked. The term spike, however, is applied in those cases where the peduncle is scarcely perceptible.

64. A *spadix* is a sort of spike, in which the flowers are closely packed together upon a succulent axis, which is enveloped in a *spathe*.

65. An *ament* or *catkin*, is a spike, the bracts or scales of which are nearly of equal size and closely imbricated, and which is articulated with the stem.

66. When a bud produces flower-buds, with a little elongation of its own axis, either a *head* or an *umbel* is produced. The former bears the same relation to the latter as the spike to the raceme; that is, they differ in the flower-buds of the head being sessile, and of the umbel having pedicels.

67. A raceme, the lowest flowers of which have long pedicels and the uppermost short ones, forming a sort of level top, is a *corymb*.

68. A *panicle* is a raceme, the flower-buds of which have, in elongating, developed other flower-buds.

69. A panicle, the middle branches of which are longer than those of the base or apex, is termed a *thyrs*.

70. A panicle, the elongation of all the ramifications of which is arrested, so that it assumes the appearance of an umbel, is called a *cyme*. The cyme may have the lateral branches very short and the flowers clustered together, forming a *fascicle*; or it may be so contracted and the ramification of it so little apparent as to be confounded with the true head, when it is called a *glomerule*.

71. In all the modes of *simple inflorescence*, that is, those which proceed from the buds of a single branch, the flowers expand first at the base and last at the summit. This kind of expansion is called *centripetal*.

72. When the inflorescence is *compound*, or the result of the expansion of several buds or branches, the uppermost or central flowers are first developed, and lastly the outer or lower ones. This kind of expansion is called the *centrifugal*.

FLORAL ENVELOPES.

73. These immediately surround the stamens and pistils, and are formed of one or more whorls of variously modified leaves. When they consist of but one whorl, they are usually called *calyx*; when of two whorls, the outer is called *calyx*, the inner *corolla*.

74. If the floral envelopes are of such a nature that it is not obvious whether they consist of both calyx and corolla, or calyx only, they receive the name of *perianth* or *perigonium*.

75. Some plants have no floral envelopes; the flowers are then said to be *naked* or *achlamydeal*.

76. The *calyx* consists of two or more divisions, usually green, called *sepals*, which are either distinct, when a calyx is said to be *polysepalous*, or which unite by their margins in a greater or less degree, when it is called *monosepalous* or *monophyllous*, (*gamosepalous*.)

77. The *corolla* consists of two or more divisions, more or less colored, called *petals*; when the petals are distinct, a corolla is said to be *polypetalous*; when they are united by the margins, it is called *monopetalous*, (*gamopetalous*.)

78. When all the petals are equal, the corolla is said to be *regular*, but when they are unequal in size or cohere unequally, it is then called *irregular*.

79. The regular monopetalous corolla varies greatly in its form, being *campanulate* or *bell-shaped*, *infundibuliform* or *funnel-shaped*, *rotate* or *wheel-shaped*, &c.

80. The calyx or corolla is said to be *labiate* or *bilabiate*, when the sepals or petals are united in one or two parcels.

81. The *papilionaceous* corolla consists of five petals; the upper one, usually larger than the others, is called the *vezillum* or *standard*; the two lateral ones, the *alæ* or *wings*; and the two lower ones, usually more or less united together by their lower margins, the *carina* or *keel*.

82. When the petal tapers conspicuously towards the base, it is said to be *unguiculate* or *clawed*; its lower part is called the *claw*, its upper, the *limb*.

83. The dilated apex of the pedicel, from which the floral envelopes and stamens arise, is called the *torus* or *receptacle*.

84. Whatever intervenes between the bracts and the stamens belong to the floral envelopes, and is either calyx or corolla; of which nature are many of the organs commonly called *nectaries*.

85. The manner in which the floral envelopes are arranged before they expand is called their *astivation* or *præfloration*.

DISK.

86. Whatever intervenes between the stamens and pistils receives the general name of *disk*.

87. The disk usually consists of an annular elevation encompassing the base of the ovary; but it sometimes appears in the form of a glandular lining of the tube of the calyx, as in the Rose; or of tooth-like hypogynous processes, as in the Cruciferae; or of a fleshy mass, as in Lamium.

88. The disk sometimes appears to be a mere cellular expansion of the torus, (83) as in Nelumbium.

89. It is one of the parts commonly called *nectary*.

STAMENS.

90. The whorl of organs immediately within the petals is composed of bodies called *stamens*, and they are essential to the production of seed.

91. When stamens and pistils occur in the same flower it is termed *perfect* or *hermaphrodite*; but when the stamens are in one flower and the pistils in another, the flowers are *imperfect* or *diclinous*.

92. The number of stamens is variable, five or ten being the usual number among the Exogenous, and three to six among the Endogenous plants.

93. When the stamens do not contract any union with the sides of the calyx, they are *hypogynous*; as in Ranunculus.

94. When they contract adhesion with the side of the calyx, they become *perigynous*; as in Rosa.

95. If they are united both with the surface of the calyx and of the ovary, they are *epigynous*; as in the Umbelliferae.

96. The stamen consists of a filament and an anther.

97. The *filament* is the body which arises from the torus, and is sometimes cylindrical, or awl-shaped, or prismatical, and is even at times expanded, as if into a scale or petal; but it is not essential to the stamen.

98. The filaments are usually *free* or isolated from each other; but they are sometimes united into one tube, when they are called *monadelphous*; or into two parcels, *diadelphous*; or into several, *polyadelphous*.

99. When they are united into a solid body along with the style, they form what is called a *column*, and are said to be *gynandrous*.

100. The *anther* is a kind of bag borne by the filament, and corresponds to the lamina of a leaf. It is *sessile* when there is no filament, or it is placed at the top of the filament in various ways.

101. The bags or cells of the anther are termed *lobes*, and the solid substance which connects them, corresponding to the midrib of a leaf, the *connective*. These cells are usually two in number; sometimes they are four, rarely one.

102. The lobes or cells of the anthers open in different ways by what is called the *line of dehiscence*; sometimes only a portion of this line opens, the anther is then said to *dehiscce by pores*; as in *Azalea*.

103. The anthers frequently grow together by their margins, as in the *Compositæ*; when they are called *syngenesious*.

104. The anther contains and frequently emits a matter called the *pollen*, the use of which is to give life to the ovule or young seed.

105. When the grains of pollen burst, they again discharge a multitude of very minute particles, called *molecules* or *granules*.

106. When the grains of pollen easily detach from each other, they are said to be *pulverulent*, and then they may be either perfectly smooth or they may be viscous.

107. Sometimes the grains contained in one cell or bag, instead of separating readily, cohere into what are termed *pollen-masses*, (*pollinia*;) as in the *Orchidaceæ*.

PISTIL.

108. The *pistil* is the organ which occupies the centre of a flower, within the stamens, and is the fruit-bearing apparatus of plants.

109. It is distinguished into three parts, viz: the *ovary*, the *style*, and the *stigma*.

110. The *ovary* is a hollow case enclosing the *ovules* or young seeds. It contains one or more cavities called *cells*.

111. The *stigma* is the upper extremity of the pistil.

112. The *style* is that part which connects the ovary and stigma; but it is often wanting, when the stigma is said to be *sessile*.

113. The pistil is either the modification of a single leaf, or of one or more whorls of modified leaves; the latter being termed *carpels*.

114. When the margins of the folded leaf out of which the carpel is formed meet and unite, a copious development of cellular tissue takes place, forming what is called the *placenta*.

115. If no union takes place among the carpels, the ovary is termed *apocarpous*, as in *Ranunculus*; but if there is an adherence, so that a compound ovary is formed, it is called *syncarpous*.

116. When carpels unite, those parts of their sides which are contiguous grow together, and form partitions between the cavities of the carpels, called *dissepiments*.

117. When these dissepiments are so contracted as not to separate the cavity into a number of distinct cells, but merely project into a cavity, the

placentæ which occupy the edges of these dissepiments become what is termed *parietal*.

118. If the dissepiments are abortive or obliterated, the placentæ remaining unaltered in the axis, a free *central placenta* is formed.

119. A one-celled ovary may also be formed out of several carpels in consequence of the obliteration of the dissepiments; as in the Nut.

120. If the ovary adheres to the sides of the calyx it is called *inferior*, and the *calyx* is said to be *superior*.

121. If it contracts no adhesion with the sides of the calyx, it is called *superior*, and the *calyx* *inferior*.

OVULES.

122. The *ovule* is a body borne by the placenta, and is the rudiment of the future seed; its position is of great importance in determining natural affinities.

123. When the ovule is fixed by its base to the bottom of one of the cells of the ovary, of which it takes the direction, it is said to be *erect*; or if it hangs from the summit of the cell, it is *inverted*.

124. When it is attached to the middle portion of the placenta, it may have an upright direction, and is then called *ascending*, or point downwards, and is then *suspended*. Generally, however, the erect and ascending ovule are confounded under one name, and the inverted and suspended are known by the term *pendulous*.

125. The ovule is either sessile, or on a stalk called the *funiculus* or *podosperm*; and in either case the point by which the union is formed is termed the *base* of the ovule, and the other extremity the *apex*.

126. The ovule consists of a nucleus and two external coats; the outer coat is called the *testa* or *primine sac*; and the inner, the *internal membrane*, or *secundine sac*, or the *tegmen*.

127. The base of the *nucleus* is always incorporated with the base of the internal membrane, and their common base is attached at some points to the *testa*. The junction of the three forms the *chalaza*.

128. The mouths of the primine and secundine sacs usually contract into a small aperture called the *foramen* of the ovule, or the *exostome*. It is through this foramen that the molecules of the pollen are introduced into the nucleus; and its position indicates the future position of the radicle of the embryo, the radicle being always next the foramen.

129. When the apex of the nucleus is contiguous to the base of the ovule, a connection takes place between the base of the ovule and the base of the nucleus, by a bundle of vessels called a *raphe*.

FRUIT.

130. Fecundation having taken place, the floral envelopes usually fade away, the stamens disappear and the pistil increases in size and becomes the *fruit*.

131. Hence the fruit should have the same structure as the pistil, but this is not always the case, for as the pistil advances to maturity many alterations take place, in consequence of abortion, non-development, obliteration or even union of parts.

132. The *base* of the fruit is the part where it is joined to the peduncle; the *apex* is where the remains of the style are found.

133. The portion of the pistil called the ovary is in the ripe fruit termed the *pericarp*.

134. The *pericarp* consists of three parts, the outer coating called the *epicarp* or *exocarp*, the inner lining called the *endocarp* or *putamen*, and the intermediate substance, which is generally fleshy or pulpy, named the *sarcocarp* or *mesocarp*. Sometimes these three parts are readily distinguished, as in the Peach; but they frequently form one uniform substance, as in the Nut.

135. The axis of the fruit is often called *columella*; the space where two carpels unite is named the *commis sure*.

136. If the pericarp neither splits nor opens when ripe, it is said to be *indehiscent*; but if it does split or open, it is said to *dehisce*, or to be *dehiscent*; and the pieces into which it divides are termed *valves*.

137. When a fruit is in its simplest state, or formed by the transformation of one carpellary leaf, there may be two sutures or lines by which it may open, the one where the margins of the leaf or the placentæ meet, called the *ventral suture*, the other at the part corresponding to the midrib of the leaf, or the *dorsal suture*.

138. If, in a compound fruit, the line of opening corresponds with the junction of the carpels, the dehiscence is *septicidal*. Formerly in this kind of dehiscence the *valves* were said to be *alternate with the dissepiment*.

139. If the opening is by the dorsal suture of each carpel, the dehiscence is *loculicidal*; or as it was formerly said, *the dissepiments are opposite to the valves*.

140. When a separation of the pericarp takes place across the cells horizontally, the dehiscence is *transverse* or *circumcisile*.

141. If the dehiscence is effected by partial openings of the pericarp, it is said to take place by *pores*.

142. All fruits are either *simple* or *multiple*; the former proceeding from a single flower, as the Apple, Nut, Strawberry, &c.: the latter formed out of several flowers, as the Pine-apple, Fig, &c.

143. Simple fruits are either *indehiscent* or *dehiscent*; of the former the most important are the caryopsis, the utricle, the achenium and the drupe.

144. The *caryopsis*, is where the pericarp is very thin and membranous, and adheres firmly to the integument of the seed; as in Wheat, Maize, and most Grasses.

145. The *utricle* is similar to the caryopsis, the pericarp being membranous, but it has no adherence with the seed.

146. The *achenium*, is a small and dry indehiscent one-seeded pericarp formed of a single carpel; as in Ranunculus and Anemone. The name is also applied to one-seeded fruits formed of more than one carpel, and invested by the calyx-tube; as in the Compositæ.

147. A *drupe* is a fleshy nut enclosed in a putamen; as in the Cherry and Peach.

148. The *nut* contains a putamen, but the sarcocarp is coriaceous, instead of being fleshy. A *samara* is a nut or achenium having a winged apex or margin; as in the Elm and Maple.

149. The dry dehiscent fruits are the follicle and the legume.
150. The *follicle* is a carpel dehiscing by the ventral suture, and having no dorsal suture.
151. The *legume* is a carpel having both ventral and dorsal sutures, by either of which or by both or neither it may dehisce; rarely the sides fall off, bearing nothing but sutures, which then form a kind of frame called a *replum*. When articulations take place across the legume and it falls into several pieces, it is said to be *lomentaceous*.
152. Of fruit formed of several carpels the principal are the capsule, the silique, gland, berry, orange, pome, and pepo.
153. The *capsule* is a many-celled, dry dehiscent pericarp.
154. The *silique*, (or *pod*,) consists of two (or four) carpels fastened together, the placentæ of which are parietal and separate from the valves, remaining in the form of a replum and connected by a membranous expansion; when the silique is very short, or broader than it is long, it is called a *silicle* or *pouch*.
155. The *gland* is a dry bony, indehiscent, one-celled and one-seeded fruit, proceeding from an ovary of several cells and seeds, and enclosed by an involucre called a *cupule* or *cup*; as in *Quercus*.
156. The *berry* is a succulent fruit, the seeds of which lose their adhesion when ripe, and lie loose in pulp; as the Grape or Gooseberry.
157. The *orange* is a berry having a pericarp, separable into an epicarp, an endocarp and a sarcocarp, and the cells filled with pulpy bags, which are cellular extensions of the sides of the cavity.
158. The *pome* is a union of two or more inferior carpels, the pericarp being fleshy and formed of the floral envelope and ovary firmly united.
159. The *pepo* is composed of about three carpels, the sides of which do not turn far inwards, nor the margins unite. It is a one-celled, fleshy, indehiscent fruit, with parietal placentæ, and usually with a firm rind; as the Melon.
160. The most remarkable modifications of multiple fruits are the cone, pine-apple, and fig.
161. The *cone* or *strobile* is an indurated ament. When it is much reduced in size, and its scales cohere, it is called a *galbulus*; as in *Thuja*.
162. The *pine-apple* is a spike of inferior flowers, which all grow together in a fleshy mass.
163. The *fig* is a fleshy, hollow, dilated apex of a peduncle, within which a number of flowers are arranged, each of which contains an achenium.

SEED.

164. The *seed* is the ovule arrived at maturity.
165. It consist of integuments, albumen, and embryo; a *naked seed* is only found in those rare cases in which the ovule is naked.
166. The seed proceeds from the placenta, to which it is attached by the *funiculus*; sometimes this becomes expanded about the seed into a fleshy body, called the *aril* or *arillus*
167. The scar which indicates the union of the seed with the placenta, is called the *hilum* or *umbilicus*.

168. The integuments are called collectively *testa*, and consist of membranes resulting from the sacs of the ovule. These membranes are called by various names.

169. Between the integuments and the embryo of some plants lies a substance called the *albumen* or *perisperm*; the nature of this is of great importance.

170. The albumen is sometimes *farinaceous* or *mealy*, as in the Grasses; *coriaceous* and almost *cartilaginous*, as in many Umbeliferæ; *ruminated* or wrinkled, as in the Anonaceæ; *horny*, as in the Coffee-bean; *oily*, as in the Poppy; or *thin* and *membranous*, as in many Labiata.

171. The *embryo* is the organized body that lies within the seed, which is destined to become a plant similar in all respects to the parent. It is usually solitary in the seed, but occasionally there are two or several.

172. The embryo consists of the cotyledons, the radicle, the plumule and the neck.

173. The *cotyledons* represent the undeveloped leaves.

174. The *plumule* is what is destined to become the stem, and is therefore a rudimentary leaf-bud.

175. The *radicle* is the rudiment of the root, and by germination becomes the root.

176. The *neck* or *collum* is the line of separation between the radicle and the portion above it.

177. The number of cotyledons varies from one to several.

178. Plants that have but one cotyledon, or if with two, one of them is alternate with the other, are termed *Monocotyledonous*. These are also *Endogenous* plants.

179. Plants that have two cotyledons placed opposite each other, or a greater number placed in a whorl, are called *Dicotyledonous*. These are also *Exogenous* plants.

180. Plants that have no cotyledons, are said to be *Acotyledonous*. But this term is only applied to cellular plants, which having no stamens and pistils, can have no seed.

181. When the radicle is so bent that it touches the back of one of the cotyledons, it is said to be *dorsal*, or the cotyledons are said to be *incumbent*.

182. When the radicle is applied to the edge or cleft of the cotyledons, it is said to be *lateral*, or the cotyledons are said to be *accumbent*.

183. When the seed is called into action, germination takes place and growth commences.

GLOSSARY

OF THE

PRINCIPAL BOTANICAL TERMS.

[The figures refer to the preceding Sketch.]

-
- Abortion*, an imperfect development of any given organ.
- Abortive*, not arriving at perfection, producing no fruit.
- Abrupt*, not gradual, sudden.
- Abruptly* pinnate, pinnate with even pairs only, wanting the odd or terminal leaflet.
- Acaulescent*, apparently without a stem.
- Accessory*, additional, or supernumerary.
- Acerose*, stiff, linear, and sharp, as in the leaves of the Pines.
- Acotyledonous*, 180.
- Accumbent* cotyledons, 182.
- Aculeate*, prickly.
- Acuminate*, taper, pointed, more than acute.
- Acute*, ending in a sharp point.
- Achenium*, plural *achenia*, 146.
- Acicular*, needle-form.
- Adherent*, attached to, or united with another organ.
- Adnate*, growing to, affixed laterally.
- Aestivation*, 85.
- Agglomerated*, bunched, crowded together.
- Aggregate*, standing together, many on the same receptacle, but not compound.
- Ala*, wings, or membranaceous expansions.
- Alate*, winged; having a membranaceous border.
- Albumen*, 169.
- Alternate*, placed alternately on opposite sides of the stem.
- Alveolate*, having pits or cells like a honeycomb.
- Ament*, or *catkin*, 65.
- Amplexicaul*, clasping or embracing the stem.
- Anastomosing*, applied to branching vessels, which unite again like network.
- Ancipital*, two-edged.
- Androgynous*, having barren and fertile flowers on the same spike, or the same plant, but no perfect ones.
- Angiospermous*, having the seeds contained in a distinct pericarp or seed-vessel.
- Annual*, 30. *a.*
- Annulate*, having a ring or belt.
- Anomalous*, not according to rule or system; an exception to the ordinary form or appearance.
- Anther*, 100.
- Antheriferous*, bearing anthers.
- Apetalous*, without petals.
- Apex*, end, tip, or sharp extremity.
- Aphyllous*, without leaves.
- Appendiculate*, having some appendage.
- Appressed*, pressed against, or close to.
- Approximate*, near together.
- Apterous*, without wings; a term applied to some parts of flowers.
- Aquatic*, growing naturally in water, or in wet places.
- Arborescent*, approaching to the size of a tree.
- Arcuate*, curved or bent like a bow.

- Areola*, a small cavity—as in the base of some achenia.
- Aril* or *arillus*, a loose coating of the seed.
- Arillate*, having an aril.
- Aristate*, awned, ending in a bristle.
- Armed*, furnished with thorns or prickles.
- Articulated*, jointed, connected by joints or places of separation.
- Ascending*, rising from the ground obliquely.
- Assurgent*, rising in a curve from a declined base.
- Attenuated*, gradually diminished or tapering.
- Auriculate*, having an ear-like base.
- Awn*, a stiff bristle, frequently rough or bearded; as in the flowers of certain grasses.
- Awned*, having awns.
- Awnless*, without awns, or bristle-like appendages.
- Axil*, the angle between a leaf and stem on the upper side.
- Axillary*, growing in or from the axil.
- Axis*, a central stem or peduncle; a real or imaginary central line extending from the base to the summit.
- Baccate*, berried, having a fleshy coat or covering.
- Banner*, or *vexillum*, 81.
- Barb*, a straight process armed with one or more teeth pointing backwards.
- Barren*, producing no fruit, containing stamens only.
- Beak*, a terminal process, like a bird's bill; a hard short point.
- Beaked*, having, or terminating, in a beak.
- Bearded*, with parallel hairs; applied also to the Grasses.
- Berry*, 156.
- Bicuspidate*, with two points.
- Bidentate*, with two teeth.
- Biennial*, 30. b.
- Bifarious*, in two series or opposite rows; pointing in two directions.
- Bifid*, two cleft, cut nearly in two parts.
- Bifurcate*, forked; ending in two nearly equal branches.
- Biglandular*, having two glands.
- Bilabiate*, having two lips.
- Bilamellate*, having two lamellæ, or thin plates.
- Bilobed*, having two lobes.
- Bilocular*, having two cells.
- Binnate*, growing two together.
- Bipinnate*, twice pinnate, when both the leaf and its subdivisions are pinnate.
- Bipinnatifid*, twice pinnatifid, both the leaf and its segments being pinnatifid.
- Birostrate*, with two beaks.
- Bisetose*, with two bristles.
- Bisulcate*, with two grooves or furrows.
- Biternate*, twice ternate, the petiole supporting three ternate leaves.
- Bivalved*, two valved.
- Bloom*, a fine powdery coating on certain fruits; as the Plum.
- Border*, the brim, or spreading part of a corolla.
- Brachiate*, branches opposite, and each pair at right angles with the preceding.
- Bract*, 51.
- Bracteoles*, small bracts.
- Branchlets*, subdivisions of the branches.
- Bristles*, rigid hairs, straight or hooked.
- Bud*, 32.
- Bulb*, 15.
- Bulbiferous*, bearing bulbs.
- Caducous*, falling early, sooner than deciduous.
- Cæspitose*, or *cespitose*, growing in tufts.
- Calcarate*, resembling, or furnished with, a spur or horn.
- Calli*, small callosities or rough protuberances.
- Calyxiform*, shaped like a calyx.
- Calyculate*, furnished with an additional outer calyx.
- Calyptiform*, shaped like a calyptra or extinguisher.
- Calyx*, 73.
- Campanulate*, bell-shaped.
- Canaliculate*, channelled or furrowed.
- Canescent*, whitish, hoary; covered with a whitish or gray pubescence.
- Capillary*, or *capillaceous*, very slender, resembling a hair.
- Capitate*, shaped like a head, or bearing a head.

- Capsule*, 153.
Carina 81.
Carinate, keeled, furnished with a sharp or prominent back like the keel of a vessel.
Carpel, 113.
Carpophore, the axis of the fruit in the Umbelliferæ.
Caryopsis, 144.
Catkin, see *Ament*.
Caudate, having a tail; as in some seeds.
Caudex, the main body of a tree or root.
Cauliscent, having a true stem
Cauline, growing on the stem.
Cell, a cavity or compartment of a seed vessel or anther.
Cellular, made up of little cells or cavities.
Centrifugal inflorescence, 72.
Centripetal inflorescence, 71.
Chaffy, made of short membranous portions like chaff.
Channelled, grooved or furrowed.
Chartaceous, of a texture resembling paper.
Cilia, hairs along the margin of a surface, like those of the eyelashes.
Ciliate, fringed with parallel hairs, like eyelashes.
Cinereous, of the color of wood-ashes.
Circinate, with the apex rolled back upon itself, like the young fronds of a fern.
Circumcised, cut round transversely, or opening like a snuff-box.
Cirrhus, a tendril.
Cirrhose, bearing tendrils.
Clasping, surrounding the stem partly or quite with the base of the leaf.
Clavate, club-shaped, larger at top than bottom.
Claw, the taper base of a petal, 82.
Cleft, split or divided less than half way.
Clypeate, shaped like a Roman buckler.
Coadunate, united at base.
Coarctate, contracted or crowded.
Cochleate, resembling the shell of a snail.
Coherent, united with an organ of the same kind.
Collateral, placed side by side.
Colored, different from green, which is the common color of plants.
- Columella*, 135.
Column, 99.
Commisure, the line of junction of two bodies; as the face of the carpels in the Umbelliferæ.
Comose, covered with cottony hair.
Compound, made up of similar simple parts.
Compressed, flattened.
Conduplicate, doubled lengthwise.
Cone, 161.
Conglomerate, crowded together.
Confluent, running into one another.
Conjugate, in pairs; coupled.
Connate, joined together at base.
Connective, the organ which connects the two cells of an anther.
Connivent, converging, the tips inclining towards each other.
Conoid, like a cone.
Continuous, without interruption or articulation.
Contorted, twisted, bent from a common position.
Convolute, rolled together.
Coraloid, resembling coral in appearance.
Cordate, heart-shaped.
Coriaceous, leathery, tough and thick.
Cornus or *corm*, the fleshy subterraneous base of a stem, resembling a bulb, but solid.
Corneous, horny, having a consistence like horn.
Corniculate, horn-shaped.
Corolla, 77.
Cortical, belonging to the bark.
Corymb, 67.
Costate, ribbed.
Cotyledons, 172.
Creeping, 12.
Crenate, scolloped, having sharp notches on the edge separated by round or obtuse dentures.
Crenulate, finely or minutely crenate.
Crested, having an appendage resembling a cock's comb.
Crowned, having a circle of projections round the upper part of the tube of a flower, on its inside.
Cruciform or *cruciate*, consisting of four petals placed like a cross.
Crustaceous, having a hard brittle shell.
Cucullate, hooded or cowled, rolled or folded in; as the spathe of *Arum triphyllum*.

- Cucurbitaceous*, like gourds or melons.
Culm, the stem of Grasses and Cyperaceous plants.
Cuneate or *cuneiform*, wedge-shaped, tapering with straight edges to the base.
Cupule, 155.
Cusp, a stiffish tapering sharp point.
Cuspidate, having a sharp straight point.
Cuticle, 6, 23.
Cyathiform, cup-shaped.
Cylindric or *cylindrical*, round and not tapering, cylinder-shaped.
Cyme, 70.
Cymose, bearing or flowering in cymes.
Cymules, the reduced cymes, or cymose clusters of the Labiatae; sometimes called *Verticillasters*.
- Deciduous*, falling off, in opposition to persistent and evergreen, later than *caducous*.
Declined or *declinate*, turned downwards.
Decomound, twice compound, composed of compound parts.
Decumbent, leaning upon the ground, the base only erect.
Decurrent, when the edges of a leaf run down the stem or stalk.
Decursive, see *Decurrent*.
Decussate, or *decussating*, in pairs alternately crossing each other.
Deflected, bent off or downwards.
Dehiscent, gaping or opening naturally by seams at maturity.
Deltoid, nearly triangular, shaped like the Greek letter Δ.
Dentate, toothed, edged with sharp projections separated by notches, larger than *serrate*.
Denticulate, minutely toothed.
Dentures, teeth, the sharp parts which separate notches.
Depauperated, few-flowered.
Depressed, flattened or pressed in at the top.
Depressed-globose, globular, with the base and apex flattened.
Diaphanous, transparent.
Dichotomous, forked, dividing into two equal branches.
Diclinous, having the stamens and pistils in distinct flowers on the same or different plants.
- Dicocous*, containing two grains or seeds.
Dicotyledonous, 179.
Didymous, twin; growing in pairs, and more or less united.
Didynamous, having 2 long and 2 shorter stamens in the same flower.
Diffuse, scattered, widely spread.
Digitate, when a petiole gives off five or more leaflets from a single point at its extremity.
Dimidiate, halved, as if one side or one-half had been cut off.
Diacious, having the barren and fertile flowers on different plants.
Discoid, having a disc covered with flowers, but no ray-flowers.
Disk, 86; also the central part of a head of compound flowers.
Dissepiment, the partition or internal wall of a pericarp.
Distichous, two-rowed, producing leaves or flowers in two opposite rows.
Distinct, separate; not connected with each other, nor with any contiguous organ.
Divaricate, diverging so far as to turn backwards.
Divergent, spreading, separating widely.
Divided, separated or cleft to the base, or to the midrib, if a leaf.
Dorsal, growing on, or belonging to, the back.
Downy, clothed with soft fine hairs.
Drooping, inclining downwards, more than *nodding*.
Drupaceous, bearing or resembling drupes.
Drupe, 147.
- Ebracteate*, without bracts.
Ecaudate, without a tail.
Echinate, beset with prickles, hedgehog like.
Effuse, a term applied to a loose one-sided panicle; as in *Juncus effusus*.
Elliptic or *elliptical*, oval, longer than wide with the two ends narrowing equally.
Elongated, exceeding a common or average length.
Emarginate, having a notch in the end.
Embryo, 176.
Emersed, raised out of water.

- Endocarp*, the hard shell which forms the covering of the seeds.
- Ensiform*, sword-shaped, two-edged.
- Entire*, even and whole at the edge; without incision, notch, or tooth.
- Envelope*, an integument or covering.
- Epicarp*, the outer coating of the pericarp or fruit.
- Epidermis*, see *Cuticle*.
- Epigynous*, attached to the ovary, so that the upper portion is apparently inserted on its summit.
- Epipetalous*, upon the petals.
- Equal*, similar parts of nearly the same size and form; as sepals, petals, &c.
- Eroded* or *erose*, appearing as if gnawed at the edge.
- Esculent*, eatable.
- Evergreen*, remaining fresh through the winter, not deciduous.
- Exsert* or *exserted*, projecting or protruding out; as stamens from the tube of a corolla, &c.
- Falcate*, sickle-shaped, linear and crooked.
- Fascicle*, 70.
- Fascicled* or *fasciculate*, collected in bundles.
- Fastigate*, flat or level topped.
- Favose*, deeply pitted, resembling a honeycomb.
- Feather-veined* leaf, where the lateral veins diverge regularly from each side of the midrib; as in a quill.
- Ferruginous*, reddish-brown, like the rust of iron.
- Fertile*, containing perfect pistils and yielding fruit.
- Fibrous*, being composed of fibres.
- Filiform*, thread-like, or very slender.
- Fimbriate*, finely divided at the edge like fringe.
- Fimbrillate*, clothed with *fimbrilla*, membranaceous linear or subulate filaments; as the receptacle of certain compound flowers.
- Fistulous* or *fistular*, hollow or tubular.
- Flabelliform*, spreading like a fan.
- Flaccid*, weak, so as to bend by its own weight.
- Flagelliform*, like a whip-lash.
- Flexuous* or *flexuose*, serpentine or zigzag.
- Floral leaf*, see *Bract*.
- Foliaceous*, resembling a leaf.
- Follicle*, 150.
- Frond*, the leaf of Cryptogamous plants.
- Frutescent*, becoming shrubby.
- Fruticose*, shrub-like, or shrubby.
- Fulvous*, tawny or tan-colored.
- Fugacious*, that which lasts but for a short time.
- Funiculus*, the little cord by which seeds are attached to the placenta.
- Funnel-shaped*, tubular at bottom, and gradually expanding at top.
- Fuscous*, grayish brown, or deep brown tinged with green.
- Fusiform*, 11.
- Galea*, a helmet, the upper part of a ringent corolla.
- Geminale*, doubled.
- Gemmaceous*, belonging to a bud, made of the scales of a bud, 49.
- Geniculate*, bent like a knee.
- Germ* or *germen*, the old name for the ovary.
- Germination*, the sprouting of a seed.
- Gibbous*, swelled out, commonly on one side.
- Glabrous*, very smooth, without any roughness or pubescence.
- Glandular pubescence*, hairs tipped with little heads or glands.
- Glaucous*, sea-green, pale bluish green.
- Globose* or *globular*, spherical, round on all sides.
- Glomerate*, gathered in a round heap or head.
- Glomerules*, small dense roundish clusters.
- Glumaceous*, resembling chaff or glumes.
- Glumes*, the scales, valves or chaff which make the calyx of grasses.
- Glutinous*, adhesive, viscid, covered with an adhesive fluid.
- Gramineous*, resembling the grasses.
- Graniferous*, bearing a grain or grains.
- Granular*, formed of grains or covered with grains.
- Gymnospermous*, having the seeds naked.
- Gynandrous*, having the stamens growing on, or adhering to, the pistil.

- Habit*, the general external appearance of a plant, by which it is known at sight.
- Habitat* or *habitat*, the natural or native place of growth.
- Hamate*, hooked, a bristle curved at the end.
- Hastate*, shaped like a halbert; it differs from *arrow-shaped* in having the barbs or lateral portions more distinct and divergent.
- Head*, a dense roundish cluster of sessile flowers.
- Helmet*, see *Galea*.
- Herbaceous* or *herb*, not woody.
- Heterocephalous* flowers, staminate and pistillate in distinct heads; as in *Ambrosia*.
- Heterogamous* heads, containing flowers of different structure and sexual character.
- Heterophyllous*, having leaves of different forms.
- Hilum*, 167.
- Hirsute*, rough with soft hairs.
- Hispid*, rough with stiff hairs.
- Hoary*, covered with white down.
- Homogamous* heads, containing flowers of a similar structure and the same sexual character.
- Hooded*, see *Cucullate*.
- Horn*, see *Spur*.
- Hybrid*, a mongrel, or partaking of the nature of two species.
- Hypocrateriform*, salver-shaped, with a tube abruptly expanded into a flat border.
- Hypogynous*, 93.
- Imbricate* or *imbricated*, lying over each other like scales, or the shingles of a roof.
- Imperfect* flower, one in which either stamens or pistils are wanting.
- Incised*, cut, separated by incisions.
- Included*, wholly received or contained in a cavity, the opposite of *exserted*.
- Incomplete* flower, one which is destitute of calyx or corolla.
- Incrassated*, thickened upward, larger toward the end.
- Incumbent*, lying against or across, 181.
- Incurved*, bent or curved inwards.
- Indefinite*, numerous, and of no constant number.
- Indehiscent*, not opening.
- Indigenous*, native; growing naturally in a country.
- Indusium*, the involucre or veil which covers the fruit of ferns.
- Inferior*, lowermost.
- Inflated*, blown up like a bladder.
- Inflexed*, bending inwards.
- Inflorescence*, 59.
- Infundibuliform*, funnel-shaped.
- Inserted into*, growing out of.
- Internode*, the space between joints; as in Grasses.
- Interrupted*, having intervals, or the continuity broken.
- Interruptedly pinnate*, when smaller leaflets are interposed among the principal ones.
- Introse* anthers, having the cells turned inwards or towards the pistils.
- Involucel*, a partial involucre, 53.
- Involucre* or *involucrum*, 53.
- Involute*, rolled inwards.
- Irregular*, the component parts differing in size and shape.
- Keel*, 81.
- Keeled*, shaped like a keel.
- Kidney-shaped*, heart-shaped without the point, and broader than long.
- Labiate*, 80.
- Lacerate*, divided into irregular segments, as if torn.
- Laciniate*, cut or divided into segments.
- Lactescent*, milky; yielding a whitish or milky juice, when cut.
- Lacunose*, covered with little pits or depressions.
- Lamellated*, in thin plates.
- Lamina*, a thin layer or plate; the flat portion of a leaf or petal, as distinguished from the petiole or claw.
- Lanceolate*, spear-shaped, narrow, with both ends acute.
- Lance-linear*, *Lance-ovate*, &c., linear, ovate, &c., with something of the lanceolate form.
- Lanuginous*, woolly.
- Lateral*, at the side.
- Lax*, loose, not compact.
- Leaflet*, a partial leaf, a constituent of a compound leaf.
- Legume*, 151.

- Leguminous*, bearing legumes.
- Lenticular*, having the form of a lens; orbicular and compressed, but convex on both faces.
- Ligneous*, woody.
- Ligulate*, ribbon-shaped; a kind of corolla found in compound flowers, consisting of a tube at bottom, continued into a long flat portion at top.
- Ligule*, the mostly membranaceous appendage at the summit of the sheath, in the Grasses.
- Liliaceous*, resembling the lily.
- Limb*, 82.
- Line*, the twelfth part of an inch.
- Linear*, long and very narrow with parallel sides.
- Linear-lanceolate*, partaking of both forms, but more of the latter.
- Lip*, the front segment of an Orchideous or other flower.
- Lobe*, a large division or distinct portion of a leaf or petal.
- Lobate* or *lobed*, cut or divided into lobes.
- Loment*, 151.
- Lunate* or *lunulate*, shaped like a half-moon.
- Lyrate*, pinnatifid, with a large roundish segment at the end.
- Marcrescent*, withering.
- Melliferous*, honey-bearing.
- Membranous* or *membranaceous*, very thin and delicate.
- Mericarp*, a name given to the indehiscent carpel of the Umbelliferæ.
- Midrib*, 43.
- Monadelpous*, 98.
- Moniliform*, arranged like the beads of a necklace.
- Monoclinous*, having the stamens and pistils in the same flower.
- Monocotyledonous*, 178.
- Monœcious*, having staminate and pistillate flowers distinct, but on the same plant.
- Monopetalous*, having but one petal, or the petals united into one.
- Monophyllous*, one-leaved.
- Monosepalous*, consisting of one sepal.
- Mucronate*, having a mucro or point projecting from an obtuse end.
- Multifid*, many-cleft.
- Multipartite*, many-parted.
- Multiple*, a number containing another number several times without a remainder; as 9 is a multiple of 3.
- Muricale*, covered with sharp spines or prickles.
- Muticous*, awnless or pointless.
- Naked*, destitute of the usual covering or appendage; as the corolla without a calyx, seeds without a pericarp, &c.
- Napiform*, turnip-shaped.
- Nectariferous*, bearing honey.
- Nectary*, 84, 89.
- Nerves*, parallel veins or rib-like fibres extending from about the base to the apex.
- Neuter* or *neutral* flower, having neither stamen nor pistil.
- Nodding*, inclining to one side, partly drooping.
- Nodi* or *nodes*, 26.
- Nodose*, having many nodi or joints.
- Nucamentaceous*, producing nuts.
- Nucleus*, a central body, the kernel of a nut.
- Nucules*, little nuts, or nut-like fruit.
- Nut*, a hard indehiscent fruit, mostly with a single seed.
- Ob*, a particle, which, when prefixed to any other term, denotes the inversion of the usual position.
- Obconic*, conic with the apex downward.
- Obcordate*, heart-shaped, with the point inwards, or downwards.
- Oblanceolate*, with the widest part above the middle, and tapering gradually to the base.
- Oblong*, longer than oval with the sides parallel.
- Obovate*, ovate, but inverted.
- Obovoid*, inversely ovoid.
- Obsolete*, indistinct, appearing as if worn out.
- Obtuse*, blunt, rounded, not acute.
- Ochrea*, a membranous sheath, embracing the stem like a boot-leg; as in *Polygonum*.
- Ochroleucous*, whitish-yellow, cream-color.
- Opercular*, opening by a lid fixed at one side.
- Opposite*, standing directly against each other on opposite sides of the stem.

- Orbicular*, circular.
- Oval*, longer than broad, the sides curving from end to end, and the ends of equal breadth and curvature.
- Ovary*, 110.
- Ovate*, flat, with the outline of the longitudinal section of an egg, the lower end being the largest.
- Ovoid*, having the outline of an entire egg.
- Ovule*, 122.
- Palate*, a large obtuse projection which closes the throat of a personate flower.
- Palea*, a term applied to the parts of the corolla in Grasses.
- Palaceous*, chaffy.
- Palmate*, hand-shaped, deeply divided into spreading and somewhat equal segments.
- Panduriform*, contracted in the middle like a violin.
- Panicle*, 68.
- Paniced* or *paniculate*, arranged in the form of a panicle.
- Papilionaceous*, 81.
- Papillose*, producing small glandular excrescences like nipples.
- Pappus*, the crown of the fruit of Compositæ and similar plants.
- Parasitic*, growing on another plant and drawing nourishment from it; as the Mistletoe.
- Parietal*, 117.
- Parted*, deeply divided almost to the base, more than cleft.
- Partial*, a term applied to small or constituent parts in distinction from general.
- Partition*, the dividing wall or dissepiment in seed vessels.
- Pectinate*, like the teeth of a comb, intermediate between fimbriate and pinnatifid.
- Pedate* leaf, like a bird's-foot; divided nearly to the petiole in narrow segments, with the lateral ones diverging.
- Pedicel*, 57.
- Pedicellate* or *pedicelled*, having, or being supported on, a pedicel.
- Peduncle*, 56.
- Peduncled* or *pedunculate*, having a peduncle.
- Pellicle*, a very thin stratum or coat.
- Pellucid*, transparent, pervious to light.
- Pellucid-punctate*, having punctures admitting the passage of light.
- Peltate*, having the stalk attached to some part of the surface or disk, and not to the margin.
- Pencilled* or *penicillate*, ending like a painter's pencil or brush.
- Pendulous*, hanging down.
- Pentagonal*, having five corners or angles.
- Pepo*, 159.
- Perennial*, 30, c.
- Perfect flower*, 91.
- Perfoliate*, surrounding the stem on all sides and perforated by it; it differs from *connate*, in not consisting of two leaves: as in *Eupatorium perfoliatum*.
- Perianth*, *perianthium* or *perigonium*, 74.
- Pericarp*, 133.
- Perigynium*, the sac formed by the union of two bractlets, which encloses the ovary; as in certain *Cyperaceæ*.
- Perigynous*, 94.
- Permanent*, see *Persistent*.
- Persistent*, not falling off; those parts of a flower are persistent which remain till the fruit is ripe.
- Personate*, masked, having the mouth of the corolla closed by a prominent palate.
- Petal*, 77.
- Petaloid*, like a petal.
- Petiole*, 40.
- Petioled* or *petiolate*, with a petiole, not sessile.
- Phænogamous*, applied to all plants which have visible flowers containing stamens and pistils.
- Pilose*, hairy, with a stiff pubescence.
- Pinnæ*, the leaflets or divisions of a pinnate leaf.
- Pinnate*, a leaf is pinnate when the leaflets are arranged in two rows on the side of a common petiole.
- Pinnatifid*, cut in a pinnate manner; it differs from pinnate in consisting of a simple or continuous leaf, not compound.
- Pinnules*, the leaflets or subdivisions of a bi-tri- or multi-pinnate leaf.
- Pisiform*, formed like peas.
- Pistil*, 108.

- Pistillate*, having pistils but no stamens.
- Placenta*, 114.
- Plane*, flat.
- Plicale*, plaited, folded like a ruffle or fan.
- Plumose*, feathery, feather-like.
- Plumula*, 174.
- Pod*, 154.
- Pollen*, 104.
- Pollen-masses* or *pollinia*, 107.
- Polygamo-diacious*, having perfect and imperfect flowers on distinct plants.
- Polygamous*, having some flowers which are perfect, and others which have stamens only or pistils only.
- Polygynous*, having many styles.
- Polymorphous*, changeable, assuming a variety of forms.
- Polypetalous*, 77.
- Polyphyllous*, having many leaves, applied to the calyx.
- Polysepalous*, 76.
- Polyspermous*, having many seeds.
- Pome*, 158.
- Porrected*, extended forward.
- Pouch*, 154.
- Præmorse*, blunt at the end, as if bitten off.
- Prickle*, 27.
- Prismatic*, having several parallel flat sides.
- Process*, a protuberance or projecting part.
- Procumbent*, lying on the ground.
- Produced*, extended or lengthened out.
- Protiferous*, an umbel or flower is said to be protiferous when it has smaller ones growing out of it.
- Pseudopinnate*, falsely or imperfectly pinnate, not resolving at any time into separate leaflets; as the Pea, Vetch, &c.
- Puberulent*, covered with a minute pubescence.
- Pubescence*, a general term for the hairy covering of plants.
- Pubescent*, clothed with short weak hairs.
- Pulp*, the soft, juicy, cellular substance found in berries and similar fruits.
- Pulverulent*, dusty, composed of powder, or appearing as if covered with it.
- Punctate*, appearing as if pricked full of small holes, or dots.
- Puncticulate*, having very minute punctures.
- Pungent*, sharp-pointed, or prickly at the apex; acrid.
- Puramen*, a hard shell.
- Pyramidal*, tapering upwards.
- Pyriform*, shaped like the fruit of a pear.
- Quadrangular*, 4-angled.
- Quadrifarious*, in four rows or directions, pointing or facing four ways.
- Quadrifid*, 4-cleft.
- Quaternate*, four together.
- Quinate*, five together.
- Raceme*, 62.
- Racemosæ*, flowering in racemes.
- Rachis*, the main stem of a compound peduncle, along which the pedicels are arranged, as in the Grasses; also the midrib of the divided frond in Ferns.
- Radiant* or *radiate*, often applied to a cluster or head of flowers when those of the circumference or ray are long and spreading, and unlike those of the disk.
- Radical*, growing immediately from the root.
- Radicating*, sending out roots at the nodes or joints of the stem.
- Radicle*, 175.
- Rameal*, belonging to the branches.
- Ramenta*, the scales or persistent remains of leaves or other parts of the plant.
- Ramentaceous*, covered with *ramenta*.
- Ramose*, branching.
- Raphe*, the linear ridge on one side of the anatropous or inverted ovule, formed by the adhesion of a part of the funicle.
- Ray*, the diverging florets or petals which form the outside of radiate flowers, cymes, and umbels.
- Receptacle*, 83.
- Reclined* or *reclinate*, bending over, with the end inclining toward the ground.
- Recurved*, curved backwards.
- Reduplicate*, with the edges folded or turned outwards.
- Reflexed*, bent backwards, more than recurved.

- Regular*, having the parts equal and uniform; as the divisions of the calyx or corolla.
- Reniform*, kidney-shaped, heart-shaped without the point.
- Repand*, slightly wavy or serpentine at the edge.
- Resupinae*, turned upside down; as the corolla of *Trichostema*.
- Reticulate*, net-like, having veins distributed like net-work.
- Retrose* or *retroscely*, pointing backwards or downwards.
- Rhizoma*, 15.
- Rhomboid*, having 4 sides with unequal angles.
- Ribbed*, marked with parallel ridges or veins.
- Ribs*, parallel ridges or nerves extending from near the base to the apex.
- Ringent*, gaping, with an upper and under lip; as in some of the Labiatae.
- Rooting*, sending out lateral roots.
- Rostrate*, furnished with a beak.
- Rosulate*, arranged in the form of a rosette.
- Rotate*, wheel-shaped; applied to a monopetalous corolla, the limb of which is flat and tube very short.
- Rough*, covered with points, dots or hairs, which are rough to the touch.
- Rudiment*, a term applied to an organ that is imperfectly developed.
- Rufescent*, becoming reddish-orange or rusty.
- Rufous*, reddish-brown or rust-colored.
- Rugose*, wrinkled; as the leaves of Sage.
- Rugulose*, finely wrinkled.
- Runcinate*, having large teeth pointing backward; as the leaves of the Dandelion.
- Runners*, 16.
- Saccate*, bagged, having a bag or pouch; as in many petals.
- Sagittate*, arrow-shaped, like the head of an arrow.
- Salver-shaped*, tubular, with the limb flatly or horizontally expanded.
- Samara*, 148.
- Sarcocarp*, the fleshy portion of a pericarp.
- Sarmentose*, running on the ground and striking roots from the joints.
- Scabrous*, rough with little asperities.
- Scales*, any small processes resembling minute leaves; also the leaves of the involucre of Compositae.
- Scandent*, climbing, usually by tendrils.
- Scape*, 58.
- Scarious*, having a thin membranous margin; as in the calyx scales of *Liatris scariosa*.
- Scattered*, irregularly and thinly arranged.
- Scious*, lateral shoots or offsets from the root.
- Scrobiculate*, excavated into little pits or hollows.
- Scutellate*, shaped like a target or shield.
- Secund*, arranged on one side only, the same as unilateral.
- Segment*, a part or principal division of a leaf, calyx or corolla.
- Semi*, half.
- Semibivalved*, half divided into two valves.
- Sepaloid*, like sepals, not petal-like.
- Sepals*, 76.
- Septicidal* dehiscence, 138.
- Septiferous*, bearing a septum.
- Septifragal* dehiscence, when the dissepiments remain united to the axis, while the valves separate from them; as in the Pea.
- Septum*, the partition which divides the interior of the fruit.
- Sericeous*, silky.
- Serrate*, notched like the teeth of a saw, the points tending upward.
- Serrulate*, minutely serrate.
- Sessile*, placed immediately on the stem without the intervention of a stalk.
- Seta*, a bristle.
- Setaceous*, bristle-like.
- Setiform*, formed like a bristle.
- Selose*, covered with bristles.
- Sheath*, a tubular or folded leafy portion enclosing the stem; as in the Grasses.
- Sheathed*, embraced by a sheath.
- Sheathing*, embracing the stem with a sheath.
- Shining*, glossy, smooth and polished.
- Silicle*, 154.
- Siliqua*, 154.
- Siliquose*, having siliques.

- Simple*, not divided branched or compound.
- Sinuate*, having sinuses at the edge.
- Sinuate-dentate* or *sinuate-toothed*, *sinuate-serrate*, having teeth or serratures, with the clefts rounded at the bottom.
- Sinus*, a large rounded indentation or cavity.
- Soboliferous*, producing young plants from the roots.
- Sori*, plural of *Sorus*, small clusters of minute capsules or spore-cases on the back of the fronds of ferns.
- Spadix* 64.
- Spathaceous*, having or resembling a spathe.
- Spathe*, a sheathing calyx opening lengthwise on one side, and consisting of one or more valves.
- Spatulate* or *spathulate*, obtuse or large at the end and gradually tapering into a stalk at base.
- Spermoderm*, the skin of a seed.
- Spike*, 63.
- Spikelet*, a small spike, the subdivision of a compound spike; as in many of the Grasses.
- Spindle-shaped*, see *Fusiform*.
- Spine*, 27.
- Spinulose*, covered with small spines.
- Spore* or *Sporule*, that part in cryptogamous plants which answers to the seed of other plants.
- Spur*, a sharp hollow projection from a flower commonly called the nectary.
- Spurred*, having spur-like elongations.
- Squamiform*, scale-shaped.
- Squamose*, scaly.
- Squarrose* or *squarrous*, ragged, having reflected or divergent scales.
- Staminate*, having stamens but not pistils.
- Staminiferous*, bearing or supporting the stamens.
- Standard*, see *Banner*.
- Stellate*, like a star.
- Stellular* pubescence, hairs with branches like rays.
- Stem*, 13.
- Stemless*, 14.
- Sterile*, barren, producing no fruit.
- Stigma*, 111.
- Stigmatiferous* or *stigmatose*, bearing or belonging to the stigma.
- Stipe*, the stem of a fern or fungus; also the little footstalk of seeds, &c.; as in the Dandelion.
- Stipitate*, having or supported on a stipe.
- Stipular*, belonging to stipules.
- Stipule*, 47.
- Stoloniferous*, having scions or running shoots.
- Striæ*, fine parallel ridges streaks or furrows.
- Striate*, marked with striæ.
- Strict*, straight and stiffly erect.
- Strigose*, clothed with bristly and appressed hairs.
- Strobile*, 161.
- Strophiolate*, surrounded by protuberances.
- Style*, 112.
- Sylopodium*, the thickened foot or base of the style which is confluent with the epigynous disk; as in the Umbelliferæ.
- Sub*, a particle prefixed to various terms, to imply the existence of a quality in a diminutive or inferior degree, as
- Subacute*, somewhat acute, less than acute, &c.
- Suberose*, cork-like.
- Subserrate*, slightly serrate.
- Subsessile*, nearly sessile.
- Subulate*, awl-shaped, narrow, stiff, and sharp-pointed.
- Succulent*, juicy.
- Sucker*, a shoot from the root or lower part of the stem.
- Suffrutescent*, almost shrubby.
- Suffruticose*, somewhat shrubby at base.
- Sulcate*, furrowed or grooved.
- Superior*, above; a term applied to the ovary when it is above the calyx, &c.
- Surculose*, with suckers or offsets.
- Suture*, 137.
- Tendrils*, a filiform appendage of certain vines, which supports them by twining round other objects.
- Terete*, round, either cylindric or tapering.
- Terminal*, extreme, situated at the end.
- Ternate*, three together; as the leaves of common Clover.

- Tessellated*, in little squares or checkers, like a chess-board.
- Testa*, 168.
- Tetramerous*, of four parts or constituent portions.
- Thorn*, see *Spine*.
- Throat*, the passage into the tube of a corolla.
- Thyrse*, 69.
- Thyrseoid*, resembling or in the form of a thyrse.
- Tomentose*, downy, covered with fine matted pubescence.
- Toothed*, divided so as to resemble teeth.
- Torose*, uneven; alternately elevated and depressed.
- Tortuous*, bent in various directions.
- Torulose*, slightly torose.
- Torus*, 83.
- Transverse*, *transversely*, across, crosswise.
- Trichotomous*, 3-forked.
- Tricoccous*, of three *cocci* or separable in dehiscent carpels.
- Trifarious*, pointing in three directions.
- Trifid*, 3-cleft.
- Trifoliate*, 3 leaved, see *Ternate*.
- Trigonous*, 3-cornered.
- Tribobate*, 3-lobed.
- Trilocular*, 3-celled.
- Tripartite*, 3-parted.
- Tripinnate*, thrice-pinnate, when the leaflets of a bipinnate leaf become pinnate.
- Tripinnatifid*, pinnately divided, with the primary divisions twice pinnatifid.
- Triplinerved*, with three principal nerves from the base.
- Trigretous*, having three sides or angles.
- Triternate*, thrice ternate, when the leaflets of a biternate leaf become ternate.
- Truncate*, having a square termination as if cut off.
- Tube*, a pipe or hollow cylinder, applied to that of a monopetalous corolla formed by the united claws.
- Tuber*, 119.
- Tuberculate*, covered with knobs or tubercles.
- Tuberous* or *tuberiferous*, bearing tubers, 119.
- Tabular*, shaped like a tube; in a compound flower, the florets which are not ligulate are called tubular.
- Tuft*, a branch growing from the same root.
- Tumid*, swelling or enlarged.
- Tunicate*, coated with concentric layers; as the Onion.
- Turbinate*, shaped like a top or pear.
- Turion*, a thick, tender young shoot; as of Asparagus.
- Twin*, two of the same kind growing together.
- Twining*, winding round and ascending spirally.
- Umbel*, 66.
- Umbellate*, like an umbel.
- Umbellet*, a partial umbel; one of the subdivisions of a compound umbel.
- Umbelliferous*, bearing umbels.
- Umbilicate*, marked with a central depression.
- Unarmed*, without prickles or thorns.
- Uncinate*, hooked, hook-shaped.
- Undulate*, wavy, serpentine, gently rising and falling.
- Unequal*, the parts not corresponding in length, form, &c.
- Unguculate*, inserted by a claw, 82.
- Uniform*, in one form or manner.
- Unilateral*, growing all on one side, or with the flowers leaning to one side.
- Unisexual*, of one sex, staminate or pistillate only.
- Urceolate*, pitcher-shaped, swelling in the middle and slightly contracted at top.
- Utricle*, 145.
- Valvate* æstivation, when the sepals or petals are folded together and fit by their margins only.
- Valves*, the segments or parts of a seed-vessel into which it finally separates, 136; also the leaves which make up a glume or spathe.
- Valvular* or *valved*, consisting of valves or seed-cells.
- Var.* (*varietas*), a variety of a species, not specifically distinct.
- Vaulted*, arched over, with a concave covering.
- Veined*, having the divisions of the petiole irregularly branched on the under side of the leaf.

- Venation*, in reference to the leaf: the distribution of veins or the frame-work.
- Ventricose*, swelling, inflated.
- Vernation*, the mode in which young leaves are folded in the bud.
- Verrucose*, warty, covered with little protuberances.
- Versatile*, swinging lightly on a stalk so as to be continually changing direction.
- Vertical*, perpendicular.
- Verticil* or *whorl*, flowers or leaves arranged around the stem in a horizontal ring.
- Verticillaster* or *verticillastrum*, a false whorl or verticil; a condensed cyme or cluster, as in some of the Labiatæ.
- Verticillate*, arranged in a verticil or whorl.
- Vesicular*, made up of vesicles or little bladders.
- Vesiculose*, bladder-like.
- Villous* or *villose*, hairy, the hairs long and soft.
- Virescent*, becoming green.
- Virgate*, long and slender, wand-like.
- Viridescent*, greenish.
- Virose*, poisonous, nauseous and strong to the smell.
- Viscid* or *viscous*, thick, glutinous, covered with adhesive juice.
- Viviparous*, producing a collateral offspring by means of bulbs.
- Wedge-shaped*, formed like a wedge, and commonly rounded at the largest end.
- Wheel-shaped*, see *Rotate*.
- Whorl*, see *Verticil*.
- Winged*, having the sides extended into a leafy expansion.
- Wings*, the two lateral petals of a papilionaceous flower, 81.
- Woolly*, clothed with a matted pubescence, resembling wool.

TABLE OF LINNÆAN ARTIFICIAL CLASSES AND ORDERS.

Div. I. *Plants with conspicuous flowers.* PHANEROGAMIA.

A. *Stamens and pistils in the same flower.*

* *Stamens free and equal.*

- | | |
|----------------------------------|-------------------------------|
| CL. 1. MONANDRIA, with 1 stamen. | 6. HEXANDRIA, with 6 stamens. |
| 2. DJANDRIA, 2 stamens. | 7. HEPTANDRIA, 7 stamens. |
| 3. TRIANDRIA, 3 stamens. | 8. OCTANDRIA, 8 stamens. |
| 4. TETRANDRIA, 4 stamens. | 9. ENNEANDRIA, 9 stamens. |
| 5. PENTANDRIA, 5 stamens. | 10. DECANDRIA, 10 stamens. |
- *11. DODECANDRIA, 11 to 19 stamens.
 12. ICOSANDRIA, 20 or more stamens, perigynous or inserted on the calyx.
 13. POLYANDRIA, 20 or more stamens, hypogynous or inserted on the receptacle.

ORDERS.—In the first 13 classes the orders depend solely on the number of pistils, and they are named—*Monogynia* 1. *Digynia* 2. *Trigynia* 3. *Tetragynia* 4. *Pentagynia* 5. *Hexagynia* 6. *Heptagynia* 7. *Octagynia* 8. *Enneagynia* 9. *Decagynia* 10. *Polygynia* more than 10.

** *Stamens free, unequal.*

14. DIDYNAMIA, 4 stamens, 2 longer than the others.

Two orders. 1. *Gymnospermia*, the seeds naked. 2. *Angiospermia*, the seeds enclosed in a pericarp.

15. TETRADYNAMIA, 6 stamens, 4 longer than the others.

Two orders. 1. *Siliculosa*, fruit a silicle or pouch. 2. *Siliquosa*, fruit a long pod or silique.

*** *Filaments united.*

16. MONADELPHIA, filaments forming 1 set.

17. DIADELPHIA, filaments forming 2 sets.

- *18. POLYADELPHIA, filaments forming more than 2 sets.

Orders depend upon the number of stamens, and have the same names as the first 13 classes.

**** *Anthers united.*

19. SYNGENESIA, 5 stamens, the anthers united (compound flowers.)

Five orders. 1. *Polygamia Æqualis*, florets all perfect. 2. *P. Superflua*, disk florets perfect, rays pistilliferous. 3. *P. Frustranea*, disk perfect, rays neutral. 4. *P. Necessaria*, disk with stamens, rays with a pistil. 5. *P. Segregata*, with a perianth to each floret.

***** *Anthers united to the pistil.*

20. GYNANDRIA.

Orders named according to the number of stamens, as *Monandria*, &c.

B. *Stamens and Pistils in different flowers.*

21. MONŒCIA, stamens and pistils on the same individuals.

22. DIŒCIA, stamens and pistils on different individuals.

Orders named according to the number of stamens, except where there is a union of the filaments; then named *Monadelphia*, &c.

*23. POLYGAMIA, perfect and unisexual flowers either on the same or different individuals.

Three orders. *Monœcia*, *Diœcia*, *Triœcia*.

Div. II. *Plants with inconspicuous flowers.* CRYPTOGRAMIA.

24. CRYPTOGRAMIA, having neither stamens nor pistils.

Six orders, viz., 1. *Filices*. 2. *Musci*. 3. *Algæ*. 4. *Fungi*. 5. *Hepaticæ*. 6. *Lichenes*.

* The classes marked thus, viz. Dodecandria, Polyadelphia, and Polygamia, have been discarded by most American botanists. They comprise, at least in the States to which this work is principally devoted, but few genera, and these, being variable in their characters, can be very well distributed among the other classes.

SYNOPSIS OF THE GENERA TREATED OF IN THIS WORK,
ACCORDING TO THE LINNÆAN SYSTEM;

WITH REFERENCES TO THE NATURAL ORDERS.

CLASS I.—MONANDRIA.—1 *Stamen*.

ORDER I.—MONOGYNIA.—1 *Pistil*.

SALICORNIA. Perianth single, turbinate, fleshy, obscurely lobed. Style bifid. Utricle compressed, enclosed in the enlarged perianth. *Chenopodiaceæ*, p. 299.

HIPPURIS. Calyx with the tube adnate to the ovary; the limb minute, entire. Petals none. Style received into the groove of the anther. Fruit 1-seeded. *Haloragaceæ*, p. 113.

HEMICARPHA. Flowers glumaceous. Scales very numerous, deciduous. Valve single, opposite the scale. Style 2-cleft. Achenium oblong. *Cyperaceæ*, p. 399.

ORDER II.—DIGYNIA.—2 *Pistils*.

CALLITRICHE. Flowers perfect or imperfect. Bracts 2, opposite, petaloid. Calyx (corolla of some) inconspicuous. Petals none. Capsule compressed, 4-celled, indehiscent. *Haloragaceæ*, p. 113.

BLITUM. Perianth single, 5-cleft, baccate in fruit. Utricle compressed, covered with the perianth. *Chenopodiaceæ*, p. 299.

CLASS II.—DIANDRIA.—2 *Stamens*.

ORDER I.—MONOGYNIA.—1 *Pistil*.

* *Perianth double, inferior, 1-petalled, regular.*

LIGISTRUM. Calyx minutely 4-toothed. Corolla 4-cleft. Stigma 2-cleft. Berry globose, 2-celled; cells 1—2-seeded. *Oleaceæ*, p. 229.

CHIONANTHUS. Calyx 4-parted. Corolla deeply 4-parted; the lobes long and linear. Drupe 1-seeded. *Oleaceæ*, p. 229.

** *Perianth double, inferior, 1-petalled, irregular.*

VERONICA. Calyx 4- rarely 5-parted. Corolla rotate, unequally 4-lobed; the lower segments narrower. Capsule 2-celled, few-seeded. *Scrophulariaceæ*, p. 264.

LEPTANDRA. Calyx 5-parted; segments acuminate. Corolla tubular; border 4-lobed, a little ringent, the lower segment narrower. Capsule 2-celled, many-seeded. *Scrophulariaceæ*, p. 265.

GRATIOLA. Calyx 5-parted, often with 2 bracts at the base. Corolla tubular, sub-bilabiate; upper lip entire or shortly bifid; lower one 3-lobed. Capsule ovate, 2-celled, 2-valved, the valves at length 2-cleft. *Scrophulariaceæ*, p. 262.

LINDERNIA. Calyx 5-parted, naked at base. Corolla ringent; upper lip short, reflexed, emarginate; lower one trifid, unequal. Capsule ovoid-oblong, 2-celled, 2-valved; dissepiment parallel with the valves. *Scrophulariaceæ*, p. 263.

HEMIANTHUS. Calyx tubular, cleft on the under side; border 4-toothed. Corolla with the upper lip obsolete; the lower 3-parted; intermediate segment ligulate and truncate, much longer and closely incurved. Capsule 1-celled, 2-valved, many-seeded. *Scrophulariaceæ*, p. 263.

CATALPA. Calyx 2-parted. Corolla campanulate; tube ventricose; limb 5-lobed, unequal. Stigma in 2 plates. Capsule pod-form, long, cylindric, 2-valved. Seeds membranaceously winged. *Bignoniaceæ*, p. 242.

JUSTICIA. Calyx 5-parted, often with 2 bracts at the base. Corolla irregular, bilabiate; upper lip emarginate; lower 3-cleft. Anthers 1 or 2 on each filament. Capsule attenuated, 2-celled, 2-valved. *Acanthaceæ*, p. 286.

UTRICULARIA. Calyx 2-parted; lips undivided, nearly equal. Corolla peronate, with the lower lip spurred at the base. Stigma 2-lipped. Capsule globose, 1-celled. *Lentibulariaceæ*, p. 287.

PINGUICULA. Calyx 4—5-cleft, unequal. Corolla ringent, spurred at the base beneath. Stigma of 2 plates or lobes. Capsule 1-celled. *Lentibulariaceæ*, p. 287.

ELATINE. Calyx 2—4-parted. Petals 2—4. Capsule 2—4-valved; margin of the valves not introflexed. *Elatinaceæ*, p. 53.

Obs. The remaining genera of this division have the corolla more or less bilabiate, and four naked seeds or achenia enclosed within the persistent calyx. They form, with the plants of *Didymamia Gymnospermia*, (from which indeed they only differ in having two of the stamens abortive,) the Natural Order *Labiata*, p. 270.

*** *Perianth double, superior.*

CIRCÆA. Calyx short; limb 2-parted. Petals 2. Stigma emarginate. Capsule obovate, hispid with hooked hairs, 2-celled, 2-valved 2-seeded. *Onagraceæ*, p. 111.

**** *Perianth single or none.*

LEMNA. Spathe membranaceous, urceolate, with 2 sterile flowers. Stamens 2, rarely wanting. Filaments longer than the style, curved. Stigma flat. Fruit a utricle. *Pistiaceæ*, p. 384.

CLADIUM. Flowers glumaceous. Spikelets 2-flowered. Scales few, imbricate in a somewhat trifarious manner; the lowest empty. Bristles none. Style 2—3-cleft. Achenium globose-ovoid. *Cyperaceæ*, p. 399.

ORDER II.—DIGYNIA.—2 Pistils.

ANTHOXANTHUM. Flowers glumaceous. Spikelets 3-flowered; the two lower flowers neutral, and each consisting of a single awned palea; the upper flower perfect, of two paleæ, nearly equal, short, awnless. *Gramminaceæ*, p. 437.

CLASS III.—TRIANDRIA.—3 Stamens.

ORDER I.—MONOGYNIA.—1 Pistil.

* *Perianth double, superior.*

FEDIA. Calyx with the limb toothed and persistent or obsolete. Corolla tubular, not spurred; the limb 5-lobed, regular or slightly irregular. Fruit 3-celled; 2 cells empty, (sometimes confluent into one,) the other 1-seeded. *Valerianaceæ*, p. 153.

VALERIANA. Calyx with the limb involute, and at length evolved in a deciduous plumous pappus. Corolla with the tube obconic or cylindrical, equal or gibbous at base, the limb obtusely 5-cleft. Fruit indehiscent, 1-celled, 1-seeded. *Valerianaceæ*, p. 153.

** *Perianth single, superior.*

IRIS. Perianth 6-cleft; 3 of the segments larger and reflexed, the others erect. Stigmas 3, petaloid, covering the stamens. *Iridaceæ*, p. 333.

LACHNANTHES. Perianth 6-cleft; segments unequal. Stigma minutely 3-lobed. Capsule 3-celled, truncate, many-seeded. *Hæmodoraceæ*, p. 376.

*** *Perianth double, inferior.*

COMMELYNA. Perianth in 2 rows; the outer one 3-leaved, calycine; inner 3-leaved, petaloid. Capsule 3-celled, 3-valved; one valve abortive. *Commelynaceæ*, p. 377.

XYRIS. Perianth in 2 rows; outer row glumaceous, 2 of the segments somewhat boat-shaped; inner row petaloid; the segments with long nearly distinct claws and dilated laminæ. Capsule 1-celled. *Xyridaceæ*, p. 371.

**** *Perianth single, inferior.*

SCHOLLERA. Spathe 1-flowered. Perianth with a long slender tube; limb deeply 6-parted. Anthers similar, oblong-sagittate. Stigma 3-lobed. Capsule 1-celled. *Pontederaceæ*, p. 370.

HETERANTHERA. Flowers in a spathe. Perianth with a long slender tube; border 6-parted, equal. Anthers of two forms. Capsule 3-celled, many-seeded. *Pontederaceæ*, p. 369.

SISYRINCHIUM. Spathe 2-leaved, bract-like. Perianth colored; limb flat, 7-cleft; the lobes equal; tube short. Filaments mostly united below. Stigmas 3. Capsule pedicellate, roundish-triangular. *Iridaceæ*, p. 354.

***** *Flowers glumaceous (dry and chaffy).*

OBS. All the genera of this division belong to the Subclass GLUMACEALS, (p. 387,) and all except *Cenchrus*, *Spartina*, and *Oryzopsis*, belong to the Order *Cyperaceæ*, p. 387.

ORDER II.—DIGYNIA.—2 Pistils.

OBS. All the genera of this order are proper grasses, *Graminaceæ*, p. 418. The family is so entirely natural that it is unnecessary to repeat the generic descriptions.

ORDER III.—TRIGYNIA.—3 Pistils.

MOLLUGO. Calyx inferior, deeply 5-parted. Petals none. Capsule 3-celled, 3-valved, many-seeded. *Caryophyllaceæ*, p. 47.

LECHEA. Calyx inferior, 3-sepalled, with two outer bracts or sepals, persistent. Petals 3, inconspicuous, lanceolate. Stigmas 3, scarcely distinct. Capsule 3-celled, 3-valved, few-seeded. *Cistaceæ*, p. 35.

PROSERPINACA. Calyx superior, the tube adhering to the triquetrous ovary; limb 3-parted. Petals none. Fruit bony, 3-sided, 3-celled. *Haloragaceæ*, p. 111.

CLASS IV.—TETRANDRIA.—4 *Stamens, equal in height.*ORDER I.—MONOGYNIA.—1 *Pistil.** *Perianth double. Corolla 1-petalled, superior.*

CEPHALANTHUS. Flowers in a globose head. Calyx small, angular, inversely pyramidal, 4-cleft. Corolla tubular, slender, 4-cleft. Capsule 2-celled, 2-seeded (mostly 2-parted.) Receptacle globose, hairy. *Rubiaceæ*, p. 150.

DIPSACUS. Flowers collected in an ovoid or roundish head. Common calyx (involucre) foliaceous, many-leaved; proper superior, of one leaf. Corolla tubular, 4-cleft. Fruit crowned by the limb of the calyx. *Dipsacaceæ*, p. 154.

GALIUM. Calyx with the tube ovate-globose or oblong; limb nearly wanting. Corolla rotate, 4-parted, (very rarely 3-parted). Fruit didymous, roundish, rarely oblong. *Rubiaceæ*, p. 151.

DIODIA. Calyx with the tube ovate or obovate, 2—4-toothed. Corolla funnel-form, 4-lobed. Fruit crowned with the calyx, 2-celled, bipartite. *Rubiaceæ*, p. 151.

HEDYOTIS. Calyx with the tube ovate, the limb 4-toothed. Corolla funnel-form, salver-form or rotate, 4-parted. Capsule ovoid or globose, 2-celled, opening transversely at the top, many-seeded. *Rubiaceæ*, p. 149.

MITCHELLA. Flowers in pairs with their ovaries united. Calyx 4-toothed. Corolla funnel-form; tube cylindrical; limb 4-parted, spreading, villous on the inner side. Stigma 4-cleft. Berry didymous, 4-seeded. *Rubiaceæ*, p. 150.

LINNÆA. Calyx with the tube ovate; limb 5-parted. Corolla turbinate, subcampanulate, 5-lobed. Stigma globose. Berry dry, small, ovoid-globose, 3-celled (one cell only bearing a perfect seed.) *Caprifoliaceæ*, p. 149.

** *Perianth double (rarely single.) Corolla many-petalled, (rarely none,) superior.*

CORNUS. Calyx adherent to the ovary; the limb minute, 4-toothed. Petals 4, oblong, spreading. Drupe with the cells not united. *Cornaceæ*, p. 142.

ISNARDIA. Calyx with the tube ovate or sub-cylindric, short, adhering to the ovary; limb 4-parted. Petals 4, often minute or wanting. Capsule short, 4-sided, 4-valved, many-seeded. *Onagraceæ*, p. 110.

SANGUISORBA. Flowers perfect or rarely polygamous. Calyx 4-cleft, with 2—3 scales at base externally. Petals none. Achenium dry, included in the hardened 4-winged calyx tube. *Sanguisorbaceæ*, p. 106.

*** *Perianth double. Corolla 1-petalled, inferior.*

PLANTAGO. Calyx 4- (rarely 3)-parted. Corolla 4-cleft; border reflexed. Stamens mostly very long. Capsule 2—4-celled, opening transversely. *Plantaginaceæ*, p. 293.

CENTAURELLA. Calyx 4-parted, appressed. Corolla subcampanulate, 4-parted. Stigma thick, glandulous and partly bifid. Capsule 1-celled, 2-valved, many-seeded, surrounded by the persistent calyx and corolla. *Gentianaceæ*, p. 240.

EXACUM. Calyx deeply 4-parted. Corolla 4-lobed, with the tube globose. Stigma 2-cleft. Capsule bisulcate, 2-celled, many-seeded. *Gentianaceæ*, p. 240.

SWERTIA. Calyx 4—5-parted. Corolla rotate, 4—5-parted; the segments with 2 glanduliferous fimbriate pores at the base of each. Stigmas 2-lobed, (rarely 2.) Capsule 1-celled, 2-valved, many-seeded. *Gentianaceæ*, p. 238.

FRASERA. Calyx 4-parted. Corolla deciduous, rotate, 4-parted, with 1 or 2 fringed glands on each lobe. Capsule compressed, 1-celled, 2-valved. Seeds few, large, winged. *Gentianaceæ*, p. 238.

HALENIA. Calyx 4—5-parted. Corolla campanulate, 4—5-cleft; the lobes erect, equalling the tube, with a glanduliferous spur at the base. Capsule 1-celled, 2-valved, many-seeded. *Gentianaceæ*, p. 237.

OBOLARIA. Calyx 2-parted, in the form of bracts. Corolla campanulate, 4-cleft. Stamens somewhat didynamous, proceeding from the clefts of the corolla. Stigma emarginate. Capsule ovate, 1-celled, 2-valved, many-seeded. *Orobanchaceæ*, p. 258.

(Some *Gentianæ*, see CLASS V., ORDER II.)

* *Perianth double. Corolla 4—5-petalled, inferior.*

AMMANNIA. Calyx 4—5-toothed or lobed, the sinuses expanding into teeth or horns. Petals 4, or wanting. Capsule globose or ovate, many-seeded. *Lythraceæ*, p. 115.

PTELEA. Calyx mostly 4-sepalled. Petals much longer than the sepals. Torus tumid, pentagonal. Samaræ membranaceous, margined, 2-celled; cells 1—2-seeded. *Zanthoxylaceæ*, p. 68.

**** *Perianth single, inferior.*

SYMPELOCARPUS. Spathe ventricose-ovate, acuminate. Spadix roundish, covered with perfect flowers. Perianth deeply 4-parted, persistent. Berries numerous, globular, imbedded in the spadix. *Araceæ*, p. 383.

ALCHEMILLA. Perianth with the tube somewhat contracted at the top; limb 8-parted, the alternate lobes smaller. Carpels 1—2, with a filiform capitate style on the side, at length dry and 1-seeded. *Sanguisorbaceæ*, p. 106.

ORDER II.—DIGYNIA.—2 Pistils.

HAMAMELIS. Calyx 4-lobed, with 2—3 bracteoles at the base. Petals 4, long, ligulate. Capsule coriaceous, 2-celled, 2-valved at the top. *Hamamelidaceæ*, p. 141.

ORDER III.—TETRAGYNIA.—4 Pistils.

ILEX. Calyx 4—5-toothed, persistent. Corolla 4—5-parted nearly to the base, rotate. Stamens 4—5. Stigmas 4—5, sometimes united. Fruit fleshy, with 4—5-ribbed or veined nucules. *Aquifoliaceæ*, p. 227.

SAGINA. Calyx 3—5-parted. Petals 4—5, or none. Capsule 1-celled, 4-valved, many-seeded. *Caryophyllaceæ*, p. 47.

TILLÆA. Calyx 3—4-parted. Petals 3—4, oblong, acuminate. Carpels 3—4, distinct, opening by the inner suture, 2—many-seeded. *Crassulacæ*, p. 121.

RUPPIA. Flowers 2, perfect, naked, on a spadix arising from the sheathing base of the leaves. Anthers large, peltate. Stigmas sessile, peltate. Fruit drupaceous, pedicellate. *Naiadaceæ*, p. 386.

POTAMOGETON. Flowers perfect, on a spadix arising from a spathe. Perianth single, 4-leaved. Anthers nearly sessile, alternating with the divisions of the perianth. Ovaries 4, becoming four compressed and somewhat cochleate nuts. *Naiadaceæ*, p. 386.

CLASS V.—PENTANDRIA—5 *Stamens.*

ORDER I.—MONOGYNIA.—1 *Pistil.*

* *Perianth double, inferior. Corolla 1-petalled. Fruit consisting of four naked nuts or seeds.*

Obs. The genera of this division constitute the Natural Order *Boraginaceæ*, p. 247.

** *Perianth double, inferior. Corolla 1-petalled. Seeds covered with a distinct capsule.*

ANAGALLIS. Calyx 5-parted. Corolla rotate, deeply 5-parted. Filaments hairy. Capsule globose, opening hemispherically, many-seeded. *Primulaceæ*, p. 292.

LYSIMACHIA. Calyx 5—6-parted. Corolla somewhat rotate, 5—6-parted. Capsule globose, 5—10-valved, dehiscent at the summit. *Primulaceæ*, p. 291.

PRIMULA. Calyx tubular, 5-toothed. Corolla salver-form; tube cylindrical; orifice open. Stigma globose. Capsule opening with 10 teeth. *Primulaceæ*, p. 289.

DODECANTHEON. Calyx 5-parted, reflexed. Corolla rotate, 5-parted, the lobes reflexed. Capsule oblong-ovate, 5-valved, many-seeded. *Primulaceæ*, p. 289.

HOTTONIA. Calyx 5-parted. Corolla salver-form, 5-lobed. Stamens seated on the tube of the corolla. Stigma globose. Capsule globose, crowned with the persistent style, at length 5-valved. *Primulaceæ*, p. 290.

MENYANTHES. Calyx 5-parted. Corolla funnel-form; limb spreading, 5-lobed, equal, hairy within. Stigma 1—2-lobed. Capsule 1-celled, with the axis of the valves seminiferous. *Gentianaceæ*, p. 241.

LIMNANTHEMUM. Calyx 5-parted. Corolla rotate, 5-parted, the lobes bearded or scaly at base, and furnished with glands. Stigma 2-lobed. Capsule 1-celled, few-seeded. *Gentianaceæ*, p. 241.

SABBATIA. Calyx 5—12-parted. Corolla rotate, 5—12-parted. Anthers at length revolute. Stigmas 2, spiral. Capsule 1-celled, 2-valved. *Gentianaceæ*, p. 238.

ERYTHRÆA. Calyx tubular, 5-cleft. Corolla funnel-form; limb short; 5-cleft. Anthers, after flowering, spirally twisted. Style erect. Stigmas 2. Capsule linear, 1—2-celled, 2-valved. *Gentianaceæ*, p. 239.

HYDROPHYLLUM. Calyx 5-parted, the lobes subulate and the sinuses mostly naked. Corolla campanulate, 5-cleft, with 5 longitudinal margined grooves on the inside alternating with the lobes. Filaments bearded in the middle. Stigma bifid. Capsule globose, 2-valved, 1-seeded, 3 other seeds mostly abortive. *Hydrophyllaceæ*, p. 252.

PHACELIA. Calyx 5-parted, the sinuses naked. Corolla tubular-campan-

ulate, caducous, 5-cleft or half 5-cleft, with 10 plaits or scales on the inside. Stamens often exserted. Style bifid. Capsule ovoid, 2-valved. *Hydrophyllaceæ*, p. 253.

COSMANTHUS. Calyx 5-parted; the sinuses naked. Corolla broadly campanulate, caducous, 5-cleft; tube without scales. Filaments slender, about as long as the corolla. Style bifid. Capsule 2-valved, septiferous in the middle. *Hydrophyllaceæ*, p. 254.

SPIGELIA. Calyx 5-parted, persistent; the segments linear-subulate. Corolla funnel-form, 5-cleft. Anthers linear, erect, 2-lobed at base. Capsule ovoid-compressed, didymous, 2-celled, few-seeded. *Loganiaceæ*, p. 235.

NICOTIANA. Calyx tubular-campanulate, 5-cleft. Corolla funnel-form; the limb 5-lobed and plaited. Stigma capitate. Capsule 2-celled, 2-4-valved, many-seeded. *Solanaceæ*, p. 256.

HYOSCYAMUS. Calyx tubular, 5-cleft. Corolla funnel-form, irregular, lobes obtuse. Stigma capitate. Capsule ovoid, opening with a lid. *Solanaceæ*, p. 257.

CONVOLVULUS. Calyx 5-parted, naked or with 2 bracts at base. Corolla funnel-form or campanulate, with 5 plaits. Stigma capitate or lobed. Capsule 2-3-celled, 2-3-valved. *Convolvulaceæ*, p. 245.

PHLOX. Calyx prismatic, 5-parted. Corolla salver-form; tube long, somewhat curved; the limb flat, 5-lobed. Stamens inserted about the middle of the tube of the corolla, very unequal. Capsule roundish-ovoid, 3-seeded. *Polemoniaceæ*, p. 243.

POLEMONIUM. Calyx campanulate, 5-cleft. Corolla campanulate-rotate; tube very short, closed by the dilated bases of the filaments. Capsule ovoid, obtuse, the cells many-seeded. *Polemoniaceæ*, p. 244.

DIAPENSIA. Calyx of 5 imbricate sepals, with 3 bracts at the base. Corolla somewhat salver-form, 5-lobed. Filaments broad-linear, inserted into the throat of the corolla. Capsule 3-celled, 3-valved, many-seeded. *Diapensiaceæ*, p. 247.

AZALEA. Calyx 5-parted. Corolla short, campanulate, 5-cleft. Style straight, included. Capsule 5-celled, 5-valved, opening at the top. *Ericaceæ*, p. 219.

RHODODENDRON. Calyx 5-parted. Corolla somewhat funnel-form, 5-cleft. Stamens 5-10, declinate. Anthers opening by 2 terminal pores. Capsule mostly 5-celled, 5-valved. *Ericaceæ*, p. 218.

*** *Perianth double, inferior. Corolla 1-petalled. Fruit a berry.*

SOLANUM. Calyx 5-10-parted. Corolla rotate or subcampanulate; limb plaited, 5-10-cleft. Anthers erect, large, connivent, opening by two pores. Berry 2-6-celled. *Solanaceæ*, p. 254.

PHYSALIS. Calyx 5-cleft, persistent, finally becoming ventricose. Corolla campanulate-rotate; limb plaited, somewhat 5-lobed; tube very short. Anthers opening longitudinally. Berry 2-celled. *Solanaceæ*, p. 255.

NICANDRA. Calyx 5-parted, 5-angled, the angles compressed, segments sagittate. Corolla campanulate, dry; the limb plaited and nearly entire. Stamens incurved. Berry 3-5-celled, covered by the calyx. *Solanaceæ*, p. 256.

**** *Perianth double, inferior. Corolla 1-petalled. Fruit a capsule.*

CAMPANULA. Calyx 5-cleft. Corolla 5-lobed or 5-cleft, usually campanulate. Filaments broad and membranaceous at base. Stigmas 3—5, filiform. Capsule 3—5-celled, opening by 3—5 lateral valves. *Campanulaceæ*, p. 211.

SPECULARIA. Calyx 5- (sometimes 3—4-) lobed; the tube elongated, prismatic or obconic. Corolla rotate, 5-lobed. Filaments membranaceous, hairy, shorter than the anthers. Stigmas 3. Capsule elongated, prismatic, 3-celled, opening laterally by 3 valves near the summit. *Campanulaceæ*, p. 211.

LOBELIA. Calyx 5-lobed. Corolla irregular, cleft on the upper side, 2-lipped; lower lip 3-cleft. The two lower anthers, rarely all, bearded at the summit. Capsule 2—3-celled, opening at the summit. *Lobeliaceæ*, p. 212.

DIERVILLA. Calyx with the tube oblong, bibracteate at base; the limb 5-cleft. Corolla funnel-form, 5-cleft, spreading, much longer than the calyx. Stigma capitate. Capsule oblong, acute, not crowned, 1-celled, many-seeded. *Caprifoliaceæ*, p. 147.

SAMOLUS. Calyx 5-cleft, the base adnate to the ovary. Corolla salverform, 5-parted, with 5 scales alternating with the lobes; tube short. Capsule half-inferior, 1-celled, many-seeded, opening with 5 valves. *Primulaceæ*, p. 292.

***** *Perianth double, superior. Corolla 1-petalled. Fruit a berry.*

LONICERA. Calyx 5-toothed. Corolla tubular, campanulate or funnel-form, 5-cleft, often irregular. Stigma capitate. Berry 3-celled, few-seeded. *Caprifoliaceæ*, p. 147.

SYMPHORICARPUS. Calyx with the tube globose; the limb small, 4—5-toothed. Corolla funnel-form, subequally 4—5-lobed. Stigma subglobose. Berry crowned by the calyx, 4-celled, 4-seeded; 2 of the cells sometimes abortive. *Caprifoliaceæ*, p. 148.

TRIOSTEUM. Calyx with the tube ovoid and the limb 5-parted; lobes linear-lanceolate, persistent. Corolla tubular, subequally 5-lobed, gibbous at base. Stigma capitate. Berry rather dry, crowned by the calyx, with 3—5 bony nucules. *Caprifoliaceæ*, p. 146.

***** *Perianth double, inferior. Corolla 4—6-petalled. Fruit a capsule.*

ITEA. Calyx campanulate, 5-toothed; the teeth subulate. Petals 5, lanceolate-linear, 1-nerved. Stigma 2-lobed. Capsule 2-celled, 2-parted from the base to the apex. *Escalloniaceæ*, p. 128.

IMPATIENS. Sepals 5, the lower one spurred. Corolla 4-petalled, irregular; the two inner petals unequally bilobed. Stigmas 5, united. Capsule prismatic-terete, elongated, 5-valved, opening elastically. *Balsaminaceæ*, p. 65.

VIOLA. Sepals 5, auricled at the base. Petals unequal, the lower one spurred. Anthers connate, the two lower ones with processes at their back. Capsule 1-celled, 3-valved, opening elastically. *Violaceæ*, p. 36.

SOLEA. Sepals scarcely equal, not auricled at base, decurrent into a pedicel, at length reflexed. Petals unequal, the lowest one lobed and somewhat gibbous at base. Stamens cohering, the two lowest bearing a gland above the middle. Capsule somewhat 3-sided. *Violaceæ*, p. 40.

CLAYTONIA. Calyx of 2 ovate or roundish persistent sepals. Petals 5, obcordate or obovate, unguiculate. Style 5-cleft. Capsule 1-celled, 3-valved, 3—5-seeded. *Portulacaceæ*, p. 120.

CEANOTHUS. Calyx 5-cleft, campanulate, persistent and somewhat adhering to the fruit. Petals 5, small, saccate and arched, with long claws. Styles 2—3, united to the middle. Fruit dry and coriaceous, 3-celled, 3-seeded, 3-parted, opening on the inner side. *Rhamnaceæ*, p. 70.

EVONYMUS. Calyx 4—5-cleft, having a peltate disk within. Petals 4—5. Stamens inserted upon glands at the margin of the disk. Capsule with 3—5 angles, and as many cells and valves. Seeds with a colored fleshy aril. *Celastraceæ*, p. 68.

CELASTRUS. Calyx minute, 5-lobed. Petals 5, small, unguiculate. Ovary small, with 10 striæ, immersed in the disk. Stigma 3-lobed. Capsule 2—3-valved; valves septiferous in the centre. Seeds enclosed in a pulpy aril. *Celastraceæ*, p. 69.

***** *Perianth double, inferior. Corolla 4—5-petalled. Fruit a drupe or berry.*

VITIS. Calyx somewhat 4—5-toothed. Petals 4—5, cohering at the apex, deciduous. Stigma simple, sessile. Berry 2-celled, 1—4-seeded; cells and seeds often abortive. *Vitaceæ*, p. 63.

AMPELOPIS. Calyx nearly entire. Petals 5. Stigma capitate. Ovary not immersed in the disk. Berry 2—4-seeded. *Vitaceæ*, p. 62.

RHAMNUS. Calyx 4—5-cleft, urceolate. Petals alternating with the lobes of the calyx, sometimes very minute or wanting. Style 2—4-cleft. Fruit drupaceous, roundish, containing 2—4 cartilaginous nuts. *Rhamnaceæ*, p. 70.

***** *Perianth double, superior. Corolla 4—5-petalled.*

RIBES. Calyx campanulate or tubular, 4—5-parted. Petals 4—5, minute, inserted into the throat of the calyx. Style 2—4-cleft. Berry crowned with the withered flower, 1-celled. *Grossulariaceæ*, p. 124.

***** *Perianth single.*

HAMILTONIA. Polygamous. Perianth turbinate-campanulate, 5-cleft. Germ immersed in the 5-toothed glandulous disk. Stigmas 2—3, sublenticular. Drupe pyriform, 1-seeded, enclosed in the adhering base of the calyx. *Santalaceæ*, p. 308.

COMANDRA. Perianth urceolate-campanulate, colored; the limb 5-cleft. Stamens villous externally. Fruit somewhat drupaceous, dry, 1-celled, crowned by the persistent perianth. *Santalaceæ*, p. 307.

GLAUX. Perianth inferior, campanulate, 5-lobed, colored. Stigma capitate. Capsule globose, 5-valved, few-seeded. *Primulaceæ*, p. 291.

ANYCHIA. Calyx 5-parted. Sepals connivent, subsaccate, callous at the apex. Petals none. Stigmas 2, subcapitate. Capsule indehiscent, utricular, 1-seeded, surrounded by the persistent calyx. *Illecebraceæ*, p. 52.

ORDER II.—DIGYNIA.—2 Pistils.

* *Perianth double, inferior. Corolla 1-petalled.*

APOCYNUM. Calyx 5-parted. Corolla campanulate, 5-cleft; the base furnished with 5 triangular scales, alternating with the lobes. Anthers

sagittate, connivent, adhering to the stigma. Follicles slender, elongated, coriaceous. *Apocynaceæ*, p. 231.

GONOLOBUS. Calyx 5-parted. Corolla rotate, 5-parted. Staminal crown scutelliform, 5-lobed. Anthers opening transversely, terminated by a membrane. Pollen-masses 5 pairs, not separating into grains. Follicles 2, ventricose. *Asclepiadaceæ*, p. 235.

ASCLEPIAS. Calyx small, 5-parted. Corolla 5-parted; the lobes lanceolate, reflexed. Staminal crown 5-leaved; leaflets opposite the anthers, each mostly producing from its base a subulate averted process or little horn. Pollen-masses 5 distinct pairs, compressed, affixed by their attenuated summits in the cells of the anthers. Follicles ventricose, smooth or muricate. *Asclepiadaceæ*, p. 232.

GENTIANA. Calyx 4—5-cleft. Corolla tubular-campanulate, funnel-form or somewhat salver-form; the limb 4—5-cleft, sometimes with intermediate plaits. Stamens included. Capsule 1-celled, 2-valved. *Gentianeæ*, p. 236.

CUSCUTA. Calyx 5- (rarely 4-) parted. Corolla globose-urceolate, 4—5-cleft. Filaments often with scales at the base. Capsule 2-celled, opening all round transversely. *Cuscutaceæ*, p. 246.

** *Perianth double, inferior. Corolla 5-petalled.*

HEUCHERA. Calyx campanulate, coherent with the ovary below, 5-cleft. Petals 5, small, entire. Capsule with 2 beaks, 1-celled, many-seeded. *Saxifragaceæ*, p. 127.

*** *Perianth double, superior. Corolla 5-petalled. Fruit fleshy.*

PANAX. Calyx with the margin very short, and obsoletely 5-toothed. Styles 2—3, short. Fruit fleshy, compressed, orbiculate or didymous, 2-celled; cells 1-seeded. *Araliaceæ*, p. 141.

**** *Perianth double, superior. Corolla 5-petalled. Fruit of 2 carpels.*

Obs. The genera of this division form the Natural Order *Umbellifera*, p. 129.

***** *Perianth single.*

ATRIPLEX. Flowers monœcious or diœcious, rarely perfect. STERILE FL. without bracts. Perianth 3—5-parted, without appendages. FERTILE FL. with 2 bracts at base. Perianth none. Utricle compressed, partly included in the bracts, 1-seeded. *Chenopodiaceæ*, p. 298.

CHENOPODIUM. Perianth 5-parted, closing upon but not wholly enveloping the fruit. Utricle thin, membranaceous. Seed lenticular. *Chenopodiaceæ*, p. 296.

SALSOLA. Perianth 5-cleft, persistent, enveloping the fruit with its base, and crowning it with its enlarged limb. *Chenopodiaceæ*, p. 299.

ULMUS. Perianth campanulate, 5—8-cleft. Stamens 5—8. Fruit (a samara) flat, with a membranaceous border. *Ulmaceæ*, p. 334.

CELTIS. Polygamous. STERILE FL. Perianth inferior, 5—6-parted. PERFECT FL. Perianth deeply 5-parted. Drupe globose, 1-seeded. *Ulmaceæ*, p. 335.

ORDER III.—TRYGYNIA.—3 Pistils.

* *Flowers superior.*

VIBURNUM. Calyx with the limb small, 5-toothed and persistent. Corolla rotate, subcampanulate or tubular, 5-lobed. Berry ovate or globose, 1-seeded, crowned by the teeth of the calyx. *Caprifoliaceæ*, p. 144.

SAMBUCUS. Calyx with the limb small and 5-cleft. Corolla rotate or urceolate, 5-lobed; lobes obtuse. Berry roundish, pulpy, 1-celled, 3—5-seeded. *Caprifoliaceæ*, p. 144.

** *Flowers inferior.*

RHUS. Calyx small, 5-parted, persistent. Petals 5, ovate, spreading. Drupe nearly dry, with one bony seed. *Anacardiaceæ*, p. 71.

STAPHYLEA. Sepals 5, oblong, erect, colored. Petals 5, imbricate. Fruit a membranaceous inflated 2—3-celled capsule. *Staphyleaceæ*, p. 69.

ORDER IV.—TETRAGYNIA.—4 Pistils.

PARNASSIA. Calyx deeply 5-cleft. Petals 5. Scales opposite to the claws of the petals, terminating in glandular bristles at the apex. Capsule 1-celled, 4-valved. Seeds arillate. *Droseraceæ*, p. 41.

NEMOPANTHES. Flowers by abortion diœcious or polygamous. Calyx scarcely conspicuous. Petals 3—5, distinct, oblong, linear, deciduous. Stigmas 3—5, sessile. Fruit subglobose; nucules usually 4, smooth, bony. *Aquifoliaceæ*, p. 228.

ORDER V.—PENTAGYNIA.—5 Pistils.

ARALIA. Calyx with the margin very short, 5-toothed or entire. Petals 5, spreading. Berry 5-celled.—Flowers in umbels. *Araliaceæ*, p. 140.

STATICE. Calyx funnel-form, 5-toothed. Petals 5, united at base. Fruit a membranaceous utricle. *Plumbaginaceæ*, p. 293.

LINUM. Sepals 5, persistent. Petals 5, unguiculate. Filaments united at base. Capsule subglobose, 10-valved, 10-celled. Seed solitary, ovate, compressed. *Linaceæ*, p. 53.

SIBBALDIA. Calyx 10-cleft, with the alternate segments narrower. Petals 5, minute. Styles proceeding laterally from the germ. Capsules 5, indehiscent, in the bottom of the calyx, 1-seeded. *Rosaceæ*, p. 100.

DROSERA. Calyx deeply 5-cleft. Petals 5. Capsule superior, globose or ovoid, 1—3-celled, 3—5-valved, many-seeded. *Droseraceæ*, p. 41.

(See *Cerastium* and *Spergula* in CLASS X.)

ORDER VI.—HEXAGYNIA.—Many Pistils.

ZANTHORIZA. Calyx deciduous, 5-sepalled. Petals 5. Ovaries 5—15, pointed with the curved styles. Follicles membranaceous, compressed, usually 1-seeded. *Ranunculaceæ*, p. 14.

CLASS VI.—HEXANDRIA —6 Stamens, equal in height.

ORDER I.—MONOGYNIA.—1 Pistil.

* *Perianth double or in two rows, inferior.*

TRADESCANTIA. Perianth in 2 rows; the outer one 3-leaved, calycine; inner one 3-leaved, petaloid. Filaments villous. Stigma obtuse. Capsule 2—3-celled, 3-valved, few-seeded. *Commelynaceæ*, p. 377.

BERBERIS. Sepals 6, mostly with 3 bracteoles at the base. Petals 6, with 2 glands upon their claws. Berry 2—3-seeded. *Berberidaceæ*, p. 16.

LEONTICE. Sepals 6, naked without. Petals 6, bearing a scale at the base within. Capsule 2—4-seeded. Seeds globose. *Berberidaceæ*, p. 17.

PRINOS. Flowers mostly diœcious or polygamous. Calyx minute, 4—6-toothed. Corolla somewhat rotate, usually 6-parted. Fruit with 4—6 smooth bony nucules. *Aquifoliaceæ*, p. 228.

FLÆRKIA. Calyx 3-sepalled. Petals 3, shorter than the sepals. Stigmas 3—5. Fruit indehiscent, winged. *Tropœolaceæ*, p. 66.

** *Perianth single, petaloid, issuing from a spathe.*

AMARYLLIS. Perianth superior, 6-parted, unequal. Stamens arising from the orifice of the tube, declined or straight, unequal. Stigma 3-lobed. Capsule 3-celled, 3-valved. *Amaryllidaceæ*, p. 354.

ALLIUM. Flowers umbellate, arising from a 2-leaved spathe. Perianth inferior, 6-leaved or deeply 6-parted, spreading. Filaments sometimes tricuspidate. Capsule 3-celled, 3-valved, few-seeded. Seeds black and rough. *Liliaceæ*, p. 363.

PONTERERIA. Perianth inferior, 6-cleft, 2-lipped; under side of the tube perforated with a longitudinal foramen; the lower part persistent, calycine. Stamens unequally inserted. Utricle muricate. *Pontederaceæ*, p. 369.

*** *Perianth single, petaloid, destitute of a spathe.*

ALETNIS. Perianth inferior, tubular, or tubular-campanulate, 6-cleft, rugose. Stamens inserted at the orifice of the tube. Style triquetrous. Capsule 3-celled, many-seeded, opening at the summit. *Hæmodoraceæ*, p. 376.

HYPOXIS. Perianth inferior, 6-parted, persistent. Capsule elongated, narrowed at the base, 3-celled, many-seeded. Seeds roundish, naked. *Hypoxidaceæ*, p. 355.

LOPHIOLA. Perianth 6-parted, woolly, bearded within. Filaments naked. Capsule opening at the summit. *Liliaceæ*, p. 364.

AGAVE. Perianth inferior, 6-cleft. Stamens exerted. Anthers versatile. Capsule ovate, attenuate at each end, obtusely triangular, 3-celled, many-seeded. *Amaryllidaceæ*, p. 355.

HEMEROCALLIS. Perianth inferior, 6-parted; tube cylindric; limb campanulate, marcescent. Stamens declined. Capsule 3-sided, 3-celled, 3-valved, many-seeded. *Liliaceæ*, p. 363.

ORNITHOGALUM. Perianth inferior, deeply 6-parted, spreading above. Filaments dilated at base. Capsule roundish-angular, 3-celled. Seeds few, black and rough. *Liliaceæ*, p. 364.

NARTHECIUM. Perianth inferior, of 6 linear spreading pieces. Filaments hairy. Capsule 3-celled, 3-valved. Seeds with an appendage at each extremity. *Juncaceæ*, p. 375.

ASPARAGUS. Perianth inferior, 6-parted, subcampanulate, the segments spreading at the apex. Anthers peltate. Berry 3-celled; cells 2-seeded. *Liliaceæ*, p. 364.

ERYTHRONIUM. Perianth inferior, campanulate, 6-parted; segments reflexed; the 3 inner with a callous tooth on each side near the base and a nectariferous pore. Capsule narrowed at base or substipitate, 3-celled. *Liliaceæ*, p. 362.

LILIUM. Perianth inferior, campanulate, deeply 6-parted; segments with a longitudinal furrow at the base. Stamens adhering to the base of the perianth. Style elongated. Capsule oblong, 3-celled, with numerous seeds. *Liliaceæ*, p. 361.

UVULARIA. Perianth inferior, deeply 6-parted, erect; segments with a nectariferous cavity at base. Filaments very short, growing to the anthers. Capsule 3-angled, 3-celled. *Melanthaceæ*, p. 367.

CLINTONIA. Perianth 6-parted, campanulate. Stamens 6, inserted at the base. Style compressed. Stigma 2-lobed, compressed. Berry 2-celled; cells many-seeded. *Smilacææ*, p. 358.

SMILACINA. Perianth inferior, 6- (rarely 4-) parted, spreading. Stamens as many as the segments of the perianth, and inserted at their base. Berry globose, pulpy, 1—3-seeded. *Smilacææ*, p. 357.

POLYGONATUM. Perianth inferior, tubular, 6-cleft. Stamens inserted near the summit of the tube. Berry subglobose, 3-celled; cells 2-seeded. *Smilacææ*, p. 359.

STREPTOPUS. Perianth inferior, 6-leaved, campanulate at base; the 3 inner leaves carinate. Stamens inserted at the base of the leaves. Anthers sagittate, longer than the filaments. Stigma obtuse. Berry globose, 3-celled. *Melanthaceæ*, p. 368.

PROSARTES. Perianth 6-leaved, campanulate-spreading; the leaflets with a nectariferous pit or saccate at base. Filaments inserted at the base of the perianth. Stigmas short, recurved. Berry ovoid, 3-celled. *Melanthaceæ*, p. 368.

**** *Perianth single, calyx-like, on a spadix.*

ORONTIUM. Spathe none. Spadix cylindric, covered with flowers. Perianth of 4—6 truncate concave sepals. Ovary superior. Stigma sessile, subumbilicate. Utricle 1-seeded. *Aracææ*, p. 383.

ACORUS. Spathe leaf-like, continuous with the scape. Spadix cylindric, covered with flowers. Perianth inferior, glumaceous, 6-leaved. Stigma minute, sessile. Fruit baccate or capsular. *Aracææ*, p. 383.

***** *Perianth single, glumaceous.*

JUNCUS. Perianth inferior, 6-leaved, glumaceous. Stigmas 3, subsessile. Capsule 3-celled, 3-valved, many-seeded. *Juncaceæ*, p. 372.

LUZULA. Perianth inferior, 6-leaved, glumaceous. Filaments smooth. Capsule 1-celled, 3-valved. Seeds 3, sometimes with an appendage at one end. *Juncaceæ*, p. 372.

ORDER II.—DIGYNIA.—2 Pistils.

OXYRIA. Perianth 4-leaved, two inner ones larger. Nut triquetrous, with a broad winged membranous margin. *Polygonacææ*, p. 305.

ORDER III.—TRIGYNIA.—3 Pistils.

RUMEX. Perianth 6-leaved; the three inner leaves somewhat colored, larger, often with tubercles on the outside and closing in a valvate manner over the fruit. Stigmas many-cleft. Nut triquetrous. *Polygonacææ*, p. 304.

ZYGADENUS. Rarely polygamous. Perianth deeply 6-parted; segments spreading, without claws, with two glands at the base of each. Filaments dilated at base. Capsule ovoid-conic, 3-celled; cells 6—10-seeded. *Melanthaceæ*, p. 365.

MELANTHIUM. Polygamous. Perianth petaloid, rotate, deeply 6-parted; segments unguiculate, with two glands at the base. Stamens on the claws of the perianth. Capsule ovoid-conic, 3-celled, many-seeded. *Melanthaceæ*, p. 365.

VERATRUM. Polygamous. Perianth calyx-like, deeply 6-parted, spreading, persistent; the segments sessile and without glands. Stamens on the receptacle. Capsule ovoid, membranaceous, 3-lobed; the carpels distinct at the summit, many-seeded. *Melanthaceæ*, p. 366.

HELONIAS. Sometimes diœcious. Perianth corolla-like, 6-parted, spreading; segments sessile and without glands. Stamens at length exceeding the perianth. Capsule 3-celled, 3-horned. *Melanthaceæ*, p. 366.

XEROPHYLLUM. Perianth subrotate, deeply 6-parted. Stamens contiguous at base. Stigmas 3, revolute, partly united below. Capsule subglobose, 3-celled; cells 2-seeded, opening at the summit. *Melanthaceæ*, p. 366.

TOFIELDIA. Perianth 6-parted, with a small 3-parted involucre. Stamens smooth. Capsule 3—6-celled; cells united at base, many-seeded. *Melanthaceæ*, p. 366.

SCHUCHZERIA. Perianth of 6 somewhat petaloid persistent leaves; the 3 inner ones narrower. Anthers on slender filaments. Capsules 3, inflated, united at base, 1—2-seeded. *Juncaginaceæ*, p. 380.

TRIGLOCHIN. Perianth 6-leaved, somewhat colored, deciduous; leaves concave. Anthers subsessile. Capsules 3—6, united by a longitudinal receptacle from which they usually separate at the base, 1-seeded. *Juncaginaceæ*, p. 379.

MEDEOLA. Perianth petaloid, 6-parted, revolute. Stamens inserted at the base of the perianth. Styles filiform, elongated, divaricate. Berry 3-celled. *Trilliaceæ*, p. 359.

TRILLIUM. Perianth deeply 6-parted; 3 outer segments (sepals) spreading; 3 inner petaloid, (petals.) Stamens inserted at the base of the segments, nearly equal. Styles stigmatose on the inside. Berry ovoid, 3-celled. *Trilliaceæ*, p. 360.

SAURURUS. Flowers in a solitary spike. Scales 1-flowered. Corolla none. Fruit 3- or 4-celled; the carpels easily separating at maturity, 1- (rarely 2-) seeded, not opening. *Saururaceæ*, p. 318.

ORDER IV.—POLYGYNIA.—*Many Pistils.*

ALISMA. Perianth 6-leaved; 3 outer leaves persistent, calycine; 3 inner colored, petaloid, deciduous. Carpels numerous, distinct, 1-seeded, crowned with the persistent style. *Alismaceæ*, p. 379.

CLASS VII.—HEPTANDRIA.—*7 Stamens.*

ORDER I.—MONOGYNIA.—*1 Pistil.*

TRIENTALIS. Calyx deeply 6—8-parted. Corolla deeply 6—8-parted, rotate. Stamens 6—8 (mostly 7.) Capsule globose, somewhat fleshy, (berry,) opening at the sutures, and then 5-valved. *Primulaceæ*, p. 290.

ÆSCULUS. Calyx campanulate, 5-toothed. Petals 4—5, more or less unequal. Filaments recurved backward. Fruit coriaceous. *Hippocastanaceæ*, p. 62.

(*Ulmus* in CLASS V., ORDER II.)

CLASS VIII.—OCTANDRIA.—8 *Stamens.*ORDER I.—MONOGYNIA.—1 *Pistil.** *Flowers complete, superior.*

RHIXIA. Calyx with the tube ventricose-ovoid at base, narrowed at the apex; the limb 4-cleft. Petals 4, obovate. Capsule free in the calyx, 4-celled. Seeds cochleate. *Melastomaceæ*, p. 117.

GENOTHERA. Calyx with a long 4-sided or 8-ribbed deciduous tube; segments 4, reflexed. Petals 4, equal. Capsule 4-valved, with many naked seeds. *Onagraceæ*, p. 108.

GAURA. Calyx tubular, adnate to the ovary at base; segments 4, reflexed; tube deciduous. Petals mostly 4-clawed, somewhat unequal. Fruit 4-angled, dry and indehiscent, by abortion mostly 1-celled, 1—4-seeded. Seeds naked. *Onagraceæ*, p. 108.

EPILOBIUM. Calyx with a long 4-sided tube; limb 4-parted, deciduous. Petals 4. Capsule linear, obtusely 4-sided, 4-celled, 4-valved, many-seeded. Seeds crowned with a tuft of hairs. *Onagraceæ*, p. 107.

OXYCOCCUS. Calyx adnate to the ovary, with the limb 4-cleft. Corolla 4-parted, with the segments somewhat linear and revolute. Filaments connivent. Anthers tubular, 2-parted. Berry 4-celled, many-seeded. *Vacciniaceæ*, p. 223.

PHALEROCARPUS. Calyx bi-bracteate, adhering to the ovary; the limb 4-parted. Corolla short-campanulate, 4-cleft. Filaments short and dilated. Anthers awnless. Berry globose-ovoid, crowned by the teeth of the calyx, 4-celled, white. *Vacciniaceæ*, p. 223.

** *Flowers complete, inferior.*

MENZIESIA. Calyx campanulate, 4-cleft or 4-toothed. Corolla tubular or globose; limb very short, 4-toothed, revolute. Filaments subulate, smooth. Capsule 4-celled, 4-valved. *Ericaceæ*, p. 216.

ACER. Flowers mostly polygamous. Calyx 5-lobed, sometimes 5-parted. Samaræ 2, winged, united at base, by abortion 1-seeded. *Aceraceæ*, p. 60.

DIRCA. Perianth colored, tubular-campanulate; limb obsolete, crosely toothed. Stamens unequal. Berry 1-seeded. *Thymelaceæ*, p. 307.

JEFFERSONIA. Sepals 4, petaloid. Petals 8, oblong. Capsule obovate, semicircularly dehiscent. Seeds many, arillate at base. *Berberidaceæ*, p. 17.

*** *Flowers incomplete.*(*Monotropa* in CLASS X.)ORDER II.—DIGYNIA.—2 *Pistils.*

(*Polygonum* in ORDER TRIGYNIA. *Vaccinium*, *Chrysosplenium* and *Scleranthus*, in CLASS X.)

ORDER III.—TRIGYNIA.—3 *Pistils.*

POLYGONUM. Perianth mostly 5-parted, petaloid, persistent. Fruit a 1-seeded compressed or triquetrous nut. *Polygonaceæ*, p. 301.

CLASS IX.—ENNEANDRIA.—9 *Stamens*.ORDER I.—MONOGYNIA.—1 *Pistil*.

LAURUS. Diœcious. Perianth colored, 5—6-parted. Fertile stamens 9, arranged in three series, the six outer ones with simple distinct filaments; three inner ones with two glands at the base of each. Drupe 1-seeded. *Lauraceæ*, p. 305.

CLASS X.—DECANDRIA.—10 *Stamens*.ORDER I.—MONOGYNIA.—1 *Pistil*.

* *Flowers regular*.

VACCINIUM. Calyx adherent to the ovary, 4—5-toothed. Corolla urceolate, cylindric, campanulate or somewhat rotate, 4—5-cleft. Berry globose, 4—10-celled, many- (or by abortion few-) seeded. *Vacciniaceæ*, p. 221.

Obs. The remaining genera of this division are included in the Natural Orders, *Ericaceæ*, p. 213, and *Pyrolaceæ*, p. 224.

** *Flowers irregular*.

CASSIA. Sepals 5, scarcely united at base, somewhat unequal. Stamens unequal; 3 upper ones usually abortive; 3 lower ones longer. Legume terete or compressed, many-seeded. *Leguminosæ*, p. 89.

BAPTISIA. Calyx half 4—5-cleft, bilabiate. Petals 5, nearly equal. Standard with the sides reflexed. Wings oblong. Keel slightly incurved. Legume ventricose, pedicelled, many-seeded. *Leguminosæ*, p. 73.

CERCIS. Calyx 5-toothed, gibbous at base. Petals 5, with claws, subpapilionaceous, all distinct. Wings larger than the standard. Legume oblong, compressed, 1-celled, many-seeded. *Leguminosæ*, p. 90.

ORDER II.—DIGYNIA.—2 *Pistils*.

HYDRANGEA. Marginal flowers usually sterile. STERILE FL. Calyx membranaceous, colored, veiny, 4—5-parted. Petals, stamens, and pistils rudimentary or none. FERTILE FL. Calyx hemispheric, adnate to the ovary, 5-toothed. Petals 5, ovate. Capsule 2-celled, opening by a foramen between the styles. *Hydrangeaceæ*, p. 129.

SAXIFRAGA. Calyx 5-parted. Petals 5, entire, with short claws. Capsule with 2 beaks, 2-celled, many-seeded, opening between the beaks. *Saxifragaceæ*, p. 125.

CHRYSOSPLENIUM. Calyx adhering to the ovary, the limb of 4—5 obtuse lobes. Petals none. Capsule 2-beaked, 2—4-valved, at length 1-celled, many-seeded. *Saxifragaceæ*, p. 126.

TIARELLA. Calyx 5-parted, persistent, with the lobes obtuse. Petals 5, inserted into the calyx, unguiculate, entire. Capsule 1-celled, 2-valved; valves unequal. *Saxifragaceæ*, p. 127.

MITELLA. Calyx campanulate, 5-cleft. Petals 5, laciniate or toothed, inserted into the calyx. Capsule 1-celled, 2-valved; valves equal. *Saxifragaceæ*, p. 127.

SAPONARIA. Calyx tubular, 5-toothed, naked at base. Petals 5, unguiculate; claws equalling the calyx. Capsule 1-celled. *Caryophyllaceæ*, p. 46.

DIANTHUS. Calyx tubular, 5-toothed, with 2—5 opposite imbricate scales at base. Petals 5, with long claws. Capsule 1-celled. *Caryophyllaceæ*, p. 44.

SCLERANTHUS. Calyx 5-cleft, persistent; tube urceolate. Stamens inserted in the orifice of the tube. Petals none. Capsule very smooth, without valves, covered by the indurated tube of the calyx. *Scleranthaceæ*, p. 121.

ORDER III.—TRIGYNIA.—3 Pistils.

SILENE. Calyx tubular, 5-toothed, naked. Petals 5, unguiculate, mostly crowned at the orifice; limb bifid. Capsule 3-celled at base, dehiscent at the top into 6 teeth. *Caryophyllaceæ*, p. 45.

STELLARIA. Calyx 5-sepalled. Petals 5, 2-cleft or 2-lobed. Capsule 3—4-valved; valves 2-parted, membranaceous. Seeds usually many. *Caryophyllaceæ*, p. 48.

ARENARIA. Calyx 5-sepalled. Petals 5, entire. Capsule 1-celled, 3-valved, many-seeded. *Caryophyllaceæ*, p. 49.

MÆHRINGIA. Sepals 4—5. Petals 4—5, somewhat perigynous. Capsule splitting into twice as many (half) valves as there are stigmas. Seeds few, smooth. *Caryophyllaceæ*, p. 50.

HONCKENYA. Sepals 5, slightly united at base. Petals 6, perigynous, with short claws, entire. Stamens inserted with the petals into a glanduliferous disk. Capsule 3—5-valved; valves entire, 8—10-seeded. *Caryophyllaceæ*, p. 60.

ORDER IV.—PENTAGYNIA.—5 Pistils.

SEDUM. Sepals usually 5, more or less united at base, ovate, often turgid and leafy. Petals 5, often spreading. Carpels 5, many-seeded, with a nectariferous scale at the base of each. *Crassulaceæ*, p. 122.

OXALIS. Sepals 5, free or united at base. Petals 5. Stamens often monadelphous at base, unequal. Capsule 5-angled, oblong or cylindric, 5-celled. *Oxalidaceæ*, p. 66.

AGROSTEMMA. Calyx tubular, 5-sided, coriaceous. Petals 5, unguiculate, not crowned; limb entire. Capsule 1-celled, opening with 5 teeth. *Caryophyllaceæ*, p. 47.

CERASTIUM. Calyx 5-sepalled. Petals 5, bifid or emarginate. Capsule membranaceous, cylindric or oblong, opening at the summit by 10 teeth. *Caryophyllaceæ*, p. 50.

SPERGULA. Calyx 5-parted. Petals 5, entire. Capsule ovate, 5-celled, 5-valved. *Illecebraceæ*, p. 52.

PENTHORUM. Sepals 5, united at base. Petals 5 or none. Carpels 5, united at the base into a 5-beaked, 5-celled capsule; cells opening transversely on the inner side of the beaks. *Crassulaceæ*, p. 122.

(*Silene* and *Stellaria* in ORDER TRIGYNIA.)

ORDER V.—DECAGYNIA.—5—12 Pistils.

PHYTOLACCA. Perianth 5-leaved, petaloid. Berry superior, globose-depressed, made up of 5—12 closely united carpels. *Phytolaccaceæ*, p. 300.

CLASS XI.—ICOCANDRIA.—20 or more Stamens placed on the Calyx.

ORDER I.—MONOGYNIA.—1 Pistil.

OPUNTIA. Sepals numerous, leafy, adnate to the ovary; outer ones flat, short; inner ones petal-like, obovate, rosaceous; tube above the ovary none. Berry ovoid, umbilicate at the apex, tuberculate, often bearing spines. *Cactaceæ*, p. 123.

PRUNUS. Calyx urceolate, hemispheric; limb 5-parted, deciduous. Drupe ovoid or oblong, fleshy, very smooth, covered with grayish dust; stone compressed, acute at both ends, subsulcate at the margin, elsewhere smooth. *Drupaceæ*, p. 90.

CERASUS. Flowers as in the preceding. Drupe globose or umbilicate at base, fleshy, very smooth, destitute of gray powder; nucleus subglobose, smooth. *Drupaceæ*, p. 91.

LYTHRUM. Calyx cylindric, striate, 8—12-toothed. Petals 4—6, inserted into the calyx. Capsule oblong, 2-celled, many-seeded. *Lythraceæ*, p. 115.

DECODON. Calyx short, broad-campanulate, 10-toothed; 5 teeth longer and spreading. Petals 5. Capsule covered with the calyx, 3—4-celled. *Lythraceæ*, p. 116.

CUPHEA. Calyx tubular, ventricose, 6—12-toothed, unequal. Petals 6—7, unequal. Capsule membranaceous, 1—2-celled, at length bursting longitudinally. *Lythraceæ*, p. 116.

ORDER II.—DI-PENTAGYNIA.—2—5 Pistils.

SESUVIUM. Calyx 5-parted, persistent; lobes colored within. Petals none. Styles 3—5. Capsule 3- rarely 4—5-celled, opening circularly, many-seeded. *Tetragoniaceæ*, p. 123.

OBS. The remaining genera belong to the Natural Orders *Rosaceæ*, p. 92, and *Pomaceæ*, p. 102.

ORDER III.—POLYGYNIA.—Many Pistils.

CALYCANTHUS. Lobes of the calyx in many rows, imbricate, lanceolate, colored, all more or less coriaceous or fleshy. Corolla none. Stamens unequal. Nuts enclosed in the fleshy tube of the calyx. *Calycanthaceæ*, p. 107.

OBS. The remaining genera belong to the Natural Order *Rosaceæ*, p. 92.

CLASS XII.—POLYANDRIA.—Many Stamens inserted upon the Receptacle.

ORDER I.—MONOGYNIA.—1 Pistil.

TILIA. Calyx 5-parted, deciduous. Petals 5, naked, or with a small scale within. Fruit coriaceous, by abortion 1-celled, 1—2-seeded. *Tiliaceæ*, p. 56.

HELIANTHEMUM. Calyx with 3 equal sepals, or 5 disposed in two rows; the two outer ones smaller, rarely larger. Petals 5, (sometimes wanting,) often irregularly denticulate at the apex. Capsule 3-valved, with the dissepiment in the middle of the valves. *Cistaceæ*, p. 34.

HUDSONIA. Calyx 5-parted; segments unequal, the two outer ones minute. Petals 5. Capsule 1-celled, 3-valved, 1—3-seeded. *Cistaceæ*, p. 36.

PORTULACA. Calyx adnate to the ovary, 2-parted, finally separating at base and deciduous. Petals 4—6, inserted in the calyx, equal. Capsule subglobose, 4-celled, many-seeded, opening circularly. *Portulacaceæ*, p. 120.

TALINUM. Sepals 2, ovate, deciduous. Petals 5, distinct, or somewhat connected at base. Capsule 1-celled, 3-valved, many-seeded. *Portulacaceæ*, p. 120.

CHELIDONIUM. Sepals 2, caducous. Petals 4. Capsule elongated, (resembling a silique,) 1-celled, 2-valved; valves dehiscent from the base to the apex. *Papaveraceæ*, p. 21.

MECONOPSIS. Sepals 2, caducous. Petals 4. Stigmas 4—6, radiating, convex, free.—Capsule obovoid, 1-celled; valves 4—6, dehiscent at the apex. *Papaveraceæ*, p. 20.

ARGEMONE. Sepals 3, caducous. Petals 4—6. Stigma 4—7-lobed; lobes radiately reflexed, persistent. Capsule obovoid, spinose, 1-celled, 5-valved; valves opening at the apex. *Papaveraceæ*, p. 20.

SANGUINARIA. Sepals 2, deciduous. Petals 8—12. Stigmas 2, connate. Capsule oblong, 1-celled, 2-valved, ventricose; valves deciduous. *Papaveraceæ*, p. 20.

PAPAVER. Sepals 2, concave, caducous. Petals 4. Stigma sessile, radiate, persistent. Capsule obovoid, 1-celled, opening by minute valves under the margin of the stigma. *Papaveraceæ*, p. 21.

PODOPHYLLUM. Sepals 3, caducous. Petals 6—9. Stigma large, subsessile, peltate, persistent. Berry somewhat fleshy, not dehiscent. *Berberidaceæ*, p. 13.

ACTÆA. Sepals 4—5. Petals 4—8, spatulate. Carpels solitary, baccate, many-seeded. *Ranunculaceæ*, p. 13.

CIMICIFUGA. Sepals 4—5. Petals 3—5, concave or unguiculate, sometimes fewer or none. Carpels 1—8, follicular, many-seeded. *Ranunculaceæ*, p. 13.

SARRACENIA. Sepals 5, with a 3-leaved involucre. Petals 5. Stigma very large, peltate, 5-angled. Capsule 5-celled. *Sarraceniaceæ*, p. 22.

NYMPHÆA. Sepals 4, at the base of the disk. Petals and stamens inserted into the fleshy disk surrounding the ovary. *Nymphaeaceæ*, p. 19.

NUPHAR. Sepals 5—6, and with the petals and stamens inserted at the base of the disk. *Nymphaeaceæ*, p. 19.

ORDER II.—DI-PENTAGYNIA.—2—5 Pistils.

ASCYRUM. Sepals 4; 2 inner ones much smaller. Petals 4, caducous. Stamens scarcely united at base. Styles 2—3. Capsule 1-celled, 2—3-valved. *Hypericaceæ*, p. 59.

HYPERICUM. Sepals 5, more or less united at the base, mostly equal. Petals 5, oblique, and often inequilateral. Stamens mostly numerous, sometimes few, distinct or united into 3—5 parcels. Styles 3—5, distinct or more or less united. Capsule membranaceous. *Hypericaceæ*, p. 57.

ELODEA. Sepals 5, somewhat united at base. Petals 5, deciduous, equilateral. Stamens 9—15, united into three parcels, which alternate with 3 hypogynous glands. Styles 3, distinct. Capsule oblong, membranaceous, 3-celled. *Hypericaceæ*, p. 60.

OBS. The remaining genera belong to the Natural Order *Ranunculaceæ*, p. 3.

ORDER III.—POLYGNIA.—*Many Pistils.*

MAGNOLIA. Sepals 3, deciduous. Petals 6—12, in concentric series. Carpels 1—2-seeded, persistent, forming a strobile-like fruit. Seeds coated with a fleshy aril. *Magnoliaceæ*, p. 14.

LIRIODENDRON. Sepals 3, deciduous. Petals 6. Carpels (samaræ) imbricated in a cone, 1—2-seeded, not opening, attenuated. *Magnoliaceæ*, p. 15.

ASIMINA. Calyx deeply 3-parted. Petals 6, spreading, ovate-oblong; inner smallest. Anthers many, subsessile. Carpels usually 3, ovoid or oblong-sessile, pulpy within. Seeds many. *Anonaceæ*, p. 15.

HYDRÔPELTIS. Calyx of 3—4 sepals. Petals 3—4. Ovaries 6—18. Carpels oblong, acuminate, 1—2-seeded. *Cabombaceæ*, p. 18.

NELUMBIUM. Calyx petaloid, of 4—6 sepals. Petals numerous. Carpels numerous, deeply immersed in the upper surface of a turbinate receptacle or torus, 1-seeded. *Nelumbiaceæ*, p. 18.

OBS. The remaining genera belong to the Order *Ranunculaceæ*, p. 3.

CLASS XIII.—DIDYNAMIA.—4 *Stamens*; 2 *longer than the other 2.*

2 ORDERS.—1. GYMNOSPERMIA.—*Seeds apparently naked.*

2. ANGIOSPERMIA.—*Seeds in a distinct capsule.*

OBS. The genera of this class form a very natural group, having irregular or bilabiate flowers, with mostly 4 stamens (2 longer); but sometimes 2 are abortive, and hence such are arranged artificially in the class *Diandria*. The whole will be more easily, as well as correctly, studied, by the Natural Orders. The genera belonging to the order *Gymnospermia* will be found in the Natural Order *Labiata*, p. 270; those belonging to *Angiospermia*, in the Natural Orders *Bignoniaceæ*, p. 241; *Pedaliaceæ*, p. 242; *Orobanchaceæ*, p. 257; *Scrophulariaceæ*, p. 258; *Verbenaceæ*, p. 283, and *Acanthaceæ*, p. 286.

CLASS XIV.—TETRADYNAMIA.—6 *Stamens*; 4 *long* and 2 *short.*

OBS. This class is entirely natural; and it is therefore altogether unnecessary to repeat the generic descriptions. It is identical with the Natural Order *Crucifera*, p. 23. I have, chiefly for the sake of convenience, preserved the Linnæan division into *Siliculosæ* and *Siliquosæ*. *Gynandropsis* and *Polanisia* (*Cleome* Linn.) usually arranged under this class, form the order *Capparidaceæ*, p. 33.

CLASS XV.—MONADELPHIA.—*Filaments combined in one set.*ORDER I.—PENTANDRIA.—5 *perfect Stamens.*

PASSIFLORA. Calyx 5-parted, colored. Petals 5 or none, inserted into the calyx. Crown of many filiform rays. Berry often pulpy, rarely submembranaceous, pedicelled. *Passifloraceæ*, p. 119.

(*Geranium* in ORDER DECANDRIA.)

ORDER II.—DECANDRIA.—10 *Stamens.*

GERANIUM. Sepals 5, equal. Petals 5, equal. Stamens 10, all fertile; 5 alternate ones longer, and with nectariferous scales at the base. Carpels

with long awns, at length separating elastically from the summit to the base. *Geraniaceæ*, p. 64.

ERODIUM. Sepals 5, equal, regular. Petals 5, mostly equal. Stamens 10; 5 outer ones shorter and sterile; the perfect ones with a nectariferous scale at the base. Styles persistent, bearded on the inside, at length spirally twisted. *Geraniaceæ*, p. 65.

ORDER III.—POLYANDRIA.—*Many Stamens.*

OBS. The genera of order from the Natural Order *Malvaceæ*, p. 54.

CLASS XVI.—DIADELPHIA.—*Filaments combined in two sets (except in some of the 3d Order.)*

ORDER I.—HEXANDRIA.—*6 Stamens.*

OBS. The genera belong to the Natural Order *Fumariaceæ*, p. 22.

ORDER II.—OCTANDRIA.—*8 Stamens.*

POLYGALA. Calyx of 5 sepals, 2 of them wing-shaped and colored. Petals 3—5, united to the stamens, the lower one keel-form. Capsule compressed, elliptic, obovate or obcordate. Seeds pubescent. *Polygalaceæ*, p. 42.

ORDER III.—DECANDRIA.—*10 Stamens.*

OBS. The genera of this order, with a few usually arranged under the class *Decandria*, constitute the Natural Order *Leguminosæ*, p. 72.

CLASS XVII.—SYNGENESIA.

OBS. The plants of this class, with a few exceptions, have 5 anthers united into a single tube. They are further characterized by the flowers being clustered together in heads and inserted upon a common receptacle, which is surrounded by an involucre; being usually known as *Compound Flowers*. They form the Natural Order *Compositæ*, p. 154.

CLASS XVIII.—GYNANDRIA.—*Stamens situated upon the style or column above the germ.*

OBS. The orders MONANDRIA and DIANDRIA constitute the *Orchidaceæ*, p. 343.

ORDER III.—HEXANDRIA.—*6 Stamens.*

ARISTOLOCHIA. Perianth tubular, ventricose at base, dilated at the apex and ligulate. Capsule inferior, 6-sided, 1-celled, many-seeded. *Aristolochiaceæ*, p. 309.

ORDER IV.—DODECANDRIA.—*12 or more Stamens.*

ASARUM. Perianth campanulate, mostly 3-parted. Stamens 12, placed on an epigynous disk. Anthers adnate to the middle of the filaments. Stigma 6-parted or lobed. Capsule 6-celled, many-seeded. *Aristolochiaceæ*, p. 309.

CLASS XIX.—MONŒCIA.—*Stamens and Pistils in separate flowers on the same plant.*

ORDER I.—MONANDRIA.—1 *Stamen.*

ZOSTERA. Stamens and pistils separated, seated in 2 rows upon one side of a flat spadix. Anthers ovate, sessile. Pistils alternating with the anthers, ovate. Stigmas 2. Utricle with one seed, bursting irregularly. *Naiadaceæ*, p. 385.

ZANNICHELLIA. STERILE FL. Perianth none. Filament slender. FERTILE FL. Perianth cup-shaped. Pistils 2—4, tapering into a short style. Stigma large and peltate. Fruit on a short stipe, coriaceous. *Naiadaceæ*, p. 385.

CAULINIA. Perianth none. STERILE FL. Anther nearly sessile. FERTILE FL. Style filiform. Stigmas 2. Fruit capsular, 1-seeded. *Naiadaceæ*, p. 385.

EUPHORBIA. Rarely furnished with a perianth. Involucre 1-leaved, campanulate, 4—5-lobed; the lobes usually alternating with peltate glands. STERILE FL. numerous, each consisting of an anther with its filament articulated in the middle. FERTILE FL. solitary, central, on a long peduncle. Styles 3, usually 2-cleft. Capsule 3-celled, 3-seeded. *Euphorbiaceæ*, p. 312.

ORDER II.—DIANDRIA.—2 *Stamens.*

PODOSTEMUM. Calyx and corolla none. Stamens affixed to a common pedicel. Stigmas 2, sessile, recurved. Capsule 2-celled, 2-valved, many-seeded. *Podostemaceæ*, p. 114.

(*Carex*, ORDER III. *Callitriche*, CLASS MONANDRIA, ORDER DI-GYNIA.)

ORDER III.—TRIANDRIA.—3 *Stamens.*

SPARGANIUM. Flowers in dense spherical heads, the sterile ones above. Perianth single, of 3 leaves. Fruit dry, indehiscent, sessile. *Typhaceæ*, p. 380.

CAREX. STERILE FL. Stamens 3, rarely 2 or 1. FERTILE FL. Perigynium membranaceous or somewhat coriaceous, 2-toothed, emarginate or truncate at the apex. Style single, included. Stigmas 2—3. Achenium lenticular, plano-convex or triangular, crowned with the lower portion of the style. *Cyperaceæ*, p. 403.

TYPHA. Flowers collected into a long dense cylindric spike. STERILE FL. above. Stamens intermixed with simple hairs, inserted directly on the axis. FERTILE FL. below the sterile on the same axis. Fruit oblong, very small, stipitate. *Typhaceæ*, p. 381.

SCLERIA. Flowers glumaceous. Fertile spikelets 1-flowered; the sterile several-flowered. Scales 2—6. Disk shallow, saucer-like or lobed. Perigynium coriaceous or crustaceous, sometimes wanting. Achenium globose or ovoid. *Cyperaceæ*, p. 402.

TRIPSACUM. STERILE SPIKELETS in pairs on each joint of the rachis, and longer than the joint, collateral, 2-flowered. Flowers with 2 paleæ. FERTILE SPIKELETS solitary, as long as the joint, 2-flowered. Flowers with 2 paleæ; the outer or lower flower neutral, the inner or upper one fertile. *Graminaceæ*, p. 452.

COMPTONIA. STERILE FL. Ament cylindric, imbricate; scales reniform-

cordate, acuminate, 1-flowered. Perianth of 2 minute scarious leaves. Stamens 3—5. FERTILE FL. Ament globose; scales 1-flowered. Styles 2. Nut ovoid-oblong, smooth. *Myricaceæ*, p. 324.

ADIKE. Perianth 3- (sometimes 4-) leaved; leaves nearly equal, oblong or lanceolate. STERILE FL. Stamens 3. FERTILE FL. Perianth with a petaloid cucullate scale at the base of each of the leaves inside, membranaceous in fruit. Stigma 1, minute, capitate, sessile. Nut minutely papillose, straight. *Urticaceæ*, p. 315.

ORDER IV.—TETRANDRIA.—4 *Stamens.*

ERIOCAULON. Flowers collected into a compact scaly head. STERILE FL. in the disk. Perianth 4—6-cleft, the inner segments nearly to their summit. Stamens 3—6. FERTILE FL. in the margin. Perianth deeply 4-parted. Capsule 2—3-celled. *Eriocaulaceæ*, p. 370.

ALNUS. STERILE FL. Ament long, cylindric; scales 3-lobed, 3-flowered. Perianth 4-parted. FERTILE FL. Ament ovoid-oblong; scales subtrifid, 2-flowered. Perianth none. Styles 2. Nut compressed. *Betulaceæ*, p. 326.

BETULA. STERILE FL. Ament imbricate, cylindric; scales ternate, the middle one bearing the stamens. FERTILE FL. Ament ovoid-oblong; scales trifid, 3-flowered. Nut compressed, winged on each side. *Betulaceæ*, p. 325.

BËHMERIA. STERILE FL. Perianth 4-parted. FERTILE FL. Perianth none, but a cluster of ovate acuminate scales, with a compressed ovary within each scale. Nut ovate, pointed with the subulate style. *Urticaceæ*, p. 316.

URTICA. STERILE FL. Perianth single, of 4 roundish obtuse leaves, containing the cup-shaped rudiment of a germ. FERTILE FL. Perianth mostly of 2 persistent leaves. Stigma 1. Nut orbicular-ovate, compressed, shining. *Urticaceæ*, p. 314.

PARIETARIA. Flowers polygamous, surrounded by a many-cleft involucre. PERFECT FL. Perianth 4-parted, persistent. Filaments at first incurved, then expanding with elastic force. Style 1. Nut enclosed by the enlarged perianth. *Urticaceæ*, p. 316.

MORUS. STERILE FL. in loose spikes. Perianth 4-parted. FERTILE FL. in dense spikes. Perianth 4-parted, becoming baccate. Styles 2. Nut ovate, compressed, covered by the succulent perianth. *Moraceæ*, p. 317.

(*Myriophyllum* in ORDER HEXANDRIA.)

ORDER V.—PENTANDRIA.—5 *Stamens.*

CROTONOESIS. STERILE FL. Perianth 5-parted, with 2 petaloid scales. FERTILE FL. Perianth 5-parted. Stigmas 3, twice bifid. Capsule 1-seeded, not opening. *Euphorbiaceæ*, p. 311.

AMARANTHUS. Perianth deeply 3—5-parted. STERILE FL. Stamens 3—5. FERTILE FL. Styles 3. Capsule 1-celled, 1-seeded, opening transversely all round. *Amaranthaceæ*, p. 295.

XANTHIUM. Heads in glomerate spikes, sterile at the summit, pistillate below. STERILE FL. Involucre subglobose, many-flowered, with the scales in one series. Receptacle cylindric, chaffy. Corolla short, 5-lobed, somewhat hairy. FERTILE FL. Involucre with hooked prickles, surmounted

by 1—2 beaks. Corolla filiform. Stamens none. Achenia compressed, one in each cell of the involucre. *Compositæ*, p. 183.

AMBROSIA. Fertile heads at the base and sterile ones at the top of the spike. STERILE FL. Involucre hemispheric or turbinate; scales few. Receptacle naked. Corolla tubular, short. FERTILE FL. Involucre 1-flowered, incurved and often armed with several tubercles or horns. Corolla none. Achenia ovoid or obovoid. *Compositæ*, p. 184.

(*Fagus* and *Quercus* in ORDER POLYANDRIA.)

ORDER VI.—HEXANDRIA.—6 *Stamens*.

ZIZANIA. Flowers glumaceous. Spikelets 1-flowered. STERILE FL. Glumes none, or only rudimentary. Paleæ 2, herbaceous, concave, nearly equal, awnless. PERFECT FL. Glumes none. Paleæ 2, herbaceous; lower one longer, oblong, keeled, terminating in a straight awn. Styles 2, short. *Graminaceæ*, p. 419.

ORDER VII.—POLYANDRIA.—Many *Stamens*.

* *Stems not woody*.

CERATOPHYLLUM. Calyx inferior, many-parted. Corolla none. STERILE FL. Stamens 12—20; filaments wanting. FERTILE FL. Stigma filiform, oblique. Fruit a beaked achenium. *Ceratophyllaceæ*, p. 114.

MYRIOPHYLLUM. STERILE FL. Calyx 4-parted. Petals 4, ovate, sometimes inconspicuous or wanting. Stamens 4—8. PERFECT FL. Calyx adhering to the ovary; limb 4-lobed. Petals none. Nuts 4, compressed or subglobose, 1-seeded. *Haloragaceæ*, p. 112.

SAGITTARIA. Perianth 6-leaved; 3 outer leaves persistent, calycine; 3 inner colored, petaloid. FERTILE FL. Ovaries collected into a head. Carpels compressed, 1-seeded, crowned with the persistent style. *Alismaceæ*, p. 378.

ARISÆMA. Spathe convolute below, the limb arched or flattish. Spadix naked above, the lower part covered with flowers, of which the upper are sterile and the lower fertile, or in some plants all sterile. Anthers somewhat verticillate and distinct. Stigma nearly sessile. Berry 1—several-seeded. *Araceæ*, p. 381.

PELTANDRA. Spathe elongated, convolute, undulate on the margin, curved at the apex. Spadix covered with flowers. Perianth none. Anthers sessile, covering the upper part of the spadix in a tessellated manner. Ovaries 1-celled, on the lower part of the spadix. Berries ovoid, forming a dense cluster. *Araceæ*, p. 382.

CALLA. Spathe ovate, somewhat flattened. Spadix covered with flowers which are destitute of a perianth, and consist of pistils surrounded by stamens. Berries distinct, depressed, few-seeded. *Araceæ*, p. 382.

** *Stems woody*. (*Trees or Shrubs*.)

Obs. The genera of this division are included in the Natural Orders *Cupulifereæ*, p. 326; *Platanaceæ*, p. 333; *Altingiaceæ*, p. 333; and *Juglandaceæ*, p. 335.

ORDER VIII.—MONADELPHIA.—*Stamens united into 1 set (sometimes in two or three sets.)*

* *Stems not woody.*

ACALYPHA. STERILE FL. Perianth 3—4-parted. Stamens 8—16, very short. FERTILE FL. Styles 3, 2-parted. Capsule 3-celled; cells 1-seeded. *Euphorbiaceæ*, p. 312.

RICINUS. STERILE FL. Perianth 5-parted. Stamens numerous. FERTILE FL. Perianth 3-parted. Styles 3, 2-parted. Capsule mostly echinate, 3-celled, 3-seeded. *Euphorbiaceæ*, p. 311.

PHYLLANTHUS. STERILE FL. Perianth 6-parted; segments spreading. Stamens 3, very short. Anthers didymous. FERTILE FL. Perianth as in the sterile. Styles 3, bifid. Capsule 3-celled. *Euphorbiaceæ*, p. 311.

MELOTHRIA. STERILE FL. Calyx 3—5-toothed. Corolla campanulate. Filaments 5, in 3 sets. FERTILE FL. Calyx and corolla as in the sterile. Style 1. Stigmas 3, fimbriate. Fruit 3-celled, many-seeded. *Cucurbitaceæ*, p. 118.

ECHINOCYSTIS. Calyx flattish; segments 6, filiform-subulate. Corolla 6-parted, rotate-campanulate. STERILE FL. Calyx slightly contracted above the ovary. Stamens 3, in two sets. FERTILE FL. Abortive filaments 3, very small, distinct. Style very short. Stigmas 2. Fruit globose-ovoid, bristly-echinate. 2-celled, 4-seeded. *Cucurbitaceæ*, p. 118.

SICYOS. STERILE FL. Calyx 5-toothed; teeth subulate or minute. Petals 5, all cohering in a tube, at length separating into three parcels. FERTILE FL. Calyx constricted above the ovary, campanulate. Corolla campanulate. Style rather slender. Stigmas 3, thick, obtuse. Fruit ovate, spiny or hispid, 1-seeded. *Cucurbitaceæ*, p. 118.

** *Stems woody.*

THUYA. STERILE FL. Ament terminal, very small, ovoid. Perianth none. Anther-cells 4, opening longitudinally. FERTILE FL. Cone with the scales 2-flowered. Seeds more or less winged. *Coniferæ*, p. 338.

CUPRESSUS. STERILE FL. Ament solitary. Anthers 2—4-celled. FERTILE FL. Cone globose; the scales protuberant or mucronate in the centre, and finally spreading. Seeds angular, compressed. *Coniferæ*, p. 339.

PINUS. Aments racemously clustered; scales peltate. Stamens numerous, with short filaments. FERTILE FL. Aments more or less conic or cylindrical; scales closely imbricate, 2-flowered, enlarging and becoming woody, forming a cone. Seeds winged at the summit, covered by the scales of the cone. *Coniferæ*, p. 339.

CLASS XX.—DICECIA.—*Stamens and Pistils in separate flowers and on different plants.*

ORDER I.—DIANDRIA.—*Stamens 1—5, mostly 2.*

SALIX. Ament cylindrical. Perianth none. STERILE FL. Stamens mostly 2, but often 3—5. FERTILE FL. Ovary with a gland at the base. Stigmas 2, often cleft. *Salicaceæ*, p. 319.

VALISNERIA. STERILE FL. Spathe ovate, 2—4-parted. Spadix covered with minute flowers. Perianth 3-parted. Stamens 2. FERTILE FL. Scape very long, flexuous or spiral. Spathe tubular, bifid, 1-flowered. Perianth elongated, 6-parted; the alternate segments linear. Style none. Stigmas 3,

ovate, bifid. Capsule elongated, cylindric, 3-toothed, 1-celled, many-seeded. *Hydrocharidaceæ*, p. 342.

FRAXINUS. Polygamous. Calyx small, 4-cleft or none. Corolla none or 4-petalled; the petals cohering at the base in pairs, oblong or linear. Stamens 2. Capsule 2-celled, compressed, winged at the apex, by abortion 1-seeded. *Oleaceæ*, p. 230.

ORDER II.—TRIANDRIA.—3 Stamens.

EMPETRUM. Perianth consisting of two rows of scales. STERILE FL. Stamens 3, upon long filaments. FERTILE FL. Style none, or very short. Stigma with 6—9 rays. Fruit globose, with 6—9 nucules. *Empetraceæ*, p. 310.

OAKESIA. STAMINATE FL. Perianth of 5—6 leaflets; the innermost ones somewhat petaloid and often united on one side. Stamens mostly 3, (sometimes 4 or 5,) exserted. Ovary wanting or mostly abortive. FERTILE FL. Perianth nearly as in the sterile. Disk none. Ovary 3—4-celled. Style filiform, 3—4-cleft. Fruit dry and drupaceous, globose, minute. *Empetraceæ*, p. 310.

ORDER III.—TETRANDRIA.—4 Stamens.

MYRICA. STERILE FL. Ament cylindric; scales concave. Stamens 4—6. FERTILE FL. Ament closely imbricate, small, ovoid. Styles 2. Drupe 1-celled, 1-seeded. *Myricaceæ*, p. 324.

VISCUM. STERILE FL. Sepals 4, (rarely 3—5,) fleshy, the segments triangular. FERTILE FL. Calyx with the margin obsolete; inner sepals (petals) 4, distinct. Stigma obtuse, sessile. Berry pulpy. *Loranthaceæ*, p. 143.

(*Rhamnus* in CLASS PENTANDRIA, ORDER MONOGYNIA.)

ORDER IV.—PENTANDRIA.—5 Stamens.

NYSSA. STERILE FL. Perianth 5-parted. Stamens 5—10. FERTILE FL. Perianth 5-parted. Stamens 5. Style 1. Drupe inferior, 1-seeded. *Santalaceæ*, p. 307.

ZANTHOXYLUM. Dioeciously polygamous. Sepals 3—5, small. Petals longer than the sepals, or none. Stamens and carpels as many as the lobes of the calyx, 1—2-seeded. *Zanthoxylaceæ*, p. 67.

ACNIDA. STERILE FL. Perianth 5-parted. Stamens 5, very short. FERTILE FL. Perianth 3-parted. Styles none. Stigmas 3—5, spreading. Capsule 1-seeded. *Chenopodiaceæ*, p. 298.

HUMULUS. STERILE FL. Perianth 5-parted. Stamens 5. FERTILE FL. in aments; the scales large, membranous, imbricate in several rows, 2-flowered. Stigmas 2, long, spreading. Achenia invested with the enlarged perianth, and forming a membranaceous strobile. *Cannabinaceæ*, p. 317.

CANNABIS. STERILE FL. Perianth 5-parted. Stamens 5. FERTILE FL. Perianth oblong, acuminate, convolute, the base ventricose, and including the ovary. Stigmas 2, long, subulate. Nut 2-valved. *Cannabineæ*, p. 316.

NEGUNDO. Calyx minute, unequally 4—5-toothed. Petals none. Anthers 4—5, linear, sessile. *Aceraceæ*, p. 61.

(*Salix*, ORDER I. *Ribes*, CLASS PENTANDRIA.)

ORDER V.—HEXANDRIA.—6 *Stamens*.

SMILAX. Perianth campanulate, spreading, of 6 leaves in a double series, somewhat petaloid. **STERILE FL.** Filaments short. **FERTILE FL.** Stigmas 3, thick. Berry 3- (or by abortion 1—2-) celled. *Smilacææ*, p. 356.

DIOSCOREA. Perianth 6-parted. **STERILE FL.** Stamens 6, 3 sometimes barren. **FERTILE FL.** Styles distinct nearly to the base. Capsule 3-celled, triangular; the angles winged. *Dioscoreææ*, p. 356.

GLEDITSCHIA. Sepals 3—4—5, equal. Petals as many as the sepals, arising from the tube of the calyx. Style short. Stigma pubescent above. Legume compressed, 1—many-seeded. *Leguminosæ*, p. 88.

ORDER VI.—OCTANDRIA.—8 *Stamens*.

POPULUS. Ament cylindric; scales lacerately fringed at the summit. **STERILE FL.** Anthers 8—30, arising from a turbinate oblique entire single perianth. **FERTILE FL.** Perianth turbinate, entire. Stigmas 4. Capsule superior, 2-celled, 2-valved, many-seeded. Seeds comose. *Salicææ*, p. 322.

DIOSPYROS. Calyx 4—6-cleft. Corolla urceolate, 4—6-cleft. **STERILE FL.** 8—16, often producing 2 anthers. **FERTILE FL.** Stamens about 8, abortive. Style divided. Stigmas simple or 2-cleft. Fruit globose or ovoid, 4—8-celled. *Ebenææ*, p. 227.

SHEPHERDIA. **STERILE FL.** Perianth 4-parted. Stamens 8, included, alternating with 8 glands. **FERTILE FL.** Perianth 4-cleft, campanulate, superior. Stamens none. Style 1. Stigma oblique. Berry 1-seeded. *Elæagnææ*, p. 306.

ORDER VII.—ENNEANDRIA.—9 *Stamens*.

UDORA. Spathe bifid, 1-flowered. Perianth 6-parted, petaloid. **STERILE FL.** Stamens 9, 3 of them inferior. **PERFECT FL.** Tube of the perianth very long and slender. Stamens 3—6. Stigmas 3, large and spreading, 2-lobed. Fruit coriaceous, few-seeded. *Hydrocharidææ*, p. 342.

ORDER VIII.—DECANDRIA.—10 *Stamens*.

GYMNOCLADUS. Calyx tubular, 5-cleft. Petals 5, equal, oblong, exerted from the tube. Legume oblong, very large and thick, pulpy inside. *Leguminosæ*, p. 89.

ORDER IX.—POLYANDRIA.—*Many Stamens*.

MENISPERMUM. Sepals and petals arranged in fours, 2- or 3-rowed. **STERILE FL.** Stamens 12—20. **FERTILE FL.** Ovaries 1—4. Drupe berried, roundish-reniform, with a single lunate nut or seed. *Menispermææ*, p. 16.

ORDER X.—MONADELPHIA.—*Stamens united*.

JUNIPERUS. **STERILE FL.** Ament ovoid-oblong, very small; scales verticillate, peltate. Anther-cells 3—6. **FERTILE FL.** Ament ovoid; scales few, concave, united at base, becoming a fleshy tuberculate berry, and enclosing 1—3 crustaceous seeds. *Coniferææ*, p. 338.

lx LINNÆAN ARRANGEMENT OF THE GENERA.

TAXUS. STERILE FL. consisting of peltate anthers in an ament; anther-cells 3—6 or more, inserted in the lobes of the connective, opening beneath. FERTILE FL. solitary, with imbricate scales at the base. Seed nut-like, seated in the disk which becomes a succulent cup. *Conifera*, p. 341.

CLASS XXI.—CRYPTOGAMIA.—*Stamens and Pistils not visible.*

ORDER I.—FILICES.

This includes the Fern-like plants, being the Natural Orders *Equisitaceæ*, p. 454; *Filices*, p. 456; *Lycopodiaceæ*, p. 467; and *Marsileaceæ*, p. 470.

TABLE OF THE NATURAL ORDERS

NOTICED IN THIS WORK.

DIVISION I.

FLOWERING OR PHÆNOGAMOUS PLANTS.

CLASS I.—EXOGENOUS OR DICOTYLEDONOUS PLANTS.

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SUBCLASS II.—*Calyciflorals*.

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* In this subclass are placed some genera and species in which the petals are united, and a few are excluded in which the petals are distinct to the base; but all these plants agree with the orders under which they are arranged in some more important characters. The same remark is more or less applicable to the other subclasses.

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SUBCLASS I.—*Petaloidicals.*

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DIVISION II.

FLOWERLESS OR CRYPTOGAMOUS PLANTS.

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GENERIC AND SPECIFIC DESCRIPTIONS
OF THE
PLANTS OF THE UNITED STATES,
NORTH OF VIRGINIA.
ARRANGED ACCORDING TO THE NATURAL SYSTEM.



BOTANY OF THE UNITED STATES, NORTH OF VIRGINIA.

DIVISION I.

FLOWERING OR PHENOGRAMOUS PLANTS,

PLANTS FURNISHED WITH FLOWERS AND PRODUCING SEEDS.

CLASS I. EXOGENOUS OR DICOTYLEDONOUS PLANTS.

Stem composed of bark, wood and pith; increasing by an annual deposit of new wood and cortical matter between the wood and bark. Leaves articulated with the stem, their veins reticulated. Propagation effected by stamens and pistils. Ovules in a pericarp; embryo with two or more opposite cotyledons.

SUB-CLASS I. THALAMIFLORALS.

Calyx many sepalled. Petals many, distinct, and with the stamens inserted into the receptacle.

ORDER I. RANUNCULACEÆ.—CROWFOOTS.

Calyx of 3—6, (but usually 5,) distinct deciduous sepals. Petals 3—15 (sometimes wanting.) Stamens indefinite in number, distinct. Pistils numerous. Fruit either dry nuts or carpels, baccate, or follicular. Seeds solitary or several.—Herbaceous plants or rarely shrubs. Leaves alternate or opposite, generally much divided, with the petiole dilated at the base. Flowers usually conspicuous.

1. CLEMATIS. *Linn.*—Virgin's Bower.

(From the Greek κλημα, a shoot or tendril; in allusion to the climbing habit of the genus.)

Involucre none, or like a calyx under the flower. Sepals 4—8, colored. Petals none, or shorter than the sepals. Carpels many, terminated by a long mostly feathery awn.

§ 1. CLEMATIS proper. *Involucre none. Sepals 4—8, colored. Petals none.*

1. *C. Virginiana Linn.*: stem climbing; leaves ternate; leaflets cordate-ovate, acute, coarsely toothed or lobed; flowers paniculate, diœcious.

Woods and thickets. Can. to Flor. N. to lat. 55° W. to Columbia river. Aug. ♀.—*Stem* long. *Flowers* white, in large panicles. *Tails of the carpels* at length clothed with long silken hairs, having the appearance of tufts of wool. *Virgin's Bower.*

2. *C. Viorna Linn.*: stem climbing; leaves pinnately divided; segments entire, or 3-lobed, ovate, acute; floral ones entire; peduncles 1-flowered; sepals thick, acuminate, connivent, reflexed at the apex.

Woods. Penn. to Geor. W. to Miss. June, July. ♀.—*Flowers* large, nodding, violet, on peduncles 3—6 inches long. *Tails of the carpels* from 1 to near two inches long, plumose. *Leather Flower.*

3. *C. ochroleuca Ait.*: herbaceous, erect, simple, pubescent; leaves simple, ovate, very entire, the younger ones with the calyx silky; flower peduncled, terminal, solitary, nodding. *C. sericea Mich.*

Woods. N. Y. to Geor. May, June ♀.—*Stem* 12—18 inches high. *Flowers* yellowish-white. *Carpels* conspicuously feathered, the silk of a yellowish color. *Silky Virgin's Bower.*

§ 2. ATRAGENE. *Involucre none. Sepals 4. Petals several, minute.*

4. *C. verticillaris D. C.*: leaves whorled in fours, ternate; leaflets petioled, ovate, acuminate, somewhat cordate, nearly entire; peduncles 1-flowered; petals acute. *Atragene Americana Sims.*

Rocks. Ver. to Car. N. to Lat. 54° W. to the Rocky Mountains. April, May. ♀.—*Stem* climbing. *Flowers* very large, purple.

Whorl-leaved Virgin's Bower.

2. THALICTRUM. *Linn.*—Meadow Rue.

(Supposed to be from the Greek θαλλω, to be green; in allusion to its verdant aspect.)

Involucre under the flower none. Sepals 4, rarely 5, petaloid, generally caducous. Petals none. Carpels dry, not awned, sometimes stipitate, sometimes with a longitudinal furrow. Often diœcious or polygamous.

* *Stamens longer than the sepals.*

1. *T. Cornuti Linn.*: leaves decomposed; leaflets roundish-obovate or oblong, 3-lobed, glaucous beneath, with the nerves scarcely prominent; peduncles longer than the leaves; flowers diœcious or polygamous; carpels

nearly sessile, acute at each end, strongly ribbed, twice as long as the style. — *T. Cornuti* and *T. pubescens Pursh.* *T. revolutum* and *T. corynellum D. C.*

Wet grounds. From lat. 56° N. to Car. June, July. ♀.—*Stem* 3—5 feet high, branching. *Leaves* very variable in form, deep-green above, paler glaucous smooth or pubescent beneath. *Flowers* in a compound leafy panicle. *Sepals* greenish-white, oblong, much shorter than the stamens. *Carpels* about 3 lines long, beaked with the persistent style. *Common Meadow Rue.*

2. *T. dioicum Linn.:* very smooth; leaves decomposed, on short petioles; leaflets rounded, crenately and obtusely lobed, glaucous beneath; flowers diœcious or polygamous; peduncles as long as the leaves; carpels oblong, sessile, strongly ribbed. *T. lævigatum Mich.* *T. purpurascens Linn.*

Banks of streams. Can. to Car. N. to lat. 67° W. to Oregon. April, May. ♀.—*Stem* 1—2 feet high. *Flowers* in a terminal panicle. *Sepals* white or purplish. *Filaments* much longer than the sepals. *Anthers* yellowish. *Early Meadow Rue.*

** *Stamens shorter than the petaloid calyx.*

3. *T. anemonoides Mich.:* root tuberous; radical leaves biternate; leaflets subcordate, 3-toothed; floral leaves petioled, resembling an involucre; flowers perfect, few, umbelled; petaloid calyx 8—10-leaved. *Anemone thalictroides Linn.*

Woods. Common throughout the U. S. April—June. ♀.—*Stems* or *scapes* 4—8 inches long, often several from one root. *Flowers* about an inch in diameter. *Sepals* 6—10, white or purplish, twice as long as the stamens. The flowers of this species resemble those of *Anemone*, but the fruit that of *Thalictrum.* *Rue Anemone.*

3. ANEMONE. *Linn.*—Wind Flower.

(From the Greek *ανεμος*, *wind*; because the flowers are supposed to open when the wind blows.)

Involucre remote from the flower, of 3 divided leaves. Calyx petaloid, with 5—15 sepals. Petals none. Achenia mucronate.

1. *A. nemorosa Linn.:* leaves ternate; leaflets undivided, or with the middle one 3-cleft and the lateral one 2-parted, incisely toothed, acute; those of the involucre similar, petioled; sepals 4—6, oval or elliptical. *A. lancifolia Pursh.*

var. *quinquefolia, D. C.:* lateral leaves of the involucre 2-parted to the base. *A. quinquefolia Linn.*

Woods. Can. to Car. N. to lat. 53° W. to the Rocky Mountains. April, May. ♀.—*Stem* or *scape* 4—8 inches high, slender. *Flowers* about an inch in diameter. *Sepals* 4—7, white or purplish. *Wood Anemone.*

2. *A. Pennsylvanica Linn.:* leaves 3—5-parted; segments 3-cleft; lobes oblong, incisely toothed, acuminate; involucre similar, 2-leaved, sessile; sepals 5, elliptic; carpels hairy, compressed, crowned with a long style. *A. aconitifolia Mich.* *A. dichotoma Linn.*

Meadows. Throughout the U. S. N. to Hudson's Bay. June, July. ♀.—*Stem* 12—18 inches high. *Flowers* 1—1½ inches in diameter. *Sepals* white and membranaceous. *Pennsylvania Wind Flower.*

3. *A. cylindrica Gray:* silky, pubescent; leaves ternately divided; late-

ral segments 2-parted, the terminal one 2-cleft; lobes linear-lanceolate, with the apex incisely toothed; those of the involucre similar and petioled; peduncles 2—6, rarely solitary; sepals 5, obovate, obtuse; carpels densely woolly, in a long cylindrical head.

N. H. Mass. Western N. Y. W. to Ind. and Mich. May, June. ♀.—*Plant* 1—3 feet high. *Peduncles* 8—12 inches long, usually purple. *Flowers* about half an inch in diameter. *Sepals* hairy outside, pale yellowish green within. *Heads of carpels* an inch long. Resembles *A. Virginiana*.

Cylindrical-headed Wind Flower.

4. *A. Virginiana* Linn.: leaves ternate; segments ovate-lanceolate, 3-cleft, acuminate, incisely toothed; those of the involucre similar, petioled; sepals 5, elliptic, acuminate, silky without; peduncles elongated; carpels densely woolly, in an ovoid-oblong head.

Woods. Throughout the U. S. and Can. as far N. as lat. 55°. July. ♀.—*Stem* 18—20 inches high. *Flowers* three-fourths of an inch in diameter. *Sepals* greenish-white, two narrower than the others. *Heads of carpels* three-fourths of an inch long.

Thimble Weed.

5. *A. multifida* Poir.: hairy; leaves ternately divided; segments cuneiform, laciniately 3-cleft, the lobes linear, acute; those of the involucre similar, on short petioles; sepals 5—8, oval, obtuse; heads of carpels oval, woolly.

var. *Hudsoniana* D. C.: stem mostly 2-flowered. *A. Hudsoniana* Oakes.

Limestone rocks. Watertown, Jefferson county, N. Y. (var. *Hudsoniana*.) N. to Arc. Amer. W. to Oregon. June. ♀.—*Stem* a foot high. *Flowers* about as large as those of *A. Virginiana*, bright purplish red. *Sepals* silky-villous within. *Heads of carpels* about three-fourths of an inch long.

Cut-leaved Wind Flower.

4. HEPATICA. Willd.—Liverwort.

(From the Greek ἥπαρ, *the liver*; from the supposed resemblance of its leaves.)

Involucre 3-leaved, 1-flowered, resembling a calyx, entire. Sepals petaloid, 6—9, arranged in 2 or 3 rows. Ovaries many. Carpels without awns.

H. triloba, Willd.: leaves cordate, 3—5-lobed; lobes entire. *Anemone Hepatica* Linn.

var. 1. *obtusa* Pursh.: leaves 3-lobed; lobes roundish, obtuse. *H. Americana* D. C.

var. 2. *acuta* Pursh.: leaves 3—5-lobed; lobes spreading, acute. *H. acutiloba* D. C.

In woods. Common throughout the U. S. and N. to lat. 52°. April, May. ♀.—There appears to be no doubt that these supposed distinct species are nothing more than varieties. They grow indiscriminately, and the lobes of the leaves assume almost every variety of form. The *sepals* are white, blue, or pale purple. This plant has been much used as a remedy in pulmonary diseases; but its virtues have no doubt been overrated.

Liverwort. Early Anemone.

5. HYDRASTIS. Linn.—Yellow Root.

(Supposed to be from the Greek ἵδωρ, *water*; from its growing in moist places.)

Sepals 3, petaloid, caducous. Petals none. Stamens and ovaries numerous. Carpels berry-like, numerous, aggregated in a globose head, terminated by the style, 1—2-seeded.

H. Canadensis Linn.

Rocks woods. Can. to Car. W. to Miss. Rare. May. ♀.—*Stem* 6—10 inches high, with two nearly opposite leaves above. *Leaves* 2—6 inches wide, palmately 3—5-lobed; lobes acute, doubly serrate. *Flower* solitary, on a peduncle about an inch long. *Sepals* fleshy, pale rose-color, caducous. *Fruit* fleshy, purplish, about the size of a large raspberry. The root affords a juice of a fine yellow color, which is used by the Indians for staining skins and clothing.
Yellow Root. Yellow Puccoon.

6. RANUNCULUS. Linn.—Crowfoot.

(Probably from the Latin *rana*, a frog; the plant often growing in wet places where frogs abound.)

Sepals 5, deciduous. Petals 5, rarely 10, with a honey scale at the base on the inside. Stamens and ovaries numerous. Carpels ovate, somewhat compressed, terminating in a point or horn, smooth, striated, or tuberculated, arranged in a globose or cylindric head.

* *Carpels transversely rugose-striate. Petals white; claws yellow.*

1. *R. aquatilis*, var. *capillaceus* D. C.: stem filiform, floating; leaves all submersed, divided into capillary diverging segments; petals obovate, longer than the calyx. *R. fluviatilis* Willd.

In streams. Throughout the U. S. and British America. N. to lat. 68°. Rather rare. July, Aug. ♀.—*Stem* long. *Leaves* petioled. *Flowers* small, white or ochroleucous. There are several varieties of *R. aquatilis*, which have been described as distinct species.
Water Crowfoot.

** *Carpels smooth, ovate, collected into a roundish head. Flowers yellow.*

† *Leaves undivided.*

2. *R. Fammula* Linn.: leaves glabrous, linear-lanceolate or ovate-lanceolate, subentire, the lower ones petiolate, the upper ones nearly sessile; stem more or less decumbent, rooting at the lower joints; peduncles opposite to the leaves. *R. Fammula*, var. *major* Hook.

Swamps. Can. to Geor. July, Sept. ♀.—*Stem* 1—2 feet long. *Flowers* about half an inch in diameter. Whole plant of a yellowish-green color. Said to be a powerful and speedy emetic.
Small Spearwort.

3. *R. reptans* Linn.: leaves linear, entire, remote, smooth; stem filiform, creeping, jointed; joints 1-flowered. *R. filiformis* Mich. *R. reptans*, var. *filiformis* D. C. Torr. *R. Fammula*, var. *filiformis* Hook.

River banks. Can. to N. Y. N. to Labrador. W. to Oregon. July, Aug. ♀.—A very delicate species. *Stem* 6—12 inches long. *Flowers* small. *Fruit* very smooth. Although coming from such high authority, I cannot yet adopt the opinion of Dr. Hooker, that this plant is a mere variety of *R. Fammula*. From a comparison of specimens, I am satisfied that our plant is identical with the foreign *R. reptans*.
Filiform Crowfoot.

4. *R. pusillus* Pursh.: stem erect or decumbent; leaves petioled; lower ones ovate and subcordate, entire or sparingly toothed; upper ones linear-lanceolate; pedicels opposite to the leaves, solitary, 1-flowered; carpels smooth, with a minute blunt point.

Wet grounds. N. J. to Geor. and Louisiana. June. Aug. ♀.—Stems 6—12 inches high, weak. *Flowers* small, pale-yellow. Distinguished from *R. Fammula* by its smaller size, and by its lower leaves being ovate. According to Dr. Torrey, a variety, (*muticus*.) in which the carpels are destitute of a beak, occurs in the low grounds of Bloomingdale, about five miles from the City Hall. The same variety is also found in Chester co. Penn. *Darlingt. Fl. Cest.*
Small-flowered Crowfoot.

5. *R. Cymbalaria* Pursh.: stoloniferous; leaves petiolate, smooth, somewhat fleshy, cordate, reniform or ovate, coarsely crenate; scape 1—3 flowered; petals spatulate, longer than the calyx; carpels ovate, ribbed, in oblong heads. *R. Cymbalaria*, var. *Americanus* D. C.

Salt marshes. N. Y. Mass. Can. to lat. 68° N., and from Hudson's Bay to the summits of the Rocky Mountains, where it does not appear to be confined to salt marshes. July, Aug. ♀.—Scapes 2—6 inches high. *Flowers* small. *Fruit* oblong. Its runners are very properly compared by Dr. Smith, to those of the garden strawberry.
Sea Crowfoot.

†† *Leaves divided.*

6. *R. abortivus* Linn.: smooth; radical leaves petiolate, cordate-orbiculate, crenate, sometimes 3-parted; cauline ternate and 3—5-cleft, with linear-oblong nearly entire segments; upper ones sessile; sepals a little longer than the petals, reflexed.

Wet grounds. Throughout the U. S. and Can. to lat. 57° N. W. to the Rocky Mountains. May. ♀.—*Stem* a foot high, simple or branching, smooth. *Leaves* very variously dissected, mostly smooth. *Flowers* small, yellow, the petals being sometimes longer than the calyx. *Carpels* compressed, forming an ovate or nearly globose head. *R. nitidus* of Walter, is a variety of this species, differing only in size, being nearly twice as large. *Kidney-leaved Crowfoot.*

7. *R. sceleratus* Linn.: smooth; radical leaves petioled, 3-parted, the segments lobed; cauline ones 3-lobed, lobes oblong, linear, entire; sepals reflexed, about equal to the petals; carpels small, numerous, forming a cylindrical head.

Wet grounds. From lat. 67° N. to Car. May—Aug. ♀.—*Stem* a foot high, branched, succulent. *Flowers* small. *Petals* pale yellow. *Head* sometimes an inch in length. The plant is almost entirely glabrous.
Celery-leaved Crowfoot.

8. *R. Purshii* Richardson: submerged leaves 2—3-chotomously divided, with the segments flat and filiform; emersed ones reniform, 3—5-parted, the lobes variously divided; petals 5—8, obovate, twice as large as the reflexed sepals; carpels in globose heads. *R. multifidus* Pursh. *R. lacustris* Beck & Tracy.

Ponds and muddy places. Arct. Amer. to Car. W. to the Rocky Mountains. May—July. ♀.—*Stem* 1—4 feet long. *Leaves* varying with the place of growth, from being all divided into numerous filiform segments, to all rounded or reniform, and cleft into 3—5 lobes. *Flowers* large, shining, bright yellow.
Pursh's Crowfoot.

9. *R. acris* Linn.: leaves mostly pubescent, 3—5 parted; lobes incisely

toothed, acute, the upper ones linear; stem many-flowered; peduncles terete, not furrowed; calyx spreading, villous; carpels roundish, compressed, terminated by a short recurved beak.

Meadows and pastures. Hudson's Bay to Del. W. to Miss. May—Sept. ♀.—*Stem* varying much in height, mostly hairy. *Flowers* bright yellow, shining, about an inch in diameter. Introduced? *Tall Crowfoot.*

10. *R. repens* Linn.: leaves ternate; leaflets wedgeform, 3-lobed, incisely dentate; central one petiolate; main stems prostrate, flowering ones erect; peduncles furrowed; calyx pilose, spreading; carpels with a straight point. *R. nitidus* Muhl. *R. Marylandicus* Poir.

Wet meadows. Can. to Geor. W. to the Pacific. June—Sept. ♀.—*Plant* increasing by runners. *Flowering stems* erect, 1—2 feet high. *Flowers* mid-sized. *Creeping Crowfoot.*

11. *R. Clintonii* Beck: somewhat hairy; stems creeping and rooting at each of the joints; lower leaves on long petioles, ternate; leaflets toothed and incised, cuneate, terminal one petioled; floral leaves incised or linear; peduncle 1—3 flowered; petals rounded; calyx spreading; carpels margined, with a short uncinatè style. *R. prostratus* Eat. *R. repens* Torr. ♂ Gr.

Banks of the canal, near Rome, Oneida co., N. Y. June, July. ♀.—Much smaller than *R. repens*, at least of American botanists, in all its parts except the flower, which is of a bright yellow, and about as large as that of *R. acris*. *Leaves* seldom more than 1½ inches in length, and about the same in breadth. *Stems* distinctly creeping like those of *R. reptans*; *flowering ones* 6—8 inches high. *Style* short and hooked. This species, which was introduced into the 1st edition, I still believe to be distinct. *Clinton's Crowfoot.*

12. *R. hispidus* Mich.: erect, branched; stem and petioles with stiff spreading hairs; leaves ternate or 3-parted; leaflets or segments acutely lobed; pubescence of the pedicels appressed; calyx hairy, at length reflexed; carpels in a globose head, margined, compressed, smooth; style short and straight. *R. Pennsylvanicus* Pursh.

Wet grounds. Can. to Car. N. to lat. 67°; and from Hudson's Bay to the Pacific. June—Aug. ♀.—*Stem* 18 inches high, very hairy; *Lower leaves* on long petioles; upper ones nearly sessile; leaflets nearly all petioled, 3-cleft or 3-parted, attenuate at base. *Flowers* about the size of *R. acris*.

Hairy Crowfoot.

13. *R. Pennsylvanicus* Linn.: stem erect and with the petioles covered with stiff spreading hairs; leaves ternate, villous; segments subpetiolate, acutely 3-lobed, incisely serrate; calyx reflexed, longer than the small petals; carpels with a short oblique style, collected into an oblong head. *R. hispidus* Pursh.

Wet meadows. From the Arctic regions to Geor. July, Aug. ♀.—*Stem* 1—2 feet high, usually much branched. *Flowers* small, pale yellow. *Carpels* viscid. Distinguished from *R. hispidus*, by its oblong heads of carpels, and by its shorter style. *Pennsylvanian Crowfoot.*

14. *R. recurvatus* Pursh.: stem erect and with the petioles covered with spreading hairs; leaves 3-parted, hairy; segments oval, subincised, the lateral ones 2-lobed; calyx reflexed; petals lanceolate; carpels crowned with a sharp hooked style.

Shady woods. Throughout the U. S., and from Labrador to the Columbia

river. May—July. ♀.—*Stem* 12—15 inches high. *Flowers* small, pale yellow, on short peduncles. *Sanicle-leaved Crowfoot.*

15. *R. fascicularis* Muhl.: stem erect, branched; leaves on long petioles, pubescent, pinnately divided; the lobes oblong, obovate, pinnatifid; calyx spreading, shorter than the petals, villous; carpels orbicular, crowned with a slender subulate style, collected into a sub-globose head.

Woods. Can. to Penn. W. to Miss. April, May. ♀.—*Root* fascicled. *Stem* 6—12 inches high. *Flowers* about as large as those of *R. acris*, pale yellow. Varies considerably in the form of its leaves, which are however always much more compound than is usual in this genus.

Bundle-rooted Crowfoot.

16. *R. bulbosus* Linn.: stem erect, hairy, bulbous at the base; leaves ternate, or quinate-pinnate; leaflets 3—5-parted, segments trifid or incised; peduncles sulcate; calyx reflexed, hairy; carpels in a globose head, with a short recurved beak.

Meadows. May—Aug. ♀.—*Root* consisting of thick fibres, tuberous at the neck. *Stem* about a foot high. *Petals* usually 5, deep yellow and shining. Medicinal. See *Big. Med. Bot.*, III. 61. Introduced from Europe.

Butter-cups.

*** *Carpels aculeate or tuberculate.*

17. *R. muricatus* Linn.: stem erect or diffuse; leaves smooth, petiolate, suborbiculate, 3-lobed, coarsely dentate; peduncles opposite to the leaves; calyx spreading; carpels tuberculate-aculeate, terminated by an ensiform beak.

Alleghany mountains. Drummond. S. to Louisiana. May—July. ♀.—*Leaves* sometimes undivided. *Flowers* small. *Petals* obovate, bright yellow. Introduced? *Muricate Crowfoot.*

7. CALTHA. Linn.—Marsh Marigold.

(From the Greek *καλῆθος*, a basket: in allusion to the form of the flower.)

Calyx colored, with 5—10 roundish sepals resembling petals. Petals none. Stamens numerous. Ovaries 5—10. Follicles compressed, spreading, many-seeded.

1. *C. palustris* Linn.: stem succulent, erect; leaves cordate, suborbicular, obtusely crenate, petiolate; flowers large, pedunculate; sepals broad oval.

var. *integerrima* Torr. & Gr.: radical leaves entire; floral ones sessile, obscurely crenate; petals obovate. *C. integerrima* Pursh.

In swamps. Can. to Car. W. to Miss. Labrador to the Columbia river. April, May. ♀.—*Root* of coarse fasciculate fibres. *Stem* 6—12 inches high, erect, somewhat succulent, dichotomously branched above. *Leaves* large and shining. *Flowers* few, an inch or more in diameter, bright yellow.

Common Marsh Marigold.

2. *C. parnassifolia* Raf.: stem erect, 1-flowered, 1-leaved; radical leaves petiolate, lanceolate-cordate, very obtuse, many-nerved; sepals elliptical, styles 5—8. *C. ficaroides* Pursh. *C. palustris*, var. *parnassifolia* Torr. & Gr.

Cedar swamps. N. J. to Car. June, July. 2.—*Flowers* deep yellow, middle sized.

Parnassia-leaved Marsh Marigold.

3. *C. flabellifolia* Pursh.: stem procumbent, many-flowered; leaves dilated-reniform; lobes widely spreading, coarsely and acutely toothed; peduncles axillary, solitary, 1-flowered; sepals obovate; capsules uncinatè. *C. palustris*, var. *flabellifolia* Torr. & Gr.

Sand spring, on Pokono mountain, Penn. Pursh. July, Aug. 2.—*Stem* a foot high. *Flowers* yellow, middle sized. Allied to *C. natans* found in Canada and in Siberia.

Tooth-leaved Marsh Marigold.

8. TROLLIUS. Linn.—Globe Flower.

(Said to be derived from the obsolete German *trol*, signifying anything round.)

Sepals colored, 5—10—15, deciduous, petaloid. Petals 5—25, small, 1-lipped, tubular. Stamens and ovaries numerous. Follicles many, subcylindrical, sessile, many-seeded.

T. Americanus Muhl.: leaves palmate; sepals 5—6, spreading; petals 15—25, shorter than the stamens. *T. laxus* Pursh.

Wet grounds. Can. to Del. W. to the Rocky Mountains. May—July. 2.—*Stem* a foot or more high. *Flowers* terminal, large, yellowish. Probably often mistaken for a species of *Ranunculus*.

American Globe-flower.

9. COPTIS. Salisb.—Gold Thread.

(From the Greek κοπρω, to cut; in allusion to the numerous divisions of the leaves.)

Sepals 5—6, colored, petaloid, deciduous. Petals small, cucullate. Stamens 20—25. Follicles 3—10, on long stalks, membranous, 4—8 seeded.

C. trifolia Salisb.: leaves on long petioles, ternate; leaflets cuneiform-obovate, obtuse, toothed or obscurely 3-lobed; scape 1-flowered. *Helleborus trifolius* Linn.

Swamps. Can. to Virg. N. to Labrador. May—July. 2.—*Scape* 4—6 inches high, slender, wiry. *Flowers* white. It affords a bitter infusion and a yellow dye. See *Big. Med. Bot.* i. 60.

Common Gold Thread.

10. AQUILEGIA. Linn.—Columbine.

(From the Latin *aquila*, an eagle; the spurs or nectaries having some resemblance to the claws of that bird.)

Sepals 5, deciduous, petaloid. Petals 5, bilabiate, drawn out into a hollow spur at base. Follicles 5, distinct, many-seeded, with acuminate styles.

A. Canadensis Linn.: spur straight; styles and stamens exserted; sepals somewhat acute, a little longer than the petals; segments of the leaves 3-parted, rather obtuse, incisely toothed.

Rocks. Throughout the U. S. and Can. N. to Hudson's Bay. April, May. ♀.—*Stem* 1—2 feet high, branched above. *Leaves* glaucous; radical ones biternate, the upper ones becoming gradually more simple. *Flowers* yellow and scarlet. *Wild Columbine.*

11. HELLEBORUS. *Adans.*—Hellebore.

(From the Greek *ἔλειν*, to cause death; and *βόφα*, food; on account of its poisonous properties.)

Sepals 5, persistent, mostly greenish. Petals 8—10, very short, tubular, 2-lipped. Stamens numerous. Stigma orbicular. Follicles 3—10, slightly cohering at the base, coriaceous, many-seeded. Seeds elliptical.

H. viridis *Linn.*: radical leaves glabrous, pedately divided; the cauline few, nearly sessile, palmately parted; peduncles often geminate; sepals roundish-ovate, green.

On the plains near Jamaica, and in a wood near Brooklyn, N. Y. April. ♀.—*Stem* about a foot high. *Radical leaves* on long petioles. *Flowers* an inch or more in diameter. A naturalized foreigner. *Torr. & Gr.*

Green Hellebore.

12. DELPHINIUM. *Linn.*—Larkspur.

(From the Greek *δελφιν*, a *dolphin*; from the shape of the upper sepal.)

Calyx deciduous, petaloid, irregular, the upper sepal produced downward into a spur. Petals 4; 2 upper ones horned behind. Ovaries 1—5. Follicles many-seeded.

* *Ovaries* 3—5. *Petals* free. *Perennial.*

1. *D. azureum* *Mich.*: petioles a little dilated at the base; leaves 3—5 parted, many-cleft, lobes linear; raceme erect; petals densely bearded at the apex; flowers on short pedicels.

Woods. Penn. to Geor. W. to Miss. May. ♀.—*Stem* 2 feet high. *Flowers* large, blue. *Azure Larkspur.*

2. *D. exaltatum* *Art.*: petioles not dilated at the base; leaves flat, 3—7 cleft beyond the middle; lobes wedgeform, 3-cleft at the apex, acuminate; lateral ones often 2-lobed; raceme erect; spur straight, as long as the calyx; capsules 3. *D. tridactylum* *Mich.*

Woods. Penn. to Car. W. to Miss. May. ♀.—*Stem* 2 feet high. *Flowers* large, light blue. *High Larkspur.*

3. *D. tricornis* *Mich.*: petioles smooth at the base, scarcely dilated; leaves 5-parted, lobes 3—5-cleft; segments linear; petals shorter than the calyx; carpels reflexed, spreading at base, arcuate.

Hills and woods. Penn. to Louis. W. to Arkansas. April, May. ♀.—*Stem* 6—8 inches high. *Raceme* loose, 6—12 flowered. *Flowers* bright blue, sometimes white. *Three-horned Larkspur.*

** *Ovary* solitary. *Petals* united. *Annual.*

4. *D. consolida* *Linn.*: stem erect, smoothish, divaricately branched;

flowers few, in lax racemes; pedicels longer than the bracts; carpels smooth.

Near cultivated grounds. July. ①.—Stem 2 feet high. Flowers blue. Introduced from Europe. *Common Larkspur.*

13. ACONITUM. Linn.—Wolfsbane.

(From the Greek *ακόνη*, a cliff or rock; in allusion to its place of growth.)

Calyx petaloid, irregular, deciduous; the upper sepal large and helmet-form. Petals 5; the 3 lower ones minute, often converted into stamens; the 2 upper on long claws, expanded into a sac or short spur at the summit. Follicles 3—5, many-seeded.

A. uncinatum Linn.; panicle rather loose, with divergent branches; galea exactly conical; spur inclined, somewhat spiral; leaves 3-lobed; lobes equal.

Mountains. N. Y. to Geor. Sept. 2.—Stem twining, branching. Leaves coriaceous, deeply 3-lobed. Flowers 3—4, near the summit of each branch, large, bright blue. De Candolle notices two American varieties of this species.

American Monkshood.

14. ACTÆA. Linn.—Baneberry.

(From the Greek *ακτή*, the elder; on account of its resemblance to that plant.)

Sepals 4—5. Petals 4—8, spatulate. Stamens numerous. Carpels solitary, baccate, many-seeded.

1. *A. rubra* Willd.: leaves twice and thrice ternate; raceme hemispherical; petals shorter than the stamens, acute; pedicels of the fruit smaller than the peduncle; berries shining, red, many-seeded. *A. spicata* Mich. *A. brachypetala*. D. C. *A. Americana*, var. *rubra* Pursh.

Woods. Can. to Car. W. to the Rocky Mountains. May. 2.—Stem 2 feet high. Flowers white. Berries red and shining. *Red Cohosh.*

2. *A. alba* Big.: leaves twice and thrice ternate; raceme oblong; petals equal to the stamens; pedicels of the fruit as large as the peduncle; berries white, few-seeded. *A. spicata*, var. *alba* Mich. *A. Americana*, var. *alba* Pursh. *A. pachypoda* Ell.

Woods. Can. to Geor. W. to Miss. May. 2.—Pedicels shorter and thicker than in the preceding. Berries milk-white tipped with red, smaller than in *A. rubra*. *White Cohosh.*

15. CIMICIFUGA. Linn.—Bugbane.

(From the Latin *cimex*, a bug, and *fugo*, to drive away.)

Sepals 4—5. Petals 3—5, concave or unguiculate, sometimes fewer or none. Stamens numerous. Style short. Carpels 1—8, follicular, many-seeded.

C. racemosa Ell.: racemes very long; leaves ternately decomposed; leaflets ovate-oblong, incisely toothed. *C. Serpentaria* Pursh. *Actæa racemosa* Linn.

Woods. Can. to Flor. W. to Texas. July, Aug. 2. —Stem 3—8 feet high. Racemes 6—10 inches long, somewhat paniced. Flowers greenish-white. Has a very fetid smell. Medicinal. *Black Snake-root.*

16. ZANTHORIZA. *Linn.*—Yellow Root.

(From the Greek *ξανθος*, yellow, and *ρίζα*, a root.)

Calyx deciduous, 5-sepalled. Petals 5, of 2 roundish gland-like lobes, raised on a pedicel. Stamens 5—10. Ovaries 5—15, pointed with the curved styles. Follicles membranaceous, compressed, usually 1-seeded.

Z. apifolia *L'Herit.*

Banks of streams. Penn. to Geor. W. to Texas. May. 12.—Suffruticose. Root large, yellow. Stem 2—3 feet high. Leaves bipinnate. Flowers in racemes, dark purple. *Yellow Root.*

ORDER II. MAGNOLIACEÆ.—MAGNOLIADS.

Sepals 3—6, deciduous. Petals 3—27, in several rows. Stamens indefinite, distinct, hypogynous; anthers adnate, long. Ovaries numerous; style short; stigma simple. Fruit either dry or succulent, consisting of numerous carpels, which are arranged upon an elongated axis. Seeds solitary or several.—Trees or shrubs. Leaves alternate, coriaceous. Flowers large, solitary, often odoriferous.

1. MAGNOLIA. *Linn.*—Magnolia.

(In honor of *Prof. Magnol*, a French botanist.)

Sepals 3, deciduous. Petals 6—12, in concentric series. Carpels 1—2-seeded, persistent, forming a strobile-like fruit. Seeds coated with a fleshy arillus, suspended by a long slender funiculus.

1. *M. glauca* *Linn.*: leaves perennial, oblong or oval, petiolate, glaucous beneath; flowers 9—12 petalled; petals obovate, concave.

Swamps. Mass. to Flor. W. to Miss. May, June.—A shrub or tree 10—15, sometimes 30 feet high, with a smooth whitish bark. Flowers terminal, on thick peduncles, white, 2—3 inches broad, very fragrant. The bark is aromatic and bitter. *Sweet Bay.*

2. *M. acuminata* *Linn.*: leaves deciduous, oval, acuminate, pubescent beneath; flowers 6—9 petalled; petals obovate, somewhat obtuse.

Woods. N. Y. to Geor. June, July. A middle sized tree, sometimes, however, attaining the height of 70 feet. Flowers of a dull yellow color, sometimes 6—8 inches in diameter, glaucous externally. Fruit when green resembling a young cucumber. Bark aromatic. *Cucumber Tree.*

3. *M. tripetala* *Linn.*: leaves deciduous, cuneate-lanceolate, acute, silky when young; petals 9, oval-lanceolate, acute, the outer ones reflected. *M. Umbrella* *Linn.*

Mountain woods. Penn. to Geor. June.—A small tree with irregular branches and very large leaves. Flowers white, 7—8 inches in diameter.
Umbrella Tree.

2. LIRIODENDRON. Linn.—Tulip Tree.

(From the Greek *λειριον*, a lily, and *δενδρον*, a tree; from the appearance of its flowers.)

Sepals 3, deciduous. Petals 6. Carpels (*Samaræ*) imbricated in a cone, 1—2-seeded, not opening, attenuated.

L. Tulipifera Linn.

Woods. Throughout the U. S. June, July. One of the largest trees of our forest. Leaves alternate, 3-lobed; the middle lobe truncate. Flowers solitary, large, each with two large caducous bracts at the base. Sepals obovate-oblong, spreading and at length deciduous. Petals lance-obovate, greenish-yellow, stained with reddish orange below the middle. According to Dr. Darlington, there are two varieties of this species, differing chiefly in the color and texture of the wood; the one being yellow and the other white. The yellow is the most valuable, but both are employed extensively by cabinet makers. The bark is a valuable tonic, &c.—See *Big. Med. Bot.*

Tulip Tree. White Wood,

ORDER III. ANONACEÆ.—ANONADS.

Sepals 3—4, persistent, usually partly cohering. Petals 6, in two rows, coriaceous. Stamens indefinite, covering a large hypogynous disk, packed closely together; filaments short; anthers adnate. Ovaries mostly numerous; styles short; stigmas simple. Fruit consisting of a number of carpels. Seeds attached to the suture in one or two rows.—Trees or shrubs. Leaves alternate, simple, almost always entire, without stipules. Flowers usually green or brown, axillary, mostly solitary.

ASIMINA. Adans.—Papaw.

(A name given by Adanson, the origin of which is unknown.)

Calyx deeply 3-parted. Petals 6, spreading, ovate-oblong; inner ones smallest. Anthers many, subsessile. Carpels usually 3, baccate, ovate or oblong, sessile, pulpy within. Seeds many.

A. triloba D. C.: leaves oblong, crenate, acuminate, and with the branches smoothish; flowers on short peduncles; outer petals roundish ovate, 4 times as long as the calyx. *Anona triloba* Linn. *Porcelia triloba* Pursh. *Uvaria triloba* Torr. & Gr.

Banks of streams. Western N. Y. to Flor. W. to Miss. April.—A small tree usually from 10 to 15 feet high, with slender nearly smooth branches. Flowers solitary, lateral, appearing rather before the leaves, dark brownish-purple. Fruit large, fleshy, sweetish. Nuttall states that the fruit does not come to perfection N. or E. of Steubenville, Ohio. *Trav. in Arkansas.*

Papaw Tree.

ORDER IV. MENISPERMACEÆ.—MENISPERMADS.

Flowers diclinous, usually dioecious and very small. Sepals and petals confounded in one or several rows, each of which is composed of 3 or 4 parts, deciduous. Stamens monadelphous or occasionally distinct, sometimes opposite the petals and equal to them in number, sometimes 3 or 4 times as many; anthers adnate. Ovaries sometimes numerous, each with one style, distinct or rarely united. Drupes mostly berried, 1-seeded, compressed. Seed same shape as the fruit; albumen wanting or small.—Shrubs, with a flexible tough tissue and sarmentaceous habit. Leaves alternate and entire. Flowers small, usually racemose.

MENISPERMUM. *Linn.*—Moonseed.

(From the Greek *μήνη*, the *moon*, and *σπέρμα*, a *seed*; on account of the lunate form of the seeds.)

Sepals and petals arranged in fours, 2 or 3-rowed. STERILE FL. Stamens 12—20. FERTILE FL. Ovaries 1—4. Drupe berried, roundish-reniform, with a single lunate nut or seed. Sterile and fertile flowers often dissimilar.

M. Canadense Linn: leaves peltate, somewhat glabrous, cordate, obtusely angled, mucronate; racemes solitary, compound; petals 4—8.

Banks of streams. Can. to Car. W. to Miss. July. $\frac{1}{2}$.—Varies somewhat in the angles of the leaves. *Stem* climbing, 8—12 feet long. *Flowers* very small, greenish yellow, tinged with purple. *Berries* black, resembling grapes.
Canadian Moonseed.

ORDER V. BERBERIDACEÆ.—BERBERIDS.

Sepals 3—4—6, deciduous, in a double row, surrounded externally by petaloid scales. Petals either equal to the sepals in number and opposite to them, or twice as many, generally with an appendage at the base in the inside. Stamens equal in number to the petals, and opposite to them. Ovary solitary, 1-celled; style rather lateral; stigma orbicular. Fruit a berry or capsule. Seeds crustaceous or membranous.—Shrubs or herbaceous plants, with alternate leaves.

1. BERBERIS. *Linn.*—Barberry.

(Supposed to be the Arabian name of the plant.)

Sepals 6, mostly with 3 bracteoles at the base. Petals 6, with 2 glands upon their claws. Stamens without teeth, or

with 2—3 teeth. Berry 2—3-seeded. Seeds 2, rarely 3, inserted laterally at the base of the cell.

B. vulgaris Linn.: spines 3-parted; leaves simple, obovate, attenuate at base, closely serrate with bristly teeth; racemes many-flowered, pendulous; petals entire. *B. Canadensis* Pursh. Nutt.

Road sides and fields. Throughout the U. S. and Can. April, May. ½.—A shrub 4—6 feet high. Leaves alternate. Flowers in pendulous racemes, pale yellow. Berries red, and of an agreeable acid. Supposed to have been introduced from Europe. At all events the American, is exactly similar to the European, plant. Common Barberry.

2. LEONTICE. Linn.—Lion's Foot.

(Abridged from the Greek *λεονταπεταλον*; the leaf resembling the print of a lion's foot.)

Sepals 6, naked without. Petals 6, bearing a scale at the base within. Capsules 2—4-seeded. Seeds globose, inserted into the bottom of the capsule.

L. thalictroides Linn.: lower leaf triternate, upper one biternate; leaflets oblong ovate and cuneate-obovate, mostly 3-lobed at the apex; flowers paniculate; peduncle from the base of the upper petioles. *Caulophyllum thalictroides*, Mich.

Rocky woods. Throughout the U. S. and Can. April, May. ¼.—Stem a foot high, purplish and glaucous when young. Leaves mostly 2. Flowers small, greenish-yellow. Seeds deep blue, globose, contracted below into a long stipitate base. Whole plant turns almost black in drying.

Blue Cohosh.

3. PODOPHYLLUM. Linn.—May Apple.

(From the Greek *πους*, foot, and *φυλλον*, a leaf; the leaf resembling a web foot.)

Sepals 3, caducous. Petals 6—9. Stamens 12—18. Stigma large, subsessile, peltate, persistent. Berry somewhat fleshy, not dehiscent. Seeds many.

P. peltatum Linn.: stem erect, 2-leaved, 1-flowered; fruit oval.

Woods. Throughout the U. S. and Can. May. ¼.—Stem a foot high, 2-leaved, 1-flowered. Leaves large, peltate, palmate-lobed. Flower solitary in the fork of the petiole, pendulous, white. Fruit an inch to an inch and a half long, yellowish when mature, pulpy and succulent. Its root is often used as a substitute for jalap. See *Big. & Bart. Med. Bot. and Schneck's Exper. Inq. &c. N. Y. Med. and Phys. Jour.* ii. 30. *May Apple. Mandrake.*

4. JEFFERSONIA. Bart.—Twin-leaf.

(In honor of *Thomas Jefferson*.)

Sepals 4, petaloid. Petals 8, oblong. Capsules obovate, semicircularly dehiscent. Seeds many, arillate at base.

J. diphylla Pers. *J. Barlonis* Mich.

Western and Northern N. Y. Penn. Virg. and Tenn. May. ¼.—Scape a

foot high. *Leaf* binnate, petioled. *Flower* terminal, solitary, large, white, resembling that of *Sanguinaria*. *Capsule* large, coriaceous. *Seeds* shining, oblong. *Twin-leaf*. *Rheumatism-root*.

ORDER VI. CACOMBACEÆ.—WATER-SHIELDS.

Sepals 3 or 4, colored inside, persistent. Petals 3 or 4, alternate with the sepals. Stamens definite or indefinite; anthers linear, turned inwards, continuous with the filament. Ovaries 2 or more. Fruit indéhiscient, tipped by the indurated style. Seeds few, pendulous; embryo seated at the base of a fleshy albumen.—Aquatics, with floating leaves. Flowers axillary, solitary, yellow or purple.

HYDROPELTIS. *Mich.*—Water-shield.

Calyx of 3—4 sepals. Petals 3—4. Stamens, 18—36. Ovaries 6—18. Carpels oblong, acuminate, 1—2-seeded.

H. purpurea Mich. *Brasenia peltata Pursh.*

Lakes and ponds. Can. to Geor. June, July. ♀.—Whole plant covered with a viscid gelatine. *Stem* floating, long, terete, branched. *Leaves* oval, peltate, coriaceous, very entire and tinged with purple on the lower side. *Peduncles* solitary, long, each springing from the side of a petiole. *Flowers* purple, about an inch in diameter. *Water-shield*. *Water-target*.

ORDER VII. NELUMBIACEÆ.—WATER BEANS.

Sepals 4 or 5. Petals numerous, oblong, in many rows. Stamens numerous, arising from within the petals in several rows; filaments petaloid; anthers adnate. Torus a fleshy elevated disk, very large, enclosing the numerous separate ovaries in hollows of its substance. Nuts numerous, half buried in hollows of the disk in which they are finally loose. Seeds solitary, rarely 2.—Herbs with peltate fleshy floating leaves, arising from a prostrate trunk, growing in quiet waters.

NELUMBIUM. *Juss.*—Sacred Bean.

(From the Ceylon name, *Nelumbo*.)

Calyx petaloid, of 4—6 sepals. Petals numerous. Carpels numerous, deeply immersed in the upper surface of a turbinate receptacle or torus, 1-seeded. Seed large, round, solitary.

N. luteum Willd.: anthers produced into a linear appendage at the extremity; leaves peltate, orbicular, very entire. *Cyamus flavicomus Salisb. Pursh.* *C. luteus Nutt.*

Lakes. N. Y. to Car. W. to Miss. July. ♀.—*Leaves* a foot or more in diameter, alternate, peltate. *Peduncles* very long, more or less scabrous. *Flowers* yellowish-white, and larger than that produced by any plant in North America, except *Magnolia macrophylla*. *Water Chinquepin*.

ORDER VIII. NYMPHÆACEÆ.—WATER-LILIES.

Sepals and petals numerous, imbricated, passing gradually into each other. Stamens numerous, inserted above the petals into the disk; filaments petaloid; anthers adnate. Disk large, fleshy, surrounding the ovary more or less. Ovary with radiating stigmas. Fruit many-celled, indehiscent. Seeds very numerous.—Herbs with peltate or cordate fleshy leaves, arising from a prostrate trunk, growing in quiet waters.

1. NYMPHÆA. *Linn.*—White Water-lily.

(From its imbibing the water, as the *Nymphs* were supposed to do.)

Sepals 4, at the base of the disk. Petals and stamens inserted into the fleshy disk surrounding the ovary.

N. odorata Ait.: leaves, floating, orbicular-cordate, very entire; nerves and veins prominent; stigma 16—20 rayed; rays incurved.

Ponds. Can. to Car. June, July. ♀.—There are two varieties of this plant. One has the sinus and lobes of the leaves more or less acute; the flowers white (*N. alba Mich.*) The other is smaller, has purplish leaves and peduncles, and rose-colored flowers, (*N. minor D. C.*) Both have the leaves on very long petioles, coriaceous, and lying on the surface of the water. Flowers 3—4 inches in diameter, very odorous.

White Pond Lily.

2. NUPHAR. *Smith.*—Yellow Water-lily.

(A name applied by Dioscorides.)

Sepals, petals, and stamens, inserted at the base of the disk.

1. *N. lutea Smith*: calyx with 5 sepals; stigma entire, 16—20 rayed, deeply umbilicate; leaves cordate, oval, lobes approximate; petioles 3-sided, acute-angled. *Nymphæa lutea Linn.*

In water. N. S. and N. to lat. 64°. June. ♀.—*Sepals* very obtuse. *Petal's* much smaller, truncate. Confounded by some of our botanists with the next species, from which it is quite distinct.

Small-flowered Yellow Water-lily.

2. *N. advena Ait.*: calyx 6-sepalled; petals numerous, small; leaves cordate, with divaricate lobes; petioles semicylindrical; fruit sulcate. *Nymphæa advena Mich.*

In water. Can. to Car. W. to Oregon. June, July. ♀.—*Leaves* upright or floating. *Flowers* large, yellow.

Common Yellow Water-lily.

3. *N. Kalmiana Ait.*: calyx 5-leaved; stigmas incised, 8—12-rayed; leaves cordate, submersed, with approximate lobes; petioles terete.—*Nymphæa lutea* var. *Kalmiana Mich.*

In water. N. S. and Can. July, Aug. ♀.—*Leaves* and *flowers* small. Torrey considers it a variety of *N. lutea*.

Kalm's Water-lily.

ORDER IX. PAPAVERACEÆ.—POPPYWORDS.

Sepals 2, rarely 3, deciduous. Petals 4 or 6, usually crumpled before expansion, occasionally none. Stamens numerous;

anthers 2-celled, innate. Ovary 1; style short or none. Fruit 1-celled, either pod-shaped or capsular, with several placentæ. Seeds numerous, with a minute embryo.—Herbaceous plants or shrubs, often with a milky juice. Leaves alternate, more or less divided. Peduncles long, 1-flowered.

1. ARGEMONE. *Linn.*—Prickly Poppy.

(From the Greek *αργεμα*, a disease of the eye; supposed to be relieved by this plant.)

Petals 4—6. Stamens many. Style scarcely any. Stigma 4—7-lobed; lobes radiately reflexed, persistent. Capsules obovate, spinose, 1-celled, 5-valved; valves opening at the apex.

A. Mexicana *Linn.*

Banks of streams. Penn. to Flor. W. to the Platte River. June, July. ①.—*Stem* 2—3 feet high, branching, armed with prickles. *Leaves* sessile, pinnatifid, repand-sinate, margins and veins beneath armed with spines. *Flowers* axillary and terminal, large, yellow or white. Probably introduced.

Common Prickly Poppy.

2. SANGUINARIA. *Linn.*—Blood-root.

(From the Latin *sanguis*, blood; in allusion to the color of its juice.)

Sepals 2, deciduous. Petals 8—12. Stamens 24. Stigmas 2, connate. Capsule oblong, 1-celled, 2-valved, ventricose; valves deciduous.

S. Canadensis *Linn.*

Woods. Throughout the U. S. and Can. April, May. ②.—*Root* tuberous, affording a bitter orange-colored juice, which contains a vegeto-alkaline principle. *Leaves* radical, reniform or cordate. *Flowers* large, white, solitary. Medicinal. Emetic, &c. *Big. Med. Bot.* i. 75. *Tully* on *Sanguinaria*.—*Am. Med. Recorder*, vol. xiii.

Red Puccoon. Blood-root.

3. MECONOPSIS. *D. C.*—Meconopsis.

(From the Greek *μηκων*, a poppy, and *οψις*, appearance; on account of its resemblance to the poppy.)

Petals 4. Stamens many. Style short. Stigma 4—6, radiating, convex, free. Capsules obovate, 1-celled; valves 4—6, dehiscent at the apex.

1. *M. diphylla* *D. C.*: leaves 2, sessile, hairy; lobes rounded and obtuse; capsules 4-valved, echinate. *Chelidonium diphyllum* *Mich. Pursh.* *Stylophorum diphyllum* *Nutt.*

Woods. Penn to Miss. S. to Tenn. May. ② —*Stem* a foot high. *Leaves* glaucous. *Flowers* yellow. Abundant in Indiana. *Two-leaved Meconopsis.*

2. *M. petiolata* *D. C.*: leaves 2—3, on long petioles, smoothish: capsules echinate. *Stylophorum petiolatum* *Nutt.*

Alleghany Mountains. *Hooker.* Shady woods on the banks of the Ohio.—

Nutt. May—July. 4.—*Stem* 12—18 inches high. *Leaves* large, smooth and glaucous beneath, with 5—7 large lobes. *Flowers* large, yellow.
Stalk-leaved Meconopsis.

4. CHELIDONIUM. *Linn.*—Celandine.

(From the Greek *χελιδων*, a swallow; its flowers appearing about the same time as that bird.)

Sepals 2, glabrous. Petals 4. Stamens many. Capsule elongated, (resembling a silique,) 2-valved, 1-celled; valves dehiscent from the base to the apex. Seeds several, furnished with a glandular crest.

C. majus Linn.: leaves pseudo-pinnate, glaucous; segments ovate, crenate-lobed; pedicels somewhat umbellate; petals elliptic, entire.

Fields and waste places. N. S. May—Oct. 4.—*Stem* 1—2 feet high, branched. *Flowers* yellow. *Capsule* about an inch long, narrow, sublinear. Plant full of an orange juice. Introduced from Europe. *Common Celandine.*

5. PAPAVER. *Linn.*—Poppy.

(From the Celtic *Papa, pap*; being added to the food of children to induce sleep.)

Sepals 2, concave, caducous. Petals 4. Stigma sessile, radiate, persistent. Capsule obovoid, 1-celled, opening by minute valves under the margin of the stigma.

P. dubium Linn.: leaves pseudo-pinnate; segments lance-oblong, pinatifidly incised, sessile, decurrent; stem with spreading hairs; peduncles with appressed bristly hairs; capsule obovoid-oblong, smooth.

Cultivated grounds. Downington, Penn. *Darlingt.* May. ①.—*Stem* 1—2 feet high. *Flowers* on long flexuous peduncles, pale red. Introduced.
Field Poppy.

ORDER X. SARRACENIACEÆ.—SARRACENIADS.

Calyx 4—6-leaved, much imbricated, without a corolla; or consisting of 5 persistent sepals, often having a 3-leaved involucre on the outside, and 5 unguiculate, concave petals. Stamens numerous; anthers oblong, adnate. Ovary, 2—5-celled; style simple, truncate, or expanded into a large peltate plate with 5 stigmatic angles. Capsule with 3—5 cells. Seeds minute, very numerous.—Herbs found in bogs. Leaves radical, with a hollow urn-shaped petiole, at whose apex the lamina is articulated, and which fits like a lid. Scapes each bearing one large flower.

SARRACENIA. *Linn.*—Side-saddle Flower.

(In honor of *Dr. Sarrazin*, who resided in Quebec, and sent the plant to Tournefort.)

Sepals 5, with a 3-leaved involucre. Petals 5. Stigma very large, peltate, 5-angled. Capsule 5-celled.

S. purpurea *Linn.*: leaves much shorter than the scape, inflated, contracted at the mouth, having a broad arched lateral wing; appendix erect, broad-cordate, undulate, not mucronate.

Sphagnous swamps. Can. to Car. W. to Lake Superior. June, July. ♀.—*Scape* 1—2 feet high, with a solitary terminal purple flower. A variety with yellow flowers has been found in Northampton, Mass. and in Seneca co. N. Y. *Common Side-saddle Flower.*

ORDER XI. FUMARIACEÆ.—FUMEWORTS.

Sepals 2, deciduous. Petals 4, cruciate, very irregular. Stamens 4, distinct, or 6, in 2 parcels, opposite the outer petals, very seldom all separate. Ovary free, 1-celled. Stigma with 2 or more points. Fruit either an indehiscent 1 or 2-seeded nut, or a 2-valved many-seeded pod. Seeds horizontal, with fleshy albumen.—Herbs with brittle stems and a watery juice. Leaves usually alternate, many-cleft, often with tendrils.

1. FUMARIA. *Linn.*—Fumitory.

(From the Latin *fumus*, *smoke*; perhaps in allusion to the effect of its juice and odor on the eyes.)

Calyx of 2 sepals. Petals 4, one gibbous or spurred at the base. Pouch ovate or globose, 1-seeded, indehiscent, not pointed with a style.

F. officinalis *Linn.*: stem sub-erect; leaves bipinnate and cleft with linear segments; racemes rather loose; fruit-bearing pedicels erect, twice as long as the bracts; pouch globose; smooth, somewhat retuse.

Near cultivated ground. N. Y. to Car. May—July, Aug. ①.—*Stem* a foot high. *Flowers* rose-colored. Introduced from Europe. *Common Fumitory.*

2. DICENTRA. *Borckh.*—Dicentra.

(From the Greek *δύς* twice, and *κέντρον* a spur.)

Petals 4, 2 outer ones equally spurred or gibbous at base. Pod 2-valved, many-seeded.

1. *D. Cucullaria* *Torr.*: scape naked; raceme, simple, 1-sided; wing of the inner petals short; spurs straight, divaricate, acute. *Dicytra Cucullaria* *D. C.* *Fumaria Cucullaria* *Linn.*

Shady hills. Throughout Can. and N. S. W. to Miss. April, May. ♀.—*Root* bulbous. *Scape* 6—8 inches high. *Leaves* 2, tritermately decomposed.

Flowers large, white, tinged with yellow and purple. *Spurs* frequently much divaricated. *Dutchman's Breeches.*

2. *D. Canadensis Torr.*: scape naked, raceme simple, 4—6 flowered; spurs short, rounded; wing of the inner petals projecting beyond the summit. *Diclytra Canadensis D. C. Corydalis Canadensis Goldie.*

Rocky woods. Can. to N. Y. W. to Ken. April. ♀.—*Root* tuberous. *Scape* 5—6 inches high, rising above the leaves, which usually have the segments longer and narrower than those of the preceding species. *Flowers* fragrant, white, tinged with pale purple. *Turkey Corn.*

3. *D. eximia Torr.*: scape naked; raceme compound, the branches cymulose; spurs short, obtuse, somewhat incurved; wings of the petals projecting beyond the summit; leaves numerous. *Diclytra eximia D. C. Corydalis formosa Pursh.*

Mountains. Yates County, N. Y. *Sartwell*. S. to Car. April—July. ♀.—*Root* bulbous. *Scape* 8—12 inches high. *Leaves* numerous. *Flowers* pendulous, reddish purple. *Choice Dicentra.*

3. CORYDALIS. *D. C. Corydalis.*

(From *χορδαλις*, the Greek name of *Fumitory*.)

Petals 4, one spurred at base. Pod 2-valved, compressed, many-seeded.

1. *C. glauca Pursh.*: stem erect, branched; leaves glaucous, decomposed; segments cuneate, trifid; bracts oblong, acute, shorter than the pedicels; pod linear, flat, scarcely torulose.—*Fumaria glauca Curtis.*

Rocky woods. Can. N. to 64° S. to Car. W. to Miss. May—July. ① or ②.—*Stem* 1—2 feet high. *Leaves* 1—3 inches long, the lower ones on long petioles. *Flowers* variegated with red yellow and green.

Glaucous Corydalis.

2. *C. aurea Willd.*: stem branched, diffuse; leaves glaucous, doubly pinnate; lobes oblong, acute; bracts lanceolate or ovate, acuminate, toothed; pod terete, torulose. *Fumaria aurea Muhl.*

Shady rocks. Throughout Can. and N. to lat. 64°. W. to Rocky Mountains, and S. to S. Car. April—August. ① or ②.—*Stem* 8—12 inches high, branching, slender. *Racemes* terminal and opposite the leaves. *Flowers* small, bright yellow. *Golden Corydalis.*

4. ADLUMIA. *Raf.*—Climbing *Fumitory*.

(In honor of *Mr. John Adlum*, a distinguished cultivator of the vine.)

Petals 4, united in a spongy monopetalous corolla, persistent, and with two protuberances at base. Pod 2-valved, many-seeded.

A. cirrhosa Raf.: *Corydalis fungosa Pers. Fumaria fungosa Willd.*

Woods. Can. to Penn. Catskill mountains. July—September. ②.—*Stem* 8—15 feet long, slender, branching and climbing. *Leaves* pinnately divided, the midrib twining like a tendril. *Flowers* in compound axillary racemes, pale violet or nearly white. *Climbing Fumitory.*

ORDER XII. CRUCIFERÆ.—CRUCIFERS.

Sepals 4, deciduous, imbricate or valvate. Petals 4, cruciate, alternate with the sepals. Stamens 6, of which two are shorter,

solitary, and opposite the lateral sepals, and four longer, in pairs, opposite the anterior, and posterior sepals. Disk with various green glands between the petals and the stamens and ovary. Ovary superior, 1-celled. Stigmas 2. Fruit a silicule or silique (pouch or pod,) rarely 1-celled and valveless, generally 2-celled and 2-valved, 1 or many-seeded, indehiscent or opening by the two valves. Seeds attached in a single row by a cord to each of the placentæ, generally pendulous, without albumen; the embryo with the radical folded upon the cotyledons.—Herbaceous plants. Leaves alternate. Flowers usually yellow or white, in corymbs or racemes.

I. SILICULOSÆ.—*Pod short and broad (pouch.)*

1. CAKILE. *Linn.*—Sea Rocket.

(An old Arabic word, applied probably to this or some allied genus.)

Pouch 2-jointed, compressed; the upper joint ensiform or ovate. Seed solitary in the cells; upper erect, lower (sometimes abortive) pendulous.

C. Americana Nutt.: leaves fleshy, obovate, attenuate at base, more or less toothed and lobed; joints of the pouch 1-seeded; the uppermost one ovate, acute. *C. maritima*, var. *Americana* Torr. *Bunias maritima* Pursh. *B. edentula* Big.

Sea shores. Can. to Geor. Shores of the Great Lakes. July, Aug. ①.—*Plant* fleshy, branched and decumbent. *Flowers* corymbed, pale purple.
American Sea Rocket.

2. THLASPI. *Linn.*—Penny Cress.

(From the Greek *θλαω*, to flatten; probably on account of its compressed seed vessels.)

Pouch emarginate at the apex; valves boat-form, winged on the back; cells 2—many-seeded. Petals equal. Calyx equal at base.

1. *T. arvense* *Linn.*: leaves oblong-sagittate, coarsely toothed, smooth; pouch suborbicular, shorter than the pedicel, its wings dilated longitudinally.

Stony fields. Can and N. S. W. to Miss. June. ①.—*Stem* a foot high, erect, somewhat branched. *Leaves* smooth. *Flowers* small, white, in a raceme. *Pouch* very large, with dilated wings. Perhaps introduced.

Penny Cress.

2. *T. tuberosum* Nutt.: leaves rhombic-ovate, obsoletely toothed, smooth, sessile; radical ones upon long petioles; stem pubescent, very short and simple; root tuberous; pouch suborbicular, short.

Penn. Nutt. April, May. ①.—*Stem* 4—5 inches high. *Flowers* large, rosaceous.
Tuberous Penny Cress.

3. CAPSELLA. *D. C.*—Shepherd's Purse.(The diminutive of *capsula*; a little capsule or box.)

Pouch triangular, wedge-form at base; valves boat-form, not winged; cells many-seeded.

C. Bursa-pastoris D. C.: radical leaves pinnatifid.

Cultivated grounds. Throughout the U. S. April—Oct. ①.—*Stem* from 3 inches to 1—2 feet high. *Radical leaves* more or less pinnatifid, hairy; *cauline ones* oblong, toothed, sagittate at base. *Flowers* small, white, in terminal spiked racemes. Introduced from Europe. *Common Shepherd's Purse.*

4. DRABA. *Linn.*—Whitlow Grass.(From the Greek *δραβη*, *acrid*, as are the leaves of many of this genus.)

Pouch sessile, oval or oblong; valves flat or slightly convex. Seeds many, not margined. Calyx equal. Petals entire. Stamens without teeth.

1. *D. Caroliniana Wall.*: stem leafy and hispid at the base, naked and smooth at the top; leaves ovate-roundish, entire, hispid; pouch linear, smooth, longer than the pedicel. *D. hispidula Mich.*

Sandy fields. Conn. to Geor. W. to Miss. April, May. ①.—*Stems* 2—4 inches high. *Leaves* clustered on the lower part of the stem, very hairy. *Pouch* 4—6 lines long, linear-lanceolate. *Flowers* white. *Carolina Whitlow Grass.*

2. *D. arabisans Mich.*: stem leafy, somewhat branched, subpubescent; leaves sparingly toothed; radical ones wedge-lanceolate; *cauline ones* oblong; pouch smooth, lanceolate-oblong, longer than the pedicel.

Rocks. Can. to Virg. W. to Miss. May, June. ②.—*Stems* 6—12 inches high. *Pouch* half an inch long, erect, acuminate, twisted. *Flowers* white. *Bunch-flowered Whitlow-grass.*

5. EROPHILA. *D. C.*—Erophila.(From the Greek *ερ*, *ηρος*, *spring*, and *φιλλεω* to *love*; in allusion to its early flowering.)

Pouch oval or oblong; valves flat. Seeds many, not margined. Calyx equal. Petals 2-parted. Stamens without teeth.

E. vulgaris D. C.: pouch elliptic, shorter than the pedicel; scape 5—15 flowered. *E. Americana D. C. Draba verna Linn.*

Fields. Can. to Virg. March—May. ①.—*Scape* 2—6 inches high, naked. *Leaves* lanceolate, somewhat toothed, hairy. *Flowers* minute, white. *Pouch* on long pedicels, with a very short style. Specimens of this plant obtained from my friend, Dr. Matthew Stevenson, of Washington co. N. Y. agree in all respects with the foreign *E. vulgaris*, as do also those which I have collected elsewhere. *Common Whitlow Grass.*

6. COCHLEARIA. *Linn.*—Scurvy Grass.(From the Latin, *cochlear*, a spoon; from a fancied resemblance in the leaves.)

Pouch sessile, ovate, globose, or oblong; valves, ventricose. Seeds many, not margined. Calyx equal at base, spreading. Petals entire. Stamens without teeth.

C. Armoracia, Linn.: root large, fleshy; radical leaves on long petioles, oblong, crenate; cauline long-lanceolate, serrate or entire; pouch oblong; stigma dilated, nearly sessile.

Waste grounds. June. ④.—*Root* large and very pungent to the taste. *Stem* 2—3 feet high. *Flowers* white, in elongated racemes. Introduced, and extensively cultivated. Used as a condiment. *Horse Radish*.

7. LEPIDIUM. Linn.—Pepper-grass.

(From the Greek λεπίς, a scale; in allusion to the form of the pouch.)

Pouch ovate or somewhat cordate; valves keeled or rarely ventricose, dehiscent; cells 1-seeded. Seeds somewhat triquetrous or compressed. Petals equal.

1. *L. Virginicum* Linn.: stem branched; radical leaves pinnatifid: cauline linear-lanceolate, serrate, smooth: stamens often 2; pouch orbicular, flat, emarginate, shorter than the pedicel. *Thlaspi Virginianum* Poir.

Sandy fields. Can. to Louis. W. to Miss. June—Oct. ①.—*Stem* a foot high, branched above. *Flowers* minute, white. *Pouch* about 2 lines long, slightly emarginate. *Wild Pepper-grass*.

2. *L. campestre* Brown: cauline leaves sagittate, toothed; pouch ovate, winged, rough with minute scales, emarginate; style scarcely longer than the notch. *Thlaspi campestre* Linn.

Waste places. Long Island, Staten Island, and elsewhere in the U. S. June, July. ① or ②.—*Stem* a foot high, erect, simple or paniculately branched above. *Racemes* much elongated in fruit. *Flowers* white. Introduced.

Field Pepper-grass.

3. *L. Smithii* Hook: cauline leaves sagittate, toothed; pouch ovate, emarginate, winged, smooth or minutely scaly on the back; style much exerted beyond the notch. *L. hirtum* Beck Bot. 1st Ed.

Fields near New Brunswick, N. J. June. ②?—*Stem* 12—18 inches high, very leafy. *Lower leaves* petioled, and somewhat pinnatifid; cauline sub-clasping, sagittate, toothed, covered with a whitish pubescence. *Flowers* in dense hairy racemes. *Pouch*, in my specimens, scabrous, emarginate, with a style about half its length. Perhaps introduced. *Rough Pepper-grass*.

8. CAMELINA. Crantz.—Camelina.

(From the Greek χαμαι, dwarf or humble, and λινον, flax; on account of a fancied resemblance in the plants.)

Pouch obovate or subglobose; valves ventricose, dehiscent with part of the style; cells many-seeded. Style filiform. Seeds oblong, not margined.

C. sativa D. C.: pouch obovate, pyriform, margined, tipped with the pointed style; leaves roughish, sub-entire, lanceolate, sagittate; flowers numerous, in corymbs. *Myagrum sativum* Linn.

Cultivated grounds. N. Y. and Penn. May, June. ①.—*Stem* 2—3 feet high, paniced above. *Flowers* numerous, corymbose, pauculate, small yellow. *Pouches* large, on long slender pedicels. Introduced from Europe.

Gold of Pleasure.

9. SUBULARIA. *Linn.*—Awl-wort.

(From the Latin *subula*, an *awl*; the leaves being subulate, or awl-shaped.)

Pouch oval; dissepiment elliptical; valves convex; cells many-seeded. Stigma sessile. Cotyledons incumbent, linear, 2-plicate.

S. aquatica Linn.

Margins of ponds. Maine. July. 2.—*Scape* 2—4 inches high. *Leaves* few, radical, awl-shaped, 1—3 inches long. *Flowers* small, white, in corymbs. *Valves* more convex or turgid than in *Draba*. *Water Awl-wort.*

10. LUNARIA. *Linn.*—Honesty.

(From the Latin *luna*, the *moon*; in allusion to the form and appearance of its pouch.)

Pouch pedicellate, elliptic or lanceolate; valves flat. Funicles long, adhering to the dissepiment. Calyx somewhat bisaccate. Petals nearly entire. Stamens not toothed.

L. biennis D. C.: pouch elliptical, obtuse at each end. *L. annua. Linn. Nutt.*

Fields. Penn. May, June. ②.—Naturalized near Philadelphia. *Nutt. Biennial Honesty.*

II. SILIQUOSÆ.—*Pod mostly long and narrow.*11. DENTARIA. *Linn.*—Tooth-wort.

(From the Latin *dens*, a *tooth*; on account of the tooth-like scales of the root.)

Pod narrow-lanceolate, with a long tapering style; valves flat, nerveless, often opening elastically. Seeds ovate, not margined, in one row.

1. *D. laciniata Muhl.*: cauline leaves 3, verticillate, on short petioles; ternate; leaflets 3-parted; segments linear, entire, or coarsely toothed; root moniliform. *D. concatenata Mich.*

Woods. Throughout the U. S., but rather rare. April, May. 2.—*Stem* 6—12 inches high, simple. *Flowers* in loose terminal racemes, pale rose-colored or white. *Petals* wedge-obovate, attenuated below. *Pod* an inch long. *Common Tooth-wort.*

2. *D. diphylla Mich.*: cauline leaves mostly 2, on short petioles, ternate; leaflets ovate-oblong, unequally and coarsely serrate or lacinate.

Woods. Throughout Can. and U. S. May. 2.—*Stem* 6—10 inches high. *Leaves* large, opposite or closely approximate above the middle of the stem. *Flowers* white or pale purple, larger than in the preceding species. *Pod* about an inch long. *Pepper-root.*

3. *D. heterophylla Nutt.*: stem 2-leaved; leaves ternate, petiolate; leaflets linear, sub-lanceolate, acute, entire, margin rough, ciliate; radical leaves ovate-oblong, incisely and coarsely toothed.

Woods. Penn. to Ken. June. 2.—*Root* tuberous. *Corymb* about 9-flowered. *Flowers* pale purple, about as large as those of *Cardamine pratensis*. The smallest of the genus. *Small Tooth-wort.*

4. *D. maxima* Nutt.: leaves many, alternate, on long petioles, ternate; leaflets sub-oval, incisely and acutely toothed, lateral ones lobed; axils naked; racemes lateral and terminal.

Woods. In the western part of N. Y. and Penn. Nutt. Rare. June. ④.—*Tubers* concatenate. *Stem* sometimes nearly 2 feet high. *Leaves* 5—7, remote, the margin a little roughened; leaflets broad. *Flowers* in racemes, pale purple.
Tall Tooth-wort.

12. BARBAREA. Brown.—Winter-cess.

(From *St. Barbara*, to whom this plant was formerly dedicated.)

Pod 4-angled and somewhat 2-edged; valves awnless at the apex. Seeds in a single row. Calyx erect, equal at base.

1. *B. vulgaris* Brown: lower leaves lyrate, the terminal lobes roundish; upper ones sessile, obovate, toothed; pod 4-sided, tapering into a slender style. *Erysimum Barbarea* Linn.

Pastures and wet grounds. N. S. N. to the Arctic Regions. Hook. May—Sept. ④.—*Stem* 1—2 feet high, smooth, branched above. *Flowers* in dense racemes, small, yellow.
Bitter Winter-cess.

2. *B. præcox* Brown: lower leaves lyrate, upper ones pinnatifid; segments linear-oblong, entire; pod linear, obtuse, compressed. *Erysimum præcox* Smith.

Waste grounds. Can. and Conn. Eaton. April—Sept. ②.—*Stem* 1—2 feet high, more slender than the last. *Flowers* smaller; *Pods* longer.
Early Winter-cess.

13. ARABIS. Linn.—Wall-cess.

(Supposed to have received this name, because originally an Arabian genus.)

Pod linear, plane; valves flat, 1-nerved in the middle. Seeds in one row in each cell, oval or orbicular, compressed. Cotyledons flat, accumbent.

1. *A. sagittata* D. C.: leaves subdentate, rough, with the pubescence often branched; radical ones ovate or oblong, attenuated into a petiole; cauline lanceolate, sagittate-cordate; pedicels of the length of the calyx; pods stiffly erect.

var. *ovata* D. C.: leaves rough; radical ones ovate, toothed; cauline clasping. *A. ovata* Poir. *Turritis ovata* Pursh.

var. *oblongata* D. C.: leaves rough, radical ones ovate-oblong, toothed; cauline sagittate-amplexicaul. *Turritis oblongata* Raf.

Rocks. Can. (lat. 63° N.) to Virg. W. to Oregon. ②.—*Stem* 12—18 inches high, simple. *Flowers* small, white. A very variable plant.

Sagittate Wall-cess.

2. *A. hirsuta* D. C.: leaves dentate, pubescent or scabrous; radical ones obovate-oblong, tapering into a petiole; cauline ovate-lanceolate; pedicels as long as the calyx; pod erect. *Turritis hirsuta* Jacq.

Conn. Robbins. Alleghany Mountains. Hook. June. ②.—*Stem* 6—12 inches high, hairy. *Flowers* small, white. A specimen of this plant, gathered in Connecticut by Dr. Robbins, agrees very well with the foreign one, from which it seems to me our *A. sagittata* is quite distinct.
Hairy Wall-cess.

3. *A. lyrata* Linn.: stem somewhat branched, hairy at base; radical leaves lyrate-pinnatifid, often pilose; those of the stem linear or spatulate, entire, smooth; pedicels somewhat spreading; pod rather erect and nearly straight. *Sisymbrium araboides* Hook.

On rocks. Throughout the N. S. and Can. W. to the Rocky Mountains. April—June. ②.—Stem 8—12 inches high. Flowers large, white, or rarely pale purple. *Lyre-leaved Wall-cress.*

4. *A. lævigata* D. C.: erect, glabrous and glaucous; radical leaves, obovate, petioled, sinuate-dentate; cauline linear, sessile, very entire; pod long and narrow, recurved-pendulous; seeds margined. *Turritis lævigata* Willd.

Rocky places. N. S. May. ②.—Stem 1—3 feet high. Flowers few, small, in corymbed racemes. Pod 2 inches long, linear, somewhat tortuous, tapering at the extremity into a very short style. *Smooth Wall-cress.*

5. *A. dentata* Torr. & Gr.: rough with a stellate pubescence; radical leaves obovate, tapering at base into a petiole which is as long as the lamina, irregularly dentate; cauline oblong, clasping; pod short, spreading; seeds slightly margined.

Sandy grounds. N. Y. to Miss. and Arkansas. May. ①.—Stem a foot or more high, slender, decumbent at base. Leaves scabrous beneath. Flowers dull white. *Toothed Wall-cress.*

6. *A. heterophylla* Nutt.: nearly smooth; radical leaves spatulate, toothed; upper ones linear, sessile, entire; pod long and spreading; petals linear-oblong, exceeding the calyx.

Maine or N. H. Nutt. ②.—Radical leaves somewhat hairy. Pod about 3 inches long. *Heterophyllous Wall-cress.*

7. *A. Canadensis* Linn.: cauline leaves sessile, oblong-lanceolate, acuminate, somewhat toothed; pedicels thrice as long as the calyx, pubescent, reflexed in fruit; pod pendulous, subfalcate, nerved; seeds with a broad wing. *A. falcata* Mich. Pursh. *A. mollis* Raf.

Rocky situations. Can. to Flor. W. to Miss. June. ②.—Stem 1—3 feet high. Flowers white, in long terminal racemes. Pod very long. *Sickle Pod.*

14. CARDAMINE. Linn.—Bitter-cress.

(From the Greek καρδια, the heart, and δαμαω, to fortify; on account of its supposed strengthening qualities.)

Pod linear; valves flat, nerveless, often opening elastically. Seeds ovate, not margined; funicle of the hilum slender.

* *Leaves undivided.*

1. *C. rhomboidea* D. C.: root tuberous; leaves ovate-rhomboid, obscurely repand-toothed, smooth; lower ones on long petioles. *Arabis rhomboidea* Pursh. Pers.

Low grounds. From Hudson's Bay to Geor. W. to the Rocky Mountains. May, June. ②.—Stem 9—18 inches high, erect, smooth, simple. Flowers in terminal racemes, large, white. *Spring-cress.*

2. *C. rotundifolia* Mich.: root fibrous; stem weak, procumbent; leaves suborbicular, subdentate, smooth, petioled; pod spreading, slender, with a long style. *C. rhomboidea* var. Torr. & Gr.

Wet grounds near springs, Can. to Car. July. ♀.—*Stem* 6—15 inches high, decumbent. *Flowers* in terminal racemes, white, or yellowish, half the size of the preceding. The taste of the root is rather bitter than acrid, as in that of *C. rhomboidea*. Quite distinct. *Round-leaved Cardamine*.

3. *C. bellidifolia* Linn.: leaves glabrous, somewhat fleshy; radical ones petioled, ovate, entire; cauline few, entire, or somewhat 3-lobed; pod erect; stigma subsessile. *C. rotundifolia* Big.

Highest summit of the White Mountains, Rocky Mountains, and throughout Arctic America. July. ♀.—*Plant* 2—4 inches high. *Flowers* in a corymbed raceme. *Petals* cuneiform, twice as long as the calyx, white. *Pod* an inch long, surmounted by a short style. Allied to *C. alpina*. *Mountain Cardamine*.

** *Leaves divided*.

4. *C. pratensis* Linn.: leaves pinnate; leaflets of the radical ones roundish; of the cauline, linear or lanceolate, entire; flowers large, in a terminal corymb; style very short, nearly as thick as the pod; stigma capitate.

Swamps. Arct. and N. W. America to Western N. Y. June. ♀.—*Stem* 12—18 inches high. *Flowers* purplish, large. *Pod* linear, an inch long. This species can be readily distinguished by its large flowers and thick style.

Common Bitter Cress.

5. *C. hirsuta* Linn.: leaves pinnate; leaflets of the radical ones petioled, mostly rounded; of the cauline ovate or linear, toothed or entire; petals small, oblong-cuneate; stigma minute, subsessile. *C. Pennsylvanica* Muhl. D. C. *C. Virginica* Mich.

Wet grounds. Throughout the U. S. and Can. to Arct. and N. W. Amer. July. ①—From 4 inches to a foot or more in height. *Leaves* hairy or smooth. *Flowers* small, white. A very variable species. *American Water Cress*.

6. *C. teres* Mich.: leaves sublyrate-pinnatifid; segments oval-oblong, the terminal one somewhat 3-lobed; pod short, erect, terete.

Low grounds. N. Eng. to N. J. *Pursh*. June, July. ♀.—*Stem* slender, erect, branching. *Pod* on a short pedicel. De Candolle thinks this may belong to his genus *Nasturtium*; while Torrey and Gray place it, with a mark of doubt, in the genus *Sisymbrium*. *Terete Cardamine*.

15. NASTURTIUM. *Brown*.—Cress.

(From *Nasus tortus*, a convulsed nose, an effect supposed to be produced by the acrid and pungent quality of this plant.)

Pod rounded (sometimes short.) Stigma sub-2-lobed. Valves concave, nerveless, not keeled. Cotyledons accumbent. Calyx spreading.

1. *N. officinale* *Brown*: leaves pinnate; leaflets ovate, subcordate, sinuate-dentate; upper ones pinnatifid. *Sisymbrium Nasturtium* Linn.

In water. Throughout the U. S. and to the N. W. coast. June, July. ♀.—*Stem* decumbent, floating. *Leaves* large. *Flowers* white, corymbed. *Pod* about an inch long. Esteemed as a salad. *Water Cress*.

2. *N. palustre* D. C.: root fibrous; leaves lyrate-pinnatifid; lobes confluent, unequally toothed, smooth; petals as long as the calyx; pod obtuse at both ends, turgid. *Sisymbrium palustre* Willd.

Wet places, throughout the U. S. and to the shores of the Arctic sea. July. ①.—*Stem* 18 inches high, mostly erect, branched. *Leaves* glabrous, all more or less pinnatifid. *Flowers* numerous, minute, yellow. *Pod* short, turgid.

Marsh Cress.

3. *N. sylvestre* Brown: leaves pinnate; leaflets lanceolate, cut, the uppermost ones entire. *Sisymbrium sylvestre* Linn. *S. vulgare* Pers.

Banks of the Delaware, near Philadelphia. Nutt. July 2.—*Root* creeping. *Stem* a foot high, angular, branched. *Flowers* yellow, larger than those of the preceding. Introduced from Europe. *Creeping Cress.*

4. *N. amphibium* Brown: root fibrous; leaves oblong-lanceolate, lyrate-pinnatifid or serrate; petals longer than the calyx; pod elliptical, tipped with the mucronate style. *Sisymbrium amphibium* Linn.

Wet places. Throughout the U. S. and Can. May—July. 2.—*Stem* 1—2 feet high, branched. *Flowers* yellow, minute, in a long raceme. Very variable in the character of its leaves. *Water Radish.*

5. *N. hispidum* D. C.: leaves pinnatifidly lobed or runcinate-pinnatifid; lobes rather obtusely toothed; pod ovoid, tumid, pointed with the distinct style, about half as long as the pedicel, petals rather shorter than the calyx. *Sisymbrium hispidum* Poir.

Wet places. Conn. N. Y. Penn. July, Aug. 2.—*Stem* 2—4 feet high, much branched above. *Leaves* more or less pinnatifid. *Flowers* yellow, in numerous paniced racemes. *Hispid Cress.*

6. *N. natans* D. C.: emerged leaves oblong-linear, entire; immersed ones cut into many capillary segments; petals scarcely longer than the calyx; pod obovate, globose.

In water. Montreal to New Orleans: rare. July. 2.—*Stem* long, submerged. *Lower leaves* finely divided; middle ones often pinnatifid; emerged ones lanceolate, undivided, serrate. *Flowers* pale yellow, small. According to Torrey and Gray the American plant is a variety of the foreign one.

Floating Cress.

16. TURRITIS. Dill.—Tower Mustard.

(From the Latin *turris*, a tower; on account of the pyramidal form of the plant.)

Pod linear; the valves plane. Seeds in a double row in each cell.—Flowers white or rose-color.

T. stricta Graham: smooth; stem straight and erect; cauline leaves linear-lanceolate clasping and sagittate, sparingly toothed; radical petioled, narrow-spatulate, remotely denticulate; pods linear, elongated and (like the flowers) strictly erect.

On rocks. Jefferson and Chenango counties, N. Y. W. to the Rocky Mountains. May. ②. *Stem* 1—2 feet high, simple. *Flowers* in a terminal raceme, white. *Pod* 2—3 inches long. *Straight Tower Mustard.*

17. CHEIRANTHUS. R. Brown.—Wall Flower.

(Said to be derived from the Arabic *kheyry*, not however originally applied to this genus.)

Pod terete or compressed. Stigma 2-lobed or capitate. Inner sepals saccate at the base. Seeds in a single series, ovate, compressed.

C. hesperidoides Torr. & Gr.: smooth; lower leaves lyrate-pinnatifid; upper ovate-lanceolate, unequally and sharply serrate; pedicels as long as the calyx; limb of the petals obovate, entire. *Hesperis pinnatifida* Mich.

Banks of streams. Western Penn. to Ken. and Arkansas. May—July. ②.—
Stem 1—3 feet high, simple or branched. Flowers in racemes, pale purple, small.
Pods about an inch and a half long. Rocket-like Wall Flower.

18. SISYMBRIUM. *All.*—Sisymbrium.

(From the Greek *σισυμβριον*, a name given by the ancients to some plant allied to this.)

Pod roundish, sessile upon the disk. Stigmas 2, somewhat distinct, or connate in a head. Calyx equal at base. Stamens without teeth. Seeds ovate or oblong.

1. *S. officinale* D. C.: leaves runcinate and with the stem hairy; flowers in a long raceme; pod subulate, pressed to the rachis. *Erysimum officinale* Linn.

Road sides. Throughout the U. S. and Can. W. to Columbia river. June—Sept. ①.—Stem 1—3 feet high, branched. Leaves hairy, or nearly smooth. Flowers yellow, minute. Varies much in the form of its leaves. Introduced?
Common Sisymbrium.

2. *S. Sophia* Linn.: leaves bipinnate, smooth or pubescent; segments oblong-linear, cut; petals shorter than the calyx; calyx thrice as short as the pedicel; pod linear, erect.

Sandy places. Can. to Virg. June, July. ①.—Stem 1—2 feet high. Flowers numerous, yellow. Segments of the leaves very narrow. Pod nearly an inch long, very narrow. Flix-weed.

3. *S. canescens* Nutt.: leaves bipinnatifid; lobes oblong or lanceolate, somewhat toothed; petals scarcely exceeding the calyx; pods in elongated racemes, oblong or oblong-linear, shorter (or rarely longer) than the pedicels.

Arct. Amer. to Flor. W. to the Rocky Mountains.—Stem 1—2 feet high. Flowers very small. Pedicels spreading, with the pod often erect. A very variable species. Canescent Sisymbrium.

4. *S. Thalianum* Hook.: leaves obscurely dentate pilose; radical ones numerous, elliptic-oblong, sub-petiolate; cauline lanceolate, sessile; pod ascending, rather longer than the pedicel. *Arabis Thaliana* Linn. Pursh. *A. parviflora* Raf.

Sandy fields or rocks. Mass. to Geor. W. to Ken. April, May. ①.—Stem 6—15 inches high, slender, terete. Leaves mostly in a radical cluster, scarcely an inch long. Flowers small, white. Introduced? Wall Cress.

19. ERYSIMUM. *Linn.*—Hedge Mustard.

(From the Greek *ερωω*, to cure; on account of the supposed virtues of the plant.)

Pod four-sided. Calyx closed. Cotyledons flat, oblong.

E. cheiranthoides Linn.: leaves lanceolate, somewhat toothed and scabrous; pod erect, spreading, twice as long as the pedicel; stigma small, nearly sessile.

Along streams. Throughout the U. S. and Can. W. to the Rocky Mountains. July—Sept. ① or ②.—Stem 1—2 feet high, erect, branched and with the leaves scabrous. Flowers yellow, in long terminal racemes. Pod about an inch long, pointed with a short style. Worm-seed Hedge Mustard.

20. SINAPIS. *Linn.*—Mustard.

(From the Greek *σιναισι*, derived again by Theis from the Celtic *nap*, a *turnip* or *cabbage*.)

Pod roundish; valves bearing nerves. Style small, short, acute. Seeds in one series, subglobose. Calyx spreading.

1. *S. nigra* *Linn.*: lower leaves lyrate; upper lanceolate, entire, petiolate; pod smooth and even, somewhat 4-sided, appressed to the peduncle.

Fields. N. S. June, July. ①.—Stem 2—4 feet high. Flowers yellow. Introduced from Europe. *Black Mustard.*

2. *S. alba* *Linn.*: leaves lyrate, nearly smooth, the terminal lobes large; pod mostly hispid, spreading, shorter than the broad sword-form beak; seeds large, pale.

Waste places. N. S. July. ①.—Stem 1—2 feet high. Flowers yellow, rather large, corymbose. Introduced from Europe. *White Mustard.*

3. *S. arvensis* *Linn.*: leaves lyrate-pinnatifid, rough; pod smooth, many-angled, turgid and knotty, longer than the two-edged beak.

Wet meadows and fields. Can. and N. Y. June—Aug. ①.—Stem 2—3 feet high, rough. Flowers rather large, bright yellow. Introduced from Europe. *Charlock. Wild Mustard.*

21. RAPHANUS. *Linn.*—Radish.

(From the Greek *ρα*, *quickly*, and *φαινομαι*, *to appear*; in allusion to its rapid germination.)

Pod transversely many-celled or dividing into several joints. Seeds in one row, globose, pendulous.

R. Raphanistrum *Linn.*: leaves simply lyrate; pod jointed, 1-celled, striate, 3—8-seeded, longer than the style.

Fields and waste places. N. S. July. ①.—Stem 1—2 feet high, hispid. Flowers yellow, about as large as those of the common radish. *Wild Radish.*

ORDER XIII. CAPPARIDACEÆ.—CAPPARIDS.

Sepals 4. Petals 4, or even 8, imbricated, or none, cruciate, usually unguiculate and unequal. Stamens 6—12, (rarely 4,) or numerous, usually some multiple of 4. Disk hemispherical or elongated. Fruit either pod-shaped and dehiscent, or fleshy and indehiscent, rarely 1-seeded, most frequently with polyspermous placentæ. Seeds generally reniform, without albumen; embryo curved, cotyledons foliaceous.—Herbaceous plants or shrubs without a true stipule, but sometimes with spines in their place. Leaves alternate, petioled, undivided or palmate.

1. GYNANDROPSIS. *D. C.*—Gynandropsis.

(From three Greek words, in allusion to the situation of the stamens.)

Calyx of 4 sepals, spreading. Petals 4. Disk elongated.

Stamens 6, united around the torus, free at the apex. Pod stiped.

G. pentaphylla D. C. : smoothish ; leaves quinate ; the lower and floral ones ternate ; leaflets entire and subserrulate. *Cleome pentaphylla* Linn.

In cultivated grounds. Penn. to Flor. July. ①. Stem 2 feet high, viscid. Flowers white, in long terminal racemes. Petals obovate, with very long capillary claws. Pod long, linear, on a long foot-stalk. *Five-leaved Gynandropsis*.

2. POLANISIA. Raf.—Polanisia.

(From the Greek πολυ, *much*, and ανισος, *unequal* ; in allusion to the inequality of the stamens.)

Calyx of 4 sepals, spreading. Petals 4. Stamens 8—32. Disk small. Pod sessile or scarcely stiped. Style distinct.

P. graveolens Raf. : viscidly pubescent ; leaves ternate ; leaflets elliptical-oblong ; stamens 8—12 ; pod oblong, attenuate at base, muricate with a glandular pubescence. *Cleome dodecandra*, var. *Canadensis* Linn.

Gravelly banks of rivers and lakes. Can. to Penn. W. to Miss. : rare. June—Aug. ④.—Stem 6—15 inches high, often purplish. Flowers in a corymbose raceme, yellowish-white and purple. Whole plant more or less viscid and fetid. *Strong-scented Polanisia*.

ORDER XIV. CISTACEÆ.—ROCK ROSES.

Sepals 5, persistent, unequal, the three inner often with a twisted æstivation. Petals 5, (very rarely 3,) very fugitive, crumpled in æstivation and twisted in a direction contrary to that of the sepals. Stamens definite or indefinite ; ovary 1 or many-celled ; style and stigma simple, hypogynous ; style single. Fruit capsular, either 1-celled with parietal placentæ in the axis of the valves, or imperfectly 5—10-celled. Seeds few or numerous. Embryo inverted, either spiral or curved in the midst of mealy albumen.—Shrubs or herbaceous plants. Leaves usually entire, opposite or alternate. Flowers very fugacious.

1. HELIANTHEMUM. Tourn.—Rock Rose.

(From the Greek ήλιος, the *sun*, and ανθεμον, a *flower* ; the flowers opening only in sunshine.)

Calyx with 3 equal sepals, or 5 disposed in two rows, the two outer ones often smaller, rarely larger. Petals 5, (sometimes wanting,) often irregularly denticulate at the apex. Stigma capitate. Ovary triquetrous. Capsule 3-valved, with the dissepiment in the middle of the valves. Seeds angled, smooth.

1. *H. Canadense* Mich. : stem at first simple, erect or ascending ; leaves oblong or somewhat lanceolate, with revolute margins, (when dry,) and with

the sepals and often the branches and peduncles canescently tomentose: the primary or terminal flowers large, few or solitary, on peduncles about as long as the flower; secondary flowers axillary, very small, nearly sessile, solitary or somewhat clustered on short leafy branches, the petals very small or none, the outer sepals usually wanting. (*Torr.*) *H. ramuliflorum* Mich. *H. corymbosum* Pursh. *H. rosmarinifolium* Pursh. *Cistus Canadensis* Linn.

Sandy woods. Can. to Flor. W. to Miss. June—Aug. ♀.—*Stem* about a foot high, at length branching. *Primary flowers* an inch in diameter, yellow; *secondary ones* often very numerous, with very minute capsules, in which stage it has probably been mistaken for *Lechea*. I follow Torrey, Gray, and Darlington, in uniting the several supposed distinct species above named.

Rock Rose. Frost Weed.

2. *H. corymbosum* Mich: stem branching from the base, canescent; flowers in terminal fastigate cymes; the primary ones on filiform peduncles much longer than the flower, the petals nearly twice the length of the calyx; the secondary flowers in glomerate cymules, mostly apetalous, 3—10 androus; sepals tomentose villous; the inner ones oblong-ovate, acute, the outer linear and obtuse; leaves oblong-lanceolate, softly canescent beneath. (*Torr. & Gr.*)

Sandy fields. N. J. to Flor. April—May. ♀.—*Stem* about a foot high. *Flowers* about as large as those of *H. Canadense*, from which it is quite distinct.

Corymbse Rock Rose.

2. LECHEA. Linn.—Pin Weed.

(In honor of *John Leche*, a Swedish botanist.)

Calyx 3-sepalled, with two outer bracts or sepals, persistent. Petals 3, inconspicuous, lanceolate. Stamens 3—12, and often thrice the number. Ovary 1, 3-sided. Stigmas 3, scarcely distinct. Capsule 3-celled, 3-valved, with as many inner valves opposite the others. Seeds affixed to the dissepiment or nerve, very few, often 8.

1. *L. villosa* Ell.: radical branches prostrate, villose; leaves oblong lanceolate, mucronate, pilose; panicle short, leafy; flowers fasciculate-racemose, secund, on very short pedicels. *L. major* Mich.

Dry woods. Can. to Flor. July. ♀.—*Stem* 1—2 feet high, erect. *Leaves* on the radical branches opposite or verticillate; those on the stem alternate. *Flowers* small, brown, in racemose clusters. *Larger Pin Weed.*

2. *L. minor* Pursh.: nearly smooth; stem assurgent; leaves linear-lanceolate and linear, acute; panicle leafy; branches elongated; flowers on short pedicels.

Dry hills. Can. and N. S. July—Sept. ♀.—*Stem* 8—12 inches high. *Flowers* brown. *Fruit* larger than in the former. *Smaller Pin Weed.*

3. *L. racemulosa* Mich.: whole plant covered with appressed pubescence; stem erect; leaves linear, acute, ciliate; panicle slender and very branching; raceme naked; flowers small, alternate, pedicellate.

Sandy grounds. N. J. to Car. July. ♀.—*Pursh.* Perhaps only a variety of the preceding. *Bunch flowered Pin Weed.*

4. *L. thymifolia* Pursh.: whole plant whitish-villose; stem erect; leaves linear, acute; panicle leafy, elongated; branches very short; flowers minute, in lateral and terminal fascicles; pedicels very short.

Sands. N. Y. to Virg. July. 2.—*Stem* a foot high, erect, much branched. *Leaves* villose at base. *Flowers* rather larger than in the preceding species.

Thyme-leaved Lechea.

3. HUDSONIA. Linn.—Hudsonia.

(In honor of *William Hudson*, author of the *Flora Anglica*.)

Calyx 5-parted; segments unequal, the two outer ones minute. Petals 5. Stamens 9—30. Style straight, simple. Stigma simple. Capsule 1-celled, 3-valved, 1—3-seeded. Seeds granulated.

1. *H. ericoides* Linn.: canescently pubescent; stem suffruticose, sub-erect; branches elongated; leaves filiform, subulate, subimbricate; peduncles exserted, longer than the flowers; sepals acutish; capsules oblong, slightly pubescent, 1—3-seeded.

Sandy woods. N. Y. to Virg. May, June. 12.—*Stem* 4—6 inches high, much branched. *Leaves* small, persistent. *Flowers* small, yellow. *Stamens* about 15.
Heath-like Hudsonia.

2. *H. tomentosa* Nutt.: cespitose, hoary-pubescent; leaves minute, closely imbricate, ovate, acute; flowers aggregated, subsessile; calyx sub-cylindric, with obtuse segments; capsule 1-seeded; valves ovate, smooth.

Sea-shores. Mass. and N. Y. to Virg. June. 12.—*Stem* ascending, much branched. *Flowers* yellow, smaller than in the preceding. *Stamens* 9—18.—*The whole plant is silvery gray and tomentose.*
Woolly Hudsonia.

ORDER XV. VIOLACEÆ.—VIOLETS.

Sepals 5, persistent, with an imbricate æstivation. Petals 5, equal or unequal, with a convolute æstivation. Stamens 5, inserted in a hypogynous disk, often unequal; anthers either separate or cohering, and lying close upon the ovary; filaments dilated, elongated beyond the anthers; two of them, in the irregular flowers, generally furnished with an appendage or gland at the base. Style usually declined, with a thickened or hooded stigma. Capsule 1-celled, 3-valved. Seeds often with a tumor at their base; albumen fleshy.—Herbaceous plants or shrubs. Leaves simple, usually alternate, furnished with stipules.

1. VIOLA. Tourn.—Violet.

(Origin of the name doubtful.)

Sepals 5, auricled at their base. Petals unequal, the lower one spurred. Stamens 5, approximated; filaments distinct;

anthers connate, the two lower ones with processes at their back. Capsules 1-celled, 3-valved, opening elastically.

* *Stemless.*

† *Flowers blue.*

1. *V. pedata* Linn.: leaves pedate, often nearly smooth, from 5—7 parted; segments linear-lanceolate, entire or somewhat toothed; stipules radical, pectinately lacerate; petals beardless, entire, rounded at the extremity; stigma large, compressed, obliquely truncate and perforate at the apex. *V. digitata* Pursh.

Rocky hills. From lat. 53° N. to Flor. W. to Miss. May, June. 2.—*Scapes* 3—5 inches high, several from the same root. *Flowers* large, pale blue, rarely almost white. *Pedate Violet.*

2. *V. palmata* Linn.: leaves more or less pubescent, reniform-cordate, palmate, or hastate-lobed; lobes very various, the intermediate one always larger; stipules lanceolate, subciliate; lateral petals densely bearded towards the base; stigma capitate, recurved, margined, rostrate. *V. heterophylla* Le Conte.

Swamps and low grounds. Can. to Flor. W. to the River Platte. May. 2.—*Scape* about as long as the leaves. *Flowers* middle-sized, bright blue. This species varies greatly in the form of the leaves, and sometimes closely resembles *V. cucullata*, of which it is perhaps only a variety. *Palmate Violet.*

3. *V. cucullata* Ait.: smoothish; leaves cordate, cucullate at base, dentate-serrate, veined; stipules small, linear, ciliate; flower oblique; lower and lateral petals rigidly bearded; upper one smooth; spur very short, rounded. *V. papilionacea* Pursh. *V. affinis* Le Conte. *V. obliqua* Pursh.

Wet meadows. Common throughout Can. and the U. S. April, May. 2.—This species varies considerably in the form of its leaves, and in the degree of pubescence. The same individual, indeed, undergoes changes during the season. *Hood-leaved Violet.*

4. *V. Selkirkii* Goldie: leaves cordate, crenately serrate, minutely hairy above, smooth beneath, the sinus deep and nearly closed; stigma triangular, margined, with a distinct beak; spur nearly as long as the lamina, thick, very obtuse.

Hills and mountains. Can. Mass. and N. Y.: rare. 2.—*Leaves* numerous, in a radical tuft. *Flowers* pale blue, much smaller than in *V. cucullata*. Spur conspicuous, somewhat dilated at the end. *Selkirk's Violet.*

5. *V. sagittata* Ait.: leaves pubescent on the upper surface, oblong, acute, cordate, sagittate, often hastate at base, serrate or crenate-dentate; petals oblong, ovate, all except the lower one bearded; stigma depressed, margined. *V. dentata* Pursh.

var. *emarginata* Nutt.: leaves almost triangular, lacerately toothed at the base; petals emarginate or bi-dentate. *V. emarginata* Le Conte.

Fields. Can. to Flor. W. to Ark. April, May. 2.—*Leaves* quite variable. *Flowers* middle-sized, purple. Var. *emarginata*, is found in the sandy fields of New Jersey. *Arrow-leaved Violet.*

6. *V. ovata* Nutt.: leaves oblong-ovate, rather acute, subcordate, crenate,

often lacerately toothed at base, decurrent on the petiole, pubescent on both sides; stipules broad-lanceolate, ciliate; sepals oblong-lanceolate; petals obovate, entire; lateral ones densely bearded. *V. sagittata*, var. *ovata* Torr. & Gr. *V. primulæfolia* Pursh.

Dry hills. Can. to Geor. April, May. ♀.—Whole plant pubescent. Leaves much narrower and more downy than in *C. cucullata*. Flowers larger than those of *V. primulæfolia*.
Ovate-leaved Violet.

7. *V. villosa* Walt.: leaves reniform-cordate or reniform, obtuse, crenate, flat, very pubescent; sepals oblong, auriculate at base; lateral and lower petals bearded; stigma deflexed; capsule smoothish. *V. barbata* Muhl.

var. *cordifolia* Nutt.: leaves smooth beneath, rather acute; sepals narrow, short, smooth and scarcely produced at base. *V. cordifolia* Schw. *V. sororia* Darlingt.

Rocky hills. Penn. to Car. May. ♀.—Leaves rather thick, mostly incumbent on the ground, often purplish on the under side. Scape longer than the leaves.
Bearded Violet.

†† Flowers yellow.

8. *V. rotundifolia* Mich.: leaves broad-ovate or orbicular, cordate, with the sinus at length closed, slightly crenate, smooth beneath; stipules lanceolate-subulate; sepals oblong, narrow, obtuse; lateral petals bearded; lower ones smaller, smooth; spur very short; stigma recurved.

Rocky woods. Can. to Car. May. ♀.—Scape 1—2½ inches high, smooth. Flowers pale yellow, middle sized. Distinct from *V. clandestina* of Pursh.

Round-leaved Violet.

††† Flowers somewhat regular, small, white.

9. *V. lanceolata* Linn.: leaves very smooth, narrow lanceolate, attenuated at each end, sub-serrate; sepals lanceolate, acute, smooth; petals beardless, nearly equal; spur very short; stigma recurved, rostrate.

Swamps. Can. to Flor. W. to Texas. April, May. ♀.—Scape about as long as the leaves. Flowers small, white, inodorous. The long narrow leaves will sufficiently distinguish this species. One of the finest localities that I have met with, is a swamp about a mile west of Albany, N.Y. Lance-leaved Violet.

10. *V. acuta* Big.: leaves ovate, smooth, crenate, rather obtuse; stipules linear-subulate; scape angular; bracts nearly as long as the petals: sepals lanceolate, acute, smooth; petals ovate, acute, mostly smooth, lower ones veined; stigma capitate, rostrate.

Moist grounds. Cambridge, Mass. Big. ♀.—A small species. Distinguished by its even and always acute petals and by its long linear bracts.

Acute Violet.

11. *V. primulæfolia* Linn.: leaves smooth, oblong-ovate or lanceolate, subcordate, rather obtuse, sparingly crenate; nerves beneath and scape somewhat pubescent; sepals lanceolate; petals obtuse; the two lateral ones a little bearded and striate; stigma capitate, rostrate.

Wet grounds. Mass. to Flor. W. to Ken.; rare. April, May. ♀.—Leaves 2—5 inches long, and an inch or more wide, about as long as the scape. Flowers white, odorous, about the size of those of *V. lanceolata*. Bracts long. This species varies in the form of its leaves from broad-cordate to lanceolate. Near New Brunswick, where what I consider the *V. primulæfolia*, is very abundant, it certainly passes into *V. lanceolata*, with which species I think it will eventually prove identical. Dr. Bigelow suggests that *V. blanda* and *V. lance-*

olata may be the same. This seems also to be the opinion of Dr. Darlington; but so far as my observation extends the former is much more constant in its characters than *V. primulæfolia*. *Primrose-leaved Violet.*

12. *V. blanda Willd.*: leaves broad-cordate, remotely serrate or crenate, nearly smooth; sinus rounded; sepals ovate, acuminate; petals ovate, obtuse, nearly beardless; stigma depressed, acutely margined.

Wet meadows. From lat. 66° N. to Car. W. to Miss. April, May. ♀.—*Leaves* 1—2 inches in diameter, flat and thin. *Flowers* small, white, streaked with purple, odorous. This species very closely resembles the foreign *V. palustris*. *White Violet.*

13. *V. clandestina Pursh.*: caespitose; leaves large, suborbicular, obtuse, thin, nearly smooth, crenate-serrate; sinus closed, cordate; stipules ovate, short; stolons floriferous; petals narrow, ovate, beardless, scarcely longer than the calyx; flowers often apetalous; stigma straight, capitate.

Shady woods, on mountains. Can. and N. S. June—Sept. ♀.—*Flowers* often apetalous, generally concealed in the earth. More nearly allied to *V. rotundifolia* than to *V. blanda*; but, in my opinion, distinct from both.

Hidden-flowered Violet.

** *Caulescent.*

14. *V. Canadensis Linn.*: stem erect; leaves broad-cordate, acuminate, serrate, slightly pubescent on the nerves, lower ones on long petioles; stipules broad-lanceolate, membranaceous, entire; sepals subulate, lanceolate; spur very short; stigma short, pubescent; capsule somewhat globose, pubescent.

Shady woods. Hudson's Bay to Car. W. to the Pacific. May—July. ♀.—*Stem* 9—18 inches high, usually simple. *Flowers* large, blue without, paler within. *Canadian Violet.*

15. *V. ochroleuca Schw.*: stem assurgent; leaves alternate, lower ones round-cordate, crenate-serrate, obtuse, upper ones acuminate; stipules large, oblong-lanceolate, dentate-ciliate; sepals subulate-lanceolate; petals obtuse, the lateral ones and often the lowest profusely bearded; spur produced, obtuse; stigma recurved, subpubescent. *V. striata Ait. Le Conte. Torr. & Gr.*

Swamps. Can. to Geor. *Le Conte*: rare. May. ♀.—*Stem* 6—10 inches high. *Flowers* yellowish-white, large. *Ochroleucous Violet.*

16. *V. Muhlenbergii Torr.*: stem weak, subprostrate, branched, smooth; lower leaves reniform-cordate; upper ones a little acuminate, crenate-serrate, nearly smooth; stipules large, oblong-lanceolate, serrate-ciliate; sepals linear-lanceolate; petals obovate, obtuse, the lateral ones bearded; spur nearly one-third the length of the corolla; stigma rostrate. *V. uliginosa* and *asarifolia Muhl.*

Swamps. Labrador to Geor. W. to the Rocky Mountains. May. ♀.—*Stem* 6—10 inches high, branched. *Flowers* middle-sized, pale purplish. Very nearly allied to *V. canina* of Europe. *Muhlenberg's Violet.*

17. *V. rostrata Muhl.*: stem diffuse, erect; leaves smooth, cordate, acute, serrate; sinus open; stipules large, lanceolate, serrate-ciliate; peduncles filiform, longer than the leaves; petals obovate, all beardless; spur longer than the corolla.

Rocky hills. Can. to Virg. W. to Ken. May. ♀.—*Stem* 6—8 inches high,

smooth. *Flowers* large, pale blue, with a very long horn or spur, by which this species can be easily recognized. *Spurred Violet.*

18. *V. pubescens* Ait.: villous-pubescent; stem elongated, erect, naked below; leaves broad-ovate, cordate, dentate, more or less acuminate; stipules large, ovate, somewhat toothed; lateral petals bearded; spur short, acuminate. *V. Pennsylvanica* Mich.

var. 1. *eriocarpa* Nutt.: capsule densely villous. *V. eriocarpa* Schw.

var. 2. *scabriuscula* Torr. & Gr.: stems several, often decumbent, nearly smooth, or with a pubescent line on one side; leaves somewhat scabrous, but hardly pubescent; capsule smooth or villous. *V. scabriuscula* Schw.

Dry woods. Can. to Geor. W. to Council Bluffs. May. 2.—*Stem* 6—8 inches high. *Flowers* middle-sized, yellow. Var. 2 is found near Albany and in Oneida county, N. Y. *Yellow Violet.*

19. *V. hastata* Mich.: smooth; stem erect, simple, leafy above; leaves on long petioles, cordate-lanceolate or hastate, acuminate; lobes obtuse, dentate; stipules minute, ciliate-dentate; lower petal dilated, sub-3-lobed; lateral ones slightly bearded; spur short; stigma truncate, hairy on the sides.

Mountains. Penn. to Flor. May. 2.—*Stem* 6—12 inches high. *Flowers* yellow, smaller than in the preceding. *Halberd-leaved Yellow Violet.*

20. *V. tricolor* Linn.: root somewhat fusiform; stem branching, diffuse; lowest leaves ovate, cordate; stipules runcinately pinnatifid, the middle lobe crenate; petals with short claws; spur thick, obtuse, not produced; appendages short; seeds oblong-ovate.

var. *arvensis* D. C. Torr. & Gr.: annual; stems assurgent; upper leaves spatulate-ovate; petals scarcely longer than the calyx, yellowish, blue, or spotted with purple. *V. bicolor* Pursh. *V. arvensis* Ell. *V. tenella* Muhl.

Dry hills. N. Y. to Geor. W. to Miss. May. ①.—*Stem* slender, 3—8 inches high. *Leaves* less than an inch long. *Flowers* small, pale blue. I follow Hooker, Torrey and Gray, in uniting our plant with *V. tricolor*, although not without some hesitation. *Pansy. Heart's Ease.*

2. SOLEA. Ging. D. C.—Solea.

(In honor of *W. Sole*, author of an Essay on the genus *Mentha*.)

Sepals scarcely equal, carinate? not auricled at base, decurrent into a pedicel, at length reflexed. Petals unequal, the lowest one 2-lobed and somewhat gibbous at base. Stamens cohering, the lowest two bearing a gland above the middle. Capsule somewhat 3-sided. Seeds 6—8, very large.

S. concolor D. C. *S. stricta* Spreng. *Viola concolor* Fors. Nutt.

Shady woods. N. Y. to Car. W. to Miss.; rare. April, May. 2.—*Stem* 2—4 feet high, simple, erect. *Leaves* cuneate-lanceolate, sessile, irregularly toothed above. *Peduncles* short, 2—3-flowered. *Flowers* small, greenish. *Calyx* nearly as long as the petals. *Spur* none. I possess fine specimens of this plant, which were gathered near Lebanon, N. Y. It is also found in the western part of that state, and in Delaware county, Penn. *Green-flowered Solea.*

ORDER XVI. DROSERACEÆ.—SUNDEWS.

Sepals 5, persistent, equal, with an imbricate æstivation. Corolla of 5 nearly equal petals. Stamens distinct, either equal in number to the petals and alternate with them, or 2 or 3 or 4 times as many. Styles 3—5, either wholly distinct or slightly connected at the base, bifid or branched. Capsule of 3 or 5 valves. Seeds either naked or furnished with an arillus; embryo minute, in the base of fleshy albumen.—Delicate herbs, often covered with glandular hairs. Leaves alternate, with stipulary ciliæ and a circinate vernation.

1. DROSERA. *Linn.*—Sundew.

(From the Greek *δρῶσος*, *dew*; the glands exuding a fluid which makes the plant appear as if covered with dew.)

Calyx deeply 5-cleft. Petals 5. Stamens 5. Styles 3—5, bipartite. Capsule superior, globose or ovoid, 1—3-celled, 3—5-valved, many-seeded.

1. *D. rotundifolia* *Linn.*: leaves all radical, orbicular, spreading, fringed with purple ciliæ, pilose above, abruptly tapering into the long hairy petiole; scape erect, bearing a terminal and mostly simple raceme; seeds arillate.

Sphagnous swamps. From Arct. Amer. to Flor. July, Aug. ♀.—Scape 4—3 inches high. Flowers small, 5—10, whitish. *Round-leaved Sundew.*

2. *D. longifolia* *Linn.*; leaves spatulate-oblong, erect-spreading, tapering below into the long and slender naked petiole; scape declined at base; seeds not arillate. *D. Americana* *Muhl.* *D. foliosa* *Ell.*

Swamps. Can. to Alabama. July, Aug. ♀.—Scape 3—6 inches long, usually curved to one side at the base. Flowers 5—9 in a raceme, twice as large as in the preceding. *Long-leaved Sundew.*

3. *D. filiformis* *Raf.*: leaves filiform, very long, nearly erect, glandular the whole length; scape longer than the leaves, many-flowered, simple or bifid. *D. tenuifolia* *Willd.*

Sandy swamps. Mass. to Flor.; rare. Aug., Sept. ♀.—Scape 8—12 inches high. Leaves 6—10 inches long. Flowers purple, few, in a one-sided raceme. *Thread-leaved Sundew.*

2. PARNASSIA. *Linn.*—Parnassus Grass.

(From *Mount Parnassus*; on account of the beauty of this plant.)

Calyx deeply 5-cleft. Petals 5. Scales (or abortive stamens?) opposite to the claws of the petals, terminating in glandular bristles at the apex. Stamens 5. Stigmas 4, sessile. Capsule 4-valved, 1-celled. Seeds arillate, numerous.

1. *P. Caroliniana* *Mich.*: radical leaves cordate, orbicular-ovate, on long petioles; cauline one sessile; flowers solitary, terminal; scales 3-bristled. *P. Americana* and *P. ovata* *Muhl.*

Swamps. Can. to Flor. W. to Miss. Aug. Sept. 7.—*Stem* 12—18 inches high. *Leaves* mostly radical. *Flowers* large, yellowish white.

Carolina Parnassus Grass.

2. *P. palustris* Linn.: leaves all cordate; cauline one sessile; scales smooth, many bristled.

Bog meadows. Labrador to N. Y.? W. to the Rocky Mountains. *Flowers* white, with veins of green or purple. Distinguished by the numerous, slender, white, pellucid hairs of its scales from all the other species of the genus.

Marsh Parnassus Grass.

ORDER XVII. POLYGALACEÆ.—MILKWORTS.

Sepals 5, very irregular, distinct, 3 exterior, of which 1 is superior and 2 inferior; 2 inner ones (the *wings*) usually petaloid. Petals hypogynous, mostly 3, of which the anterior (*keel*) is larger than the rest, and usually crested or lobed. Stamens 8, usually in a tube; anthers mostly 1-celled, and opening by a terminal pore. Ovary superior, 2-celled; style and stigma simple. Fruit usually a capsule, sometimes indehiscent. Seeds with abundant albumen.—Shrubs or herbaceous plants, with simple entire leaves destitute of stipules. Flowers mostly in racemes or spikes.

POLYGALA. Tourn.—Milkwort.

(From the Greek πολυ, *much*, and γαλα, *milk*; from its supposed power of increasing the secretion of milk.)

Calyx of 5 sepals, 2 of them wing-shaped and colored. Petals 3—5, united to the stamens, the lower one keelform. Capsule compressed, elliptic, obovate or obcordate. Seeds pubescent.

* *Flowers in racemes or spikes.*

1. *P. incarnata* Linn.: glaucous; stem erect, slender, nearly simple; leaves scattered, few, subulate; racemes spiked, oblong, without glands; corolla with a long tube.

N. J. to Flor. W. to Ark. Near Niagara Falls. Hook. June, July. ①.—*Stem* 12—18 inches high, somewhat angled, with few remote subulate leaves. *Flowers* flesh-colored, in a somewhat loose terminal spike. *Petals* united into a long slender tube. A specimen of this plant, received from Dr. Charles Pickering, and gathered by him in New Jersey, has only 4 or 5 subulate leaves on the stem, which is more than a foot high.

Flesh-colored Milkwort.

2. *P. cruciata* Linn.: stem fastigiate, winged at the angles; leaves whorled in fours, linear and linear-oblong, punctate; spikes ovate, dense, sessile or on short peduncles; flowers subcristate; wings deltoid-cordate, acute or cuspidate. *P. brevifolia* and *P. fastigiata* Nutt.

Swamps. Mass. to Flor. W. to Louis. Aug. Sept. ①.—*Stem* variable in height, depending on situation. *Spikes* sometimes pedunculate. *Flowers* red or purple.

Cross-leaved Milkwort.

3. *P. purpurea* Nutt.: stem fastigiately branched; leaves alternate, linear and oblong-linear; flowers beardless, imbricated in obtuse cylindrical spikes; rachis squarrose; wings of the calyx cordate-ovate, erect, twice as long as the capsule. *P. sanguinea* Mich. Pursh.

Woods and hill sides. Mass. to Louis. W. to Ark. July, Aug. ①.—Stem 12—18 inches high. *Flowers* rose-colored. *Purple Milkwort.*

4. *P. sanguinea* Linn.: stem fastigiately branched; leaves alternate, narrow-linear; flowers beardless, in long and crowded spikes; rachis squarrose; wings of the calyx obovate, as long as the capsule.

Dry soils. N. J. to Geor. W. to Ken. July—Oct. ①.—Stem 8—12 inches high. *Flowers* dark red. Allied to the former, but a much smaller plant, the leaves shorter and narrower, and with a longer and more loose spike; the rachis also is much more squarrose. *Red Milkwort.*

5. *P. ambigua* Nutt.: stem erect, virgately branched; leaves linear; the lower ones sometimes whorled, the rest scattered; spikes rather obtuse, dense, on very long peduncles; flowers cristate; wings of the calyx round and veined, as long as the fruit; bracts deciduous.

Dry Woods. N. Y. to Virg. Aug. Sept. ①.—Stem 6—12 inches high, slender, somewhat angular. *Flowers* greenish-white, tinged with purple, distinctly pedicellate, larger than those of the next species. *Ambiguous Milkwort.*

6. *P. verticillata* Linn.: stem erect, branched; leaves whorled, linear, and lance-linear; racemes spiked, acute, on rather short peduncles; bracts deciduous; flowers cristate; wings of the calyx roundish, shorter than the capsule.

Sandy soils. Can. to Flor. W. to Miss. July—Oct. ①.—Stem 8—12 inches high, slender, slightly angled. *Leaves* sometimes solitary, but mostly in whorls of 4 or 5. *Flowers* small, greenish-white, sometimes tinged with purple.

Whorl-leaved Milkwort.

7. *P. Senega* Linn.: stems numerous, erect, smooth, simple; leaves alternate, lanceolate, tapering at each end, scabrous on the margin; spikes rather dense, somewhat acute; wings of the calyx orbicular; capsule elliptic, emarginate.

Woods. Can. to Geor. June, July. ②.—Stem a foot high, with ovate, scale-like leaves at the base. *Leaves* smooth, finely serrulate and fringed under a lens. *Flowers* greenish-white, in a terminal spike, which is 1—2 inches long. The root is hard, firm and branching, and is much used in medicine. *Big. Med. Bot. ii. 97.* *Seneca Snake-root.*

8. *P. polygama* Walt.: stems numerous, simple, erect and procumbent; leaves linear-lanceolate, attenuate downwards; racemes filiform, terminal and lateral, elongated; lower ones procumbent, without petals; flowers sessile. *P. rubella* Willd. Pursh.

Forests. Can. to Flor. June, July. ③.—Stem 4—8 inches high, angular. *Terminal racemes* 10—25-flowered; pedicels slender. *Flowers* purple, at length pendulous. The whole plant is bitter and is used in medicine. *Big. Med. Bot. iii. 129.* *Bitter Milkwort.*

** *Flowers* capitate, (yellow.)

9. *P. lutea* Linn.: stem simple or branched; lower leaves spatulate; upper ones lanceolate; flowers in globular heads, yellow; wings of the calyx ovate, mucronate; bracts shorter than the flowers.

Bogs, in pine barrens. N. J. to Flor. June—Oct. ④.—Stem 8—12 inches

high, mostly simple. *Leaves* fleshy. *Flowers* bright orange yellow. Abundant in a peat bog four miles south of New Brunswick, N. J. *Yellow Milkwort.*

*** *Flowers in corymbs.*

10. *P. cymosa* Walt. : stem simple below, corymbose at the summit; radical leaves spatulate-obovate; cauline ones linear; cymes compound; spikes ovate; wings oblong, cuspidate. *P. corymbosa* Mich. *P. ramosa* Ell.

Swamps. Del. to Flor. W. to Texas. July, Aug. 2. — *Stem* 8—12 inches high, bearing a large terminal corymb. *Spikes* compact, half an inch in diameter. *Flowers* yellow, dark green when dry. *Corymbose Milkwort.*

**** *Flowers axillary, (large.)*

11. *P. pauciflora* Willd. : stem simple, erect, naked below; leaves ovate, acute, smooth; flowers mostly terminal and by threes, large, cristate, sometimes axillary. *P. uniflora* Mich.

var. *alba* Eights: flower solitary, smaller, white; stem somewhat leafy at base.

Woods. Arct. Amer. to Geor. June. 2. — *Stem* 3—4 inches high. *Flowers* large, purple, with the summit of the keel densely crested. Var. *alba* was found by Dr. James Eights in the sandy plains near Albany. It has the stem rather lower and more leafy than in the former; the flower also is solitary, smaller, white, and the keel less densely crested. *Fringed Milkwort.*

ORDER XVIII. CARYOPHYLLACEÆ.—CLOVEWORTS.

Sepals 4—5, either distinct or cohering in a tube, persistent. Petals 4—5, unguiculate, inserted upon the pedicel of the ovary; occasionally wanting. Stamens as many or more commonly twice as many as the petals, and inserted with them; anthers fixed by the middle. Ovary often stipitate; stigmas 2—5, sessile, filiform, papillose on the inner surface. Capsule 2—5-valved, either 1-celled or 2—5-celled, in the latter case with a loculicidal dehiscence; placenta in the axis. Seeds numerous, rarely few; the embryo curved round mealy albumen.—Herbaceous plants. Stems with tumid joints. Leaves opposite, entire, without stipules.

1. DIANTHUS. Linn.—Pink.

(From the Greek Ζεύς, Δίος, *Jupiter*, and ανθος, a *flower*; the high value set upon the plants of this genus being such as to render them worthy of being dedicated to Deity itself.)

Calyx tubular, 5-toothed, with 2—4 opposite imbricate scales at base. Petals 5, with long claws. Stamens 10. Styles 2. Capsule 1-celled.

D. Armeria Linn. : flowers in terminal crowded clusters; scales of the calyx lanceolate, villous, as long as the tube. *D. armerioides* Raf.

Sandy fields. Mass. to Md. July. ①.—*Stem* 18 inches high, branched above. *Leaves* linear, opposite and connate. *Flowers* rose-colored, with white dots, inodorous, small. Introduced from Europe. *Deptford Pink.*

2. *SILENE*. *Linn.*—Catchfly.

(Supposed to be derived from the Greek *σαλον*, *saliva*; in allusion to the viscid secretion on the stem.)

Calyx tubular, 5-toothed, naked. Petals 5, unguiculate, mostly crowned at the orifice; limb bifid. Stamens 10. Styles 3. Capsule 3-celled at base, dehiscent at the top into 6 teeth.

* *Caulescent. Flowers solitary or paniced. Calyx inflated.*

1. *S. stellata* *Ait.*: stem erect, branching, pubescent; leaves verticillate in fours, oval-lanceolate, long-acuminate, smooth; flowers in panicles; calyx bladder-like, pubescent; limb of the petals fringed. *Cucubalus stellatus* *Linn.*

Dry woods. Can. to Car. W. to Miss. July, Aug. ④.—*Stem* 2—4 feet high, slender, somewhat 4-sided. *Leaves* with a long tapering point, sessile. *Flowers* white, the petals fringed at the apex. *Four-leaved Campion.*

2. *S. inflata* *Smith*: stem erect, branching; leaves ovate-lanceolate, acute; flowers numerous, paniced; petals deeply cleft, with narrow segments, scarcely crowned; calyx inflated, reticulated. *Cucubalus Behen* *Linn.*

Fields. Can. and Mass. July. ④.—*Stem* 1—2 feet high. *Flowers* white; petals bifid. *Calyx* bladder-like and beautifully veined. Introduced from Europe. *Bladder Campion.*

3. *S. nivea* *Muhl.*: stem divaricate and dichotomous above; leaves oblong-lanceolate, minutely and puberulently pubescent, the uppermost ovate; calyx obtuse, bell-shaped, inflated, subpilose; petals small, reflexed, bifid at the extremity; claws exserted beyond the calyx, nearly naked; flowers solitary, dichotomal, terminal. *Cucubalus niveus* *Nutt.* *Silene alba* *Muhl.*

“Upon an island in the Susquehannah near to Columbia, Penn. Muhlenberg.” *Nutt.* June, July. ④.—*Stem* smooth and slender. *Leaves* opposite, 2 inches long, and $\frac{1}{2}$ an inch wide. *Flowers* white, remote, solitary, dichotomal and terminal. *White Catchfly.*

** *Caulescent. Flowers in axillary spikes, alternate. Calyx 10-striate.*

4. *S. nocturna* *Linn.*: stem branched, pilose below; leaves pubescent, long ciliate at base; lower ones spatulate, upper ones linear-lanceolate; spike secund, dense; flowers sessile, alternate; calyx cylindrical, nearly smooth; petals 2-parted, narrow.

Penn. and Virg. July. ①.—*Flowers* white, greenish beneath. Introduced from Europe. *Night-smelling Catchfly.*

*** *Caulescent. Stem rigidly erect. Peduncles filiform. Calyx bellform or cylindrical.*

5. *S. Antirrhina* *Linn.*: almost smooth; stem erect, simple or branching above, somewhat leafy; leaves lanceolate, acute, subciliate, upper ones

linear; flowers small, paniced; calyx ovoid, glabrous; petals small, obcordate, slightly crowned.

Dry hills. Can. to Flor. W. to Oregon. June, July. ①.—*Stem* 1—2 feet high, nearly glabrous, with some of the upper internodes viscid. *Petals* white or pale purple, only expanding towards evening. *Calyx* broad-oval or obovate, shining. *Snapdragon Catchfly.*

**** *Caullescent. Flowers paniced, rarely solitary. Pedicels opposite, short. Calyx tubular.*

6. *S. noctiflora* Linn.: viscid-pubescent; stem erect, branching; lower leaves spatulate, the upper ones linear; calyx cylindrical-ventricose, the alternate striæ veined; teeth very long, subulate; petals 2-parted.

In cultivated places. N. S. Torr. July. ①.—*Stem* a foot or more high. *Flowers* rather large, pale reddish or white, expanding only in cloudy weather or in the evening. *Night-flowering Catchfly.*

7. *S. Catesbæi* Walt.: branching; leaves broad-lanceolate; flowers in panicles; calyx clavate, colored; petals with long claws; limb bifid, with two lateral teeth; lobes acute. *S. Virginica* Mich. Pursh. not of Linn.

Penn. to Miss. Muhl. June. ♀.—*Stem* a foot high. *Flowers* crimson. Both De Candolle and Hooker concur in supposing the present plant distinct from *S. Virginica*. *Catesby's Catchfly.*

8. *S. Virginica* Linn.: viscid-pubescent; stem mostly erect, branching; leaves lanceolate; lower ones on long petioles, with long ciliæ at base; flowers large, in panicles; petals with long claws, broad, bifid, crowned.

Can. to Geor. W. to Miss. May, June. ♀.—*Stem* 1—2 feet high. *Flowers* larger than in the next species, purple. *Virginia Catchfly.*

9. *S. Pennsylvanica* Mich.: viscidly-pubescent; radical leaves somewhat cuneate; those of the stem long-linear; flowers in panicles, somewhat trichotomous; calyx long, tubular; petals slightly emarginate, subcrenate. *S. Caroliniana* Walt.

Sandy woods. Can. to Geor. May, June. ♀.—*Stems* numerous, cespitose, 8—12 inches high. *Petals* bright purple, sometimes almost white. *Wild Pink.*

***** *Cespitose. Stems almost wanting. Calyx subinflated. Peduncles 1-flowered.*

10. *S. acaulis* Linn.: stems very densely cespitose, low; leaves linear, ciliate at base; peduncles solitary, short, 1-flowered; calyx campanulate; petals obcordate, crowned.

White Mountains, N. H. Arct. Amer. Rocky Mountains. July. ♀.—*Stem* short, much branched or tufted. *Leaves* spreading. *Flowers* purple. *Moss Campion.*

3. SAPONARIA. Linn.—Soapwort.

(From the Latin *sapo*, soap; the plant yielding a mucilaginous juice, which has been used as a substitute for that article.)

Calyx tubular, 5-toothed, naked at base. *Petals* unguiculate; claws equalling the calyx. *Stamens* 10. *Styles* 2. *Cap-sule* 1-celled.

1. *S. Vaccaria* Linn.: leaves ovate-lanceolate, sessile; flowers in panicles; calyx pyramidal, 5-angled, smooth; bracts membranaceous, acute.

Cultivated grounds. Mass. and N. Y.; rare. July, Aug. ①.—Stem 1—2 feet high. Flowers rose-colored. Introduced from Europe. *Field Soapwort*.

2. *S. officinalis* Linn.: leaves ovate-lanceolate, ribbed, acute or obtuse; flowers large, in a fasciculate panicle; calyx cylindrical; appendages of the petals linear.

Road sides. N. Y. to Geor. June—Sept. ②.—Stem 12—18 inches high. Leaves opposite and connate. Flowers large, rose-colored. It is said to make a lather with water, and hence its common name. Introduced from Europe.

Common Soapwort.

4. AGROSTEMMA. Linn.—Rose Campion.

(From the Greek *αγρος στεμμα*, *crown of the field*, quite applicable to this species.)

Calyx tubular, 5-sided, coriaceous. Petals 5, unguiculate, not crowned; limb entire. Capsule 1-celled, opening with 5 teeth.

A. Githago Linn.: hairy; leaves opposite, linear-lanceolate; segments of the calyx much longer than the corolla; flower solitary, terminal, large; petals entire, destitute of a crown. *Lychnis Githago* D. C. Torr. & Gr.

Cultivated grounds. June, July. ①.—Stem 18—20 inches high. Flowers large, purple, not crowned, on long peduncles. Introduced from Europe.

Corn Cockle.

5. SAGINA. Linn.—Pearlwort.

(The name signifying *meat which fattens*, is applicable to any of the minute plants of this genus.)

Sepals 3—5, united at base. Petals 4—5, or more. Stamens 4—10. Styles 4—5. Capsule 4—5-valved, 1-celled, many-seeded.

1. *S. procumbens* Linn.: perennial; stems procumbent, smooth, branched; leaves linear-mucronate; petals much shorter than the calyx.

Borders of streams. N. Y. to Car. and W. to the banks of the Columbia river. May—July. ②.—Stems 2—4 inches long, diffuse and rooting at the lower joints. Lower leaves connate. Peduncles solitary, longer than the leaves. Flowers small, white, at first drooping.

Procumbent Pearlwort.

2. *S. apetala* Linn.: annual; stems erect or procumbent only at base, subpubescent; leaves subulate; flowers alternate; petals 4, very minute or none.

Sandy fields. N. Y. to Md. May, June. ①.—Stems numerous, erect, filiform. Leaves narrower and more bristle-pointed than in the preceding. Flowers on long slender peduncles. Petals, according to Mr. Wilson, (*Hook. Br. Fl.*) always present, but if so, they must be exceedingly minute.

Annual Pearlwort.

6. MOLLUGO. Linn.—Indian Chickweed.

(Supposed to be from *Galium Mollugo*, to which this plant bears some resemblance.)

Sepals 5, united at base. Petals none. Stamens 3—5. Styles 3. Capsule 3-valved, 3-celled, many-seeded.

M. verticillata Linn.: stem decumbent, dichotomous; leaves verticillate, obovate-lanceolate, acute; peduncles 1-flowered, verticillate.

Fields. Can. to Car. W. to the Columbia river. July—Sept. ①.—Stem spreading on the ground in all directions, 4—12 inches long. Leaves about 6 in a whorl. Flowers small, white, forming a sessile umbel. Carpet Weed.

7. STELLARIA. Linn.—Stitchwort.

(From the Latin *stella*, a star; because the corolla is spread in a star-shaped manner.)

Calyx of 5 sepals. Petals 5, (sometimes by abortion none,) 2-cleft or 2-lobed. Stamens 10, or by abortion 3—8. Styles 3, rarely 4. Capsule 3—4-valved; valves 2-parted, membranaceous. Seeds usually many.

1. *S. media* Smith: stem procumbent, with an alternate pubescent lateral line; leaves ovate or lanceolate, very smooth; upper ones sessile; petals oblong, deeply divided, shorter than the sepals; stamens 3—10. *Alsine media* Linn.

Road sides, &c. Can. to Flor. March—Nov. ①.—Stem much branched and somewhat succulent. Peduncles axillary and terminal, hairy, deflexed in fruit. Petals white. Stamens usually 3 or 5. Introduced.

Common Chickweed.

2. *S. pubera* Mich.: pubescent; stem decumbent; leaves ovate-oblong, sessile, acute, ciliate; pedicels filiform dichotomous, recurved or deflexed; petals longer than the calyx.

Rocky banks. Penn. to Geor.; rare. April, May. ②.—Stem 6—12 inches high, diffuse and dichotomous. Flowers large, axillary and terminal, on filiform pedicels. Petals white, deeply bifid. Oval-leaved Stitchwort.

3. *S. longifolia* Muhl.: smooth; stem erect, square, weak; leaves linear-acute, spreading, with the margins often scabrous; panicle terminal, divaricate, very long, bracteate; petals broad-obovate, 2-parted, about as long as the 3-nerved calyx. *Spergulastrum gramineum* Mich. *Micropetalon gramineum* Pers.

Moist woods. N. S. and N. to lat. 64°. W. to Oregon. June. ②.—Stem 12—15 inches high. Petals white, becoming longer than the calyx. Stamens 8—10. Long-leaved Stitchwort.

4. *S. borealis* Big.: stem spreading, angular, dichotomous; leaves oval-lanceolate, acute, veinless; peduncles axillary, elongated, 1-flowered; petals deeply cleft, about equal to the calyx; capsule ovate, oblong, nearly twice as long as the calyx. *Micropetalon lanceolatum* Pers.

Shady swamps. N. Y. to Arct. Amer. July, Aug. ①.—Stem 4—15 inches high, weak. Leaves slightly connate. Petals white, deeply cleft.

Northern Stitchwort.

5. *S. aquatica* D. C.: weak and decumbent, nearly smooth; leaves oblong, acute, veined; petals 2-cleft, rather shorter than the lanceolate very acute sepals; capsule ovoid, about as long as the calyx. (Torr. & Gr.) *S. borealis* Darlingt.

Sandy springs. Penn. W. to the Rocky Mountains. May. ②.—Stem 6—12 inches long, very slender. Flowers white, smaller than in the preceding.

Water Stitchwort.

6. *S. longipes* Goldie.: weak, very smooth, glaucous; leaves linear, subulate, spreading; peduncles terminal, dichotomously branched; bracts membranaceous; pedicels much elongated; petals broad-ovate, deeply bifid, a little longer than the obtuse and obscurely 3-nerved calyx.

Shores. Lake Ontario to Subarct. Amer. W. to Oregon.—*Stem* 2—6 inches high, nearly simple or branched. Very variable.

Sharp-leaved Stitchwort.

8. ARENARIA. Linn.—Sandwort.

(From the Latin *arena, sand*; because the species generally grow in sandy soils.)

Calyx 5-sepalled. Petals 5, entire. Stamens 10, or fewer by abortion. Styles 3, rarely 2 or 4. Capsule 1-celled, 3-valved, many-seeded.

* *Leaves linear, with scarious stipules at base.*

1. *A. rubra* Linn.: stem prostrate, pilose: leaves filiform, somewhat fleshy, acute or mucronate, shorter than the internodes; sepals lanceolate, somewhat obtuse, scarious on the margin; peduncles axillary, at length deflexed; seeds compressed, angular, roughish, not margined. *A. Canadensis* Pers. *A. marina* Big. *Spergula rubra* Torr. & Gr.

Sandy fields. Can. to Flor. W. to California. April—Nov. ①.—*Stem* 3—10 inches long, at first erect, at length diffuse, smooth or pubescent. *Leaves* variable in length and form. *Flowers* small, red, axillary and solitary, and in terminal leafy cymes or racemes. A very variable species.

Common Sandwort.

** *Leaves linear, lanceolate, or rounded, without stipules.*

2. *A. squarrosa* Mich.: densely cespitose; stem simple, few-leaved; lower leaves, densely squarrose, imbricate, channelled, smooth; flowers in dichotomous panicles, erect; sepals roundish-ovate, smooth; petals obovate, much longer than the calyx; capsule oval, 3-valved, exceeding the calyx. *A. Caroliniana* Walt.

Pine barrens. N. Y. to Geor. May—Aug. ②.—*Stem* 6—8 inches high, forming dense tufts. *Flowers* white, in a small terminal panicle.

Squarrose Sandwort.

3. *A. stricta* Mich.: stems numerous, erect, smooth, filiform; leaves subulate-linear, erect, subfasciculate, spreading; panicle few-flowered; sepals ovate, very acute, 3-ribbed, half as long as the petals; capsule ovate.

Rocks and barren ground. Can. to Car. May, June. ②.—*Stems* 6—12 inches high. *Leaves* more linear than in the preceding, and not so much crowded near the base.

Upright Sandwort.

4. *A. Granlandica* Spreng.: densely cespitose, smooth; stems low, decumbent at base, 1—5-flowered; leaves narrow-linear, obtuse; pedicels filiform, nearly erect; petals obovate wedge-form, entire or with a slight notch, twice the length of the oblong, obtuse, membranaceously margined, nerveless sepals. (*Torr. & Gr.*)

Rocks. Greenland; Labrador; White Mountains, N. H.; Whiteface and Shawangunk Mountains, N. Y. June—Aug. ②.—*Stems* numerous, 2—4 inches high, slender. *Leaves* erect or spreading. *Flowers* 3 or 4 lines in diameter. *A. glabra* of Michaux is said to be confined to the more or less mountainous portions of the southern states.

Greenland Sandwort.

5. *A. serpyllifolia* Linn.: stem dichotomous, diffuse; leaves ovate, acute, sessile, somewhat rugose, smooth, ciliate; sepals lanceolate, acute, 3-nerved, larger than the corolla; capsule ovate, 6-valved, equalling the calyx; seeds exactly reniform, rugose.

Sandy fields. Mass. to Geor. May—July. ①.—Stem mostly decumbent, 3—8 inches long. Flowers axillary and terminal, solitary. Introduced from Europe.
Thyme-leaved Sandwort.

9. MÆHRINGIA. Linn.—Mæhringia.

(In honor of *Mæhring*, a German physician and botanist of the last century.)

Sepals 4—5. Petals 4—5, somewhat perigynous. Stamens 8—10. Styles usually 3, sometimes 2 or 4. Capsule splitting into twice as many (half) valves as there are stigmas. Seeds few, smooth.

M. lateriflora Fenzl.: minutely pubescent; stem erect; leaves oblong or oval, obtuse; peduncles lateral and terminal, 2 (rarely 3—4) flowered, one of the pedicels with 2 bracteoles near the middle; petals twice the length of the sepals. (*Torr. N. Y. Fl.*) *Arenaria lateriflora* Linn.

Woods. Mass. N. Y. N. to Hudson's Bay; not very common. June. ♀.—Stem 5—10 inches high, simple or sparingly branched above. Peduncles axillary, solitary, filiform. Flowers white.
Lateral-flowered Mæhringia.

10. HONCKENYA. Ehrh.—Sea Chickweed.

(In honor of *J. G. Honckeny*, a German botanist.)

Sepals 5, slightly united at base. Petals 6, perigynous, with short claws, entire. Stamens 10, inserted with the petals into a glanduliferous disk. Styles 3—5. Capsules 3—5-valved; valves entire, 8—10-seeded. Seeds large, smooth.

H. peploides Ehrh.: sepals broadly ovate, mostly obtuse, with scarios margins; petals spatulate-obovate; leaves and stem very fleshy. (*Torr. ♀ Gr.*) *Arenaria peploides* Linn.

Sea coast. Long Island, N. Y. Mass. N. J. N. to Arctic America and Labrador. May, June. ♀.—Stems 6—10 inches high, thrown up from a creeping rhizoma. Leaves ovate or oval, closely sessile or clasping, very acute, or mucronate. Flowers in short pedicels, white. *Common Sea Chickweed.*

11. CERASTIUM. Linn.—Mouse-ear Chickweed.

(From the Greek *κερας*, a horn; in allusion to the form of the capsule.)

Calyx 5-sepalled. Petals 5, bifid or emarginate. Styles 5, (rarely 4.) Capsule membranaceous, cylindrical or oblong, opening at the summit by 10 teeth.

1. *C. vulgatum* Linn.: viscidly pubescent, pale green; stems numerous, cespitose, suberect; leaves ovate or obovate, obtuse, hirsute; flowers dichotomous, subumbelled, longer than the peduncles; petals oblong, emarginate, scarcely larger than the calyx; capsule oblong, tapering, as long again as

the calyx. *C. hirsutum* Muhl. *C. connatum* Beck, *Bot. 1st. Ed.* *C. semidecandrum* Walt.

Fields and hills. Can. to Geor. May—Aug. ①.—Stem 6—10 inches high. Flowers white. Introduced from Europe. *Common Mouse-ear Chickweed.*

2. *C. viscosum* Linn.: hairy and somewhat viscid, deep green; stems numerous, erect; leaves lanceolate-oblong; flowers subpaniculate, shorter than their pedicels; capsule somewhat incurved, terete, as long again as the calyx. *C. semidecandrum* Linn.

Fields and road sides. Can. to Louis. May—Aug. ②.—Stems 6—12 inches high. Leaves rather obtuse. Petals white, obovate, a little longer than the calyx. Introduced from Europe. *Clammy Mouse-ear Chickweed.*

3. *C. arvense* Linn.: stems ascending; leaves linear-lanceolate, obtuse; more or less hairy, especially at base; flowers few, terminal; peduncles deflexed, pubescent; petals twice as long as the calyx; capsule oblong-cylindrical, scarcely longer than the calyx. *C. tenuifolium* Pursh. *C. Pennsylvanicum* Horn.

Rocky places. Can. to Geor. W. to the Rocky Mountains. May—Aug. ②.—Root creeping. Stems 4—8 inches long, ascending, slender, somewhat cespitose. Leaves crowded at the base of the stem, short, ciliate at base, Flowers large, 2 or 3 on terminal pedicels. Petals deeply cleft, white, twice as long as the calyx. *Field Chickweed.*

4. *C. oblongifolium* Torr.: stems erect or declined, villous; leaves oblong-lanceolate, mostly obtuse; flowers numerous; peduncles viscid; petals obovate, 2-cleft, twice the length of the oblong obtuse sepals; capsule cylindrical, about twice as long as the calyx. *C. pubescens* Goldie. *C. villosum*. Muhl.

Rocky places. Can. to Penn.; rather rare. May, June. ②.—Stems 6—12 inches high, rather stout, very villous, tomentose at and below the nodes. Flowers larger than in *C. arvense*, 7—15 in a cyme.

Oblong-leaved Chickweed.

5. *C. nutans* Raf.: viscid and pubescent; stem erect, straight, deeply striate; leaves elongated, distant, lanceolate-linear; panicle much elongated, divaricate, many-flowered, with long filiform pedicels; petals oblong, bifid at the tip, longer than the calyx; capsule nodding, twice as long as the calyx. *C. glutinosum* Nutt. *C. longepedunculatum* Muhl.

Moist grounds. Hudson's Bay to Louis. W. to Oregon. June. ①.—Stem 8—12 inches high, very viscid and covered with a woolly pubescence. Lower leaves oblong-spatulate, acute. Flowers terminal, in a loose dichotomous panicle. *Nodding Chickweed.*

ORDER XIX. ILLECEBRACEÆ.—KNOTWORTS.

Sepals 5, seldom 3 or 4, distinct or more or less cohering. Petals minute, inserted upon the calyx between the lobes, occasionally wanting. Stamens as many as the sepals and opposite to them, or fewer by abortion. Ovary superior; styles 2—5, distinct or partially combined. Fruit small, dry, 1-celled, either indehiscent or opening with 3 valves. Seeds solitary or numerous, with mealy albumen.—Herbaceous or half shrubby plants,

with opposite or alternate, entire leaves, and scarious stipules. Flowers minute, with scarious bracts.

1. ANYCHIA. *Mich.*—Forked Chickweed.

(From the Greek *ονυξ*, *ονυχος*, a *finger-nail*; on account of its reputed virtue in curing whitlows.)

Calyx 5-parted. Sepals connivent, subsaccate, callous at the apex. Petals none. Stamens 3—5; filaments distinct. Styles short; stigmas 2, subcapitate. Capsule indehiscent, utricular, 1-seeded, surrounded by the persistent calyx.

1. *A. dichotoma Mich.*: stem erect or spreading, dichotomously branched, pubescent, leaves opposite, lanceolate, smooth; flowers solitary, terminal and axillary, very minute, on very short pedicels, about as long as the stipules. *A. Canadensis Ell. Queria Canadensis Linn.*

Dry soils. Can. to Geor. W. to Ark. July, Aug. ①.—Stem 6—12 inches high, very pubescent, with numerous forking almost filiform branches, often purple. Flowers very minute, solitary in the forks of the stem, greenish. A very variable plant. *Common Forked Chickweed.*

2. *A. capillacea D. C.*: stem very smooth and slender; leaves ovate; stipules shorter than the flowers; flowers remote. *A. dichotoma Torr. & Gr. Queria capillacea Nutt.*

Pine barrens. N. J. Aug. ①.—Perhaps only a variety of the preceding. *Capillary Forked Chickweed.*

2. SPERGULA. *Linn.*—Spurrey.

(From the Latin *spargo*, to *scatter*; from the seeds being so widely dispersed.)

Calyx 5-parted. Petals 5, entire. Stamens 5—10. Styles 3—5. Capsule ovate, 5-celled, 5-valved.

1. *S. arvensis Linn.*: leaves whorled, with minute stipules at the base; panicle dichotomous; flowers decandrous; peduncles of the fruit reflexed; seeds spherical, somewhat hispid, black, with a narrow margin.

Sandy Fields. Can. to Geor. W. to the Columbia river. June—Aug. ①.—Stem 6—12 inches high, swelling at the joints. Leaves narrow-linear, whorled. Flowers in a panicle, white. According to Sir W. Hooker, the margin of the seed varies greatly in its breadth. (*Brit. Fl.*) Introduced from Europe.

Corn Spurrey. Tares.

2. *S. saginoides Linn.*: stems creeping; leaves opposite linear, smooth, awnless; peduncles solitary, very long; petals oblong, obtuse, as long as the calyx; seeds kidney-form, punctate. *S. decumbens Ell. Sagina decumbens Torr. & Gr.*

Sandy fields. Can. to Louis. W. to the Pacific Ocean. April—July. ①.—Stems 2—4 inches long, decumbent. Flowers erect, white. Resembles *Sagina procumbens*. Introduced? *Pearlwort Spurrey.*

ORDER XX. ELATINACEÆ.—WATERWORTS.

Sepals 2—5, distinct, or slightly connate at the base. Petals hypogynous, alternate with the sepals. Stamens as many or

twice as many as the petals. Styles 2—5, very short, or none; stigmas capitate. Capsule 2—5-celled, 2—5-valved. Seeds numerous, without albumen; embryo straight.—Small annual plants, found in marshes. Stems fistulous, rooting. Leaves opposite, with minute stipules.

ELATINE. *Linn.*—Waterwort.

(From the Greek *ελάτη*, a fir; its minute leaves somewhat resembling those of the fir tree.)

Calyx 2—4-parted. Petals 2—4. Stamens 2—8. Capsule 2—4-valved; margin of the valves not introflexed.

E. Americana *Arnott*: stems diffuse, rooting and creeping; leaves cuneate-obovate, obtuse; flowers minute, sessile; sepals, petals, stamens and sessile stigmas 2, sometimes 3; seeds 6—8. (*Torr. N. Y. Fl.*) *Crypta minima* *Nutt.* *Peplis Americana* *Pursh.*

Banks of streams. Throughout the U. S. July—Sept. ①?—Stems rooting and creeping, forming patches. Leaves 2—3 lines long, entire. Flowers solitary, very minute. Petals roundish, white. *American Waterwort.*

ORDER XXI. LINACEÆ.—FLAXWORTS.

Sepals 3—5, persistent, with an imbricated æstivation. Petals as many as the sepals, unguiculate, with a twisted æstivation. Stamens as many as the petals, and alternate with them, often with intermediate teeth or abortive stamens. Ovaries of 3—5 united carpels; styles filiform. Capsule globose, 3—5-celled; each cell partially divided in two by an imperfect spurious dissepiment, and opening by 2 valves at the apex. Seeds solitary, with thin albumen and a straight embryo.—Herbaceous plants or small shrubs. Leaves entire, opposite or alternate, without stipules. Flowers terminal.

LINUM. *Linn.*—Flax.

(From the Celtic *lin*, thread.)

Sepals 5, persistent. Petals 5. Stamens 5, with the filaments united at base. Styles 5, very rarely 3. Capsule superior, subglobose, 10-valved, 10-celled. Seeds ovate, compressed.

1. *L. usita tissimum* *Linn.*: stem mostly solitary, round, smooth, simple, branched above; leaves lanceolate, alternate; flowers large, on peduncles; segments of the calyx ovate, acute; petals crenate; capsule roundish, acuminate.

Fields. June, July. ①.—Stem 1½ to 2 feet high. Leaves distant, 3-rowed. Flowers large, purplish-blue. Introduced; scarcely naturalized.

Common Flax.

2. *L. Virginianum* Linn.: stem erect, slender, smooth; radical leaves ovate and spatulate; those of the stem linear-lanceolate, alternate; panicle lax, corymbose; sepals acute; capsule globose, awnless.

Hills and fields. Can. to Flor. W. to Arkansas. June—Aug. ①.—Stem 1—2 feet high, slender. Flowers small, yellow, in a dichotomous panicle.
Virginian Flax.

3. *S. rigidum* Pursh.: stem rigid, angular, grooved; leaves subsetaceous, short and erect; margin of the calyx glandulously ciliate; petals cuneate-oblong; seeds pale brown.

Woods. Mass. to Geor. W. to Fort Mandan and California. ①.—Stem about 6 inches high. Flowers pale yellow.
Small Wild Flax.

ORDER XXII. MALVACEÆ.—MALLOWWORTS.

Sepals 5, very seldom 3 or 4, more or less united at the base, often bearing external bracts forming an involucre. Petals equal in number to the sepals. Stamens indefinite, monadelphous; anthers 1-celled, reniform. Ovary formed by the union of several carpels round a common axis, either distinct or cohering; styles as many as the carpels. Fruit capsular or berried. Seeds without albumen.—Herbaceous plants or shrubs. Leaves alternate, more or less divided, stipulate. Flowers showy.

1. MALVA. Linn.—Mallow.

(Name altered from *μαλαχη*, soft; in allusion to the emollient nature of the species. Hook. Br. Fl.)

Calyx 5-cleft, surrounded by an involucre usually of 3, sometimes 1—2, or 5—6 setaceous bracts; rarely naked. Capsules dry, numerous, 1-seeded, circularly arranged.

1. *M. sylvestris* Linn.: stem erect, herbaceous, branched hairy; leaves large, roundish, with 7 somewhat acute lobes; flowers large, axillary; peduncles and petioles hairy; petals obcordate, thrice as long as the calyx.

Fields. N. Y. July, Aug. ②.—Stem 2—3 feet high, branched. Flowers large, 3 or 4 together, purplish rose-color, with darker veins. Whole plant mucilaginous and emollient. Introduced from Europe.
High Mallow.

2. *M. rotundifolia* Linn.: stem somewhat prostrate; leaves roundish, cordate, obtusely 5—7-lobed; peduncles bent downwards, and with the petioles pubescent; flowers axillary; corolla twice the length of the calyx.

Cultivated grounds. Can. to Car. W. to Miss. June—Oct. ②.—Root fusiform. Stem 10—18 inches long. Flowers small, pink, with darker veins, on pedicels, 2—3 together. Extensively naturalized.
Low Mallow.

3. *M. ? Americana* Muhl.: leaves ovate, crenate, stipules oblong-linear; peduncles axillary, 1-flowered. *Malope malacoides* Linn.

Penn. Virg. ①.—Stem 12—18 inches high, sparingly branched. Flowers on peduncles 2—3 lines long. Petals twice as long as the calyx, yellow. Torr. & Gr.
American Mallow.

2. ALTHÆA. *Linn.*—Marsh Mallow.

(From the Greek $\alpha\lambda\theta\omega$, to cure; on account of its healing properties.)

Calyx surrounded by a 6—9-cleft involucre. Capsules numerous, 1-seeded, arranged circularly.

1. *officinalis Linn.*: leaves soft tomentose on both sides, cordate and ovate, dentate, entire or 3-lobed; peduncles axillary, many-flowered, much shorter than the leaves.

Near salt marshes. Mass. N. Y. N. J. Aug., Sept. ♀.—Stem 2 feet high. Flowers large, purple. Introduced from Europe. Marsh Mallow.

3. HIBISCUS. *Linn.*—Hibiscus.

(From an ancient Greek name of some plant of this tribe.)

Calyx 5-cleft or 5-toothed, surrounded by an involucre which is often many-leaved. Stigmas 5. Carpels united in a 5 or 10-celled capsule; valves septiferous in the middle; cells many-seeded, rarely 1-seeded.

1. *H. Virginicus Linn.*: roughish tomentose; leaves cordate-ovate, acuminate, unequally serrate-toothed; upper ones undivided; lower 3-lobed; pedicels longer than the petioles; flowers cernuous; capsule hispid. *H. clypeatus Wall.*

Salt marshes. N. Y. to Car. Aug. ♀.—Stem 3 feet high. Flowers in paniculate racemes, 2 inches in diameter, rose-colored. Involucre 8—9-leaved, tomentose. Petals obovate-cuneate. *Virginian Hibiscus.*

2. *H. Moscheutos Linn.*: leaves ovate, acuminate, serrate, often 3-lobed, whitish-tomentose beneath, somewhat scabrous pubescent above; peduncles and petioles often united; calyx tomentose. *H. palustris Linn.*

Swamps, especially near salt water. Can. to Car. Aug., Sept. ♀.—Stem 3—5 feet high. Leaves 5 inches long and 3 broad, usually obtuse at base. Flowers white or pale purple, sometimes with a crimson centre, about as large as the common *Hollyhock*. *Swamp Hibiscus.*

3. *H. militaris Willd.*: leaves 3-lobed, hastate, acuminate, serrate, smooth; pedicels articulate in the middle; corolla subcampanulate; capsule ovate, acuminate, smooth; seeds silky. *H. Virginicus Walt. H. hastatus Mich.*

Banks of streams. Penn. to Geor. W. to Ark. Aug. ♀.—Stem 3—4 feet high. Flowers large, purple, axillary, solitary. *Smooth Hibiscus.*

4. *H. Trionum Linn.*: leaves toothed; lower ones scarcely divided; upper 3-parted; lobes lanceolate, middle one very long; calyx inflated, membranaceous, nerved. *H. pallidus Raf.*

Near gardens and cultivated grounds. N. Y. July. ①.—Stem 2 feet high, somewhat hispid. Flowers yellowish white, with the lower part purple. Introduced from Europe. *Bladder Kctmia.*

4. SIDA. *Linn.*—Sida.

(An ancient Greek name applied to some plant of this tribe.)

Calyx 5-cleft, often angled, naked, or rarely with 1—2 se-

taceous bracts. Style many-cleft at the top. Carpels numerous, arranged circularly, 1-celled, 1—3-seeded.

1. *S. spinosa* Linn.: leaves ovate-lanceolate, toothed, with the tubercles at the base spiny; pedicels axillary, solitary, shorter than the stipules and petioles; carpels 5, bi-rostrate.

Barrens and road sides. N. Y. to Car. W. to Miss. July, Aug. ①.—Stem 1—2 feet high, branched. Flowers solitary, yellow. Leaves sometimes subcordate. Prickly Sida.

2. *S. Napæa* Willd.: leaves palmately 5-lobed, smooth; lobes oblong, acuminate, toothed; peduncles many-flowered; capsules 10, awnless, acuminate. *Napæa lævis* Linn.

Rocky places. Penn. to Virg.; rare. Pursh. July. ♀.—Stem 3—4 feet high. Flowers small, white. Smooth Sida.

3. *S. dioica* Willd.: leaves palmately 7-lobed, rough; lobes lanceolate, incisely toothed; peduncles many-flowered, bracteate, subcorymbed; flowers diœcious; capsules 10, awnless. *Napæa dioica* and *N. scabra* Linn.

Stony ground. Penn and Virg. Oct. ♀.—Stem 4—5 feet high. Flowers small, white, crowded into heads. Rough Sida.

4. *S. Abutilon* Linn.: leaves roundish-cordate, acuminate, toothed, tomentose; peduncles shorter than the petioles; capsules 15, truncate, bi-rostrate, hairy. *Abutilon Avicennæ* Gært. Torr. & Gr.

Waste ground. N. S. July, Aug. ①.—Stem 3—5 feet high, with spreading branches. Leaves large. Flowers orange yellow. Introduced from India. Indian Mallow.

ORDER XXIII. TILIACEÆ.—LINDENS.

Sepals 4—5, distinct or united, with a valvate æstivation. Petals 4—5, entire, rarely wanting. Stamens generally indefinite, hypogynous, distinct; anthers 2-celled. Disk often with 4—5 glands at the base of the petals. Ovary of 2—10 united carpels; style 1; stigmas as many as the carpels. Fruit dry, of several cells. Seeds solitary or numerous, with fleshy albumen.—Trees or shrubs, with simple, stipulate, alternate leaves and axillary flowers.

TILIA. Linn.—Linden or Lime Tree.

(A name of uncertain origin.)

Calyx 5-parted, deciduous. Petals 5, naked, or with a small scale within. Stamens many; filaments free, or somewhat in sets. Ovary globose, villous, 5-celled; cells 2-seeded, (Fruit.) coriaceous, by abortion 1-celled, 1—2-seeded.

1. *T. glabra* Vent.: leaves deeply cordate, abruptly acuminate, acutely serrate, subcoriaceous, smooth; flowers in cymes; petals truncate at the apex, crenate; style as long as the petals; fruit ovate, somewhat ribbed. *T. Americana* Linn. Mich. f. *T. Canadensis* Mich.

Woods. Can. to Car. W. to Miss. June. A tree often 60 or 70 feet high, with yellowish-white flowers. The wood is white and soft, and much used by cabinet and coach-makers. The bark is grayish, and so strong and flexible as to make tolerable ropes. *Big. Basswood. Whitewood.*

2. *T. laxiflora Mich.*: leaves cordate, gradually acuminate, serrate, membranaceous, smooth; flowers in loose panicles; petals emarginate; styles longer than the petals; fruit globose.

Near the sea coast. Penn. to Geor. May. 12.—A very distinct species, though generally confounded with the former. *Pursh.*

Loose-flowered Linden.

3. *T. pubescens Ait.*: leaves truncate at the base, subcordate, oblique, denticulate-serrate, pubescent beneath; petals emarginate; styles longer than the petals; fruit globose, smooth. *T. Americana Walt.*

Banks of streams. Penn. to Geor. W. to Tenn. June.—A large tree. *Flowers white, in axillary cymes. Hairy-leaved Linden.*

ORDER XXIV. HYPERICACEÆ.—TUTSANS.

Sepals 4—5, distinct or cohering, unequal. Petals 4—5, with a twisted æstivation and oblique veins. Stamens usually numerous and cohering at base in three or more parcels. Ovary single, superior; styles several, rarely connate; stigmas simple, occasionally capitate. Fruit a capsule or berry, of many valves and many cells. Seeds very numerous, minute, without albumen; embryo straight.—Herbaceous plants or shrubs, with a resinous juice, and dotted with pellucid or black glands. Leaves opposite, entire, without stipules. Flowers mostly yellow.

1. HYPERICUM. *Linn.*—St. John's Wort.

(A name of uncertain origin.)

Sepals 5, more or less united at the base, mostly equal. Petals 5, oblique, and often inequilateral. Stamens numerous, or sometimes few, united at the base into 3—5 parcels, sometimes distinct. Styles 3—5, distinct or more or less united. Capsule membranaceous.

* *Stamens numerous. Styles 5. Flowers mostly terminal, large, yellow.*

1. *H. pyramidatum Ait.*: smooth; stem square, somewhat branching above; leaves oblong-lanceolate, somewhat clasping, acute, membranaceous, pellucid-punctate; sepals ovate-lanceolate; styles free, as long as the stamens. *H. macrocarpon Mich. H. ascyroides Willd.*

River banks. Can. to Penn. and Ohio. July. 4.—Stem 2—4 feet high, with two of the angles strongest. *Flowers few or solitary, at the ends of the branches, more than an inch in diameter. Capsule ovoid-conical, as large as a nutmeg.*

Giant St. John's Wort.

2. *Kalmianum Willd.*: frutescent, much branched; branches square;

leaves crowded, narrow-oblongate, obtuse; cymes fastigiate, 3—7-flowered; sepals ovate-lanceolate, about half as long as the petals.

Banks of streams and in swamps. Can. and around the great lakes. Falls of Niagara. N. J. July, Aug. A shrub about 2 feet high. *Flowers* smaller than in the preceding. The var. *elongatum* of Macnab occurs in a swamp about 8 miles S. of New Brunswick, N. J. The branches are more elongated, the leaves more obtuse, and the flowers smaller than in the specimens from Niagara Falls.

Kalm's St. John's Wort.

** *Stamens* numerous. *Styles* mostly 3. *Flowers* yellow.

3. *H. angulosum* Mich.: stem herbaceous, square, erect; leaves distant, elongated, ovate, subclasping, sinuate on the margin, acute, not punctate; flowers axillary, solitary, in a dichotomous panicle; sepals lanceolate, acute, somewhat keeled. *H. denticulatum* Walt.

Cedar swamps. N. J. to Flor. June, July. 2.—*Stem* 12—18 inches high, branched towards the summit. *Flowers* scattered in the panicle and alternate, orange-colored. *Styles* 3, often united. *Angular St. John's Wort.*

4. *H. adpressum* Bart.: stem 2-winged above; leaves linear-lanceolate or linear-oblong, closely sessile, pellucid-punctate; cyme few-flowered, naked; sepals very unequal, oblong and obovate, at length reflexed; petals oblong-obovate, twice as long as the sepals.

Swamps. N. J. Penn. W. to Ark. Aug., Sept. 2.—*Stem* 2 feet high, somewhat shrubby at base. *Flowers* in compound cymes. *Stamens* very numerous. *Winged St. John's Wort.*

5. *H. ellipticum* Hook.: stem square, simple below, somewhat branched above; leaves elliptic, very obtuse, closely sessile, pellucid-punctate; cyme nearly naked; sepals oblong, very unequal, spreading; capsule ovate-globose.

Moist grounds. Can. to Penn. July. 2.—*Stem* 10—20 inches high. *Flowers* pale orange. *Styles* 3, connate nearly to the summit.

Elliptic St. John's Wort.

6. *H. corymbosum* Muhl.: stem terete, black punctate; leaves ovate lanceolate, obtuse, sub-clasping; flowers in dense corymbs; sepals ovate, acute; petals oblong. *H. punctatum* Torr. Comp.

Shady woods. Can. to Penn. W. to Miss. June. 2.—*Stem* 2 feet high. *Flowers* in a compact panicle or corymb. *Styles* 3, longer than the stamens. Whole plant, except the filaments and styles, spotted with black dots.

Corymbed St. John's Wort.

7. *H. perforatum* Linn.: stem ancipital; leaves obtuse, ovate-elliptic, and with the lanceolate sepals pellucid-punctate; flowers panicled; anthers with black punctures; styles diverging.

Fields, pastures, &c. Throughout Can. and the U.S. June—Aug. 2.—*Stem* 1—2 feet high, branched. *Flowers* numerous. *Stamens* mostly in three sets. A pernicious weed, producing, according to Dr. Darlington, troublesome sores upon horses and horned cattle, where it comes in contact with them. It would seem that the dew which collects on the plant, becomes active in this way. *Fl. Cest.* Introduced from Europe. *Common St. John's Wort.*

8. *H. mutilum* Linn.: stem erect, much branched, smooth, square; leaves ovate, subcordate, obtuse, sessile, obscurely 5-nerved, pellucid-punctate; flowers in a dichotomous corymb; sepals lanceolate, longer than the petals. *H. quinquenervium* Walt. Mich. *H. parviflorum* Willd.

Overflowed grounds. Throughout Can. and the U. S. June—Aug. ♀.—
Stem 6—12 inches high. Flowers very small, pale yellow, solitary in the divisions
of the stem. *Small-flowered St. John's Wort.*

9. *H. Canadense* Linn.: stem erect and straight, 4-winged; leaves linear, attenuate at the base, rather obtuse: panicle elongated, dichotomous; sepals lanceolate, very acute, longer than the petals; stamens 5—10; capsule long, conical, colored.

Gravelly soil. Can. to Geor. June—Aug. ①.—Stem 6—12 inches high. Flowers small, yellow. Capsule much longer than the calyx, and of a reddish color, by which, together with its linear leaves, it can be readily distinguished from the preceding. *Canadian St. John's Wort.*

10. *H. Sarothra* Mich.: erect, much branched above; branches setaceous; leaves minute, subulate, appressed; flowers terminal, subsolitary; stamens 5—10; capsule conical, very acute, 1-celled. *H. nudicaule* Wall. *Sarothra gentianoides* Willd.

Sandy fields. N. Y. to Car. June—Aug. ♀.—Stem 4—8 inches high, much branched. Leaves scarcely more than a line long. Flowers minute, orange-yellow. Stamens variable in number. *Ground Pine.*

11. *H. prolificum* Linn.: stem shrubby, terete; branches angled; leaves linear-lanceolate, revolute on the margin, pellucid-punctate; corymbs axillary and terminal, few-flowered, sepals ovate-lanceolate; stamens very numerous. *H. galioides* Pursh.

Banks of streams. N. J. to Flor. W. to Texas. July.—A shrub 2—3 feet high, with much compressed branches. Leaves 2 inches long. Peduncles generally 3-flowered, the intermediate one nearly sessile.

Proliferous St. John's Wort.

2. ASCYRUM. Linn.—St. Peter's Wort.

(From the Greek *a*, *privative*, and *ασυρος*, *roughness*; the plant being smooth to the touch. *Torr. N. Y. Fl.*)

Calyx 4-sepalled; 2 outer sepals smaller. Petals 4, caducous. Stamens many, scarcely united at base. Styles 2—3, rarely 4, sometimes united. Capsule 1-celled, 2—3-valved.

1. *A. Crux-Andrea* Linn.: stem much branched at base, assurgent; leaves obovate-oblong, or linear-oblong, obtuse; flowers solitary or cymulose, on short pedicels; outer sepals ovate, inner ones very minute; petals linear-oblong; styles 2, at length distinct. (*Torr. & Gr.*) *A. multicaule* Mich.

Sandy fields. N. J. to Flor. and Louis. July. ♀.—Stem 8 inches to 2 feet high, ancipital above. Leaves variable in width. Flowers usually in threes, pale yellow. *Common St. Peter's Wort.*

2. *A. stans* Mich.: stem ancipital and somewhat winged; straight; leaves closely sessile, ovate-elliptic, obtuse, glaucous; outer sepals cordate-orbicular; inner ones lanceolate, one-third shorter than the others; styles 3, rarely 4. *A. hypericoides* Linn.?

Sandy swamps. N. Y. to Flor. July, Aug. ♀.—Stem 1—2 feet high, branched at the summit. Flowers mostly three together, yellow, much larger than in the preceding. *Upright St. Peter's Wort.*

3. ELODEA. *Adans.*—Elodea.(From the Greek *ελωδης*, growing in marshy places.)

Sepals 5, somewhat united at base. Petals 5, deciduous, equilateral. Stamens 9, (rarely 12—15,) united into three parcels which alternate with 3 hypogynous glands. Styles 3, distinct. Capsule oblong, membranaceous, 3-celled.

E. Virginica Nutt.: leaves sessile, clasping; stamens united below the middle. *E. campanulata* Pursh. *Hypericum Virginicum* Linn.

Bogs and meadows. Can. to Flor. and Louis. July—Sept. 2l.—Stem 12—18 inches high, tinged with purple. Leaves 1—2 inches long, paler beneath. Flowers few, in terminal and axillary cymes, reddish-yellow, half an inch in diameter. *Virginian Elodea.*

ORDER XXV. ACERACEÆ.—MAPLES.

Calyx 5, or rarely 4—9-parted, with an imbricate æstivation. Petals as many as the lobes of the calyx and alternate with them, inserted round a hypogynous disk. Stamens usually 8, sometimes 3—12, distinct. Ovary 2-lobed, 2-celled; style 1; stigmas 2. Fruit of 2 indehiscent winged carpels, (*samaræ*,) each 1-celled, 1—2-seeded. Seeds with little or no albumen.—Trees, with opposite, palmately lobed, rarely pinnate, leaves. Flowers small, often polygamous, in racemes, corymbs or fascicles.

1. ACER. *Linn.*—Maple.(From the Latin *acer*, sharp; the wood having been used for pikes, or lances.)

Flowers mostly polygamous. Calyx 5-lobed, sometimes 5-parted. Stamens rarely 5, often 7—10. Samaræ 3, winged, united at base, by abortion 1-seeded.

* *Flowers in corymbs or fascicles.*

1. *A. rubrum* Linn.: leaves 3—5-lobed, cordate at the base, unequally and incisely toothed, glaucous beneath; the sinuses acute, the lobes acute or acuminate; flowers aggregated in about fives, on rather long pedicels; fruit smooth; the wings slightly falcate, at length spreading.

Moist woods. Can. to Flor. April.—A tree from 20—50 feet high. Leaves pubescent when young. Flowers appearing before the leaves, in sessile fascicles, red or yellowish. Pedicels of the flowers, half an inch long, of the fruit 2—3 inches. *Red Maple.*

2. *A. eriocarpum* Mich.: leaves palmately 5-lobed, truncate at the base, smooth and whitish-glaucous beneath; sinuses obtuse; lobes acuminate, incisely toothed; flowers aggregated, on short pedicels; fruit woolly when young, nearly smooth when old, with large dilated wings. *A. dasycarpum* Willd.

Banks of streams. Can. to Geor. April, May.—A tree 30—50 feet high, affording a sweet sap. *Leaves* on long petioles, nearly smooth when old. *Flowers* greenish-yellow or purplish, usually about 5 together. *Pedicels* of the fruit about an inch long. *Silver-leaved Maple. White Maple.*

3. *A. barbatum Mich.*: leaves ovate-cordate, with 3 short lobes, unequally serrate, glaucous beneath and pubescent on the nerves; corymbs sessile; peduncles hairy; those of the sterile flowers branched, of the fertile simple; calyx bearded within; fruit smooth; wings erect. *A. Carolinianum Walt.*

Cedar swamps. N. J. to Car. *Pursh.* April.—A small tree. *Leaves* small. *Flowers* pale green. *Calyx* densely bearded within. *Hairy Maple.*

4. *A. saccharinum Linn.*: leaves palmately 3—5-lobed, subcordate at base, petioled, glaucous beneath; sinuses obtuse; lobes acuminate; peduncles corymbose, loose, nodding, hairy; fruit glabrous; wings divergent.

Woods. Can. to Geor. W. to Miss. April.—A tree 50—80 feet high. *Leaves* deep green and smooth above. *Flowers* yellowish, on long filiform peduncles. *Petioles* smooth. Valuable for its timber and for the sugar obtained from its sap. *Common Sugar Maple. Hard Maple.*

5. *A. nigrum Mich.*: leaves palmately 5-lobed, cordate, with the sinus closed, pubescent beneath; lobes divaricate, sinuate-dentate; flowers on long slender peduncles, corymbed; fruit glabrous, turgid at base; wings diverging. *A. saccharinum* var. *nigrum Torr. & Gr.*

Woods, on hill-sides. Ver. to Car. April.—A large tree. *Flowers* yellowish. *Petioles* pubescent. *Black Sugar Maple.*

** *Flowers in racemes.*

6. *A. striatum Mich.*: leaves with 3 acuminate lobes, rounded at the base, acutely dentate, somewhat pubescent; racemes simple, pendulous; petals oval; fruit smooth; wings large, somewhat diverging. *A. Pennsylvanicum Linn.*

Shady rocks. Can. to Geor. (Not south of the Highlands in N. Y. *Torr.*) May.—A shrub or small tree 10—15 feet high; trunk beautifully striate. *Leaves* rarely undivided. *Flowers* large, greenish-yellow, 10—12 in a raceme. *Striped Maple. Moose Wood.*

7. *A. spicatum Linn.*: leaves small, 3—5-lobed, acute, dentate, cordate, pubescent beneath; racemes spikeform, erect; petals linear; fruit smooth; wings somewhat diverging. *A. montanum Ait.*

Rocky hills. Can. to Geor. May.—*Shrub* 8—12 feet high. *Flowers* greenish, small, in racemes 2 or 3 inches long. *Mountain Maple.*

2. NEGUNDO. *D. C.* Box Elder.

Flowers diœcious. Calyx minute, unequally 4—5-toothed. Petals none. Anthers 4—5, linear, sessile.

N. fraxinifolium Nutt.: leaves ternate, or pinnate by fives; leaflets rhomboid-oval or oval-lanceolate, acuminate, unequally and coarsely dentate; flowers diœcious, in simple pendulous racemes. *Acer Negundo Linn. Mich.*

Low wet grounds. Can. to Geor. W. to the Rocky Mountains. April.—A tree 15—20 feet high, with a smooth yellowish-green bark. *Leaves* mostly ternate. *Flowers* yellowish-green, pendulous. *Ash-leaved Maple. Box Elder.*

ORDER XXVI. HIPPOCASTANACEÆ.—HORSE CHESTNUTS.

Calyx campanulate, 5-lobed. Petals 4 or 5, unequal. Stamens 7—8 distinct, unequal, inserted upon a hypogynous disk. Ovary 3-celled; style filiform, acute. Fruit coriaceous, 1—2 or 3-valved, 1—2 or 3-celled. Seeds 1—3, large, roundish, with a smooth shining coat, and a broad hilum; albumen none; embryo curved, germinating under ground.—Trees or shrubs. Leaves opposite, compound. Flowers in racemes or panicles.

ÆSCULUS. *Linn.*—Horse Chestnut.

(A Latin name said to have been originally applied to an oak.)

Calyx campanulate, 5-toothed. Petals 4—5, more or less unequal. Filaments recurved backward.

1. *Æ. glabra Willd.*: leaflets 5, ovate, acuminate, very smooth; corolla 4-petalled, spreading, with the claws as long as the calyx; stamens longer than the corolla; fruit echinate. *Æ. echinata Muhl. Pavia Ohiensis Mich. f.*

Banks of streams. Penn. to Virg. W. to Miss. May.—A large shrub or small tree. *Flowers* yellowish-white, in terminal racemose panicles. *Buck-eye.*

2. *Æ. Hippocastanum Linn.*: leaflets 7, obovate-cuneate, acute, dentate; flowers with 5 petals and 7 stamens; fruit echinate.

About houses. May.—A tree with a smooth bark, very branching towards the top. *Flowers* large, white, spotted with purple and yellow. A native of India. *Common Horse Chestnut.*

ORDER XXVII. VITACEÆ.—VINES.

Calyx small, nearly entire. Petals 4 or 5, sometimes cohering above and calyptriform, with a valvate æstivation. Stamens as many as the petals, inserted upon the disk, sometimes sterile by abortion. Ovary 2-celled; style 1, very short; stigma simple. Fruit a globose pulpy berry, 2- (or by abortion 1-) celled. Seeds 1—5, bony, with hard albumen.—Climbing shrubs, with simple or compound leaves, and small green flowers.

1. AMPELOPSIS. *Mich.*—Ampelopsis.

(From the Greek *αμπελος vine*, and *οψις, aspect*; on account of its resemblance to the vine.)

Calyx nearly entire. Petals 5. Style 1, very short. Stigma capitate. Ovary not immersed in the disk, 2—4-seeded.

1. *A. cordata Mich.*: stem climbing, with slender branches; leaves cor-

date, acuminate, toothed and angular; nerves beneath pubescent; racemes dichotomous, few-flowered. *Cissus Ampelopsis Pers.* *Vitis indivisa Willd.*

Banks of streams. Penn. to Car. W. to Ark. June, July. $\frac{1}{2}$.—Leaves cordate, often straight at base as if truncate. Panicles opposite the leaves. Berries pale red. *Heart-leaved Ampelopsis.*

2. *A. quinquefolia Mich.*: stem climbing and rooting; leaves digitate, by fives, on long petioles, glabrous; leaflets connected at base, lanceolate, acuminate, dentate towards the apex; racemes somewhat dichotomously cymose. *A. hederacea D. C.* *Cissus hederacea Pursh.* *Hedera quinquefolia Linn.*

var. *hirsuta Torr. & Gr.*: leaves pubescent on both sides; leaflets ovate. *A. hirsuta Muhl.* *Cissus hederacea, var. hirsuta Pursh.*

Woods. Can. to Geor. W. to Ark. Var. *hirsuta*, Alleghany Mountains. *Pursh.* June, July. $\frac{1}{2}$.—Stem climbing. Flowers small, yellowish-green. Berries dark blue or nearly black. *Virginian Creeper.*

2. VITIS. *Linn.*—Vine.

(An ancient Latin name, the derivation of which is unknown.)

Calyx somewhat 4—5-toothed. Petals 4—5, cohering at their apex, deciduous. Stamens 5. Style none. Berry 2-celled, 1—4-seeded; cells and seeds often abortive.

1. *V. Labrusca Linn.*: leaves very large, broad-cordate, sub-3-lobed, acutely toothed, glabrous above, and with the peduncles grayish-tomentose beneath; racemes small, paniced; berries large.

Woods. Can. to Flor. June, July. $\frac{1}{2}$.—Stem climbing to a great height. Flowers greenish. Berries dark purple, sometimes greenish-white. It undergoes great changes by cultivation. *Fox Grape.*

2. *V. astivalis Mich.*: stem long and slender; leaves broad-cordate, 3—5-lobed, younger ones ferruginous-tomentose beneath, when old nearly smooth; sinuses rounded; racemes opposite the leaves, rather crowded, oblong; berries small. *V. intermedia Muhl.*

Woods and river banks. N. Y. to Flor. W. to Miss. June. $\frac{1}{2}$.—Berries deep blue, almost black. *Summer Grape.*

3. *V. vulpina Linn.*: leaves cordate, abruptly acuminate, somewhat equally and rather coarsely toothed, smooth above; racemes loose, many-flowered; berries small. *V. cordifolia Mich. Pursh.*

River banks. Can. to Flor. June. $\frac{1}{2}$.—Berries amber-colored, nearly black when ripe, and have a tart taste. *Winter Grape. Frost Grape.*

4. *V. riparia Mich.*: leaves cordate, unequally and incisely toothed; shortly 3-lobed, pubescent on the margin, nerves and petiole; racemes loose; berries small. *V. odoratissima Donn.*

Gravelly banks. Can. to Virg. W. to Ark. May—July. $\frac{1}{2}$.—Stem long. Leaves incisely toothed, by which it may be distinguished from the preceding. Flowers sweet-scented. Berries dark purple or amber color, when ripe. *Sweet-scented Grape.*

ORDER XXVIII. GERANIACEÆ.—CRANE'S-BILLS.

Sepals 5, persistent, more or less unequal, with an imbricated æstivation. Petals 5, (or by abortion 4, rarely none,) unguicu-

late. Stamens usually monadelphous, hypogynous, twice or thrice as many as the petals. Fruit formed of 5 carpels cohering round the axis, having a membranous pericarp and terminated by an indurated style, which finally twists and carries the pericarp along with it. Seeds solitary, without albumen. Cotyledons convolute and plaited.—Herbaceous or shrubby plants usually strong-scented. Leaves opposite and alternate, mostly lobed. Flowers regular or irregular.

1. GERANIUM. *Linn.*—Crane's-bill.

(From the Greek *γέρανος*, a crane; the fruit resembling the bill of that bird.)

Sepals 5, equal. Petals 5, equal. Stamens 10, all fertile; alternate ones longer, and with nectariferous scales at the base. Carpels with long awns, at length separating elastically from the summit to the base; awns smooth internally.

* *Perennial.*

1. *G. maculatum Linn.*: stem somewhat angular, erect, dichotomous, retrorsely pubescent; leaves 3—5-parted, incised; radical on long petioles; upper opposite, sessile; petals entire; filaments slightly ciliate at the base.

Woods. Can. to Flor. W. to Miss. May, June. ①.—*Stem* 8—15 inches high. *Leaves* hairy. *Flowers* large, purple. The root is very astringent, and is useful for medicinal purposes. *Big. Med. Bot.* i. 19.

Spotted Geranium, or Crane's-bill.

** *Annual.*

2. *G. pusillum Linn.*: stem procumbent; leaves reniform or nearly orbicular, deeply 5—7-lobed; lobes of the lower leaves 3-cleft, of the upper entire; peduncles short, 2-flowered; petals emarginate, scarcely longer than the awnless calyx; carpels keeled, pubescent.

Sandy soils. N. Y. & Penn. May—July. ①.—*Stem* 1—2 feet long, very slender. *Leaves* slightly pubescent. *Flowers* pale purple, much smaller than in the preceding. Introduced? *Small-flowered Crane's-bill.*

3. *G. Carolinianum Linn.*: diffusely branched, pubescent; leaves 5-lobed beyond the middle; lobes incised, 3—5-cleft; peduncles crowded towards the top; petals notched, as long as the awned calyx; carpels hairy. *G. dissectum Pursh.*

Barren grounds. Arct. Amer. to Flor. and Louis. W. to the Rocky Mountains and California. April—June. ①.—*Stem* 4—12 inches high. *Flowers* small, rose-color, or nearly white. *Carolina Crane's-bill.*

4. *G. Robertianum Linn.*: leaves ternate or quinate; leaflets somewhat pinnatifid, segments mucronate; peduncles long, 2-flowered; calyx, angular, hairy, with longish awns, shorter than the entire petals; carpels small, wrinkled.

Rocky places. Can. to Virg. June—Sept. ①.—*Stem* long. *Flowers* rather small, purple. Plant very fetid. *Herb Robert.*

2. ERODIUM. *L'Herit.*—Heron's-bill.

(From the Greek *ερωδιος*, a heron; the fruit resembling the head and beak of that bird.)

Sepals 5, equal, regular. Petals 5, mostly equal. Stamens 10, the 5 outer ones (opposite the petals) shorter and sterile; the perfect ones with a nectariferous gland at the base. Styles persistent, bearded on the inside, at length spirally twisted.

E. cicutarium *Smith*: stem prostrate or diffuse, hairy; leaves pinnately divided; segments sessile, pinnatifid, incised or acute; peduncles several flowered; petals unequal. *Geranium cicutarium* *Linn.*

Gravelly shore of Oneida Lake, N. Y.; abundant. W. to Oregon and California. May, June. ①.—Leaves 2—4 inches long, oblong, with numerous pinnatifid lobes. Flowers as large as those of *Geranium pusillum*. Introduced?
Hemlock-leaved Heron's-bill.

ORDER XXIX. BALSAMINACEÆ.—BALSAMS.

Sepals 5, irregular, deciduous; the two upper commonly united into one, the lower spurred. Petals 4, hypogynous, united in pairs, so that apparently there are only 2 petals. Stamens 5; filaments subulate. Ovary 5-celled; stigma sessile, more or less 5-lobed. Fruit capsular, with 5 elastic valves and 5 cells. Seeds solitary or numerous, without albumen.—Succulent herbaceous plants. Leaves simple, without stipules.

IMPATIENS. *Linn.*—Balsam.

(In allusion to the bursting of the seed-vessels by the slightest touch.)

Sepals 5, the lower one spurred. Corolla 4-petalled, irregular; the two inner petals unequally bilobed. Stigmas 5, united. Capsule prismatic-terete, elongated, 5-valved, opening elastically.

1. *I. pallida* *Nutt.*: peduncles solitary 2—5-flowered; leaves oblong-ovate, on short petioles, coarsely serrate, the teeth mucronate; lower sepal dilated, obtusely conic, shorter than the petals, with a very short recurved spur; flowers sparingly punctate. *I. noli-tangere* *Pursh.*
I. aurea *Muhl.*

Damp grounds. Can. to Geor. W. to Miss. Aug. ①.—Stem 3—5 feet high, much branched. Leaves obtuse at base, on petioles half an inch long, upper ones sessile. Flowers gamboge-yellow, larger than the next.

Snap-weed. Touch-me-not.

2. *I. fulva* *Nutt.*: peduncles solitary, 2—4-flowered; leaves rhombic-ovate, somewhat obtuse, on longish petioles, coarsely serrate, the teeth mucronate; lower sepal acutely conic, with a long recurved spur; flowers with crowded spots. *I. biflora* *Pursh.* *I. noli-tangere*, var. *Mich.* *I. maculata* *Muhl.*

Wet grounds. Can. to Geor. W. to Miss. Aug., Sept. ①.—*Stem* 2—4 feet high. *Leaves* on petioles an inch or more long. *Flowers* deep orange with reddish brown spots, smaller and less numerous than the former.

Balsam Weed. Jewel Weed.

ORDER XXX. TROPÆOLACEÆ.—INDIAN CRESSES.

Sepals 3—5, upper one with a long distinct spur. Petals 1—5, equal or unequal. Stamens 6—10, distinct. Ovary 1, 3-cornered; style 1; stigmas 3—5, acute. Fruit indehiscent, the pieces separable from a common axis, sometimes winged. Seeds large, without albumen.—Herbaceous plants with an acrid taste. Leaves alternate, without stipules.

FLÆRKIA. Willd.—False Mermaid.

(In honor of *Flærke*, a German botanist.)

Calyx of 3 sepals. Petals 3, shorter than the sepals. Stamens 6.

F. proserpinacoides Willd. *F. uliginosa* Muhl. *Nectris pinnata* Pursh.

Marshes. Ver. to Virg. W. to Miss. April, May. ①.—*Stem* 4—10 inches long, at length decumbent, nearly simple. *Leaves* somewhat succulent, on slender petioles, trifid and pinnatifid. *Peduncles* axillary, at first short, gradually lengthening. *Flowers* about 3 lines in diameter, with white oblong petals.

False Mermaid.

ORDER XXXI. OXALIDACEÆ.—WOOD SORRELS.

Sepals 5, persistent, equal. Petals 5, equal, unguiculate, with a twisted æstivation. Stamens 10, usually more or less monadelphous. Styles 5, filiform; stigmas capitate. Fruit capsular, membranous, with 5 cells, and from 5 to 10 valves. Seeds few, with a fleshy integument, which bursts elastically. Albumen between cartilaginous and fleshy.—Herbaceous plants, rarely shrubs or trees. Leaves mostly alternate and compound.

OXALIS. Linn.—Wood Sorrel.

(From the Greek *ὄξυς*, *sharp* or *acid*; in allusion to the sour taste of the plant.)

Sepals 5, free or united at base. Petals 5. Stamens 10, often monadelphous at base, 5 outer ones shorter. Styles 5. Capsule pentangular, oblong or cylindric, 5-celled.

* *Stemless.*

1. *O. Acetosella* Linn.: root creeping, scaly; scape 1-flowered, longer than the leaves, with two small bracts above the middle; leaves ternate; leaflets obcordate, hairy; petals oval, obtuse; styles as long as the inner stamens.

Mountain woods. Can. Mass. N. Y. and Penn. June. 2.—*Scape* 3—5 inches long. *Flowers* large, white, with red veins, drooping. *Petals* slightly emarginate. This is the *Shamrock* of the Irish. The expressed juice yields binoxate of potash.

Common Wood Sorrel.

2. *O. violacea* Linn.: bulb scaly; scape umbelliferous, 3—9-flowered; flowers nodding; leaves ternate; leaflets obcordate, smooth; styles shorter than the outer stamens.

Rocky woods. Can. to Geor. W. to Miss. and Texas. May, June. 2.—*Scape* 4—6 inches high. *Flowers* violet, umbelled, with the petals obovate and sometimes slightly emarginate.

Violet Wood Sorrel.

** *Caulescent.*

3. *O. corniculata* Linn.: pubescent; stem rooting, decumbent, branched; peduncles 2-flowered, shorter than the leaves; leaves ternate; leaflets obcordate; petals obovate, emarginate; styles as long as the inner stamens. *O. corniculata* var. *Mich.*

Woods. Can. to Car. W. to Miss. May—Aug. 2.—*Stem* 6—10 inches long. *Flowers* small, yellow. It is distinguished chiefly by its habit; but the plant of American authors may after all be only a variety of the next.

Decumbent Wood Sorrel.

4. *O. stricta* Linn.: hairy; stem erect, sometimes procumbent, branched; peduncles 2—6-flowered, longer than the leaves; leaves ternate; leaflets obcordate; petals obovate, entire; styles as long as the inner stamens.

Sandy Fields. Can. to Louis. W. to the Rocky Mountains. May—Aug. 2.—*Stem* 4—12 inches high. *Flowers* small, yellow, 4—6 in an umbel.

Upright Wood Sorrel.

ORDER XXXII. ZANTHOXYLACEÆ.—ZANTHOXYLS.

Flowers declinous, regular. Calyx in 3, 4, or 5 divisions. Petals as many as the sepals, rarely none, convolute. Stamens as many or twice as many as the petals. Ovaries as many as the petals, sometimes fewer; styles more or less combined. Fruit either baccate or membranous, sometimes consisting of several drupes or 2-valved capsules. Seeds solitary or in pairs, with fleshy albumen.—Trees or shrubs. Leaves without stipules, usually marked with pellucid dots.

1. ZANTHOXYLUM. Linn.—Prickly Ash.

(From the Greek *ξανθος*, yellow, and *ξυλον*, wood.)

Polygamo-dicecious. Sepals 3—5, small. Petals longer than the sepals, or none. Stamens and carpels as many as the lobes of the calyx, 1—2-seeded.

Z. Americanum Mill.: prickly; leaves pinnate; leaflets in 4—5 pairs, ovate, obsoletely serrate, equal at base; petioles terete, unarmed; prickles stipular; flowers in short axillary sessile umbels. *Z. fraxincum* Willd. *Z. ramiflorum* Mich.

Rocky woods. Can. to Car. (Not below the Highlands in N.Y. *Torr.*) W. to Ark. April.—*Shrub*, 3—5 feet high, covered with sharp strong prickles. *Leaves* pinnate, sometimes prickly on the back. *Flowers* in umbels, small, greenish, appearing before the leaves. The bark of this shrub is pungent, and is employed medicinally. *Big. Med. Bot.* iii. 156. *Prickly Ash.*

2. PTELEA. *Linn.*—Shrubby Trefoil.

(The Greek name of the *elm*, from a root which alludes to the winged seed vessels.)

Polygamo-dicæious. Sepals 3—6, (usually 4,) small. Petals much longer than the sepals. Stamens alternating with the petals. Torus tumid, pentagonal. Ovary 1; style short; stigmas 2. Samaræ membranaceous, margined, 2-celled; cells 2- or by abortion 1-seeded.

Pt. trifoliata Linn.: leaves on long petioles, ternate; leaflets sessile, ovate, acuminate, odd one much attenuated at base; flowers in panicles, polygamous, mostly with 4 stamens.

Moist woods. Can. to Geor. W. to Miss. and Texas. June.—*Shrub* 6—10 feet high. *Flowers* greenish-white, small, in corymbose clusters.

Shrubby Trefoil.

SUBCLASS II.—CALCYFLORALS.

Calyx with the sepals more or less united at base, (gamosepalous, *D. C.*—monophyllous, *Linn.*) Petals and stamens inserted into the calyx.

ORDER XXXIII. CELASTRACEÆ.—SPINDLE TREES.

Sepals 4 or 5, imbricated, inserted into the margin of a large expanded disk. Petals 4—5, imbricate. Stamens alternate, with the petals, inserted upon the margin or upper surface of the disk. Ovary free, 2—5-celled. Fruit capsular or drupaceous. Seeds often with an aril; albumen fleshy.—Small trees or shrubs, with simple leaves and small caducous stipules.

1. EVONYMUS. *Linn.*—Spindle Tree.

(From *Euonymus*, mother to the Furies, in allusion to the injurious effects produced by the fruit of this plant. *Hook. Br. Fl.*)

Calyx 4—5-cleft, having a peltate disk within. Petals 4—5. Stamens inserted upon glands at the margin of the disk. Capsule with 3—5 angles and as many cells and valves. Seeds covered with a colored fleshy aril.

1. *E. Americannus Linn.*: branches opposite, smooth, square; leaves opposite, subsessile, varying from elliptic-lanceolate to oval-obovate; smooth,

acute, serrate; peduncles 1—3-flowered, terete; calyx small, with acute segments; corolla 5-petalled; fruit roughened, warty.

Shady woods. Can. to Flor. W. to Miss. June.—*Shrub* 4—6 feet high, with opposite branches. *Flowers* greenish-yellow, with a tinge of purple. *Fruit* crimson, when mature. *E. obovatus* Nutt. is a trailing variety.

Strawberry Tree.

2. *E. atropurpureus* Jacq.: stem with smooth, opposite, square branches; leaves petiolate, oblong-lanceolate, acuminate, serrate, pubescent beneath; peduncles divaricate, many-flowered; flowers 4-cleft; fruit smooth.

Shady woods. Can. to Flor. W. to Miss. June. 12.—*Stem* 4—8 feet high. *Flowers* dark purple. *Fruit* crimson.

Burning Bush.

2. CELASTRUS. *Linn.*—Staff Tree.

(A Greek name of uncertain application.)

Dioeciously polygamous. Calyx minute, 5-lobed. Petals 5, small, unguiculate. Ovary small, with 10 striæ, immersed in the disk; style short and thick; stigma 3-lobed. Capsule 2—3-valved; valves septiferous in the centre. Seeds 1—2 in each cell, inclosed in a pulpy aril.

C. scandens *Linn.*: stem climbing, unarmed; leaves petioled, oval, acuminate, serrate; stipules minute; racemes terminal.

Rocky woods. Can. to Virg. W. to Miss. May, June.—A woody vine or low shrub. *Leaves* alternate. *Flowers* greenish-yellow, in small terminal racemes. *Fruit* scarlet.

Climbing Staff Tree.

ORDER XXXIV. STAPHYLEACEÆ.—BLADDER-NUTS.

Sepals 5, colored, imbricated. Petals 5, imbricated. Stamens 5, alternate with the petals, perigynous. Disk large, urceolate. Ovary 2—3-celled, superior; styles 2—3, cohering at base. Fruit membranous or fleshy. Seeds roundish, with a bony testa; hilum large; albumen none.—Shrubs, with opposite pinnate leaves. Flowers in terminal racemes.

STAPHYLEA. *Linn.*—Bladder-Nut.

(From the Greek *σταφυλη*, a bunch of grapes; in allusion to its mode of flowering.)

Sepals 5, oblong, erect, colored, persistent. Petals 5. Stamens 5. Styles distinct or slightly united. Fruit a membranaceous inflated 2—3-celled capsule. Seeds globose.

S. trifolia *Linn.*: leaves ternate, on long petioles; leaflets ovate, acuminate, serrulate, pubescent, the terminal one petioled; styles glabrous; capsule bladder-like.

Moist places. Can. to Car. W. to Miss. April—June. 12.—*Stem* 6—10 feet high, with straight and smooth slender branches. *Flowers* white, in axillary and terminal pendulous panicles.

American Bladder-nut.

ORDER XXXV. RHAMNACEÆ.—BUCKTHORNS.

Calyx 4—5-cleft, valvate. Petals distinct, inserted into the orifice of the calyx, occasionally wanting. Stamens definite, opposite the petals. Disk fleshy. Ovary superior or half superior, 2—3—4-celled. Fruit fleshy and indehiscent, or dry and separating in 3 parts. Seeds erect, mostly with fleshy albumen; embryo with large flat cotyledons.—Trees or shrubs, often thorny. Leaves mostly alternate, simple, usually with minute stipules.

1. RHAMNUS. *Linn.*—Buckthorn.

(From the Greek *ραμνος*, *white-thorn*; probably from its resemblance to some of the thorn tribe.)

Calyx 4—5-cleft, urceolate. Petals alternating with the lobes of the calyx, sometimes very minute or wanting. Stamens 4—5, inserted above the petals. Style 2—4-cleft. Fruit drupaceous, roundish, containing 2—4 cartilaginous nuts.

1. *R. alnifolius* *L'Herit.*: unarmed; leaves alternate, oval, acuminate, serrulate, pubescent on the veins beneath; flowers diœcious; peduncles 1-flowered, aggregate; calyx acute; fruit turbinate. *R. franguloides* *Mich.*

Sphagnous swamps. Hudson's Bay to Penn.; rare. May, June. $\frac{1}{2}$.—*Stem* 2—4 feet high, branching. *Flowers* small, greenish, in axillary fascicles. *Berries* black, the size of a small pea. *R. alnifolius* of Pursh is described by De Candolle as a distinct species, under the name of *R. Purshianus*.

Alder-leaved Buckthorn.

2. *R. catharticus* *Linn.*: branches thorny at the top; leaves opposite, ovate, erosely denticulate; flowers mostly 4-cleft, polygamo-diœcious; berries 4-seeded, subglobose.

Highlands of N.Y. *Torr.* Mass.—A small tree or large shrub, with yellowish-green flowers. *Fruit* black; cathartic. Introduced? *Common Buckthorn.*

2. CEANOTHUS. *Linn.*—Ceanothus.

(An ancient Greek name applied to this genus.)

Calyx 5-cleft, campanulate, persistent and somewhat adhering with the fruit. Petals 5, small, saccate and arched, with long claws. Stamens exsert. Styles 2—3, united to the middle. Fruit dry and coriaceous, 3-celled, 3-seeded, 3-parted, opening on the inner side.

1. *C. Americanus* *Linn.*: stem shrubby; branches terete, and somewhat pubescent; leaves ovate-oblong, alternate, serrate, 3-nerved, tomentose, pubescent beneath; common peduncles axillary, elongated, almost leafless. *C. herbaceus* *Raf.*

Woods. Can. to Flor. W. to Miss. May—July. $\frac{1}{2}$.—Stem 2—3 feet high. Leaves on petioles, sometimes slightly cordate at base. Flowers small, white, in an oblong terminal thyrses. Root very large, dark red. The leaves were used as a substitute for tea during the American Revolution. A variable plant. *C. herbaceus Raf.* is a variety with oval nearly smooth leaves.

New Jersey Tea. Red Root.

2. *C. ovalis Big.*: leaves narrow, oblong, or elliptic-lanceolate, 3-nerved from the base, serrulate, nearly smooth; thyrses umbel-like, the pedicels elongated and closely approximate. *H. intermedius Hook.* not of Pursh.

Rocky places. Can. Maine, Ver. and Northern N. Y. W. to Mich. and Texas. May, June. $\frac{1}{2}$.—Stem 2—3 feet high. Leaves 1—3 inches long. Fruit black. Easily distinguished by its narrow leaves and short thyrses from *C. Americanus*.
Narrow-leaved Ceanothus.

ORDER XXXVI. ANACARDIACEÆ.—ANACARDS.

Flowers usually declinous. Calyx usually small, persistent, 5- (sometimes 3—7) divided. Petals as many as the segments of the calyx, perigynous, imbricate. Stamens as many as the petals, and alternate, or twice as many or more; filaments distinct or cohering at the base. Disk fleshy, hypogynous. Ovary single (or rarely 5—6;) stigmas usually 3. Fruit indehiscent, usually drupaceous. Seed without albumen.—Trees or shrubs, with a resinous, gummy, caustic, or milky juice. Leaves alternate, simple, ternate or pinnate, not dotted.

RHUS. Linn.—Sumach.

(From the Celtic *rhudd, red*; in allusion to the color of the fruit.)

Calyx small, 5-parted, persistent. Petals 5, ovate, spreading. Stamens 5, equal, inserted into the disk. Styles 3, short. Drupe nearly dry, with one bony seed.

* *Leaves ternate.*

1. *R. Toxicodendron Linn.*: stem erect, pubescent near the summit; leaves ternate; leaflets broad-oval or rhomboid, entire, sinuate or lobed, subpubescent beneath; flowers diœcious, in sessile axillary racemes. *R. Toxicodendron, var. quercifolium Mich.*

Moist woods. Can. to Car. W. to Rocky Mountains. June. $\frac{1}{2}$.—Stem 2—3 feet high. Flowers yellowish-green. Fruit globose, brown, smooth.
Poison Oak or Ivy.

2. *R. radicans Linn.*: stem climbing; leaves ternate; leaflets petiolate, ovate, acuminate, smooth, generally entire; flowers in axillary racemes, towards the top of the stem, diœcious; fruit smooth. *R. Toxicodendron, var. vulgare Mich. Pursh. R. Toxicodendron var. radicans Torr.*

Woods and hedges. Can. to Car. June. $\frac{1}{2}$.—Stem climbing. Flowers yellowish-green. Fruit subglobose, brown. De Candolle thinks *R. radicans* distinct from *R. Toxicodendron*, although they are considered identical by Torrey and Gray. Both are very poisonous to persons of peculiar constitutions.—Christy, in *N. Y. Med. & Phys. Jour. N. S. i. 21.*
Climbing Poison Oak,

3. *R. aromatica* Ait: branches slender, nearly smooth; leaves ternate; leaflets sessile, ovate-rhomboid, deeply toothed, tomentose beneath; flowers in dense axillary racemes or catkins, diœcious; fruit pilose.—*Lobadium aromaticum* Raf.

Rocky places. Arct. Amer. to Geor. W. to Miss. April, May. ♀.—Stem 2—6 feet high. Flowers yellow. Fruit red, more or less hispid, acid.

Aromatic Sumach.

** Leaves pinnate, smooth.

4. *R. glabra* Linn.: stem and branches smooth; leaflets in many pairs; sessile, lanceolate, acuminate, sharply serrate, smooth, whitish glaucous beneath; flowers all perfect, in terminal compound panicles.

Old fields. Can. to Geor. W. to Miss. July. ♀.—Stem 6—12 feet high. Flowers greenish-yellow. Fruit crimson, covered with short hairs, acid.

Smooth Sumach.

5. *R. Copallina* Linn.: branches terete, downy; leaflets 4—7 pairs, with an odd one, oval-lanceolate, or oblong, very entire, shining on the upper surface; pubescent beneath, unequal at base; petiole winged, appearing as if jointed; flowers in sessile panicles, diœcious.

Dry fields. Can. to Flor. W. to Ark. July, Aug.—A small shrub, with yellowish-green flowers. Fruit red, small, compressed, hairy, acid, and bitter.

Mountain Sumach.

6. *R. venenata* D. C.: branches, leaves, and petioles very smooth; leaflets in 3—6 pairs, oblong-oval, abruptly acuminate, nearly entire; petioles without joints or wings; flowers in loose slender panicles, diœcious; fruit smooth, greenish-white. *R. Vernix* Linn.

Margins of swamps. Can. to Geor. W. to Louis. June, July. ♀.—Stem 6—12 feet high. Flowers greenish. Fruit about as large as a pea. Poisonous. *Big. Med. Bot.* i. 96.

Poison Sumach. Poison Elder.

*** Leaves pinnate, pubescent.

7. *R. typhina* Linn.: branches and petioles very villous; leaflets in many pairs, lanceolate-oblong, acuminate, acutely serrate, whitish and more or less pubescent beneath; flowers in oblong dense panicles, diœcious.

Rocky hills. Can. to Car. June. ♀.—Stem 10—15 feet high. Flowers greenish-yellow. Fruit in clusters, covered with a purple velvety down, acid.

Stag-horn Sumach.

ORDER XXXVII. LEGUMINOSÆ.—LEGUMINOUS PLANTS.

Calyx of 5 sepals, more or less combined. Petals 5, either papilionaceous or regularly spreading. Stamens definite or indefinite, distinct or monadelphous, or diadelphous. Ovary simple, superior. Fruit a legume. Seeds attached to the upper suture, without albumen.—Herbaceous plants, shrubs or trees. Leaves alternate, mostly compound, and with 2 stipules at base.

SUBORDER I. PAPILIONACEÆ.

Petals papilionaceous, imbricated in æstivation, the upper exterior.

1. BAPTISIA. *Vent.*—Baptisia.

(From the Greek βαπτω, to dye; in allusion to the coloring properties of some of the species.)

Calyx half 4—5-cleft, bilabiate. Petals 5, nearly equal. Standard with the sides reflexed. Wings oblong. Keel slightly incurved. Stamens deciduous. Legume ventricose, pedicelled, many-seeded.

1. *B. tinctoria* *Brown*: very smooth, much branched; leaves ternate, petioled, upper ones subsessile; leaflets cuneate-obovate, rounded and often emarginate at the summit; stipules minute, subulate, deciduous; racemes terminal, few-flowered; legume on a long stipe. *Sophora tinctoria* *Linn.* *Podalyria tinctoria* *Willd.*

Sandy woods. Can. to Flor. June—Aug. 2.—Stem 2—3 feet high, very bushy. Flowers yellow. Whole plant turns bluish-black in drying. It is said to yield a considerable quantity of inferior indigo. *Wild Indigo.*

2. *B. australis* *Brown*: smooth; leaves ternate, on short petioles, the upper ones nearly sessile; leaflets oblong-wedgeform, obtuse; stipules linear-lanceolate, longer than the petioles; racemes elongated, erect; legumes oval-oblong, the stipe about as long as the calyx. *B. cærulea* *Nutt.* *Sophora australis* *Linn.*

Banks of streams. Near Canandaigua, N. Y. Easton, Penn. to Geor. W. to Miss. July. 2.—Stem 2—3 feet high. Flowers an inch long, bright indigo blue. *Blue-flowered Baptisia.*

3. *B. alba* *Brown*: leaves ternate, petioled, and with the branches smooth; leaflets elliptic-oblong, obtuse; stipules deciduous, subulate, shorter than the petioles; racemes terminal; ovaries smooth. *Sophora alba* *Walt.*

Sandy fields. On Lake Erie, *Goldie*. S. to Flor. W. to Miss.—Stem 1—2 feet high, branching towards the top. Flowers white. *White-flowered Baptisia.*

2. CROTALARIA. *Linn.*—Rattlebox.

(From the Greek κροταλον, a rattle; the seeds becoming loose in the ripe pod.)

Calyx 5-lobed, subbilabiate; upper lip 2-, lower one 3-cleft. Standard large, cordate. Keel falcate, acuminate. Filaments all united, with the sheath often divided above. Legume turgid, inflated, with ventricose valves, often many-seeded, pedicelled.

C. sagittalis *Linn.*: hairy, erect, branched; leaves simple, oblong-lanceolate; stipules lanceolate, acuminate, decurrent; racemes opposite the leaves, about 3-flowered; corolla smaller than the calyx. *C. parviflora* *Willd.*

Sandy soils. N. Y. to Flor. W. to Ark. July, Aug. ①.—Stem 4—10 inches high, with spreading branches. Leaves hairy on both sides, and varying from oblong to linear-lanceolate. Flowers yellow. Legume inflated, blackish when ripe. I am satisfied that *C. parviflora* is not specifically distinct.

Arrow-leaved Rattlebox.

3. GENISTA. Lam.—Green Weed.

(From the Celtic *gen*; signifying a shrub. *Hook. Br. Fl.*)

Calyx bilabiate, upper lip bipartite; lower one 3-toothed, or 5-lobed; 3 lower lobes united almost to the summit. Standard oblong-oval. Keel oblong, straight. Stamens monadelphous. Legume flat-compressed or rarely somewhat turgid, many-seeded, rarely few-seeded.

G. tinctoria Linn.: stem unarmed, erect; branches terete, striate; leaves lanceolate, nearly smooth; flowers in spiked racemes; legume smooth.

Hills. Mass. and N. Y. July. 12.—*Stem* a foot high, with numerous branches, shrubby. *Leaves* rather distant. *Flowers* on the upper part of the branches, nearly sessile, yellow, with a floral leaf at the base. Said to afford a fine yellow dye. Introduced from Europe. *Dyer's Green Weed.*

4. MEDICAGO. Linn.—Medick.

(From the Greek *μηδικη*; because it was introduced into Greece by the Medes.)

Calyx subcylindric, 5-cleft. Keel somewhat remote from the standard. Stamens diadelphous. Legume many-seeded, varying in form, always falcate or twisted into a spiral.

1. *M. lupulina* Linn.: stem procumbent; leaflets obovate-cuneate, denticulate at the apex; stipules lanceolate, acute, somewhat entire; flowers in capitate spikes; legume reniform, 1-seeded.

Fields. Throughout the U. S. June—Aug. ①.—*Stem* 6—12 inches high. *Flowers* small, yellow, crowded. *Legume* black when ripe. Introduced from Europe. *Black Medick or Nonesuch.*

2. *M. intertexta* Willd.: stem procumbent; leaflets obovate, toothed; stipules ciliate-toothed; peduncles somewhat 2-flowered; legume pilose, cochleate, membranaceous, obliquely reticulate; spines straight, thick, rigid and acute.

Sandy fields. Conn. and Car. July, Aug. ①.—*Flowers* yellow. Introduced from Europe. *Hedgehog Medick.*

3. *M. sativa* Linn.: erect, smooth; leaflets ovate-oblong, toothed above, mucronate; flowers in oblong racemes; legume spirally twisted.

Fields. N. S. June, July. 2.—*Stem* 1—2 feet high, erect or oblique. *Flowers* purple. *Pods* twisted. A native of Europe, which has been occasionally cultivated, and has in some places almost become naturalized. *Lucerne.*

5. MELILOTUS. Tourn.—Melilot.

(From the Latin *mel*, *honey*, and *lotus*, the genus so called.)

Calyx 5-toothed. Standard free, longer than the wings. Keel petals united, free from the stamen-tubes. Legume coriaceous, globose or ovate, longer than the calyx, scarcely dehiscent, 1 or few-seeded.

1. *M. officinalis* Willd.: stem erect, branching; leaflets lanceolate-oblong, obtuse, remotely serrate; spikes axillary, paniculate; legume 2-seeded,

rugose; style filiform, as long as the legume; seeds unequally cordate. *Trifolium officinale*, var. *a.* Linn.

Fields. Can. to Geor. Aug. ①.—Stem 2—4 feet high. Flowers in long racemes, yellow. Plant giving out an odor when dry, similar to the vernal grass. Introduced from Europe. *Yellow Melilot.*

2. *M. leucantha* D. C.: stem erect, branched; leaflets ovate-oblong, truncate and mucronate at the apex, remotely serrate; stipules setaceous; teeth of the calyx unequal, as long as the tube; standard longer than the keel and wings; legume 1—2-seeded, ovate, lacunose-rugose, green; seeds exactly ovate. *M. vulgaris* Willd. Enum. *Trifolium officinale*, var. *b.* Linn.

Fields. N. S. July, Aug. ②.—Stem 3—5 feet high. Flowers white. Racemes longer and less crowded than in the former. Both species become fragrant upon drying. Introduced. *White Melilot. Scented Clover*

6. TRIFOLIUM. Tourn.—Clover Trefoil.

(From the Latin *tres*, three; and *folium*, a leaf.)

Calyx tubular, persistent, without glands, 5-cleft or 5-toothed. Segments subulate. Keel shorter than the wings and standard. Stamens diadelphous. Legume small, scarcely dehiscent, often ovate, 1—2-seeded, as long as the calyx and covered by it, rarely oblong, 3—4-seeded, and a little exceeding the calyx.

* *Legume 1-seeded. Standard of the corolla deciduous. Flowers not yellow.*

1. *T. arvense* Linn.: stem erect, simple or branched, pubescent; leaves on short petioles; leaflets obovate-linear or cuneate-oblong, somewhat toothed at the apex; stipules ovate, acuminate; spikes oblong-cylindric, very villous; segments of the calyx pilose, equal, setaceous, longer than the corolla.

Dry pastures. Can. to Flor. May—Sept. ①.—Stem 6—12 inches high. Flowers minute, white or pink. Seeds ovoid, brown. Introduced from Europe. *Stone Clover. Hare's-foot Trefoil.*

2. *T. pratense* Linn.: stem suberect, branched; leaves on long petioles; leaflets oval or oblong-ovate, often retuse or emarginate, nearly entire; stipules broad-lanceolate, terminating in a subulate point; heads of flowers ovate, dense, nearly sessile; segments of the calyx setaceous, about half as long as the corolla, the lower one longer than the rest.

Meadows. Can. to Flor. W. to Oregon. May—Oct. ②.—Stem 1—2 feet high. Flowers united into a tube at the base, rose-colored. Seeds yellowish, reniform. Introduced from Europe. *Red Clover.*

3. *T. Pennsylvanicum* Willd.: stem ascending, much branched, flexuous; leaflets ovate-elliptic, obtuse, very entire; stipules awned; heads of flowers ovate-cylindric, solitary, dense; lower tooth of the calyx shorter than the corolla.

Woods. Mass. and Penn. June—Sept. ②.—Flowers fine red. Resembles *T. medium* of Linnæus. Introduced? *Buffalo Clover.*

** *Legume 1-seeded. Standard of the corolla persistent, scarious. Flowers yellow.*

4. *T. procumbens* Linn.: stem mostly procumbent; leaves on short petioles; leaflets obovate or obcordate, denticulate, terminal one petioled; stipules lance-ovate, ciliate, shorter than the petiole; heads axillary, ovate; peduncles equal to or longer than the leaves; segments of the calyx unequal, the 2 upper ones very short; seeds elliptic.

Dry fields. Mass. to Virg. May—Aug. ①.—*Stem* spreading, 3—6 inches long. *Flowers* numerous, and with the *seeds* yellow. According to De Candolle *T. campestre* is a mere var. with erect branching stems. Introduced from Europe. *Hop Clover.*

5. *T. agrarium* Linn.: stem ascending, with erect branches; leaves nearly sessile; leaflets oblong-ovate, or cuneate-oblong, denticulate, all nearly sessile; stipules leafy, lanceolate, acute, often longer than the petiole; heads on rather long peduncles, oval; standard obcordate; segments of the calyx smooth, elongated, the upper one smaller.

Sandy fields. Mass. to Virg. June—Aug. ①.—*Stem* 6—15 inches long. *Flowers* small, pale yellow-brown when old. Introduced from Europe. *Golden Clover.*

*** *Legume 3—8-seeded.*

6. *T. repens* Linn.: stem creeping and somewhat rooting; leaflets obovate-roundish, somewhat retuse, serrulate; stipules scarious, narrow-lanceolate, mucronate; heads axillary, on very long peduncles; flowers pedicelled, and at length reflexed; segments of the calyx unequal, shorter than the corolla; legume 4-seeded.

Fields and pastures. Throughout the U. S. May—Oct. ②.—*Stem* 6—12 inches long. *Leaves* on long slender petioles. *Flowers* white, becoming pale brown. *Seeds* brown. *White Clover.*

7. *T. reflexum* Linn.: stem ascending; leaflets ovate or obovate, serrulate; stipules leafy, lanceolate-acuminate; heads globose, axillary; flowers on long pedicels, at length reflexed; segments of the calyx hairy, nearly equal, very narrow, one-nerved, nearly twice as long as the tube, but shorter than the standard; legume 4-seeded. *T. stoloniferum* Muhl.

Fields and woods. N. Y. to Geor. W. to Miss. June, July. ①.—*Plant* smoothish or pubescent. *Stem* 6—18 inches long. *Heads of flowers* middle-sized. *Standard* broad-ovate, rose-red. *Wings and keel* white. *Running Buffalo Clover.*

7. CLITORIA. Linn.—Clitoria.

(From an anatomical term.)

Calyx tubular, 5-toothed; the teeth much shorter than the tube. Standard very large, emarginate or bifid. Keel small, shorter than the wings, incurved, acute, on very long claws. Style dilated at the apex, longitudinally bearded. Legume stipitate, linear or linear-oblong, twisted.

1. *C. Mariana* Linn.: stem climbing, glabrous; leaves ternate; leaflets ovate-lanceolate; peduncles solitary, 1—3-flowered; calyx tubular-campanulate, glabrous, much longer than the lanceolate bracts; teeth nearly equal; legume 4—8-seeded, smooth.

Sandy soil. N. Y. to Flor. and Ala. July, Aug. 2l.—*Stem* 2 or more feet long, climbing, sometimes erect. *Flowers* large, pale blue, usually 1—2 on the peduncles. *Maryland Clitoria*.

2. *C. Virginiana* Linn.: stem twining, and with the ovate leaflets glabrous or subpubescent; peduncle 1—4-flowered; calyx 5-parted, about as long as the lanceolate bracts; legume linear, compressed. *Centrosema Virginiana* Benth. Torr. & Gr.

Dry soils. Penn. to Flor. Aug. 2l.—*Flowers* purple or violet, larger than that of any of our North American Papilionaceæ. De Candolle describes three varieties of this species, which differ only in the shape of the leaves.

Butterfly Weed.

8. GALACTIA. Browne.—Milk Pea.

(From the Greek γαλα, milk; some of the species yielding a milky juice.)

Calyx bibracteate, 4-cleft; segments acute, of nearly equal length; the upper one broadest. Standard incumbent, broad. Keel petals slightly cohering towards the apex. Legume compressed, linear, many-seeded.

1. *G. mollis* Mich.: stem twining, softly villous; leaves ternate; leaflets ovate-oblong, obtuse, pale beneath; racemes axillary, a little longer than the leaves, pedunculate; flowers pedicelled; calyx acuminate, villous; legume compressed, villous.

Pine barrens. N. J. to Flor. July, Aug. 2l.—*Stem* prostrate or climbing. *Flowers* reddish-purple, about half as large as the next. *Soft Milk Pea*.

2. *G. glabella* Mich.: stem prostrate, somewhat twining, smooth; leaves ternate; leaflets elliptic-oblong, obtuse, emarginate at each end, shining above; racemes axillary, simple, few-flowered, on peduncles as long as the leaves; calyx smooth; legume pubescent.

Sandy soils. N. Y. to Flor. Aug. 2l.—*Root* fusiform. *Stem* 2—4 feet long, spreading on the ground or twining. *Flowers* reddish-purple and white, large and handsome. *Smooth Milk Pea*.

9. TEPHROSIA. Pers.—Tephrosia.

(From the Greek τεφρος, ash-colored; in allusion to the color of the foliage.)

Calyx without bracts, nearly equal, 5-toothed. Standard of the corolla large, roundish, pubescent or sericeous without, reflexed-spreading; wings adhering to the obtuse keel. Stamens monadelphous, or diadelphous. Legume compressed-flat, linear, many-seeded.

T. Virginiana Pers.: villous pubescent; stem erect; leaflets 8—14 pairs, oval or linear-oblong, mucronate, white villous beneath; raceme terminal, subsessile; segments of the calyx very villous, acuminate-cuspidate; legume falcate, villous. *Galega Virginiana* Linn.

Sandy soil. Can. to Flor. W. to Miss. June, July. 2l.—*Root* long and tough. *Stem* about a foot high, usually several from one root. *Flowers* in a dense terminal raceme, showy, yellow, tinged with purple. *Goat's Rue*.

10. AMORPHA. *Linn.*—False Indigo.

(From the Greek *a*, *privative*, and *μορφη*, *shape*; on account of the absence of the wings and keel of the corolla.)

Calyx 5-toothed, obconic-campanulate. Standard of the corolla ovate, concave; wings and keel none. Style filiform, straight, glabrous. Stamens exerted, monadelphous at base. Legume compressed, ovate or lunulate, 1-celled, 1—2-seeded.

A. fruticosa Linn.: subarborescent, pubescent, or nearly smooth; leaves pinnate, petiolate; oval or elliptic-oblong; spikes aggregated; calyx somewhat pubescent, 4 teeth obtuse, the other one acuminate; legume few-seeded.

N. J. to Flor. W. to Rocky Mountains. July.—A shrub with spikes of purple flowers. Varies with emarginate, mucronate and narrower leaves.

Shrubby False Indigo.

11. ROBINIA. *D. C.*—Locust.

(In honor of *John* and *Vespasian Robin*, French botanists.)

Teeth of the calyx 5, lanceolate, two upper ones approximate. Corolla papilionaceous. Standard large. Keel obtuse. Stamens diadelphous, deciduous. Legume compressed, straight, subsessile, many-seeded; valves flat, thin.

R. Pseudacacia Linn.: leaves pinnate; leaflets ovate and oblong-ovate; stipules prickly; racemes pendulous, and with the legume smooth; teeth of the calyx unarmed.

Near cultivated grounds, but apparently native. N. Y. to Car. W. to Miss. May.—A large tree, the wood of which is much esteemed in ship-building. Leaflets 4—9 pairs, with an odd one. Flowers white, odorous, in racemes which are 3—5 inches long.

Common Locust Tree.

12. ASTRAGALUS. *Linn.*—Milk Vetch.

(A name given by the Greeks to a leguminous plant.)

Calyx 5-toothed. Corolla with the keel obtuse. Stamens diadelphous. Legume 2-, or half 2-celled; lower suture inflexed.

A. Canadensis Linn.: erect, canescent; leaflets 10—14 pairs with an odd one, elliptic-oblong, rather obtuse, smoothish; stipules broad-lanceolate, acuminate; peduncles about as long as the leaves; flowers in oblong or elongated spikes; bracts subulate, nearly as long as the calyx; legume ovate-oblong, terete, erect, smooth, 2-celled, many-seeded. *A. Carolinianus Linn.*

Banks of streams. Can. as far N. as lat. 58°, to Louis. and W. to Oregon. June—Aug. ♀.—Stem 1—3 feet high. Leaflets usually smooth above, sparsely pubescent beneath. Flowers pale yellow, in spikes 1—4 inches long.

Canadian Milk Vetch.

13. PHACA. *Linn.*—Bastard Vetch.(From the Greek φακος, *lentils*.)

Calyx 5-toothed or 5-cleft; the two upper teeth a little distant from each other. Keel obtuse. Legume usually turgid or inflated, 1-celled, the upper suture somewhat tumid.

P. neglecta Torr. & Gr.: nearly smooth; leaflets 6—10 pairs, elliptic, smooth above, pubescent with appressed hairs beneath; stipules triangular ovate; peduncles about as long as the leaves; spikes oblong, many-flowered; calyx campanulate; legume sessile, globose, ovate, pointed.

Gravelly banks and sandy woods. Western N. Y. to Wisconsin. June, July. ♀.—Stem 1—2 feet high, rather slender, sparingly branched. Flowers 15—25 in a spike, white. Resembles *Astragalus Canadensis*, but has shorter and looser spikes, white flowers, and a campanulate calyx. *Bastard Vetch*.

14. STYLOSANTHES. *Swartz.*—Pencil Flower.(From the Greek στυλος, a *column*, and ανθος, a *flower*; the flowers appearing stipitate.)

Tube of the calyx very long, slender; limb 5-parted, lobes unequal. Corolla inserted in the throat of the calyx. Keel minute, bifid at the apex. Stamens monadelphous. Style filiform, very long, straight. Stigma capitate, hispid. Legume with 1—2 joints; joints 1-seeded; the apex subuncinate, acuminate into the base of the style.

S. elatior Swartz: stem erect, herbaceous, pubescent on one side; leaves ternate; leaflets lanceolate, smooth, acute; bracts lanceolate, hispid-ciliate; spikes few-flowered; legume 2-jointed, the lower joint sterile and stipitate. *S. hispida* Mich. *Arachis aprica* Walt.

Sandy woods. N. Y. to Flor. W. to Ala. and Ark. July, Aug. ♀.—Stem a foot high, branched at the top. Flowers yellow, in terminal compact heads. Legume 1-seeded, hooked at the summit. *Pencil Flower*.

15. ÆSCHYNOMENE. *Linn.*—Æschynomene.(From the Greek αισχυνομαι, *to be bashful*; in allusion to its sensibility.)

Calyx 5-cleft, bilabiate; upper lip 2-cleft or 2-toothed; lower one 3-cleft, or 3-toothed. Corolla papilionaceous. Stamens 10, in two equal sets. Legume compressed, transversely jointed, erect, exsert; joints 1-seeded.

Æ. hispida Willd.: stem herbaceous, erect, and with the petioles and peduncles hispid; leaves in many pairs; leaflets linear, obtuse; racemes simple, 3—5-flowered; legume distinctly stipitate, with 6—9 hispid joints. *Hedysarum Virginicum* Linn.

Marshes. Penn. to Flor. July, Aug. ♂.—Stem 2—3 feet high. Leaflets 20—25 pairs. Flowers yellow and red. *Hispid Æschynomene*.

16. DESMODIUM. *D. C.*—Desmodium.

(From the Greek *δεσμος*, a chain, and *ειδος*, form; the articulated pods resembling a chain.)

Calyx with two bracts at base, obscurely bilabiate to the middle; upper lip bifid; lower one 3-parted. Corolla papilionaceous. Standard roundish; keel obtuse, not truncate; wings longer than the keel. Stamens diadelphous (9 and 1); filaments subsistent. Legume with many joints; joints compressed, 1-seeded, membranaceous or coriaceous, scarcely dehiscent.

1. *D. Canadense D. C.*: stem erect, hairy, striate; leaves ternate; leaflets oblong-lanceolate, much longer than the petioles, nearly smooth above; stipules lanceolate; racemes terminal and in the axils of the uppermost leaves; joints of the legume 3—4, ovate-triangular, truncate at both ends, hispid. *Hedysarum Canadense Linn.*

Dry woods. Can. to Car. W. to Miss. July. ♀.—Stem 3—6 feet high, often branched. Leaflets 2—3 inches long. Flowers pale violet blue.

Canadian Desmodium.

2. *D. canescens D. C.*: stem erect, branching, striate, hairy and scabrous; leaflets ovate, rather acute, scabrous, pubescent on both sides; stipules large, obliquely ovate, acuminate; flowers in a loose terminal panicle; legume with 4 or 5 oblong-triangular reticulated strongly hispid joints. *D. Akinianum Beck Bot. 1st Ed. Hedysarum viridiflorum Pursh. D. C. H. canescens Linn.*

Dry woods. Can. to Flor. July, Aug. ♀.—Stem 3—5 feet high, more or less hairy. Leaflets 2—4 inches long, hairy on both sides, the shorter hairs uncinatate. Flowers violet-purple.

Hoary Desmodium.

3. *D. Marylandicum Boott*: stem erect, simple, slender, nearly smooth; leaflets (small) ovate, very obtuse, often subcordate, thin; petiole as long as the lateral leaflets, smooth; stipules lanceolate-subulate, caducous; panicle elongated; legume with 2—3 hispid somewhat semiorbicular joints. *D. obtusum D. C. Hedysarum Marylandicum Linn. and H. obtusum Pursh.*

Fields and woods. N. Y. to Flor. and Louis. July, Aug. ♀.—Stem 2—3 feet high, nearly smooth. Leaflets about three-fourths of an inch long. Flowers small, violet-purple, in a terminal panicle. *Smooth Small-leaved Desmodium.*

4. *D. Dillenii Darlingt.*: stem erect, branching, pilose; leaflets oblong or ovate-oblong, somewhat glaucous and villous beneath; stipules subulate; racemes slender, forming a loose terminal panicle; legume with 3—4 rhomboid reticulated hispid joints. *D. Marylandicum D. C. Hedysarum Marylandicum Pursh.*

Dry woods. Mass. to Penn. W. to Ken. Aug. ♀.—Stem 2—3 feet high. Leaflets 1½—3 inches long, obtuse, sometimes acute. Flowers purple, becoming bluish-green.

Dillenius's Desmodium.

5. *D. viridiflorum Beck*: stem erect; leaves ternate; leaflets ovate, obtuse, scabrous on the upper surface, villous and very soft beneath; panicle

terminal, very long, naked; legume with 3—4 roundish triangular very hispid joints. *Hedysarum viridiflorum* Linn. Ell. not of Pursh.

Woods. N. Y. to Flor. July. 2.—Stem 3—4 feet high, very scabrous towards the summit. Leaves very scabrous on the upper surface, clothed with a velvet-like tomentum on the under. Flowers purple within, greenish without. *Villous-leaved Desmodium*.

6. *D. ciliare* D. C.: stem erect, rather slender, hairy; leaves crowded, on short hairy petioles; leaflets small, ovate or oval, obtuse, subcoriaceous, ciliate; stipules subulate-linear; racemes paniculate, terminal; legume with 2 or 3 semiorbicular hispid joints. *Hedysarum ciliare* Willd.

Woods. N. Y. to Flor. W. to Texas. July, Aug. 2.—Stem about 2 feet high. Resembles *H. Marylandicum*, but differs in having the petioles short and hairy. *Hairy Small-leaved Desmodium*.

7. *D. rigidum* D. C.: stem erect, branching, rough-pubescent; leaflets ovate-oblong, rather obtuse, reticulate, ciliate, scabrous above, hairy beneath; stipules ovate-lanceolate, acuminate; racemes paniculate, erect, very long; legumes with 2—3 semiorbicular or oval hispid joints. *Hedysarum rigidum* Ell.

Dry woods. Mass. and N. Y. to Geor. W. to Ark. Aug. 2.—Stem 2—3 feet high. Leaflets 1—3 inches long, somewhat coriaceous. Flowers small, purple. It sometimes closely resembles *D. ciliare*. *Rigid Desmodium*.

8. *D. levigatum* D. C.: stem simple, erect, smooth, somewhat glaucous; leaves ternate, on long petioles; leaflets ovate, acute; panicle terminal; flowers in pairs, on long pedicels; bracts ovate, acute, shorter than the flower buds; lower segment of the calyx elongated; joints of the legume triangular. *Hedysarum levigatum* Nutt.

Woods. N. Y. and N. J.; rare. Aug. 2.—Stem 2—4 feet high. Flowers purple. The smoothest of the North American species. *Smooth Desmodium*.

9. *D. cuspidatum* Torr. & Gr.: stem erect, smooth; leaflets ovate or lanceolate-ovate, acuminate, smooth; stipules lanceolate, acuminate; panicle terminal, elongated, rather slender; bracts ovate, acuminate, striate, smooth; legume with 4—6 triangular-oblong reticulated sparingly hispid joints. *D. bracteosum* D. C. *Hedysarum cuspidatum* Willd. *H. bracteosum* Mich.

Rocky woods. Can. to Flor. W. to Ark. Aug. 2.—Stem 3—5 feet high, nearly simple. Leaflets 2—5 inches long. Flowers in a large open panicle, reddish-purple. *Large-bracted Desmodium*.

10. *D. paniculatum* D. C.: stem erect, smooth; leaves ternate; leaflets oblong-lanceolate, rather obtuse, smoothish; stipules subulate; panicle terminal; legumes with 3 or 4 rhomboidal pubescent joints. *Hedysarum paniculatum* Linn.

Dry woods. Can. to Flor. W. to Miss. Aug. 2.—Stem 2—3 feet high, slender, often branching. Leaflets 1—3 inches long. Flowers small, purple, in a paniculate raceme. *Paniculate Desmodium*.

11. *D. strictum* D. C.: stem stiffly erect, simple, subpubescent; leaves ternate; leaflets sublinear, smooth, reticulate, glaucous beneath; stipules subulate; panicles terminal, pedunculate, few-flowered; legume incurved, with sublunate-triangular hispid joints. *Hedysarum hirtum* Pursh.

Pine barrens. N. J. to Flor. W. to Miss. Aug. 2.—Stem slender, very

erect. *Leaflets* narrow. *Flowers* small, purple, in long axillary and terminal panicles. *Strict Desmodium.*

12. *D. acuminatum* D. C.: stem erect, simple, pubescent, leafy at the summit; leaves ternate, on very long petioles; leaflets ovate, conspicuously acuminate, somewhat hairy, the terminal one broader and orbicular-ovate; panicle terminal, on a very long peduncle; joints of the legume 2—3, semi-oval, pubescent. *Hedysarum acuminatum* Mich.

Shady woods. Can. to Car. W. to Miss. July, Aug. ♀.—*Stem* about a foot high, a little hairy. *Leaflets* 2—4 inches long. *Peduncle* 1—2 feet long. *Flowers* pale purple. *Acuminate-leaved Desmodium.*

13. *D. nudiflorum* D. C.: stem erect, simple, leafy at the summit; leaves ternate; leaflets broad-ovate, acuminate; scape paniculate, smooth, radical; legume on a very long stipe, with 3—4 obtusely triangular joints. *Hedysarum nudiflorum* Linn.

Woods. Can. to Car. Aug. ♂.—*Stem* 8—10 inches high. *Scape* 1½—3 feet long, slender. *Flowers* purple. *Naked-flowered Desmodium.*

14. *D. pauciflorum* D. C.: stem decumbent or suberect, low and slender, mostly simple, pilose; leaves alternate and distant, lateral, on rather long petioles; leaflets obliquely ovate, subacuminate and pubescent ciliate; the terminal one dilated, rhomboid-ovate; stipules obsolete; raceme slender, few-flowered, on a terminal peduncle; legume stipitate, with 2—3 semi-oval pubescent joints. *Hedysarum pauciflorum* Nutt.

Woods. Penn.; rare. *Darlington*. W. to Ark. Aug. ♀.—*Stem* 6—9 inches high, rather erect or decumbent at base. *Leaflets* 1—3 inches long. *Flowers* in a loose slender raceme, small, white or reddish-white.

Few-flowered Desmodium.

15. *D. rotundifolium* D. C.: stem prostrate, hirsute; leaves ternate; leaflets orbicular, hairy; stipules broad-ovate, acuminate, reflexed; racemes axillary and terminal; legume with 3—5 rhomboid-oval hispid joints. *Hedysarum rotundifolium* Mich.

Rocky woods. N. Y. to Car. Aug. ♀.—*Stem* 2—4 feet long, hirsute with spreading hairs. *Racemes* few-flowered, pedunculate. *Flowers* purple.

Round-leaved Desmodium.

16. *D. humifusum* Beck: stem procumbent, smooth; leaves ternate; leaflets ovate, slightly hairy; racemes terminal, elongated; joints of the legume subrhomboidal. *Hedysarum humifusum* Muhl. Big.

Woods. Mass. Penn. to Car. Muhl. Aug. ♀.—Resembles the last, but is smoother, and has the leaflets oval or ovate and subacute. Perhaps only a variety.

Procumbent Desmodium.

17. HEDYSARUM. D. C.—Hedysarum.

(Etymology uncertain.)

Calyx 5-cleft; segments linear-subulate, nearly equal. Standard large. Keel obliquely truncate; wings much shorter than the keel. Stamens diadelphous (9 and 1). Legume with many joints; joints compressed, roundish, 1-seeded.

H. boreale Nutt.: stem subdecumbent; leaves pinnate; leaflets (7 or 8 pairs) oblong-ovate, partly villous; stipules sheathing, subulate; racemes

on long peduncles; legume with smooth rugose roundish joints. *H. alpinum* Mich.

Mountains. Can. and Penn. N. to Arct. Amer. W. to the Rocky Mountains. June, July. ♀.—Stem 6—12 inches high, rather stout. Flowers large, numerous, purple. Northern *Hedysarum*.

18. LESPEDEZA. Mich.—Lespedeza.

(Dedicated by Michaux to *Lespedez*, a Spanish governor of Florida.)

Calyx with 2 bracts at base, 5-parted; segments nearly equal. Corolla papilionaceous. Keel transversely obtuse. Stamens diadelphous (9 and 1). Legume lenticular, compressed-flat, not opening, 1-seeded, unarmed.

1. *L. reticulata* Pers.: stem erect, simple, nearly smooth; leaflets oblong-linear, obtuse, mucronate, hairy beneath; fascicles of flowers subsessile, numerous; axillary ones subracemose; legume ovate, reticulate, acute, longer than the calyx. *L. sessiliflora*, var. Mich. *L. angustifolia*. Raf. *L. violacea*. Torr. & Gr. *Hedysarum reticulatum* Willd.

Dry woods. N. J. Penn. W. to Ill. Aug. ♀.—Stem 2 feet high, very rarely branched. Leaflets half an inch to an inch long, 2 lines wide. Flowers in short clustered axillary racemes, violet. Reticulated *Lespedeza*.

2. *L. sessiliflora* Nutt.: stem erect, somewhat branched; leaves on short petioles; leaflets oblong-oval, obtuse; fascicles of flowers subsessile; axillary ones partly racemose; legume ovate, acute or acuminate, much longer than the minute calyx. *Hedysarum sessiliflorum* Lam. *L. violacea* Torr. & Gr.

Dry woods. N. Y. to Flor. W. to Miss. Aug., Sept. ♀.—Stem 2 feet high, slender. Leaves hairy beneath. Flowers in subsessile axillary clusters, violet. Sessile-flowered *Lespedeza*.

3. *L. Stuevei* Nutt.: stem, simple, erect, softly and sericeously villous; leaves on very short petioles; leaflets elliptic-oval, mucronate; racemes pedunculate, scarcely longer than the leaves; legume pubescent, naked, longer than the calyx.

Sandy fields. N. J. to Louis. W. to Texas. July, Aug. ♀.—Stem 2—3 feet high, covered with a silky pubescence. Peduncles an inch long. Flowers purple, very variable. *Stuev's Lespedeza*.

4. *L. capitata* Mich.: stem erect, simple; leaves on very short petioles; leaflets varying from elliptic to linear, with close-pressed hairs beneath; spikes capitate, on short peduncles; calyx villous, as long as the corolla, with the oval legume much longer. *L. frutescens* and *L. angustifolia* Ell.

Dry woods. Can. to Car. W. to Miss. July, Aug. ♀.—Stem 2—4 feet high, straight. Leaflets an inch or an inch and a half long, and 2—6 lines wide. Flowers in oblong or subglobose heads, white or very pale yellow.

Round-headed *Lespedeza*.

5. *L. polystachia* Mich.: stem erect, branched, very villous; leaves on very short petioles; leaflets round-oval, obtuse; spikes oblong-cylindric, the peduncles at length much longer than the leaves; corolla and legume about as long as the calyx. *L. hirta* Ell. Torr. & Gr. *Hedysarum hirtum* Linn.

Dry woods. Can. to Flor. Aug., Sept. ♀.—Stem 2—4 feet high. Leaflets about an inch long. Flowers reddish-white, in dense spikes which are about an inch in length. Hairy *Lespedeza*.

6. *L. violacea Pers.*: diffuse, much branched, somewhat pubescent; leaves on long petioles; leaflets elliptic-obtuse, somewhat hairy; racemes subumbelled, about as long as the leaves; flowers in pairs, distinctly pedicellate; legume rhomboidal, reticulate and smooth. *Hedysarum violaceum Linn.*

Dry woods. Can. to Flor. W. to Miss. July. ♀.—Stem long, slender. Flowers violet.—*Lepedeza divergens* of Pursh, is probably only a variety of the above, although Mr. Elliott considers it very distinct. "It is," he says, distinguished by much larger leaves on much longer petioles, its stem is much more diffusely branched, the peduncles long, with the flowers scattered and distinctly racemose." Torrey and Gray include under this species *L. divergens Pursh. L. frustescens Linn.* (not of Ell.) *L. sessiliflora Mich.*, and *L. reticulata Pers.*

Violet-flowered *Lepedeza*.

7. *L. procumbens Mich.*: slender, procumbent, with the branches assurgent, everywhere pubescent; leaves on long petioles; leaflets oval, obtuse, mucronate; racemes short, subumbellate, on long erect axillary peduncles, few-flowered; legume orbicular-ovate, pubescent. *Hedysarum Lepedeza Lam.*

Sandy woods. Mass. to Flor. W. to Miss. Aug., Sept. ♀.—Stem 2—3 feet long, densely pubescent. Flowers purple, tinged with violet.

Procumbent *Lepedeza*.

8. *L. repens Torr. & Gr.*: minutely pubescent or nearly smooth, diffusely procumbent; leaflets oval or obovate-elliptical, the uppermost ones emarginate; petioles mostly very short; peduncles axillary, elongated, few-flowered; legume nearly orbicular. *L. repens Bart. L. prostrata Pursh. Hedysarum repens Linn.*

Sandy fields. Can. to Geor. W. to Ken. July, Aug. ♀.—Stem 2 feet or more long, very slender. Flowers violet, smaller than in the last.

Slender *Lepedeza*.

19. VICIA. *Linn.*—Vetch.

(A name derived from a Celtic term, signifying *Vetch*.)

Calyx tubular, 5-cleft or 5-toothed; two upper teeth shorter. Corolla papilionaceous. Stamens diadelphous. Style filiform, bent at a right angle with the ovary, bearded beneath the stigma. Legume oblong, many-seeded.

* *Flowers on peduncles.*

1. *V. Caroliniana Walt.*: smoothish; leaflets 8—10, elliptical-lanceolate, subalternate, obtuse, mucronate; stipules ovate-lanceolate, entire; peduncles many-flowered, as long as or longer than the leaves; flowers distant; teeth of the calyx short; style villous at the top; legume lanceolate, smooth, obliquely veined. *V. parviflora Mich.*

Borders of woods. Can. to Geor. W. to Ken. May, June. ♀.—Stem long and climbing. Flowers small, white or pale blue. Standard black at the tip.

Carolina Vetch.

2. *V. Americana Muhl.*: leaflets 8—12, elliptic-lanceolate, obtuse, smooth, mucronate; stipules semisagittate, deeply toothed; peduncles 4—8-flowered, shorter than the leaves.

Woods. Can. to Penn. W. to the Rocky Mountains. June. ♀.—Stem 1—3 feet long, slender, somewhat 4-angled. Flowers pale purple, three-fourths of an inch long.

American Vetch.

3. *V. Cracca* Linn.: stem branching; leaflets numerous, oblong, alternate and opposite, mucronate, pubescent; stipules semisagittate; linear, nearly entire; peduncles many-flowered, as long as or longer than the leaves; racemes crowded, secund; teeth of the calyx unequal; upper ones very short; lower ones shorter than the tube; styles hairy at the top; legume oblong, coriaceous, compressed, smooth.

Woods and meadows. Can. to Penn. W. to Ken. June, July. ④.—*Stem* 2—3 feet long, slender. *Leaflets* 10—12 pairs, an inch long, 1—3 lines wide. *Flowers* 10—20 in a raceme, pale purple. *Tufted Vetch.*

4. *V. tetrasperma* Loisel: smooth; leaflets 4—6, oblong; stipules lanceolate, semisagittate; peduncles mostly 2-flowered; legume oblong, smooth, mostly 4-seeded. *V. pusilla* Muhl. *Ervum tetraspermum* Linn.

Fields, &c. Can. to Penn. May, June. ①.—*Stem* 1—2 feet long, very slender, 4-angled. *Leaflets* half an inch long, rather obtuse, with a fine point. *Flowers* white or bluish-white, very small, sometimes 3 or 4 together. *Slender Vetch.*

** *Flowers nearly sessile.*

5. *V. sativa* Linn.: leaflets 6—12, ovate-oblong or linear-oblong, retuse, mucronate, more or less pilose beneath; stipules semisagittate, toothed, with a dark spot beneath; flowers mostly in pairs, subsessile; calyx cylindrical; segments linear-lanceolate, nearly equal; style bearded at the top; legume compressed.

Fields. Can. to Car. June. ①.—*Stem* 1—2 feet high, erect or decumbent. *Flowers* half an inch long, pale purple. A very variable species. Introduced from Europe. *Common Vetch.*

20. ERVUM. Linn.—Tare.

(From the Celtic *erw*, a ploughed field, of which it is the pest. *Hook. Br. Fl.*)

Calyx 5-cleft; segments linear, acute, nearly equalling the corolla. Stigma glabrous. Legume oblong, 2—4-seeded.

E. hirsutum Linn.: leaflets linear or linear-oblong, truncate or retuse, mucronate; stipules semisagittate, narrow; peduncles 3—6-flowered, about as long as the leaves; segments of the calyx linear-lanceolate, equal, longer than the tube; legume oblong, compressed, hairy, finely reticulate; seeds globose, variegated. *Vicia Mitchelli* Raf.

Fields. N. Y. to Car. May, June. ①.—*Stem* 2—3 feet long, much branched, and diffuse. *Leaflets* 8—20, about half an inch long and a line or two wide. *Flowers* very small, bluish-white. Introduced? *Hairy Tare.*

21. LATHYRUS. Linn.—Vetchling.

(From *λαθυρος*; a leguminous plant of Theophrastus.)

Calyx campanulate, 5-cleft; two upper lobes shorter. Corolla papilionaceous. Stamens diadelphous. Style flat, bent at a right angle with the ovary, dilated at the summit, villous or pubescent on the upper side. Legume oblong, many-seeded, 2-valved, 1-celled. Seeds globose or angled.

1. *L. maritimus* Big.: smooth; stem stout, at length decumbent; leaflets 4—6 pairs, oval or slightly obovate; stipules cordate-hastate, nearly as

large as the leaflets; peduncles 6—10-flowered, shorter than the leaves; legume oblong, somewhat falcate. *L. pisiformis* Hook. *Pisum maritimum* Linn.

Sandy shores. Labrador to N. Y. W. to Oregon and California. Oneida Lake and Long Island, N. Y. June, July. ♀.—Plant pale green. Stem 1—2 feet long. Flowers large, purple and blue. *Beach Pea.*

2. *L. venosus* Muhl.: stem square, naked; leaves pinnate; leaflets 5—7 pairs, ovate-oblong, obtuse, subopposite, mucronate, smooth, veined; stipules small, semisagittate, ovate; peduncles many-flowered, shorter than the leaves.

Low meadows. Can. to Geor. W. to California. July, Aug. ♀.—Leaflets large. Flowers purple. *Veiny-leaved Vetchling.*

3. *L. palustris* Linn.: stem smooth, winged, weak; leaflets in 3 pairs, oblong, somewhat coriaceous, mucronate; stipules semisagittate, acute; peduncles 3—5-flowered, a little longer than the leaves; segments of the calyx unequal, sublinear, as long as the tube; legume compressed.

Low grounds. Can. to Penn. W. to Oregon. June, July. ♀.—Stem 2—3 feet long, climbing. Leaflets varying in width. Flowers pale purple. *Marsh Vetchling.*

4. *L. myrtifolius* Muhl.: stem weak, flexuous, square; leaflets 2—3 pairs, oblong-lanceolate, somewhat obtuse, mucronate, rigid, smooth, veined; stipules semisagittate, lanceolate, acuminate, scabrous on the margin; peduncles 3—6-flowered, longer than the leaves.

Salt marshes. N. Y. and Penn. July, Aug. ♀.—Resembles the former, but usually has a more slender stem, and broader leaflets and stipules. Flowers smaller, purple, and rose-colored. *Myrtle-leaved Vetchling.*

5. *L. ochroleucus* Hook.: plant smooth, pale, and somewhat glaucous; leaflets in 3—4 pairs, ovate, obtuse, mucronate, reticulate beneath; stipules large, broad-ovate, acuminate; peduncles 4—10-flowered, shorter than the leaves; legume compressed, smooth. *L. glaucifolius* Beck Bot. 1st. Ed.

Banks of streams. Arct. Amer. to N. Y. and N. J. May, June. ♀.—Stem slender, 1—2 feet long, often nearly erect. Leaflets one and a half to two inches long, and an inch wide. Flowers large, pale yellow. When I introduced this plant as a new species into the former edition of this work, I was not aware that it had already been described under another name by Dr. Hooker.

Cream-colored Vetchling.

22. AMPHICARPÆA. Ell.—Hog-Nut.

(From the Greek *αμφι*, both, and *καρπος*, fruit; producing fruit both above and under ground.)

Flowers of two kinds; the one perfect and petaliferous, but often sterile; the other imperfect, but usually fertile. PERFECT FL.—Calyx tubular-campanulate, 4-toothed, without bracts at the base. Standard incumbent and partly folded round the other petals. Style smooth. Stigma small, capitate. Legume linear-oblong, stipitate, compressed, 3—4-seeded. IMPERFECT FL.—Corolla none or with the rudiment of a standard. Stamens either wanting, or 5—10. Legume obovate, 1—2-seeded, usually maturing below the surface of the ground.

A. monoica Torr. & Gr. : racemes of the petaliferous flowers nodding ; teeth of the calyx short and broad, somewhat triangular ; bracts shorter than the pedicels. *A. monoica* and *A. sarmentosa* Ell. *Glycine monoica, comosa* and *bracteata* Linn.

Woods. Can. to Flor. W. to Louis. July, Aug. ♀.—*Stem* slender, twining, 3—8 feet long, more or less hairy. *Leaves* ternate ; *leaflets* rhombic or oblong-ovate. *Flowers* pale purple, in shortly peduncled racemes, some of them under ground and imperfect. *Common Hog-nut.*

23. APIOS. Boerh.—Ground-Nut.

(From the Greek *απιος*, a pear ; in allusion to the form of its tuberous roots.)

Calyx campanulate, obscurely 2-lipped ; the upper lip of 2 short rounded teeth. Standard very broad, with a longitudinal fold in the centre, reflexed. Keel long, falcate, and with the stamens and style at length spirally twisted. Legume somewhat terete, slightly falcate, many-seeded.

A. tuberosa Mærch. *Glycine Apios* Linn.

Low grounds. Can. to Flor. W. to Miss. July, Aug. ♀.—*Root* producing oval tubers about half an inch in diameter. *Stem* 4—8 feet long, slender, climbing. *Leaflets* mostly in fives, ovate-lanceolate, acuminate, on short hairy petioles. *Flowers* in short oval racemes, purple and green.

Ground-nut. Wild Bean.

24. PHASEOLUS. Linn.—Kidney Bean.

(From the Latin *phaselus*, a little boat ; on account of the form of the legume.)

Calyx campanulate, 5-cleft or 5-toothed ; the two upper teeth more or less united. Keel, stamens and style, spirally twisted, or rarely incurved. Legume linear or falcate, more or less compressed, many-seeded.

1. *P. perennis* Walt. : stem twining, pubescent ; leaflets ovate, acuminate, 3-nerved ; racemes solitary or somewhat clustered, simple or somewhat branched, longer than the leaves ; legume pendulous. *P. paniculatus* Mich. *Dolichos polystachyos* Linn.

Dry woods. Can. to Flor. W. to Miss. July. ♀.—*Stem* 4—10 feet long, climbing. *Leaflets* 2—3 inches long. *Flowers* purple, in numerous racemes which are from 4—10 inches long. *Wild Kidney Bean.*

2. *P. diversifolius* Pers. : stem prostrate ; leaflets broad-ovate, angular, 2—3-lobed ; peduncles angled, longer than the leaves ; flowers in heads ; bracts ovate ; legume linear, terete, subpendulous, pubescent, 6—7-seeded. *P. trilobus* Mich. *Strophostyles angulosa* Ell. *Glycine angulosa* Muhl. in Willd.

Woods. Can. to Flor. Aug. ①.—*Stem* prostrate and a little scabrous, 2—6 feet long. *Leaflets* more or less distinctly 3-lobed. *Flowers* 4—8, purple, on peduncles 4—6 inches long. *Various-leaved Kidney Bean.*

3. *P. helvolus* Linn. : stem slender, hairy backwards ; leaflets ovate, oblong, usually entire, about the length of the petiole ; stipules lanceolate ; peduncles slender, 3—6 times as long as the leaves ; flowers few, in heads ;

legume narrow-linear, 7—10-seeded, slightly pubescent; seeds pubescent. *P. vexillatus* and *P. helvolus* Pursh. *Strophostyles helvola* and *S. peduncularis* Ell.

Sandy fields. N. Y. to Flor. W. to Miss. July, Aug. ♀.—Stem 3—4 feet long, prostrate or climbing. Leaflets rarely 3-lobed. Flowers purple, 3—5 on a very long peduncle. *Pale-red Kidney Bean.*

25. LUPINUS. Linn.—Lupine.

(From the Latin *lupus*, a wolf; because it was supposed to destroy the fertility of the soil.)

Calyx deeply bilabiate; the upper lip 2-cleft; the lower entire, or 3-toothed. Standard with the sides reflexed. Wings united at the top. Keel acuminate. Anthers 5 roundish and 5 oblong. Style filiform. Stigma small, capitate, bearded. Legume oblong or linear, torulose, coriaceous, many-seeded.

L. perennis Linn.: perennial, somewhat hairy; leaves digitate; leaflets 7—11, obovate-oblong or oblanceolate, rather obtuse, mucronate, smoothish above, a little hairy beneath; flowers scattered in a long loose raceme; bracts shorter than the pedicels; upper lip of the calyx emarginate, lower one nearly entire; legume linear-oblong, very hairy.

Sandy woods. Can. to Flor. N. to Arct. Amer. W. to Miss. May, June. ♀.—Stem 12—18 inches high, erect or somewhat decumbent. Leaflets usually 8 or 9, digitately arranged. Flowers purplish-blue, large, in a terminal spike or raceme which is 6—10 inches long. *Common Lupine.*

SUBORDER II. CÆSALPINEÆ.

Petals imbricated in æstivation, the uppermost interior.

26. GLEDITSCHIA. Linn.—Honey Locust.

(In honor of *Gleditsch*, a German botanist of the last century.)

Flowers by abortion imperfect or perfect. Sepals 3—4—5, equal. Petals as many as the sepals, arising from the tube of the calyx. Stamens as many as the sepals and opposite them, or by abortion fewer; style short; stigma pubescent above. Legume compressed, 1- or many-seeded. Seeds oval, compressed.

G. triacanthos Linn.: branches spiny; spines thick, simple or triple and compound; leaves equally pinnate; leaflets linear-oblong; legume compressed-flat, falcate, many-seeded. *G. triacanthos* and *brachycarpa* Pursh.

Woods. N. Y. to Geor. W. to Miss. July.—A tree sometimes attaining the height of 40 or 50 feet, with very long spines. Leaflets three-fourths of an inch long, nearly smooth. Flowers in axillary racemes, greenish. Legume 10—15 inches long, many-seeded, the intervals between the cells of the seeds filled with a saccharine pulp. The tree is sometimes unarmed, when it forms the var. *inermis* of De Candolle. *Three-thorned Honey Locust.*

27. GYMNOCLADUS. Lam.—Coffee Tree.

(From the Greek γυμνος, *naked*, and κλαδος, a *branch*; in allusion to the naked appearance of this tree in winter.)

Flowers by abortion dicecious. Calyx tubular, 5-cleft. Petals 5, equal, oblong, exserted from the tube. Stamens 10, included. Legume oblong, very large and thick, pulpy inside.

G. Canadensis Mich.

Can. N. Y. W. to Ark. May, June.—A middle-sized tree with few branches. Leaves very large, (1—3 feet long,) bipinnate; leaflets oval, acuminate, slightly pubescent. Flowers white, in racemes. Legume large, dark-brown. Seeds half an inch in diameter.
Canadian Coffee Tree.

28. CASSIA. Linn.—Cassia.

(Said to have been derived from a Hebrew term Latinized by *Cassia*.)

Sepals 5, scarcely united at base, somewhat unequal. Petals 5, unequal. Stamens 10, free, unequal; 3 lower ones longer; 4 middle ones short and straight; 3 upper ones usually abortive. Anthers opening at the apex. Legume terete or compressed, many-seeded.

1. *C. Marylandica Linn.*: stem erect; leaflets in 6—9 pairs, ovate-oblong, mucronate, equal; gland at the base of the petiole ovate; racemes axillary, many-flowered, shorter than the leaves; legume compressed, linear, hispid, at length smooth.

Banks of streams. N. Eng. and N. Y. to Car. W. to Miss. July, Aug. ♀.—Stem 3—4 feet high, smooth or somewhat pubescent. Flowers yellow, large, in axillary racemes which appear paniculate at the summit of the stem. Medicinal; a tolerable substitute for the *senna* of the shops. *Big. Med. Bot.* i. 166.
Wild Senna.

2. *C. fasciculata Mich.*: nearly smooth; leaflets in 8 or 9 pairs, oblong-linear, mucronate; gland near the middle of the petiole sessile; fascicles lateral, many-flowered; petals and stamens of the same color; legume smooth, curved, ascending.

Dry fields. N. Y. to Car. June—Aug. ♂.—Flowers yellow. A doubtful species.
Fascicled Cassia.

3. *C. nictitans Linn.*: stem erect or decumbent, branched; leaflets in 10—20 pairs, oblong-linear, obtuse, mucronate; gland on the petiole cup-shaped, on a slender foot-stalk; racemes lateral, above the axils of the leaves, short, few-flowered; stamens 5; legume pubescent.

Sandy banks of streams. N. Y. to Flor. June, July. ♂.—Stem a foot high. Flowers small, yellow, 2—3 in a raceme. The leaves are somewhat irritable, like the *Mimosa* or sensitive plant.
Wild Sensitive Plant.

4. *C. Chamæcrista Linn.*: erect or decumbent; leaflets in 10—15 pairs, linear-oblong, oblique at base, obtuse, mucronate; gland on the petiole cup-shaped; fascicles of flowers above the axils of the leaves; legume sparingly hirsute.

Sandy places. N. Y. to Car. W. to Miss. June—Aug. ♂.—Stem a foot or more high. Flowers yellow, larger than in the preceding; sometimes the base of all the petals are spotted.
Partridge Pea.

29. CERCIS. *Linn.*—Red Bud.

(From the Greek *κερκis*, a weaver's shuttle; being the form of the legume.)

Calyx 5-toothed, gibbous at base. Petals 5, with claws, subpapilionaceous, all distinct. Wings larger than the standard. Stamens 10, free, unequal. Legume oblong, compressed, 1-celled, many-seeded; upper seminiferous suture margined. Seeds obovate.

C. Canadensis Linn.: leaves roundish-cordate, acuminate, villous in the axils of the nerves; legume on short foot-stalks; flowers in small fascicles.

Banks of streams. N. J. to Flor. W. to Miss. April.—A small tree with grayish-brown bark. Flowers appearing before the leaves, of a dark rose-color. Legume about 3 inches long, acute at each end. *Judas Tree. Red Bud.*

ORDER XXXVIII. DRUPACEÆ.—ALMONDS.

Calyx 5-toothed, deciduous, the odd lobe superior. Petals 5. Stamens about 20, arising from the throat of the calyx. Ovary superior, solitary; styles terminal, with a reniform stigma. Fruit a drupe. Seeds mostly solitary, without albumen.—Trees or shrubs, with alternate simple leaves. Stipules simple, mostly glandular. Flowers white or pink.

1. PRUNUS. *Linn.*—Plum.

(The Latin name for a plum.)

Calyx urceolate, hemispherical; limb 5-parted, deciduous. Petals spreading. Stamens numerous. Drupe ovate or oblong, fleshy, very smooth, covered with grayish dust; stone compressed, acute at both ends, subsulcate at the margin, elsewhere smooth.

1. *P. maritima Wang*: low; branches seldom thorny; leaves oval, ovate or obovate, acuminate, sharply serrate; petioles usually with 2 glands; flowers few, on short pedicels, umbellate; drupe subglobose. *P. acuminata Mich.* *P. littoralis Big.* *Cerasus pubescens* and *C. pygmaea D. C.*

Sandy sea-coast. Mass. and N. Y. to Ala. April, May. 12.—Stem 2—5 feet high. Drupe often as large as the common garden-plum and eatable, but sometimes smaller and astringent; the two kinds being sometimes on the same stem. *Beach Plum. Sand Plum.*

2. *P. Americana Marsh*: branches somewhat thorny; leaves ovate-oblong, ovate or obovate, acuminate, sharply and often doubly serrate, at length smooth; umbels 2—5-flowered; drupe roundish oval. *P. nigra Ait.* *P. mollis Torr. Fl. N. & M. S.* *P. hiemalis Mich.* *Cerasus nigra* and *hyemalis D. C.*

Banks of streams. Arct. Amer. to Geor. Louis. and Texas. April, May. 12.—

Stem 8—15 feet high, much branched. *Leaves* rather coarsely serrate. *Flowers* white, preceding the leaves. *Drupe* an inch or a little less in diameter, with a yellow pulp, and thick tough skin. *Red Plum. Yellow Plum.*

3. *P. spinosa* Linn.: branches thorny; peduncles solitary; calyx campanulate; lobes obtuse, longer than the tube; leaves obovate-elliptic or ovate, pubescent beneath, coarsely and doubly dentate; drupe globose.

Hedgerows. Penn. $\frac{1}{2}$.—Introduced. *Pursh. Black Thorn or Sloe.*

2. CERASUS. Juss.—Cherry.

(The name of an Asiatic town, whence the cherry is said to have been derived.)

Flowers as in the preceding. *Drupe* globose or umbilicate at base, fleshy, very smooth, destitute of gray powder; nucleus subglobose, smooth.

* *Flowers umbelled: pedicels 1-flowered, arising from the buds.*

1. *C. pumila* Mich.: depressed or prostrate; leaves obovate-lanceolate, or oval, acute or obtuse, serrulate, smooth, glaucous beneath; umbels sessile, few-flowered; drupe ovoid. *C. depressa* D. C. *Prunus pumila* Willd.

Banks of streams. Hudson's Bay to Virg. W. to Miss. May. $\frac{1}{2}$.—*Stem* trailing, the branches 3—20 inches high. *Drupe* dark-red, eatable.

Sand Cherry.

2. *C. Pennsylvanica* D. C.: leaves oval or oblong-lanceolate, acuminate, smooth and shining when old, mostly with 2 glands at the base; umbels subsessile, somewhat corymbose, many-flowered; drupe ovoid-subglobose. *C. borealis* Mich. *Prunus borealis* Pursh. *P. Pennsylvanica* and *lanceolata* Willd.

Woods. Subarct. Amer. to Virg. W. to the Rocky Mountains. April, May.—A small tree, with reddish bark. *Leaves* 2—5 inches long. *Drupe* small, red and astringent.

Bird Cherry.

** *Flowers racemose, arising from the branches.*

3. *C. Virginiana* D. C.: leaves broad-oval or somewhat obovate, abruptly acuminate, often subcordate, toothed, smoothish; petioles with 2—4 glands; racemes short, erect or spreading; drupe subglobose. *C. obovata* Beck Bot. 1st. Ed. *Prunus Virginiana* Linn. *P. obovata* Big. *P. serotina* Pursh.

Woods. Hudson's Bay to Flor. April, May.—A small tree or low shrub, with gray branches. *Fruit* a quarter of an inch in diameter, dark-red when ripe, very astringent.

Choke Cherry.

4. *C. serotina* D. C.: leaves oval-oblong or lance-oblong, acuminate, smooth and shining above, bearded along the midrib beneath, finely serrate; petiole mostly with 2 or more glands; drupe globose. *C. Virginiana* Mich. *Prunus serotina* Willd.

Woods. Can. to Flor. May, June.—A tree 30—60 feet high; branches spreading. *Flowers* in long racemes, which are at length pendulous. *Drupe* dark purple, about as large as in the preceding, slightly bitter. The wood is close-grained, and very valuable for cabinet work.

Wild Cherry.

ORDER XXXIX. ROSACEÆ.—ROSEWORKS.

Calyx 4 or 5-lobed, with a disk either lining the tube or surrounding the orifice. Petals 5, equal, or none. Stamens usually indefinite. Ovaries superior, solitary or several, 1-celled; styles lateral. Fruit 1-seeded nuts, achenia, or follicles containing several seeds; albumen none.—Herbaceous plants or shrubs, with simple or compound leaves.

1. SPIRÆA. *Linn.*—Spiræa.

(Supposed to be from the Greek *σπειρα*, a *cord*; in allusion to its flexible branches.)

Calyx 5-cleft, persistent. Petals 5. Stamens 20—50. Carpels 3—8, distinct, rarely united at base, short apiculate, sessile, rarely stiped. Seeds 2—15.

* *Shrubby. Leaves lobed and toothed.*

1. *S. opulifolia* *Linn.*: leaves ovate, often subcordate, 3-lobed, doubly toothed and crenate, petioled, smoothish; corymbs umbel-like, hemispherical, peduncled; pedicels filiform; carpels 3—5, at length spreading, much longer than the calyx.

Banks of streams. Can. to Geor. W. to Oregon. May, June. \bar{h} .—*Stem* 3—6 feet high, much branched. *Flowers* numerous, white, in corymbs which are about two inches in diameter. *Calyx* and *pedicels* pubescent. *Nine-bark*.

** *Shrubby. Leaves entire or toothed.*

2. *S. corymbosa* *Raf.*: leaves oval or ovate, on short petioles, whitish beneath, incisely serrate toward the apex; corymb terminal, pedunculate, compound, fastigiate, somewhat leafy; carpels 3—5, smooth. *S. chamædrifolia* *Pursh.*

Mountains of Penn. S. to Geor. W. to Ken. May, June. \bar{h} .—*Stem* 18 inches high, slightly pubescent. *Leaves* nearly smooth above, pale beneath. *Flowers* pale rose-color, in a compound pedunculate corymb.

Corymbose Spiræa.

3. *S. salicifolia* *Linn.*: stem and peduncles glabrous; leaves lanceolate or obovate, simply or doubly serrate, smooth; racemes in dense terminal compound panicles; carpels 5, distinct, not inflated, scarcely twice as long as the calyx. *S. alba* *Ehrh.* *S. hypericifolia* *Muhl.* according to *Torr. & Gr.*

Meadows. Arct. Amer. to Geor. June, July. \bar{h} .—*Stem* 3—5 feet high, the branches purple and brittle. *Leaves* varying in form, usually acute, but sometimes obtuse. *Flowers* white or reddish-white. *Meadow Sweet.*

4. *S. tomentosa* *Linn.*: stem and peduncles reddish tomentose; leaves ovate-lanceolate, unequally serrate, densely tomentose beneath; racemes terminal, compound, crowded; carpels 5, woolly.

In low grounds. Can. to Geor. July, Aug. \bar{h} .—*Stem* 2—3 feet high, cov-

ered with a loose wool. *Flowers* small, pale purple, in a very dense elongated conical raceme. *Hard-hack. Steeple-bush.*

*** *Herbaceous. Leaves pinnate.*

5. *S. Aruncus* Linn.: leaves twice or thrice pinnate, shining; leaflets lanceolate-oblong, acuminate; the terminal ones ovate-lanceolate, sharply and incisely doubly serrate; flowers very numerous; carpels 3—5, smooth. *S. Aruncus* var. *Americana* Pursh.

Mountains. N. Y. to Geor. W. to Miss. June. 2.—*Stem* 4—6 feet high. *Leaves* very large. *Flowers* white, small, in slender terminal spikes.

Goat's Beard.

6. *S. lobata* Jacq.: leaves palmate-pinnate, smooth, lower ones bipinnate; terminal leaflet much larger and 7-lobed; lateral leaflets 3-lobed; the lobes all serrate, mostly incised or toothed; flowers in a compound cymose panicle; sepals reflexed; carpels 6—8, smooth.

Moist grounds. Penn. to Car. W. to Mich. and Ken. June, July. 2.—*Stem* 5—8 feet high, angled. *Flowers* in an imperfect cyme, deep rose-color, large. *Lobe-leaved Spiræa.*

2. GILLENIA. *Mærch.*—Indian Physic.

(Etymology uncertain.)

Calyx tubular-campanulate, contracted at the mouth, 5-cleft. Petals 5, linear-lanceolate, somewhat unequal, coarctate at the claws. Stamens 10—20, mostly included. Styles filiform. Carpels 5, distinct, 2-valved.

1. *G. trifoliata* *Mærch.*: leaves ternate; leaflets lanceolate or obovate-lanceolate, acuminate, serrate; stipules small, subulate-linear, entire. *Spiræa trifoliata* Linn.

Shady woods. Can. to Geor. W. to Miss.; rare. June. 2.—*Stem* 2—3 feet high. *Flowers* white or pale rose-color, few, in a terminal panicle. Medicinal; emetic, &c. *Big. Med. Bot.* iii. 11.

Indian Physic. Bowman's Root.

2. *G. stipulacea* Nutt.: radical leaves pinnatifid; cauline ternate; leaflets incisely serrate; stipules foliaceous, ovate, incisely toothed and clasping. *Spiræa stipulata* Muhl.

Western part of N. Y. *D. Thomas.* S. to Car. and Louis. W. to Miss. June. 2.—*Stem* 2—3 feet high, branching. It resembles the former, but can readily be distinguished by its large clasping stipules. It possesses nearly the same medicinal properties. *American Ipecacuanha.*

3. DRYAS. Linn.—Dryas.

(Said to be derived from the Greek *δρυσ*, the oak; on account of a distant similarity between their leaves.)

Calyx 8—9-parted, naked without; tube somewhat concave. Petals 8—9. Stamens numerous. Carpels numerous, crowned by a terminal style, at length terminating in a bearded plumose awn.

D. integrifolia Vahl.: leaves oblong-ovate, broader at base, entire or very slightly toothed at the base; sepals linear. *D. tenella* Pursh.

White Hills, N. H. N. to Labrador. July. ♀.—*Flower* white, on a terminal peduncle. Scarcely distinct from *D. octopetala* Linn.

Entire-leaved Dryas.

4. GEUM. Linn.—Avens.

(From the Greek γεωω, to yield an agreeable flavor; the root of one species being aromatic.)

Calyx concave; limb 5-cleft, with 5 small external bracts alternating with the segments. Petals 5. Stamens numerous, inserted into the disk that lines the base of the calyx. Carpels in a head, awned by the persistent styles.

1. *G. strictum* Ait.: hairy; radical and lower leaves interruptedly pinnate; upper cauline ones 3—5-foliate; the leaflets rhombic-ovate, acute, sharply toothed and incised; stipules large, incised; petals roundish, longer than the calyx. *C. Canadense* Murr.

Swamps. Can. N. Y. and New Eng. Aug. ♀.—*Stem* 2—4 feet high, simple. *Radical and lower leaves* on long petioles, the upper nearly sessile. *Flowers* large, yellow, in a loose dichotomous panicle. *Yellow Avens.*

2. *G. Virginianum* Linn.: pubescent; radical leaves pseudo-pinnate or ternate; upper simple, lanceolate, incisely serrate; stipules subovate, entire or incised; petals cuneate-obovate, shorter than the calyx. *G. album* Willd.

Woods. Can. to Geor. W. to Miss. June, July. ♀.—*Stem* 2—3 feet high, smooth, or pubescent. *Radical leaves* on long petioles. *Flowers* white or pale yellow, on peduncles 1—3 inches long terminating the branches, at first somewhat nodding, at length erect. *Virginian Avens.*

3. *G. macrophyllum* Willd.: hispid; radical leaves lyrate and interruptedly pinnate; cauline with 2—4 minute lateral leaflets, the terminal one large roundish and 3-parted; stipules nearly entire; petals obovate, a little longer than the calyx.

White Mountains. N. H. N. to Arct. Amer. W. to the Pacific. June, July. ♀.—*Stem* 1—2 feet high, very hispid. *Leaves* sometimes nearly smooth. *Flowers* yellow, intermediate in size between *G. strictum* and *Virginianum*. *Long-leaved Avens.*

4. *G. rivale* Linn.: pubescent; stem simple, 1—4 flowered; radical leaves interruptedly pinnate; cauline ternate or 3-lobed; petals broad obcordate-spatulate, emarginate, about as long as the calyx; carpels in a stiped head, very hairy; upper joint of the style plumose.

Moist places. Can. to Penn. W. to the Rocky Mountains. May, June. ♀.—*Stem* 18 inches or 2 feet high, nearly simple, somewhat pilose. *Radical leaves* on very long petioles. *Flowers* large, purple, nodding. *Water Avens.*

5. *G. triflorum* Pursh.: stem nearly naked, softly pubescent, about 3-flowered at the summit; radical leaves interruptedly pinnate, the petioles hairy; leaflets cuneiform-oblong, deeply incised and toothed; bracts longer than the segments of the calyx; styles very long and filiform in fruit, plumose. *Sieversia triflora* R. Brown.

On rocks. Watertown, Jefferson county, N. Y.; very rare. *Dr. Crave*. White Mountains, N. H. W. to the Rocky Mountains. N. to Labrador. May, June. ♀.—*Stem* 4—6 inches, in fruit 12—15 inches high, with two opposite

small laciniate leaves near the middle. *Radical leaves* numerous. *Flowers* at first nodding. *Calyx* purple. *Petals* yellowish white. *Three-flowered Avens*.

6. *G. Peckii*: somewhat hairy; stem paniculately branched above, several-flowered, scarcely leafy; radical leaves lyrate-pinnate; the terminal leaflet very large, roundish reniform, somewhat truncate at base; lateral ones minute; petals obovate-roundish, twice as long as the ovate-triangular segments of the calyx. *Sieversia Peckii* R. Brown.

White Mountains. N. H. Prof. Peck. July, Aug. 21.—*Stem* a foot or more high, with 3 or 4 small sessile incised leaves. *Flowers* terminal and solitary at the end of each branch or peduncle, yellow, middle-sized. *Peck's Avens*.

5. COMAROPSIS. Rich.—Dry Strawberry.

(From the Greek, *κομαρος*, the ancient name of a *strawberry*, and *οψις*, *appearance*; on account of its resemblance to the strawberry.)

Calyx with the tube turbinate, the limb 5-cleft, not bracted. *Petals* 5, without claws. *Stamens* numerous. *Capsule* small, with an elongated filiform style at the apex. *Achenia* 2—6, dry, not united at base.

C. fragarioides D. C.: leaves radical, ternate; leaflets broad wedgeform, toothed and incised; scapes 3—5-flowered; petals much larger than the segments of the calyx; carpels hairy. *Dalibarda fragarioides* Michx. Pursh. *Waldsteinia fragarioides* Torr. & Gr.

Shady woods. Can. to Geor. May. 21.—*Root* creeping. *Scape* 3—4 inches high, with a small leafy bract below the middle. *Leaves* on long petioles. *Flowers* yellow. *Dry Strawberry*.

6. RUBUS. Linn.—Raspberry and Blackberry.

(Said to be from the Latin *ruber*, red.)

Calyx concave or flattish at base, naked, 5-parted. *Petals* 5, deciduous. *Stamens* numerous, inserted into the border of the disk. *Berry* composed of many pulpy carpels aggregated on a spongy receptacle, persistent or deciduous.

§ 1. *Berry* concave beneath and falling away from the dry receptacle when ripe. (Raspberry.)

* *Leaves* simple.

1. *R. odoratus* Linn.: hispid with glandular hairs; stem erect, branched; leaves large, 3—5-lobed; the lobes acute or acuminate, unequally serrate; peduncles many-flowered, compound; sepals long, acuminate, shorter than the obovate-roundish petals.

Rocky places. Can. to Geor. June. 12.—*Stem* 3—4 feet high. *Flowers* large, purple. *Fruit* broad and flat, yellowish or red when ripe, scanty, but well-flavored. It is often abortive. *Flowering Raspberry*.

2. *R. Chamæmorus* Linn.: diœcious; stem creeping at base, simple, 1-flowered, somewhat pubescent, unarmed; leaves cordate-reniform, plicate, 5-lobed, serrate, the lobes rounded; sepals ovate, obtuse, shorter than the spreading obovate petals.

Sphagnous swamps. Lubeck, Maine. White Mountains, N. H. Oakes. N. to Arct. Amer., from Greenland to Behring's Straits. June, July. 2.—*Flower* large, white. *Fruit* red, well-flavored, composed of few and large carpels.
Cloud Berry.

** *Leaves compound.*

3. *R. triflorus* Richardson: unarmed; stem suffrutescent at base, ascending; leaves ternate or pedate-quinately, on slender petioles; leaflets membranaceous, rhombic-ovate or ovate-lanceolate, acute at both ends, coarsely serrate or incised, the terminal one petiolate; peduncle terminal, 1—3-flowered; sepals lanceolate, reflexed, shorter than the spatulate-oblong petals. *R. saxatilis* β *Canadensis* Mich. *R. saxatilis* Big.

Moist woods and hills. Hudson's Bay to Penn. June. 2.—*Stem* a foot or more high, and with the branches often rooting at the extremity, minutely pubescent. *Flowers* white. *Fruit* small, reddish-purple, usually sour.

Dwarf Raspberry.

4. *R. strigosus* Mich.: stem erect, suffruticose, strongly hispid; leaves ternate or quinate; leaflets oblong-ovate, acuminate, incisely serrate, white tomentose beneath, the terminal one often subcordate; peduncles 4—6-flowered; sepals spreading, nearly as long as the petals. *R. Pennsylvanicus* Lam.

Rocky places. Subarct. Amer. to Virg. W. to Oregon. May. 2.—*Stem* reddish-brown, shining. *Flowers* white. *Fruit* red, richly flavored. This species has probably been confounded with *R. Idæus*, which is not a native.

Red Raspberry.

5. *R. occidentalis* Linn.: somewhat smooth, armed with strong hooked prickles; leaves ternate, rarely quinate; leaflets ovate, acuminate, coarsely or incisely serrate, hairy tomentose beneath; terminal peduncles several-flowered; petals obovate-wedgeform, shorter than the reflexed sepals.

Woods. Can. to Geor. W. to Oregon. May—July. 2.—*Stem* 5—8 feet long, sparingly branched. *Flowers* white, 1—3 on axillary peduncles, in terminal leafy racemes. *Fruit* roundish, dark purple, almost black, sweet and well-flavored.

Black Raspberry. Thimble Berry.

§ 2. *Fruit persistent on the somewhat juicy receptacle.* (Blackberry.)

6. *R. villosus* Ait.: prickly; stem angular, and with the branches, peduncles and lower surface of the leaves tomentose-villous and glandular; leaves ternate and pedate-quinately; leaflets ovate or oblong-ovate, mostly acuminate, doubly or unequally serrate, the terminal one petiolate and subcordate; flowers in elongated terminal racemes; sepals acuminate, much shorter than the obovate spreading petals.

var. *frondosus* Torr.: much less glandular, smoother; flowers fewer, corymbose, with leafy bracts. *R. frondosus* Big.

Fields and woods. Can. and throughout the U. S. May, June. 2.—*Stem* erect, (4—8 feet high,) or reclined. *Flowers* white, numerous. *Fruit* ovoid-oblong, sometimes acute, half an inch to an inch in length, purple or nearly black when ripe, sweet and well-flavored.

High Blackberry.

7. *R. Canadensis* Linn.: stem procumbent or trailing, somewhat prickly; leaves ternate or pedate-quinately, smooth or pubescent; leaflets oval, rhombic-ovate or lanceolate, sharply and unequally serrate, often incised; flowers in racemes or somewhat corymbed, with leafy bracts; sepals mucronate,

half as long as the petals. *R. procumbens* Muhl. *R. trivialis* Pursh. not of Mich. *R. flagellaris* Willd.

Rocky woods. Can. to Virg. May, June. 12.—Stem trailing or procumbent, ascending at base. Flowers white, smaller than in the preceding. Fruit roundish or oblong, half an inch to an inch in diameter, black, sweet and juicy.

Low Blackberry. Dewberry.

8. *R. hispidus* Linn.: stem slender, prostrate, and with the petioles and peduncles armed with retrorse bristles or weak prickles; leaves ternate or pedate-quinate; leaflets somewhat coriaceous, obovate, coarsely and unequally serrate, entire towards the base, smoothish; flowers in corymbs or racemes, without bracts; sepals spreading, half the length of the obovate or oblong-obovate petals. *R. obovalis* Mich. *R. sempervirens* Big.

Wet woods and swamps. Can. to Car. May, June. 12.—Stem profusely trailing, with short erect branches. Flowers white, small. Fruit composed of a few large grains, blackish, sour.

Trailing Swamp Blackberry.

9. *R. setosus* Big.: stem reclining, armed with weak prickles; branches setose at the apex; leaves ternate or quinate, on long petioles; leaflets obovate-wedgeform, simply serrate, smooth; flowers in racemes, with bristly pedicels; petals obovate-wedgeform, longer than the sepals. *R. hispidus* var. *setosus* Torr. & Gr.

Swamps. Can. and Mass. Big. June. 12.—Flowers white. Fruit red, small.

Bristly Raspberry.

10. *R. trivialis* Mich.: sarmentose procumbent, bristly, at length prickly; leaves ternate or pedate-quinate; leaflets ovate-oblong or lanceolate, mostly acute, sharply serrate, nearly smooth; peduncles 1—3-flowered; petals broad-obovate, more than twice as long as the reflexed sepals. *R. hispidus* Willd.

Dry woods. Penn. to Flor. W. to Texas. March—May. 12.—The leaves are more coriaceous and often smaller than in any other N. American species, the young stems very hispid as well as prickly, the flowers large in proportion, on long-hispid or prickly peduncles. Torr. & Gr. Stem sometimes with erect branches. Fruit large, black.

Low Bush Blackberry.

11. *R. cuneifolius* Pursh.: low, armed with stout recurved prickles; leaves ternate and pedate-quinate; leaflets wedgeform-obovate, somewhat coriaceous, entire at base, subplicate, pubescent-tomentose beneath, terminal one petiolate; peduncles few-flowered; petals obovate, much longer than the tomentose oblong mucronate sepals. *R. parviflorus* Walt.

Sandy fields. N. Y. to Flor. May, June. 12.—Stem 1—3 feet high. Leaves rarely quinate. Flowers white. Fruit ovoid, black, juicy, eatable.

Sand Blackberry.

7. DALIBARDA. Linn.—Dalibarda.

(In honor of *Dalibard*, a French botanist of the last century.)

Calyx with the tube short, concave; limb 5—6-cleft, naked without; lobes dentate. Petals 5, sessile, deciduous. Stamens many. Ovaries 5—10, with short terminal styles. Acheneia few, dry, adhering to the calyx.

D. repens Linn.: stem creeping; leaves simple, cordate, crenate-dentate;

stipules lacinate; peduncles 1-flowered; sepals not bristly. *D. violaeoides* Mich. *Rubus Dalibarda* Linn.

Moist shady places. Can. N. Eng. N. Y. and Penn. June—Aug. ♀.—*Stem* herbaceous, creeping and rooting. *Leaves* on long petioles, with a deep and often closed sinus at the base. *Flowers* solitary, white, on long nearly radical peduncles. *Creeping Dalibarda*.

8. FRAGARIA. Tourn.—Strawberry.

(From the Latin *fragrans*; on account of its fragrant fruit.)

Calyx with the tube concave, 5-cleft, and with 5 bracts without, (or 10-cleft.) Petals 5. Stamens many. Carpels naked, fixed on a long pulpy deciduous receptacle. Style lateral.

1. *F. Virginiana* Linn.: leaflets broad-oval, smoothish above, the lateral ones distinctly petioled; peduncles usually shorter than the leaves; fruit ovoid; achenia imbedded in the receptacle. *F. Canadensis* Mich.

Fields and meadows. Throughout the U. S. Can. and Arct. Amer. to lat. 64°. May. ♀.—*Flowers* white. *F. Canadensis* Mich. is the larger form of this species, and appears in some situations to be quite constant. This is the case at Little Falls, N. Y. *Wild Strawberry*.

2. *F. vesca* Linn.: lobes of the leaves plicate, thin, pilose beneath; peduncles usually longer than the leaves; fruit conical or hemispherical; achenia superficial.

Fields. N. S. Subarct. Amer. and N. W. Coast. April, May. ♀.—More stoloniferous than the former, and the carpels not imbedded in the receptacle. There are several cultivated varieties. *Common Strawberry*.

9. POTENTILLA. Linn.—Cinquefoil.

(From the Latin *potens, powerful*; in allusion to its supposed medicinal virtues.)

Calyx with the tube concave; limb 4—5-cleft, 4—5-bracted without (or 8—10-cleft). Petals 4—5, obtuse or obcordate. Stamens many. Carpels many, roundish, rugose, naked, fixed to a small dry receptacle.

* *Leaves ternate or quinate-palmate*.

1. *P. Norvegica* Linn.: hirsute; stem erect, dichotomous above; leaves ternate-palmate; leaflets lanceolate or obovate, simply and doubly serrate; stipules lanceolate; flowers numerous, subcorymbed and axillary; petals obovate, slightly emarginate, shorter than the calyx. *P. hirsuta* Mich.

Old fields and pastures. Can. to Car. N. to Arct. Amer. June—Aug. ①.—*Stem* 1—2 feet high, hirsute, at length more or less branched. *Lower leaves* on petioles 1—4 inches long. *Flowers* yellow, in leafy corymbs at the top, and on long solitary peduncles below. *Norway Cinquefoil*.

2. *P. tridentata* Ait.: stems ascending, woody and creeping at base; leaves ternate-palmate; leaflets obovate-wedgeform, coriaceous, 3-toothed at the end, pale pubescent beneath; stipules lanceolate, acuminate; corymb loose, few-flowered; petals oblong-ovate, longer than the calyx.

Mountains. Arct. Amer. to Car. June, July. ♀.—*Stem* 4—10 inches high. *Leaflets* sometimes 4—5-toothed. *Flowers* 6—8 in the summit of each stem, white or reddish-white. *Three-toothed Cinquefoil*.

3. *P. Canadensis* Linn.: silky-villous; stem procumbent and ascending, somewhat branched; leaves quinate-palmate; leaflets obovate-wedgeform, acutely dentate; stipules lanceolate, somewhat obtuse; peduncles solitary, elongated; lobes of the calyx linear-lanceolate, acute, nearly equalling the obovate or obcordate petals. *P. simplex* Mich. *P. sarmentosa* Willd.

Fields and woods. Can. to Geor. W. to Miss. April—Aug. ♀.—Stems at first short, but at length 12—18 inches long. Leaves white, villous when young. Flowers yellow, on slender axillary peduncles. Quite variable. *Five-finger*.

4. *P. minima* Haller: stem ascending, pubescent, mostly 1-flowered; leaves ternate; leaflets obovate, very obtuse, smooth except on the margin and veins beneath, incisely serrate towards the apex; petals obcordate, longer than the calyx.

Near the summit of the White Mountains, N. H. June, July. ♀.—Root fusiform. Stems 1—3 inches high. Leaves crowded. Flowers small.

Small Cinquefoil.

5. *P. argentea* Linn.: stem ascending or erect, tomentose; leaves quinate-palmate; leaflets obovate-wedgeform, deeply incised, revolute on the margin, smooth above, canescent beneath; flowers numerous, corymbed; lobes of the calyx lanceolate, shorter than the obovate petals.

Fields. Can. and throughout the U. S. June—Sept. ♀.—Stems numerous, 4—10 inches long, somewhat woody at base. Leaves green above. Flowers yellow, small, in spreading corymbs.

Silvery Cinquefoil.

** *Leaves pinnate.*

6. *P. fruticosa* Linn.: stem fruticose; leaves pinnate, hirsute or silky; leaflets oblong-lanceolate, very entire, approximate; stipules lanceolate, membranaceous, acute; flowers in corymbs, large; petals longer than the calyx. *P. fruticosa* and *P. floribunda* Pursh.

Margins of swamps. N. S. N. to Arct. Amer. W. to the Rocky Mountains. June—Sept.—A shrub about 2 feet high, much branched and hairy. Leaves numerous, on short petioles. Flowers numerous, large, yellow.

Shrubby Cinquefoil.

7. *P. supina* Linn.: stem decumbent, herbaceous, dichotomous; leaves pinnate; leaflets obovate or oblong, somewhat glabrous, more or less toothed; peduncles axillary, solitary, 1-flowered; segments of the calyx triangular-lanceolate; petals as long as the calyx. *P. paradoxa* Nutt. in Torr. & Gr.

Overflowed banks of streams. Can. and Penn. From the Ohio to Oregon. Nutt. June—Aug. ♂.—Flowers small, yellow. Perhaps not a native of our section.

Decumbent Cinquefoil.

8. *P. Anserina* Linn.: stem filiform, rooting; leaves interruptedly pinnate; leaflets ovate-oblong, incisely and acutely serrate, smooth above, silvery canescent beneath; stipules many-cleft; peduncles scape-like, as long as the leaves, axillary, solitary; lobes of the calyx lanceolate, entire, half as long as the obovate petals.

Wet meadows. N. S. N. to Arct. Amer. W. to Oregon. June. ♀.—Stems long, reddish, with a tuft of leaves and one or more pedicels at each joint. Leaves sometimes white and silky on both sides. Flowers bright yellow.

Silver-weed. Wild Tansy.

9. *P. Pennsylvanica* Linn.: whole plant white tomentose; stem herbaceous, erect; leaves interruptedly pinnate; leaflets oblong, obtuse, pinnatifid

or pinnately incised; stipules lanceolate, somewhat lacinate; flowers in corymbose panicles; segments of the calyx somewhat acute, as long or a little longer than the corolla; petals obcordate. *P. arguta* Lehm. not of Pursh.

N. S. ? Can. and throughout British America. W. to the Rocky Mountains. June. 2.—Stem 1—2 feet high. Flowers pale yellow. According to Torrey and Gray this species is not found within the limits of the U. S. east of the Mississippi. They represent it as being very variable. Northern Cinquefoil.

10. *P. arguta* Pursh.: erect, simple, pubescent; leaves unequally pinnate; leaflets roundish, ovate or somewhat rhomboid, incised or doubly serrate, outer ones larger; stipules rhomboidal, toothed or entire; flowers terminal, in a crowded corymb. *P. confertiflora* Lehm. *Geum agrimonoides* Pursh. *Boottia sylvestris* Big.

Banks of streams. Can. to Penn. W. to the Rocky Mountains. June, July. 2.—Stem 1—3 feet high, erect, nearly simple, branched above and with the petioles peduncles and calyx covered with a brownish and glandular pubescence. Flowers erect, at first in dense corymbs, at length paniculate. Calyx with the five alternate segments smaller. Petals ochroleucous or white.

Close-flowered Cinquefoil.

11. *P. Comarum* D. C.: root creeping; stem ascending; leaves pinnate, upper ones ternate; leaflets lanceolate, acutely serrate; petals lanceolate, acuminate, much shorter than the calyx. *P. palustris* Lehm. *Comarum palustre* Linn. Torr. & Gr.

In swamps. N. S. N. to Arct. Amer. June, July. 2.—Stem 18 inches high, nearly simple. Leaves petioled, with 5—6 leaflets. Flowers large, purple, on the upper part of the stem. Marsh Cinquefoil.

10. SIBBALDIA. Linn.—Sibbaldia.

(In honor of Robert Sibbald; a writer upon the natural history of Scotland, of the 17th century.)

Calyx 10-cleft, with the alternate segments narrower. Petals 5, minute. Stamens and carpels often 5. Styles 5, proceeding laterally from the germ. Capsules 5, indehiscent, in the bottom of the calyx, 1-seeded.

S. procumbens Linn.: leaves ternate; leaflets cuneate, tridentate, smooth above, hairy beneath; flowers corymbed; petals lanceolate, acute, shorter than the calyx.

High mountains. Can. and Ver. Pursh. Labrador and the summits of the Rocky Mountains. July. 2.—A small procumbent plant, with the habit of *Potentilla tridentata*. Petals yellow, sometimes wanting. Stamens 5—7. Pistils 5—10. Procumbent Sibbaldia.

11. AGRIMONIA. Linn.

(Corrupted from *Argemone*, a name given by the Greeks to a plant supposed to cure cataract, called *αργηνα*.)

Calyx turbinate, covered with hooked bristles, 5-cleft, inferior, with 2 bracteoles at the base. Petals 5. Stamens 12—15, inserted with the petals upon the calyx. Achenia 1—2, invested by the hardened calyx.

1. *A. Eupatoria Linn.*: hairy; leaves interruptedly pinnate; leaflets oblong-ovate, crenate-dentate, the terminal one petioled; spike virgate, many-flowered, terminal, long and slender; tube of the calyx bell-shaped, with spreading bristles near the middle; petals twice as long as the calyx; fruit distant, turbinate, hispid, smooth at base.

Woods and hedges. Can. to Geor. W. to Miss. July. 2.—Stem 2 feet high. Flowers yellow, in a long terminal spike or raceme.

Common Agrimony.

2. *A. parviflora Ait.*: hirsute with brownish hairs; leaves interruptedly pinnate; leaflets numerous, linear-lanceolate, incisely serrate; spike virgate; flowers on very short pedicels; petals scarcely longer than the calyx; fruit roundish, divaricately hispid. *A. Eupatoria* var. *parviflora Hook.*

Woods. N. J. to Geor. W. to Ken. July, Aug. 2.—Stem 4—5 feet high. Flowers numerous, in virgate racemes. Petals small, pale yellow.

Small-flowered Agrimony.

12. ROSA. Linn.—Rose.

(From the Celtic *rhos*; signifying red.)

Calyx urceolate, fleshy, contracted at the orifice, terminating in 5 segments. Petals 5. Stamens many. Carpels many, long, hispid, included in and fixed to the fleshy tube of the calyx.

* *Styles cohering in a column.*

1. *R. setigera Mich.*: stem ascending; branches glabrous; prickles few, falcate; leaves ternate, ovate-lanceolate, serrate, pubescent beneath; stipules narrow, entire; peduncles and calyx hispid; flowers corymbose; lobes of the calyx ovate, short, simple; styles cohering in a tomentose club-shaped column, as long as the stamens; fruit pisiform. *R. rubifolia R. Brown.*

Shores of the Western lakes. W. to Miss. July. 2.—Flowers very numerous, changing from white to different shades of red, sometimes in a large corymb. When cultivated, it may be trained to a great extent.

Michigan Rose.

** *Styles free.*

2. *R. lucida Ehrh.*: prickles straight or slightly recurved; leaflets 5—9, lanceolate-elliptic, coriaceous, sharply serrate, shining above; stipules dilated, large, smooth, serrulate; peduncles somewhat hispid; segments of the calyx entire, appendaged, spreading but not deflexed; flowers mostly in pairs; fruit globose-depressed, hispid or smooth. *R. parviflora Ehrh.* *R. Caroliniana Mich.* *R. nitida* and *R. parviflora Beck Bot. 1st Ed.*

Borders of swamps. Can. to Geor. W. to Ark. June, July. 2.—Stem 1—3 or 4 feet high. Flowers rather large, pale red. Petals obovate or emarginate. Fruit small, red, mostly smooth when mature. A very variable species.

Dwarf Wild Rose.

3. *R. Carolina Linn.*: prickles recurved, often wanting; leaflets 5—9, coriaceous, lanceolate or obovate, serrulate, approximate, glaucous beneath; stipules long, with an involute margin; flowers mostly in corymbs, rarely solitary; lobes of the calyx very long, appendaged, spreading; fruit de-

pressed-globose, mostly somewhat glandular hispid. *R. corymbosa* Ehrh.
R. Pennsylvanica Mich.

Swamps. Can. to Car. W. to Miss. June, July. 1 $\frac{1}{2}$.—*Stem* 3—6 feet high. *Flowers* 5—7, in terminal corymbs. *Petals* large, red, obovate, emarginate. *Petioles* tomentose. A very variable species. Numerous specimens found on an island near Troy, N. Y., have the stems uniformly and constantly unarmed, except near the root, where there are a few slender prickles. *Swamp Rose*.

4. *R. blanda* Ait.: prickles straight, slender, deciduous; leaflets 5—7, oval or oblong, obtuse, equally serrate, pale and mostly pubescent beneath; stipules dilated; flowers 1—3, on short smooth peduncles; lobes of the calyx shorter than the petals; fruit globose. *R. gemella* Willd.

Dry hills and rocks. Hudson's Bay to Penn. May, June. 2 $\frac{1}{4}$.—*Stem* 1—3 feet high. *Flowers* rather large, rose-color. *Petals* obcordate. Distinguished from *R. cinnamomea*, to which it is allied, by its being more slender and nearly unarmed, by the absence of stipular prickles, the smaller bracts and shorter sepals as compared with the petals. *Torr. & Gr.* *R. stricta* is said not to be a native of the U. S. *Early Rose*.

5. *R. rubiginosa* Linn.: prickles strong, compressed, uncinatè, rarely straight; leaflets 5—7, ovate or somewhat rounded, serrate, more or less, especially beneath, glandular and ferruginous; fruit ovoid or obovate and with the peduncles hispid. *R. suaveolens* Pursh.

Hedges and road sides. Throughout the U. S. June, July. 1 $\frac{1}{2}$.—*Stem* tall and slender. *Flowers* solitary or two or three together, pale red. *Fruit* orange red. *Sweet-brier*.

ORDER XL. POMACEÆ.—APPLEWORTS.

Calyx adherent, 5-toothed. Petals 5, unguiculate. Stamens numerous. Disk thin, lining the tube of the calyx, bearing the petals and stamens on its margin. Ovaries 1—5, adhering more or less to the sides of the calyx and each other; styles 1—5; stigmas simple. Fruit a pome, 1—5-celled, seldom spuriously 10-celled. Seeds 1—2 in each carpel; albumen none.—Trees or shrubs, with alternate, simple or compound leaves.

1. CRATÆGUS. Linn.—Thorn.

(From the Greek *κρᾶτος*, *strength*; in allusion to the strength or firmness of the wood.)

Calyx with the tube urceolate, and the limb 5-cleft. Petals 5, spreading, orbicular. Stamens many. Styles 1—5, glabrous. Pome fleshy, or baccate, crowned with the teeth of the calyx, containing 1—5 bony 1-seeded carpels, the summit contracted or closed by the disk.

* *Leaves serrate or subentire, not lobed.*

1. *C. Crus-galli* Ait.: leaves obovate-wedgeform, subsessile, shining, coriaceous, serrate, entire near the base; corymbs smooth; segments of the

calyx lanceolate, smooth, subserrate; styles 1—3; fruit ovoid-oblong, sometimes pyriform. *C. lucida* Wang. Amer.

Borders of woods. Can. to Flor. W. to Miss. May, June.—A shrub or small tree, much branched, and with long sharp spines. *Flowers* white, in a corymb. *Style* often solitary. *Fruit* red. There are several varieties of this species. *Cockspur Thorn.*

2. *C. punctata* Jacq.: leaves obovate-cuneate, smooth, somewhat plaited, doubly or incisely serrate; corymbs and calyx villous-pubescent when young; styles 1—3; fruit dotted, globose.

Woods and swamps. Can. to Flor. W. to Miss. May.—A small tree with rugged branches, usually armed with stout sharp thorns, but sometimes nearly unarmed. *Leaves* light-green, mostly hairy. *Flowers* white, numerous, in compound corymbs. *Fruit* large, red or yellow, eatable, but tough. *Common Thorn.*

3. *C. parvifolia* Ait.: leaves obovate-cuneate, nearly sessile, crenate-serrate, rarely somewhat incised, pubescent; flowers subsolitary; segments of the calyx foliaceous, incised, as long as the petals, and with the short pedicels and branchlets villous; styles 5; fruit roundish-pyriform. *C. tomentosa* Linn. *Mespilus laciniata* Walt.

Sandy woods. N. J. to Flor. April, May. γ .—*Stem* 3 or 4—3 feet high, much branched, with a few long and sharp thorns. *Flowers* white, mostly solitary and terminal. *Fruit* a third to half an inch in diameter, pale greenish-yellow, eatable. *Small-leaved Thorn.*

** *Leaves incised and more or less lobed.*

4. *C. tomentosa* Linn.: leaves ovate-elliptic or oval, cuneate and narrowed at base into a short margined petiole, incisely serrate and sublobed towards the apex, smooth above, somewhat tomentose beneath when young; peduncles and calyx villous; segments linear-lanceolate; styles 3—5; fruit obovoid or pyriform. (*Torr. & Gr.*) *C. pyrifolia* Ait. *C. flava* Darlingt.

Borders of woods. Can. to Car. W. to Ken. May, June. γ .—*Stem* 12—20 feet high, branching; the branches armed with long and sharp thorns. *Leaves* usually large. *Flowers* white, in large leafy corymbs. *Fruit* large, orange red, eatable, but rather insipid. *Tomentose Thorn.*

5. *C. coccinea* Linn.: leaves roundish-ovate, acutely incised or sublobed, sharply serrate, thin and at length nearly smooth, on long slender petioles, sometimes a little cordate; corymbs and calyx pubescent or smooth; styles 3—5; fruit globose. *C. glandulosa* Willd.

Borders of woods. Can. to Flor. and Louis. May. γ .—*Stem* 10—20 feet high, with spreading rugged branches armed with short slightly-curved thorns. *Leaves* usually cut into 3 or 4 acute or acuminate angulate lobes on each side. *Flowers* white, in corymbs terminating the young branches. *Fruit* rather large, bright red or purple, eatable. Very variable. *Scarlet-fruited Thorn.*

6. *C. cordata* Ait.: leaves deltoid-ovate and subcordate, on long and slender petioles, acuminate, incised and serrate, mostly 3-lobed near the base; petioles and calyx without glands; styles 5; fruit depressed-globose. *P. populifolia* Pursh.

Banks of streams. Washington city to Geor. June. γ .—*Stem* 15—20 feet high, branching; the branches dark purple and armed with long and very slender thorns. *Leaves* often deeply and equally 3-lobed like those of the red maple. *Flowers* white, numerous, in corymbs terminating the branches. *Fruit* small, bright purple. This species is not known to be a native of our district.

but according to Dr. Darlington it was long since introduced into Chester county, Penn., from the neighborhood of Washington city, and is there extensively used in hedging. It is known by the name of *Washington Thorn*.

7. *C. Oxycantha* Linn.: leaves obovate-cuneate, 3—5-lobed, incised and serrate, smoothish, shining; petioles and calyx destitute of glands; segments of the calyx acute or acuminate; styles 1—3; fruit ovoid.

Road sides, &c. N. S. June. $\frac{1}{2}$.—*Stem* 4—10 feet high, much branched; the branches armed with sharp and short tapering thorns. *Leaves* variously lobed, paler beneath. *Flowers* white, in corymbs. *Fruit* small, purple when mature. Introduced from Europe. *English Thorn. Hawthorn.*

2. AMELANCHIER. *D. C.*—June Berry.

(*Amelancier* is said to be the Savoy name for *A. vulgaris*.)

Calyx 5-cleft. Petals ovate-oblong or oblanceolate. Stamens many, rather shorter than the calyx. Styles 5, somewhat united at base. Pome, when mature, 3—5-celled.

1. *A. Botryapium* *D. C.*: unarmed; leaves cordate, oval, conspicuously acuminate, pubescent when young, smooth when mature; flowers in loose racemes, appearing before the leaves; petals linear-lanceolate, four times as long as the calyx. *A. Canadensis* var. *Botryapium* Torr. & Gr. *Aronia Botryapium* Pers. *Pyrus Botryapium* Linn.

Rocky woods. Throughout the U. S. May.—A small tree. *Flowers* large, white. *Fruit* dark purple. *Common June-berry. Shad-bush.*

2. *A. ovalis* *D. C.*: leaves roundish-elliptic or oblong-oval, acute or acuminate, serrate, smooth when mature; flowers in compact racemes; petals obovate, oblong. *A. Canadensis* var. *oblongifolia* and *rotundifolia* Torr. & Gr. *Aronia ovalis* Pers. *Pyrus ovalis* Linn.

Near swamps. Can. to Car. N. to lat. 62°. May.—A small shrub. *Flowers* in racemes. *Fruit* small, nearly black, eatable. Supposed by some botanists to be a variety of the preceding, but I am still inclined to believe it distinct. *Medlar Bush.*

3. *A. sanguinea* *D. C.*: leaves oval, obtuse at each end, mucronate, with very slender serratures, subcordate at base; racemes few-flowered; calyx smooth; petals linear, obtuse. *Pyrus sanguinea* Pursh. *Aronia sanguinea* Nutt.

Can and Mass. W. to Columbia river. Pursh. May.—A small tree with blood-red branches. *Berries* red, eatable. Pursh. Torrey & Gray refer this plant, with a mark of doubt, to their *A. Canadensis*; while Nuttall, Hooker and Lindley, consider it distinct. *Red June-berry.*

3. PYRUS. Linn.—Pear. Apple.

(The Latin name for the *pear*; said to be derived from the Celtic *peren*.)

Calyx with the tube urceolate, and the limb 5-lobed. Petals roundish. Styles often 5, rarely 2—3. Pome closed, 5-celled, with a cartilaginous putamen; cells 2-seeded. Seeds with a cartilaginous covering.

* *Petals spreading, flat. Styles 5, nearly united at base. Leaves simple, without glands. MALUS.*

1. *P. coronaria* Linn.: leaves broad-ovate, rounded at base, serrate, somewhat angulate-lobed, smoothish; corymbs terminal, few-flowered, on long peduncles; fruit depressed, globose. *Malus coronaria* Mich.

In woods. N. Y. to Geor. May.—A tree 15—20 feet high. *Flowers* large, fragrant, pale rose-color. *Fruit* an inch and a half in diameter, pale, greenish-yellow, firm and hard, very acid. *Crab Apple.*

2. *P. angustifolia* Ait.: leaves lanceolate-oblong, acute at base, slightly crenate-dentate or almost entire, smooth, shining above; flowers in corymbs; pedicels smooth. *Malus angustifolia* Mich.

In woods. Penn. to Geor. and Louis. March—May.—A tree 15—20 feet high. *Leaves* and *fruit* smaller than in the preceding.

Narrow-leaved Crab Apple.

** *Petals spreading. Styles 2—5. Leaves pinnate. SORBUS.*

3. *P. Americana* D. C.: leaves pinnate; leaflets 13—15, oblong-lanceolate, acuminate, sharply serrate, and with the common petiole at length smooth; flowers in large compound cymes; fruit globose. *Sorbus Americana* Pursh.

var. *microcarpa* Torr. & Gr.: fruit smaller. *P. microcarpa* D. C. *Sorbus microcarpa* Pursh.

Moist woods. Subarct. Amer. to Penn. N. W. Coast. Var. *microcarpa* on high mountains, Virg. and N. Car. Torr. & Gr. May.—A large shrub or small tree, (sometimes in Vermont 20—30 feet high,) with the younger branches pubescent. *Flowers* very numerous, white. *Styles* 3—5. *Fruit* somewhat acid, bright-red when ripe, remaining on the tree during the winter.

Mountain Ash.

*** *Petals spreading, with claws. Styles 2—5. Leaves simple, glandular on the midrib above. Pome turbinate or globose. ADENORACHIS.*

4. *P. arbutifolia* Linn.: leaves obovate, oblong or lanceolate, acute or acuminate, crenate-serrate, smooth above, veiny beneath, with two rows of glands on the midrib; flowers in corymbs; fruit nearly globose.

var. 1. *erythrocarpa* Torr. & Gr.: calyx peduncles and lower surface of the leaves tomentose, especially when young; fruit dark-red. *P. arbutifolia* D. C. *Aronia arbutifolia* Nutt.

var. 2. *melanocarpa* Torr. & Gr.: calyx peduncles and leaves smooth or nearly so; fruit purplish-black. *P. melanocarpa* Willd. *Aronia arbutifolia* Pers.

Low woods or bogs. Can. to Geor. May, June.—A shrub 2—5 feet high, branching. *Flowers* numerous, reddish-white, in cymes or compound corymbs. *Fruit* 2 or 3 lines in diameter, dark-red or nearly black, sweetish and astringent. *Choke-berry.*

ORDER XLI. SANGUISORBACEÆ.—SANGUISORBS.

Calyx 3—5-lobed, with a thickened tube. Petals none. Stamens few or definite. Ovary solitary, simple, enclosed in the tube of the calyx; stigma simple or compound. Nut

solitary. Albumen none.—Herbaceous plants or under-shrubs. Leaves alternate, simple, lobed or compound. Flowers sometimes polygamous or dicœious.

1. *ALCHEMILLA*. *Linn.*—Ladies' Mantle.

(From the Arabic *alkamelych*, *alchemy*; from its pretended alchemical virtues.)

Calyx tubular; tube somewhat contracted at the top; limb 8-parted, the alternate lobes smaller. Petals none. Stamens 1—4. Carpels 1—2, with a filiform capitate style on the side, at length dry and 1-seeded.

A. alpina *Linn.*: leaves digitate; leaflets 5—7, lanceolate-cuneate, obtuse, serrate at the apex, white and silky beneath.

High mountains. N. H. and Ver. *Pursh.* June, July. ♀.—Flowers white, in corymbs. *Alpine Ladies' Mantle.*

2. *SANGUISORBA*. *Linn.*—Great Burnet.

(From the Latin *sanguis*, *blood*, and *sorbeo*, to *take up* or *absorb*; from the supposed vulnerary properties of the plant.)

Flowers perfect or rarely polygamous. Calyx 4-cleft, with 2—3 scales at base externally. Petals none. Stamens 4, opposite the calyx segments; filaments often dilated upwards. Achenium dry, included in the hardened 4-winged calyx-tube.

1. *S. Canadensis* *Linn.*: leaves pinnate; leaflets ovate-oblong subcordate, coarsely serrate; spikes cylindric, long; stamens longer than the corolla. *S. Canadensis* *a Torr. & Gr.*

Wet meadows. Can. to Geor. Aug., Sept. ♀.—Stem 2—4 feet high. Flowers white, in crowded spikes, which are from 2—5 inches long, and terminate the naked branches. *White Great Burnet.*

2. *S. media* *Linn.*: leaves pinnate and with the bracts smooth; leaflets ovate, subcordate, toothed; spikes ovate-cylindric; stamens scarcely longer than the corolla. *S. Canadensis*, *β Torr. & Gr.*

Wet meadows, principally on the mountains. Can. to Geor. W. to Oregon and N. W. Coast. Aug., Sept. ♀.—The spikes shorter than in the former, and tinged with red. *Pursh.* *Short-spiked Great Burnet.*

ORDER XLII. CALYCANTHACEÆ.—CALYCANTHS.

Sepals and petals confounded, indefinite, imbricated, combined in a fleshy tube. Stamens indefinite, inserted into a fleshy rim at the mouth of the tube. Ovaries several, simple. Nuts enclosed in the fleshy tube of the calyx, 1-seeded. Albumen none.—Shrubs with square stems. Leaves opposite, simple. Flowers axillary, solitary.

CALCYANTHUS. *Linn.*—Allspice-Shrub.

(From the Greek *καλυξ*, a *calyx*, and *ανθος*, a *flower*; the calyx resembling a corolla.)

Lobes of the calyx in many rows, imbricate, lanceolate, colored, all more or less coriaceous or fleshy. Stamens about 12, unequal, deciduous, the outer ones fertile.

C. lævigatus Willd.: lobes of the calyx lanceolate; leaves oblong or oval, gradually acuminate, somewhat rugose, smooth and green on both sides; branches straight, erect. *C. floridus*, γ *lævigatus*. *Torr. & Gr. C. ferax Mich.*

Mountains. Penn.? to Geor. March—June. $\frac{1}{2}$.—*Stem* 4—6 feet high. *Leaves* opposite, entire. *Flowers* large, solitary, terminal. Calyx brownish purple. Common in gardens. *Sweet-scented Shrub. Carolina Allspice.*

ORDER XLIII. ONAGRACEÆ.—ONAGRADS.

Calyx tubular; the limb usually 4-lobed. Petals usually 4. Stamens 4 or 8, inserted into the calyx. Ovary mostly 4-celled; style filiform; stigma capitate or 4-lobed. Fruit baccate or capsular, many-seeded. Seeds without albumen.—Herbaceous plants or shrubs. Leaves simple, alternate or opposite. Flowers axillary or terminal, of various colors.

1. EPILOBIUM. *Linn.*—Willow Herb.

(From the Greek *επι*, upon, *λοβος*, a *pod*; the flower being at the apex of a long pod.)

Calyx with a long 4-sided tube; limb 4-parted, deciduous. Petals 4. Stamens 8, the 4 alternate a little shorter. Stigma clavate, or with 4 spreading or revolute lobes. Capsule linear, obtusely 4-sided, 4-celled, 4-valved, many-seeded. Seeds crowned with a tuft of hairs.

1. *E. spicatum Lam.*: stem tall, terete, smooth, branched above; leaves scattered, lanceolate or linear-lanceolate, sparingly denticulate, veined; flowers large, pedicelled, in a terminal spike; petals clawed, obovate; stamens unequal, declined. (*Torr. & Gr.*) *E. angustifolium Linn.*

Swamps and moist woods. Can. to Penn. N. to Arct. Amer. W. to Oregon. July. $\frac{1}{4}$.—*Stem* 3—5 feet high. *Flowers* purple, in a terminal leafless spike or raceme which is often a foot long. *Spiked Willow Herb.*

2. *E. coloratum Muhl.*: stem terete, branched, pubescent; leaves mostly opposite, lanceolate, serrulate, petiolate, smooth, with colored veins, upper ones alternate; flowers small, axillary, near the extremity of the branches; petals 2-cleft at the apex; capsule pedicellate, slightly pubescent. *E tetragonum Pursh.* not of *Linn.*

Wet grounds. Arct. Amer. to Geor. W. to Oregon. July, Aug. ④.—*Stem* 1—3 feet high, much branched, often purplish. *Flowers* small, purplish, sometimes nearly white. *Colored Willow Herb.*

3. *E. palustre* Linn.: stem terete, branched, somewhat hirsute; leaves lanceolate, rather acute, attenuate at base, nearly sessile, sparingly toothed or entire, the lower ones opposite; petals about twice the length of the calyx; stigma undivided; capsule pubescent. *E. rosmarifolium* Pursh. *E. squamatum* Nutt.

Sphagnous swamps. Labrador to Penn. W. to Oregon. Aug., Sept. ④.—*Stem* 1—2 feet high, slender, at length much branched. *Flowers* pale purple or white. *Marsh Willow Herb.*

4. *E. tetragonum* Linn.: stem 4-sided, nearly smooth; leaves opposite, lanceolate-oblong, denticulate, lower ones slightly petioled; petals emarginate; stigma clavate; capsule pedicellate.

Low grounds. Can. to Car. July. ④.—*Stem* 2 feet high, branched, smooth. *Flowers* small, pale red, in terminal racemes. Perhaps not a native of the Northern States. *Square-stalked Willow Herb.*

5. *E. molle* Torr.: densely and softly pubescent; stem terete, erect; leaves alternate and opposite, crowded, sessile, lanceolate or oblong-linear, remotely denticulate or entire; petals deeply emarginate, twice as long as the calyx; stigma large and thick; capsule pedicellate. *E. strictum* Muhl.

Sphagnous swamps. N. Y., N. J., and Penn. Aug., Sept. ④.—*Stem* 18—20 inches high, simple or branched above. *Flowers* axillary in the upper part of the stem, pale purple. *Soft Willow Herb.*

6. *E. alpinum* Linn.: stem creeping at the base, usually marked with 2 pubescent lines; leaves opposite, ovate or ovate-oblong, slightly petioled, denticulate, smooth; stigma entire; capsule mostly pedicellate.

Mountains. Essex county, N. Y. Torr. White Mountains, N. H. Big. N. to Arct. Amer. July. ④.—*Stem* 6—10 inches high, slender, simple. *Flowers* small, pale purple. *Alpine Willow Herb.*

2. GAURA. Linn.—Gaura.

(From the Greek γαυρος, *superb*; on account of its showy spikes of flowers.)

Calyx tubular, adnate to the ovary at base; segments 4, reflexed; tube deciduous. Petals mostly 4-clawed, somewhat unequal. Stamens usually 8. Fruit 4-angled, dry and indehiscent, by abortion mostly 1-celled, 1—4-seeded. Seeds naked.

G. biennis Linn.: stem herbaceous, erect, hairy, mostly purplish; leaves alternate, sessile, lanceolate, toothed; flowers numerous, sessile, in terminal spikes; fruit roundish, slightly 4-angled, pubescent.

Banks of streams. Can. to Geor. W. to Miss. July, Aug. ②.—*Stem* 2—5 feet high. *Flowers* dark rose-colored, sessile, in terminal spikes.

Biennial Gaura.

3. ŒNOTHERA. Linn.—Evening Primrose.

(Said to be derived from the Greek οἶνος, *wine*, and θήρα, *hunting*; but the application is uncertain.)

Calyx with a long 4-sided or 8-ribbed deciduous tube; seg-

ments 4, reflexed. Petals 4, equal. Stamens 8. Stigma 4-lobed or capitate. Capsule 4-valved, many-seeded. Seeds naked.

* *Capsule elongated, 4-sided, sessile.*

1. *Æ. biennis* Linn.: stem erect, mostly simple, usually hairy; leaves alternate ovate-lanceolate, repandly denticulate, acute, pubescent, lower ones on short petioles; capsule sessile, obtusely 4-angled, somewhat turgid. *Æ. muricata* Murr. *Æ. parviflora* Linn. *Æ. grandiflora* Ait.

Fields. Subarct. Amer. to Flor. W. to Ark. and Oregon. June, Aug. ① and ②.—*Stem* 2—5 feet high. *Flowers* yellow, variable in size, in a terminal leafy spike 3—12 inches long. *Petals* obcordate.

Common Evening Primrose.

2. *Æ. sinuata* Linn.: pubescent or villous; stem ascending or decumbent; leaves oblong or lanceolate, nearly entire, sinuate-toothed or pinnatifid; calyx and ovary villous; capsule cylindrical or somewhat prismatic, elongated. *Æ. minima* Pursh.

Sandy fields. N. J. to Flor. W. to Miss. May, June. ④.—*Stem* 1—6 inches high, simple or branching from the base. *Flowers* small, axillary, sessile, pale yellow. *Petals* obcordate.

Sinuate-leaved Evening Primrose.

** *Capsule obovate-clavate, angular, mostly pedicellate.*

3. *Æ. fruticosa* Linn.: hairy or nearly smooth; stem erect, simple or branched; leaves lanceolate or oblong-lanceolate, slightly toothed; petals obcordate; capsules oblong-clavate, 4-winged, longer than the pedicels. *Æ. ambigua* Spreng. *Æ. hybrida* Mich. *Æ. incana* Nutt.

Shady woods. N. Y. to Flor. W. to Ohio. July. ④.—*Stem* 1—3 feet high. *Leaves* sessile or slightly petioled. *Flowers* large, pale yellow, in a peduncled corymb. Varies much in the amount of pubescence. *Sun Drop.*

4. *Æ. riparia* Nutt.: slightly pubescent; leaves linear-lanceolate, acute, attenuate at base and somewhat petioled, remotely denticulate or entire; petals slightly obcordate; capsules subsessile, oblong-clavate, sometimes shorter than the pedicels, slightly 4-winged, with 4 intermediate ribs.

Swamps and banks of streams. Quaker Bridge, N. J. to Flor. June, July. ②.—*Stem* 2—3 feet high, often vigately branched. *Leaves* rather thick, somewhat pubescent on the midrib and margin. *Flowers* large, yellow, somewhat produced towards the summits of the branches. *Swamp Evening Primrose.*

5. *Æ. linearis* Mich.: stem erect or decumbent at base, slender and often branched; leaves narrow-lanceolate or linear, remotely denticulate or entire, tapering at base; capsule clavate, turbinate or obovate, mostly pubescent or canescent, with the alternate angles slightly winged above.

Dry sandy grounds. Montauk Point, Long Island, N. Y. (the decumbent variety. *Torr. & Gr.*) to Flor. and Louis. April—July. ④. ?—*Stem* 10 inches to 2 feet high. *Flowers* rather large, yellow, somewhat corymbose at the extremity of the branches, but not in an elongated spike like those of *Æ. pumila*.

Narrow-leaved Evening Primrose.

6. *Æ. chrysantha* Mich.: pubescent; stem ascending; leaves lanceolate, rather obtuse, entire or slightly toothed, the radical ones obovate-spatulate; petals broad-obovate, emarginate; capsule clavate-oblong, pedicelled, the alternate angles narrowly winged.

Rocky grounds. Hudson's Bay to near Niagara Falls. June, July. ②. ?

(Torr. & Gr.) 2. (Pursh.)—Stem about a foot high, slender, smooth and purplish towards the summit. Flowers small, orange-yellow, in a terminal somewhat crowded spike. Perhaps not distinct from the next.

Orange-flowered Evening Primrose.

7. *Æ. pumila* Linn.: minutely pubescent; stem ascending; leaves lanceolate or oblong-lanceolate, mostly obtuse, attenuate at base, entire, the radical ones obovate-spatulate; petals obovate; capsule oblong-clavate, nearly sessile, 8-angled. *Æ. pusilla* Mich.

Dry fields. Hudson's Bay to Car. July. ②. (Torr. & Gr.)—Stem 6—12 inches high, mostly simple. Flowers small, pale yellow, in a loose elongated leafy spike. *Low Evening Primrose.*

4. ISNARDIA. Linn.—Isnardia.

(In honor of *Antoine d'Isnard*; a French botanist.)

Tube of the calyx ovate or subcylindric, short, adhering to the ovary; limb 4-parted, persistent. Petals 4, often minute or wanting. Stamens 4. Style filiform, deciduous. Stigma capitate. Capsule short, 4-sided, 4-valved, many-seeded.

* *Petals 4.* I.UDWIGIA.

1. *I. alternifolia* D. C.: stem erect, branched, nearly smooth; leaves alternate, lanceolate or oblong-lanceolate, somewhat scabrous on the margins and under side; peduncles axillary, 1-flowered; lobes of the calyx large, ovate, acuminate; capsule obovoid-globose 4-cornered, the angles winged. *Ludwigia alternifolia* Linn. Torr. & Gr. *L. macrocarpa* Mich.

Swamps. Can. to Flor. July. 2.—Stem 2—3 feet high, often purplish. Flowers large, yellow, on short peduncles. *Alternate-leaved Isnardia.*

2. *I. uniflora*: stem straight, simple; leaves alternate, lanceolate, acute, smooth; flower terminal; petals longer than the calyx. *Ludwigia uniflora* Raf.

Swamps. N. J.—This seems to be sufficiently distinct. Dr. Torrey, however, suggests that it is a variety of the former. *Single-flowered Isnardia.*

3. *I. hirtella*: hirsute; stem erect, scarcely-angled; leaves alternate, ovate-oblong, sessile, upper ones narrower; peduncles 1-flowered, axillary; capsule villous, globose, 4-angled, the angles slight winged. *I. hirsuta* Pursh. *Ludwigia hirtella* Raf.

Ditches and pools. N. J. to Flor. July, Aug. 2.—Stem 1—2 feet high, simple or sparingly branched. Flowers bright yellow, axillary. *Hairy Isnardia.*

** *Petals very minute or none.* ISNARDIA.

4. *I. sphaerocarpa* D. C.: stem erect, nearly smooth, much branched; leaves narrow-lanceolate, mostly acute, attenuate at base; flowers solitary, axillary, or clustered towards the summit of the branches; capsule turbinate-globose, obscurely 4-sided, canescent. *Ludwigia sphaerocarpa* Ell.

In water. Near Peekskill, N. Y. to Flor. July, Aug. 2.—Stem about 2 feet high, reddish. Flowers in somewhat compound leafy spikes. *Petals none.* *Round-fruited Isnardia.*

5. *I. palustris* Linn.: stem prostrate, creeping, glabrous; leaves opposite,

ovate-lanceolate, tapering at base, petioled, smooth; flowers axillary, solitary, sessile; capsule subovate, slightly angled. *Ludwigia nitida* Mich. *L. palustris* Ell.

Stagnant water. Throughout the U. S. June—Oct. ♀.—Stem succulent, purplish. Flowers very small. Petals none. *Water Purslane.*

5. CIRCÆA. Linn.—Enchanter's Nightshade.

(From the enchantress *Circe*, either from the prettiness of its flowers, or as some say, from its growing in damp, shady places, where plants used for incantations are found. *Hook. Br. Fl.*)

Calyx short; limb bipartite. Petals 2, obcordate. Stamens 2, alternating with the petals. Stigma emarginate. Capsule obovate, hispid with hooked hairs, 2-celled, 2-valved, 2-seeded.

1. *C. Lutetiana*, var. *Canadensis* Linn.: stem erect, pubescent; leaves ovate, slightly cordate, acuminate, toothed, opaque, longer than the petiole. *C. Canadensis* Muhl.

Moist woods. Can. to Car. W. to Miss. July, Aug. ♀.—Stem a foot and a half high, smooth, simple. Flowers in a long terminal raceme, reddish-white. Fruit reflexed. *Common Enchanter's Nightshade.*

2. *C. alpina* Linn.: stem ascending, nearly smooth; leaves cordate, shining, coarsely toothed, the lower ones about as long as the petiole.

Moist shady places on mountains. Can. to Car. July. ♀.—Stem 3—8 inches high, somewhat diaphanous. Leaves very thin and delicate. Flowers and fruit as in the preceding, but smaller. Many botanists consider the two as varieties of one species. *Alpine Enchanter's Nightshade.*

ORDER XLIV. HALORAGACEÆ.—HIPPURIDS.

Calyx with a minute limb. Petals 3 or 4, inserted into the calyx, or none. Stamens as many as the petals or fewer. Ovary adhering to the calyx, 1 or more celled; style none; stigmas as many as the cells. Fruit dry, indehiscent, membranous or bony, 1 or more-celled. Seeds solitary, pendulous.—Herbaceous plants or under-shrubs, growing in wet places, with alternate, opposite or whorled leaves. Flowers sessile, occasionally monœcious or diœcious.

1. PROSERPINACA. Linn.—Mermaid Weed.

(From the Latin *proserpo*, to creep; the stems creeping and rooting at the base.)

Tube of the calyx adhering to the triquetrous ovary; limb 3-parted. Petals none. Stamens 3. Stigmas 3, sessile upon the top of the ovary. Fruit bony, 3-sided, 3-celled.

1. *P. palustris* Linn.: upper leaves linear-lanceolate, serrate; lower ones often pinnatifid or pectinately-incised; fruit angular, acute. *P. palustris* var. *a.* Mich.

Wet places. Can. to Flor. July, Aug. ♀.—Stem a foot and a half long,

the lower part usually submerged. *Flowers* mostly solitary, sometimes 2—4 together, very small, nearly sessile. *Stigmas* purplish.

Common Mermaid Weed.

2. *P. pectinacea* Lam.: leaves all pinnatifid-pectinate; fruit large, angular, obtuse. *P. palustris* var. β Mich.

Sandy swamps. Mass. to Flor. Aug. ♀.—Distinguished from the former, by having the leaves all finely pectinate and the fruit with rather obtuse instead of acute angles. *Pectinate Mermaid Weed.*

2. MYRIOPHYLLUM. Linn.—Water Milfoil.

(From the Greek *μυριας*, *myriad*, and *φυλλον*, a *leaf*; in allusion to the minute divisions of the leaf.)

Flowers monœcious or rarely perfect. STERILE FL. Calyx 4-parted. Petals 4, ovate, sometimes inconspicuous or wanting. Stamens 4—8. PERFECT FL. Calyx adhering to the ovary; limb 4-lobed. Petals none. Nuts 4, compressed or subglobose, 1-seeded.

* *Flowers octandrous.*

1. *M. spicatum* Linn.: leaves verticillate, pinnately divided, segments capillary; floral leaves shorter than the flowers; lower subserrate and mostly very entire; petals broad-ovate; carpels smooth and even.

In water. Can. and N. S. Aug., Sept. ♀.—*Stem* slender, varying in length with the depth of the water. *Leaves* in whorls, 3—5, pectinate. *Flowers* in a terminal nearly naked spike. *Spiked Water Milfoil.*

2. *M. verticillatum* Linn.: leaves verticillate, pinnately divided into capillary or setaceous segments; floral leaves pectinate-pinnatifid, usually much longer than the flowers; petals oblong-obovate; carpels smooth and even.

In water. Can. to Flor. W. to Texas and Oregon. July—Sept. ♀.—*Stem* long and stouter than in the preceding. *Flowers* in a terminal leafy spike, upper ones sometimes perfect. *Whorled Water Milfoil.*

** *Flowers tetrandrous.*

3. *M. heterophyllum* Mich.: leaves verticillate, pinnately divided into capillary segments; floral leaves ovate or lanceolate, sharply serrate, crowded; petals oblong; carpels minutely roughened, slightly 2-ridged on the back.

In water. Can. to Flor. W. to Texas. July. ♀.—*Stem* branching, thick. *Flowers* purple, whorled in the axils of the upper leaves. *Stamens* 4. (6, Michaux.) *Various-leaved Water Milfoil.*

4. *M. ambiguum* Nutt.: submersed leaves cut into capillary segments; the emersed ones pectinate; floral leaves linear, tapering into a short petiole, sparingly incised or toothed, sometimes entire; flowers mostly perfect; petals oblong; carpels smooth and even. *M. capillaceum* Torr. *Comp. M. procumbens* Big.

Ponds and ditches. Mass. to Penn. July, Aug. ♀.—*Stems* 2—6 inches long and creeping in the mud, or when floating in water, long and slender. *Leaves* variously divided, depending upon the place of growth. *Flowers* small, purplish. *Polymorphous Water Milfoil.*

5. *M. tenellum* Big.: stem simple, nearly leafless, erect, somewhat rooting at base; floral leaves minute, entire; flowers alternate; petals linear-oblong; carpels smooth and even.

Borders of ponds. N. Eng. and N. Y. July. ♀.—*Scapes* several from the same rhizoma, 4—12 inches high, with numerous small scales. *Flowers* minute, purplish. *Leafless Water Milfoil.*

3. HIPPURIS. Linn.—Mare's-tail.

(From the Greek ἵππος, a horse, and οὐρα, a tail; from a fancied resemblance of the plant.)

Tube of calyx adnate to the ovary; limb minute, entire. Petals none. Stamen 1, inserted into the margin of the calyx. Style filiform, received into a groove of the anther. Fruit 1-seeded, crowned with the margined limb of the calyx.

H. vulgaris Linn.: leaves in whorls of 8—12, linear, acute, callous at the tip.

Ponds and lakes. Labrador and Subarct. Amer. to Penn. Aug. ♀.—*Stem* 12—18 inches high, simple, erect. *Leaves* mostly in whorls of 8. *Flowers* at the base of the upper whorls, one to each leaf, sessile, minute.

Common Mare's-tail.

4. ? CALLITRICHE. Linn.—Water Starwort.

(From the Greek κάλλος, beautiful, and τρίξ, hair; in allusion to its long and slender stems.)

Flowers perfect or imperfect. Bracts 2, opposite, petaloid. Calyx (corolla of some) inconspicuous. Petals none. STERILE FL. Stamens 1, (rarely 2,) with the filament filiform and exserted; anthers reniform. FERTILE FL. Ovary 4-lobed. Capsule compressed, 4-celled, indehiscent.

C. verna Linn.: leaves 3-nerved; upper ones aggregated, broader; fruit sessile, with 2 bracts at the base, each carpel bluntly keeled on the back.

var. 1. *vulgaris*: leaves all elongated and obovate.

var. 2. *intermedia*: upper leaves spatulate-obovate; lower ones linear.

C. intermedia Willd. *C. heterophylla* Pursh.

var. 3. *linearis*: leaves all linear, or the upper ones linear-elliptic.

C. autumnalis Mich.

var. 4. *terrestris*: stem procumbent, rooting in the mud; leaves linear or elliptic-oblong. *C. terrestris* Raf.

Ponds and slow-flowing streams, or in muddy banks. N. S. Some varieties throughout the U. S. May—Aug. ①.—*Stems* slender, varying in length with the depth of the water, growing in tufts or patches. *Flowers* very minute, white. I readily adopt the views of Darlington and Torrey in regard to this very variable plant. *Common Water Starwort.*

ORDER XLV. PODOSTEMACEÆ.—PODOSTEMADS.

Flowers usually perfect, naked, bursting through an irregularly lacerated spathe. Stamens 1, 2, or many, often monadel-

phous. Ovary 2—3-celled; styles or stigmas 2 or 3, acute and sessile. Fruit capsular, slightly pedicellate. Seeds numerous, minute, without albumen.—Herbaceous plants, with alternate leaves, which are usually cut into capillary segments. Flowers minute.

PODOSTEMUM. *Mich.*—Podostemum.

(From the Greek *πους ποδος*, a *foot*, and *στημων*, a *stamen*; the stamens being supported on a common footstalk.)

Calyx and corolla none. Stamens 2, affixed to a common pedicel. Stigmas 2, sessile, recurved. Capsule 2-celled, 2-valved, many-seeded.

P. ceratophyllum Mich.: leaves dichotomously many-parted; peduncles solitary, axillary.

Rocks in streams. N. Y. to Ala. July, Aug. ①.—*Stem* creeping, 1—4 inches long, smooth, branching. *Leaves* alternate, crowded above. *Flowers* axillary, on short fleshy peduncles.
Horn-leaved Podostemum.

ORDER XLVI. CERATOPHYLLACEÆ.—HORNWORTS.

Flowers monœcious. Calyx inferior, many-parted. STERILE FL. Stamens 12—20; filaments wanting; anthers 2-celled. FERTILE FL. Ovary 1-celled; stigma filiform, oblique. Fruit a beaked achenium. Seed pendulous, without albumen.—Floating herbs, with dichotomous cellular verticillate leaves. Flowers small.

CERATOPHYLLUM. *Linn.*—Hornwort.

(From the Greek *κερας*, a *horn*, and *φυλλον*, a *leaf*; the dichotomous leaves resembling horns.)

Character same as of the order.

C. echinatum Gray: achenium elliptic, slightly compressed, with 3 short spines; sides strongly mucronated; margins slightly winged, not gibbous, armed with blunt teeth which finally become weak spines or horns as long as the lateral spines. (*Torr. & Gr.*) *C. demersum* (wholly or in part) of *American botanists.*

Ponds and slow-flowing streams. N. Y. to Virg. June, July. ②.—*Stem* submerged, branching, filiform, jointed. *Leaves* in numerous whorls of 6—8, 2 or 3-chotomously divided, the segments capillary. *Flowers* axillary, solitary, sessile, very minute.
Rough Hornwort.

ORDER XLVII. LYTHRACEÆ.—LOOSESTRIFES.

Sepals combined into a 4—7-toothed calyx, the sinuses sometimes lengthened into other teeth or processes. Petals inserted between the teeth of the calyx, sometimes wanting. Stamens

as many, or 2—4 times as many as the petals, inserted into the tube of the calyx. Ovary superior, 1—6-celled; style filiform; stigma usually capitate. Capsule membranous, covered by the calyx, dehiscent. Seeds numerous, small, without albumen.—Herbs, rarely shrubs. Leaves opposite, seldom alternate, entire. Flowers axillary, or in terminal spikes or racemes.

1. AMMANNIA. *Linn.*—*Ammannia*.

(In honor of *John Ammann*, a Russian botanist of the last century.)

Calyx 4—5-toothed or lobed, the sinuses expanding into teeth or horns. Petals 4, or wanting. Stamens as many, and sometimes twice as many, as the lobes of the calyx. Style mostly short. Stigma capitate. Capsule globose or ovate, many-seeded.

1. *A. ramosior* *Linn.*: stem erect, somewhat 4-sided; leaves linear-lanceolate, dilated at the base; flowers axillary, sessile; the lower ones compactly whorled, the upper solitary; petals 4, obovate-roundish; stamens 4.

Salt meadows. N. J. to Car. W. to Ark. Aug., Sept. ①.—Stem 4—8 inches high, sometimes much higher. Flowers purple, minute. There is still some uncertainty in regard to this plant.
Branched Ammannia.

2. *A. humilis* *Mich.*: stem procumbent at the base, square, somewhat branched; leaves narrow-lanceolate, tapering at base into a short petiole; flowers sessile, solitary, axillary; petals 4, orbiculate; stamens 4. *A. ramosior* *Walt.*

Damp grounds. Mass. N. Y. S. to Geor. Aug. ①.—Stem 4—8 inches high, much more slender than in the former. Flowers small, blue.
Dwarf Ammannia.

2. LYTHRUM. *Linn.*—Purple Loosestrife.

(From the Greek *λυθρον*, *blood*; in allusion to the color of the flower in some species.)

Calyx cylindrical, striate, 8—12-toothed. Petals 4—6, inserted into the calyx. Stamens as many or twice as many as the petals, sometimes fewer. Style filiform. Stigma capitate. Capsule oblong, 2-celled, many-seeded.

* *Stamens mostly equal in number with the petals. Flowers solitary in the axils of the leaves.*

1. *L. hyssopifolia* *Linn.*: leaves alternate or opposite, linear or oblong, somewhat obtuse; flowers subsessile, shorter than the leaves; bracts minute or none; petals and stamens 5—6.

Low wet grounds. Mass. Conn. N. Y. July. ①.—Stem 12—18 inches high; the branches square, slightly margined. Leaves pale green, rather acute at the base. Flowers small, pale purple. *Hyssop-leaved Purple Loosestrife.*

2. *L. lineare* Linn.: leaves linear, opaque, mostly opposite; the lower obtuse; the upper narrow, acute; flowers slightly pedicelled; bracts minute; petals and stamens 6.

Brackish swamps. N. J. to Flor. and Louis. July—Sept. ♀.—Stem 3—4 feet high, slender, virgate, branched at the summit, 4-angled. Flowers small, nearly white.
Narrow-leaved Purple Loosestrife.

** *Stamens twice the number of the petals. Flowers numerous, somewhat verticillate in an interrupted virgate spike.*

3. *L. Salicaria* Linn.: leaves lanceolate, cordate at base; flowers nearly sessile, in a long spike; petals 6—7. *L. Salicaria* var. *pubescens* Pursh. Beck Bot. 1st. Ed.

Wet meadows. Can. Maine, Mass., and N. Y. July, Aug. ♀.—Stem 2 feet high, pubescent or smoothish. Leaves opposite and ternate, sessile; the upper ones very small, appearing like bracts. Flowers large, purple. Introduced? Dr. Torrey remarks that it is apparently native in Orange county, N. Y.
Spiked Purple Loosestrife.

3. DECODON. Gmel.—Swamp Willow-herb.

(From the Greek *δεκας*, ten, and *οδους*, a tooth; in allusion to the ten teeth of the calyx.)

Calyx short, broad campanulate, 10-toothed, 5 teeth longer and spreading. Stamens 10, 5 very long, the alternate ones shorter. Style filiform. Stigma small, undivided. Capsule covered with the calyx, 3—4-celled. Seeds numerous, wingless.

D. verticillatum Ell. *Lythrum verticillatum* Linn.

Swamps. Can. and throughout the U. S. Aug. ♀.—Stem 2—6 feet long, sometimes prostrate and rooting at the summit, smooth or pubescent. Leaves lanceolate, acute, on short petioles, opposite and alternate, sometimes verticillate. Flowers axillary, crowded so as to appear whorled, purplish.

Swamp Willow Herb.

4. CUPHEA. Jacq.—Cuphea.

(From the Greek *κυφός*, curved; in reference to the form of the capsule.)

Calyx tubular, ventricose, 6—12-toothed, unequal. Petals 6—7, unequal. Stamens 11—14, rarely 6—7, unequal. Style filiform. Stigma simple or subbid. Capsule membranaceous, 1—2-celled, at length bursting longitudinally.

C. viscosissima Jacq.: viscid-pubescent; leaves opposite, petioled, ovate-oblong, a little rough; flowers lateral, solitary, on short peduncles; calyx ventricose, gibbous at the base.

Gravelly places. N. Y. to Geor. W. to Ark. July, Aug. ♂.—Stem 12—18 inches high, erect, branching. Petals unequal, narrowed to a claw at the base, purple. Stamens 12.
Viscid Cuphea.

ORDER XLVIII. MELASTOMACEÆ.—MELASTOMADS.

Calyx divided into 4, 5, or 6 lobes, cohering more or less with the angles of the ovary. Petals as many as the segments

of the calyx, with a twisted æstivation. Stamens as many or twice as many as the petals; anthers long. Ovary 3—6-celled; style 1; stigma simple. Fruit capsular or baccate. Seeds very numerous, without albumen.—Herbs, trees or shrubs, with opposite mostly entire leaves. Flowers terminal, solitary or cymose.

RHEXIA. *Linn.*—Rhexia.

(A Greek name said to have been originally applied to a different plant.)

Calyx with the tube ventricose-ovate at base, narrowed at the apex; the limb 4-cleft. Petals 4, obovate. Anthers 8, attached to the filaments behind, naked at base. Capsule free in the calyx, 4-celled. Seeds cochleate.

1. *R. Mariana Linn.*: very hairy; leaves linear-oblong or lanceolate, acute at each end, sparingly hispid on both sides, ciliate-serrulate; calyx hispid.

Wet grounds. N. J. to Flor. and Louis. July, Aug. ♀.—*Stem* 1—2 feet high, slender. *Petals* obovate, hairy on the outer surface, purple.

Maryland Rhexia.

2. *R. ciliosa Mich.*: stem nearly square, smooth; leaves broad-ovate, subpetiolate, serrulate, ciliate, 3-nerved, smooth beneath, slightly hispid above; flowers with an involucre; calyx smooth. *R. petiolata Walt.*

Moist pine barrens. Del. to Flor. July. ♀.—*Stem* 12—18 inches high. *Flowers* in a loose dichotomous panicle, large, purple, with an involucre of leaves at the base of each.

Fringed Rhexia.

3. *R. Virginica Linn.*: stem with winged angles, somewhat hairy, square; leaves sessile, ovate-lanceolate, ciliate, serrate, sprinkled with hairs on both sides; calyx hispid.

Wet meadows. Mass. and N. Y. to Louis. and Ark. July—Sept. ♀.—*Stem* a foot high, often dichotomously branched above. *Leaves* 5—7-nerved, almost naked beneath. *Flowers* large, purple, in a dichotomous corymb.

Deer Grass.

ORDER XLIX. CUCURBITACEÆ.—CUCURBITS.

Flowers monœcious or diœcious. Calyx 5-toothed, sometimes obsolete. Corolla 5-parted, scarcely distinguishable from the calyx, with strongly marked reticulated veins. Stamens 5, distinct, or cohering in 2 or 3 parcels; anthers sinuous. Ovary adherent, 1-celled; style short; stigma very thick, velvety or fringed. Fruit more or less succulent (a pepo). Seeds flat, often arillate, without albumen.—Succulent herbaceous plants, climbing by tendrils. Leaves alternate, palmately veined. Flowers axillary.

1. SICYOS. *Linn.*—Single-seeded Cucumber.(From the Greek *σικκος*, *cucumber*.)

Flowers monœcious. STERILE FL. Calyx 5-toothed; teeth subulate or minute. Petals 5, all cohering in a tube, at length separating into three parcels. FERTILE FL. Calyx constricted above the ovary, campanulate. Corolla campanulate. Style rather slender. Stigmas 3, thick, obtuse, spreading. Fruit ovate, spiny or hispid, 1-seeded.

S. angulatus Linn.: leaves roundish-cordate, 5-angled, toothed, scabrous; lobes acuminate; tendrils umbellate; sterile flowers corymbose-capitate, with the common peduncle long; fertile ones sessile on a much shorter peduncle.

Banks of streams. Can. to Car. W. to Miss. June. ①.—A procumbent vine, climbing by 3—5-cleft tendrils. Flowers greenish-white, the fertile not half the size of the sterile ones. Fruit small, ovate, prickly.

*Common Single-seeded Cucumber.*2. ECHINOCYSTIS. *Torr. & Gr.*—Wild Balsam Apple.

(From the Greek *εχινος*, *prickly*, and *κυστις* a *bladder*; in allusion to the appearance of the fruit.)

Flowers monœcious. Calyx flattish; segments 6, filiform-subulate. Corolla 6-parted, rotate, campanulate. STERILE FL. Calyx slightly contracted above the ovary. Stamens 3, diadelphous, short. FERTILE FL. Abortive filaments 3, very small, distinct. Style very short. Stigmas 2, broadly obcordate. Fruit globose-ovoid, bristly-echinate, 2-celled, 4-seeded.

E. lobata Torr. & Gr.: *Momordica echinata Muhl.* *Sicyos angulata Mich.*

Banks of streams. Can. N. Y. and Penn. W. to Miss. July, Aug. ①.—Stem smooth, 10—15 feet long, climbing. Leaves large, nearly smooth, with 5 deep acuminate sharply denticulate lobes. Flowers white; the sterile in long compound racemes; the fertile solitary, or 2 or 3 together. Fruit about as large as a pigeon's egg, covered with short bristly spines. *Wild Balsam Apple.*

3. MELOTHRIA. *Linn.*—Creeping Cucumber.

Flowers polygamous or monœcious. STERILE FL. Calyx 3—5-toothed. Corolla campanulate. Filaments 5, in 3 sets. FERTILE FL. Calyx and corolla as in the sterile. Style 1. Stigmas 3, fimbriate. Fruit 3-celled, many-seeded.

M. pendula Linn.: leaves somewhat reniform, lobed and angled, slightly hispid; fruit oval, smooth, pendulous.

Banks of streams. Penn. to Ala. and Louis. June. ①.—A slender vine running over small shrubs and herbs. Stem hairy. Leaves on petioles. Ten-

drils 5—6 inches long. *Flowers* axillary, yellow, the sterile in small racemes, the fertile solitary. *Small Creeping Cucumber.*

ORDER L. PASSIFLORACEÆ.—PASSIONWORTS.

Sepals 5, combined in a tube of variable length which is lined by filamentous processes. Petals 5, arising from the throat of the calyx, sometimes wanting. Stamens 5, monadelphous, rarely indefinite. Ovary seated on a long stalk, 1-celled; styles 3, clavate; stigma dilated. Fruit with 3 polyspermous placentæ, sometimes 3-valved. Seeds with a brittle sculptured testa; albumen fleshy.—Herbaceous plants or shrubs, usually climbing. Leaves alternate, with leafy stipules. Flowers axillary or terminal.

PASSIFLORA. *Linn.*—Passion Flower.

(Altered by Linnæus from *flos passionis*, or *passion flower*.)

Calyx 5-parted, colored, with the tube very short. Petals 5, inserted into the calyx, or none. Stamens 5, monadelphous. Crown of many filiform rays. Berry often pulpy, rarely submembranaceous, pedicelled.

1. *P. lutea Linn.*: leaves cordate, 3-lobed, obtuse, nearly smooth; petioles without glands; peduncles axillary, in pairs; petals much longer than the calyx.

Banks of streams. Penn. to Flor. W. to Miss. June, July. ♀.—*Stem* climbing, slender, 3—10 feet long. *Flowers* small, greenish-yellow. *Fruit* dark purple. *Yellow Passion Flower.*

2. *P. incarnata Linn.*: leaves smooth, subcuneate at base, 5-nerved, deeply 3-cleft; lobes ovate-lanceolate, mostly acuminate; petioles with 2 glands; involucre 3-leaved; leaflets lanceolate, glandular-serrate; ovary villous.

Banks of streams. Del. to Flor. W. to Miss. Sept. ♀.—*Stem* long, climbing. *Flowers* large, on long pedicels. *Petals* oval-oblong, white. *Crown* purple. *Fruit* oval, pale yellow when ripe, eatable. *Flesh-colored Passion Flower.*

ORDER LI. PORTULACACEÆ.—PURSLANES.

Sepals 3, cohering by the base. Petals generally 5. Stamens inserted irregularly into the calyx or hypogynous, variable in number. Ovary 1-celled; style 1 or more; stigmas several. Capsule 1-celled. Seeds attached to a central placenta; albumen mealy.—Succulent shrubs or herbs. Leaves mostly alternate, with stipules. Flowers usually ephemeral.

1. PORTULACA. *Linn.*—Purslane.

(Origin uncertain.)

Calyx adnate to the ovary, 2-parted, finally separating at base and deciduous. Petals 4—6, inserted on the calyx, equal. Stamens 8—20. Style 3—6-cleft at the apex, or parted. Capsule subglobose, 4-celled, many-seeded, opening circularly.

P. oleracea Linn.: leaves cuneiform, obtuse, fleshy, smooth; axils geniculate, naked; flowers sessile.

Near gardens, &c. N. S. May—Aug. ①.—*Stem* fleshy, spreading on the ground, with the summit a little assurgent. *Flowers* in clusters, axillary and terminal, small, pale yellow. Introduced. According to Mr. Nuttall it is indigenous on the plains of the Missouri. *Common Purslane.*

2. TALINUM. *Sims.*—Talinum.(Supposed to be derived from the Greek *θαλλω*, to be green.)

Calyx of 2 ovate deciduous sepals. Petals 5, distinct, or somewhat connected at base. Stamens 10—20. Style filiform, cleft at the apex. Capsule 1-celled, 3-valved, many-seeded.

T. teretifolium Pursh.: leaves terete, subulate, fleshy; peduncles elongated, naked; cyme terminal, somewhat dichotomous and corymbose.

Rocks. Penn. to N. Car. W. to Ark. and Texas. June—Aug. ②.—*Root* a few coarse fibres from a short, thick and fleshy rhizoma. *Stems* 1—4 inches long, often branched. *Peduncles* 3—8 inches high. *Bracts* small, scarious, produced at base. *Petals* bright purple, expanding only for a day. See a detailed description of this plant in Darlington's *Flora Cestricea*.

*Cylindrical-leaved Talinum.*3. CLAYTONIA. *Linn.*—Spring Beauty.(In honor of *John Clayton*, one of the earlier Virginian botanists.)

Calyx of 2 ovate or roundish persistent sepals. Petals 5, obcordate or obovate, unguiculate. Stamens 5, inserted on the claws of the petals. Ovary sessile. Style 3-cleft. Capsule 1-celled, 3-valved, 3—5-seeded.

1. *C. Virginica Linn.*: leaves mostly 2, linear-lanceolate, elongated and attenuated into a petiole below; raceme simple, loose, at length elongated; pedicels slender, nodding; petals usually emarginate.

Wet meadows. Can. to Flor. March—May. ③.—*Scape* 6—10 inches long, weak, erect or subprocumbent. *Flowers* about 6—12, in a loose simple raceme. *Petals* rose-red, with deeper veins, three times as long as the sepals.

Narrow-leaved Spring Beauty.

2. *C. Caroliniana Michx.*: leaves ovate-lanceolate or oval, somewhat spatulate, or abruptly decurrent into a petiole; pedicels slender, nodding; sepals and petals very obtuse. *C. Virginica* var. *latifolia Torr. Fl. C. spathulæfolia Nutt.*

Woods and hilly places. Can. to Car. W. to the Rocky Mountains. April,

May. 4.—*Stem* 4—8 inches high. *Cauline leaves* sometimes oval. *Sepals* roundish-ovate. *Petals* pale rose-color, entire or slightly emarginate. Smaller than the preceding.
Broad-leaved Spring Beauty.

ORDER LII. SCLERANTHACEÆ.—KNAWELS.

Calyx 4 or 5-toothed, with a stiff tube. Stamens 1—10, inserted into the orifice of the tube. Ovary simple, superior, 1-seeded; styles 1 or 2, emarginate at the apex. Fruit a membranous utricle, enclosed within the hardened calyx. Seed pendulous; albumen mealy.—Small diffusely branched plants. Leaves opposite, without stipules. Flowers small.

SCLERANTHUS. *Linn.*—Knewel.

(From the Greek *σκληρος*, *hard*, and *ανθος*, a *flower*; in allusion to the indurated nature of the floral covering.)

Calyx 5-cleft, persistent; tube urceolate. Petals none. Stamens 10, rarely 5 or 2. Styles 2. Capsule very smooth, without valves, covered by the indurated tube of the calyx.

S. annuus Linn.: stems spreading, slightly pubescent; flowers decandrous; calyx of the fruit spreading, acute.

Sandy fields. N. S. July. ①.—*Stems* numerous, much branched in a dichotomous manner, forming tufts 3—6 inches in diameter. *Leaves* linear-subulate, scarious and dilated at base. *Flowers* very small, green, in axillary leafy clusters. Introduced?
Annual Knewel.

ORDER LIII. CRASSULACEÆ.—HOUSE-LEEKES.

Sepals 3—20, more or less united at the base. Petals as many as the sepals, distinct or cohering. Stamens as many or twice as many as the petals. Pistils always equal in number to the sepals, distinct or partly united. Carpels follicular, usually several-seeded.—Succulent herbs or shrubs, with simple leaves and the flowers usually in cymes.

1. TILLÆA. *Linn.*—Tillæa.

(In honor of *Mich. Aug. Tilli*; an Italian botanist, who died in 1740.)

Sepals 3—4, united at base. Petals 3—4, oblong, acuminate. Stamens 3—4. Carpels 3—4, distinct, opening by the inner suture, many-seeded.

T. simplex Nutt.: stem diffusely branching from the base and rooting; the branches ascending; leaves linear-oblong, connate, rather obtuse; flowers solitary, nearly sessile; petals twice as long as the sepals.

Muddy banks of streams. N. Y. Conn and Penn. July, Aug. ①.—*Stems* 1.—3 inches long. *Leaves* 2—3 lines long, spreading. *Flowers* very minute, white. *Carpels* 8—10-seeded.
Pigmy Weed.

2. SEDUM. *Linn.*—Stonecrop.

(From the Latin *sedo*, to sit; in allusion to the humble growth of these plants on their native rocks.)

Sepals usually 5, more or less united at base, ovate, often turgid and leafy. Petals 5, often spreading. Stamens twice the number of the petals. Carpels 5, many-seeded, with a nectariferous scale at the base of each.

1. *S. ternatum Mich.*: stem creeping, a little scabrous; leaves flat; the lower ones spatulate-obovate, ternately verticillate; the upper ones lance-oblong, scattered; cymes mostly 3-spiked; terminal flowers decandrous, the rest octandrous. *S. portulacoides Muhl.*

Rocks. Can. to Geor. May. 4.—Stem 4—6 inches long. Leaves from half an inch to an inch long. Flowers white, sessile.

Purslane-leaved Stonecrop.

2. *S. telephioides Mich.*: stem erect; leaves ovate or oval, flat, acute at each end, somewhat toothed, smooth and fleshy; corymb fasciculate, many-flowered.

Rocks. N. Y. to Car. July. 4.—Stem branching, about a foot high, leafy. Flowers in crowded compound corymbs with leafy bracts interspersed, pale purple.

American Orpine.

3. *S. Telephium Linn.*: stem erect; leaves flat, oblong and oval, attenuate at the base, toothed, smooth; corymbs leafy; stamens shorter than the corolla.

Rocks and fields. Catskill Mountains; Orville, Onondaga county, N. Y. Torr. July. 4.—Stem 1—2 feet high. Leaves broad. Flowers purple. Introduced from Europe.

Common Orpine. Live-forever.

3. PENTHORUM. *Linn.*—Penthorum.

(From the Greek *πεντε*, five, and *οπος*, a border; in allusion to the five-beaked capsule.)

Sepals 5, united at base. Petals 5, or none. Stamens 10. Carpels 5, united at the base into a 5-beaked, 5-celled capsule; cells opening transversely on the inner side of the beaks. Seeds numerous, minute.

P. sedoides Linn.: stem branched, angular above; leaves alternate, lanceolate, subsessile, unequally serrate; flowers in terminal one-sided spikes or racemes; seeds numerous, elliptic.

Overflowed grounds. Can. to Geor. and Louis. July, Aug. 4.—Stem 12—18 inches high. Flowers pale greenish-yellow.

Sedum-leaved Penthorum.

ORDER LIV. TETRAGONIACEÆ.—AIZOONS.

Calyx 3—5-cleft, free or partially adherent to the ovary. Corolla none. Stamens definite. Ovary 2—9-celled; styles as many as the cells, distinct. Fruit either an indehiscent

tough-shelled nut, or a capsule splitting all round. Seeds with mealy albumen.—Succulent herbs or rarely small shrubs. Leaves alternate, without stipules. Flowers small, axillary.

SESUVIUM. *Linn.*—Sesuvium.

(From *σῆκος*, a *bird's nest*; which the capsule resembles when open.)

Calyx 5-parted, persistent; lobes colored within. Stamens 15—30, inserted at the top of the short calycine tube. Styles 3—5. Capsule 3- rarely 4—5-celled, opening circularly, many-seeded.

S. Portulacastrum Linn.: leaves linear or lanceolate-oblong, flat; flowers pedicelled or sessile.

Sandy beaches. N. J. to Flor. W. to Ark. June—Sept. ♀.—*Stem succulent. Leaves* opposite, entire. *Flowers* solitary, axillary, reddish. “Varies with flowers upon long pedicels, *S. pedunculatum Pers.* and with the flowers sessile, *S. sessile Pers.*” *D. C.* *Purslane-leaved Sesuvium.*

ORDER LV. CACTACEÆ.—INDIAN FIGS.

Sepals numerous, usually indefinite and confounded with the numerous petals. Stamens indefinite; filaments long, filiform. Ovary fleshy, 1-celled; style filiform; stigmas numerous. Fruit a berry, 1-celled, many-seeded. Seeds without albumen.—Succulent shrubs, very variable in form. Leaves mostly wanting; when present fleshy, smooth, and entire or spine-like. Flowers usually showy, sessile.

OPUNTIA. *Tourn.*—Indian Fig.

(A name given to this plant by Theophrastus.)

Sepals numerous, leafy, adnate to the ovary; outer ones flat, short; inner ones petal-like, obovate, rosaceous; tube above the ovary none. Stamens numerous, shorter than the petals. Style cylindrical, contracted at base. Stigmas many, erect, thick. Berry ovoid, umbilicate at the apex, tuberculate, often bearing spines.

O. vulgaris D. C.: stems erect or procumbent, destitute of proper leaves, articulately proliferous; joints compressed, ovate; spines setaceous; flowers sessile on the margin of the joints. *Cactus Opuntia Linn.*

Dry rocks and sandy soils. N. Y. to Flor. W. to Miss. June, July. ♀.—*Flowers* large, yellow. *Fruit* obovate, umbilicate, nearly smooth, eatable. *Seeds* numerous, immersed in the crimson pulp.

Common Indian Fig or Prickly Pear.

ORDER LVI. GROSSULARIACEÆ.—CURRANTWORTS.

Calyx campanulate or tubular, 4—5-parted, sometimes colored. Petals 4—5, minute, inserted into the throat of the calyx. Stamens 4—5, inserted alternately with the petals, very short. Ovary 1-celled; style 2—4 cleft. Fruit a berry, crowned with the withered flower, 1-celled. Seeds numerous, suspended among the pulps by long filiform cords; albumen corneous.—Shrubs, either spiny or unarmed. Leaves alternate, lobed. Flowers mostly in racemes.

RIBES. *Linn.*—Currant and Gosseberry.

(An Arabic name, said to have been originally applied to a species of rhubarb, *Rheum Ribes*.)

Character same as that of the order.

* *Stem unarmed; flowers in racemes.* RIBESIA.

1. *R. rubrum Linn.*: leaves subcordate, obtusely 3—5-lobed, pubescent beneath when young, mucronate-serrate; calyx rotate, the segments roundish; petals truncate; fruit smooth, globose. *R. albinervium Mich.*

Woods and swamps, (on mountains?) N. Y. ? Ver. W. to the St. Croix river. Can. to the mouth of Mackenzie river. April, May. $\frac{1}{2}$.—Flowers in pendulous racemes, small, greenish-yellow. Berries red. *Red Currant.*

2. *R. prostratum L'Her.*: stem reclining or prostrate; leaves deeply cordate, smooth, 5—7-lobed; the lobes somewhat ovate, acute, coarsely serrate; calyx rotate, the segments obovate; petals spatulate, small; fruit glandular-hispid, globose. *R. glandulosum Ait.* *R. rigens* and *R. trifidum Mich.* (according to *Torr. & Gr.*)

Rocky places. Subarct. Amer. to Penn. W. to the Rocky Mountains. May, June. $\frac{1}{2}$.—Stems 1—3 feet long, procumbent, with erect branches. Racemes few-flowered, erect, at length pendulous. Petals purplish. Berries red, rather large, not well flavored. The plant has a disagreeable odor. *Fetid Currant.*

3. *R. floridum L'Her.*: leaves on long petioles, punctate on both sides, sharply 3—5-lobed, subcordate; the lobes acute, doubly serrate; racemes pendulous, pubescent; bracts linear, longer than the pedicels; calyx tubular-campanulate, the segments oblong-spatulate; fruit ovoid-globose, smooth. *R. recurvatum Mich.* *R. Pennsylvanicum Lam.*

Woods and hedges. Subarct. Amer. to Virg. and Ken. April, May. $\frac{1}{4}$.—Stem 3—4 feet high. Flowers yellowish-green, rather large. Berries black and inspid. *Wild Black Currant.*

** *Stem usually armed with subaxillary spines, often prickly.* GROSSULARIA.

4. *R. Cynosbati Linn.*: stem unarmed or prickly; subaxillary spines 1—3; leaves cordate, roundish, pubescent, with 3—5 incisely-toothed lobes; peduncles long, 2—3-flowered; tube of the calyx broad-campanulate, slightly contracted at the mouth; fruit prickly, rarely smooth.

Woods and mountains. Hudson's Bay to Penn. W. to Ken. and the Rocky Mountains. May, June. ♀.—*Stem* 2—3 feet high, branching, the lower part often prickly. *Flowers* in pendulous racemes, greenish-white. *Berries* brownish when ripe, usually covered with strong prickles, but sometimes smooth.

Prickly Gooseberry.

5. *R. hirtellum Mich.*: stem prickly or naked; subaxillary spines mostly solitary and very short; leaves roundish, cordate, 3—5-lobed, toothed, pubescent beneath; peduncles very short, deflexed, 1—2 flowered; calyx-tube campanulate, the segments twice as long as the petals; fruit smooth. *R. triflorum Big.*

Rocky places. Hudson's Bay to Mass. Alleghany Mountains. Pursh. W. to Lake Superior. May, June. ♀.—*Leaves* small. *Flowers* in pendulous racemes, greenish-white. *Berries* bluish-purple. (*Torr. & Gr.*)

Rough Gooseberry.

6. *R. rotundifolium Mich.*: stem not prickly; subaxillary spines short, mostly solitary; leaves roundish, 3—5-lobed, incisely toothed, nearly smooth; peduncles slender, 1—2-flowered, smooth; calyx cylindrical and narrow; petals broad-spatulate, clawed; fruit small, smooth. *R. triflorum Willd.* *R. gracile Pursh.* not of Mich.

Mountains, woods. Mass. N. Y. W. to the Rocky Mountains. May, June. ♀.—*Stem* 2—4 feet high, with recurved branches, sometimes without spines. *Flowers* greenish, with a tinge of purple. *Berries* about as large as the black currant, purple when ripe, finely-flavored. *Round-leaved Gooseberry.*

7. *R. lacustre Pursh.*: stem hispid-prickly; subaxillary spines weak; leaves cordate, 3—5-parted, the lobes deeply incised; racemes 5—9-flowered, loose; calyx rotate; fruit small, hispid. *R. oxycanthoides var. lacustre Pers.* *R. oxycanthoides Mich.*

Mountain swamps. N. H. Mass. N. Y. N. to Arct. Amer. W. to Oregon. May, June. ♀.—*Stem* 3—4 feet high. *Flowers* small, greenish-yellow, on pubescent peduncles. *Berries* dark purple, unpleasant to the taste. *Swamp Gooseberry.*

ORDER LVII. SAXIFRAGACEÆ.—SAXIFRAGES.

Calyx either superior or inferior, 4—5-cleft. Petals 5, or none. Stamens 5—10, inserted either into the calyx or beneath the ovary. Disk either hypogynous or perigynous. Ovary 1 or 2-celled; styles none; stigmas sessile on the tips of the lobes of the ovary. Fruit a capsule or berry, with numerous minute seeds.—Herbaceous plants, with alternate leaves. Flower stems simple, often naked.

1. SAXIFRAGA. Linn.—Saxifrage.

(From the Latin, *saxum*, a stone, and *frango*, to break; in allusion to the roots penetrating the crevices of rocks and stones.)

Calyx 5-parted. Petals 5, entire, with short claws. Stamens 10. Capsule with 2-beaks, 2-celled, many-seeded, opening between the beaks.

1. *S. Virginiensis Mich.*: pubescent; scape mostly naked, corymbose-

paniculate above; more or less spatulate-obovate, often obtuse, crenate-dentate, tapering at the base into a broad petiole; flowers subsessile; petals oval, twice as long as the calyx; capsule half inferior. *S. vernalis* Big. *S. nivalis* Muhl.

Rocky hills. Can. to Geor. W. to Oregon. April—June. 2.—*Scape* 4—12 inches high. *Leaves* in a radical spreading tuft. *Flowers* in rather dense terminal cymose clusters, white, with a tinge of purple. *Virginian Saxifrage*.

2. *S. Pennsylvanica* Linn.: pubescent; scape naked; leaves oblanceolate or oval, attenuate into a long naked petiole, acute, obsoletely denticulate; cymes in a large oblong panicle; flowers pedicellate; petals lance-linear, a little longer than the calyx; capsule superior.

Wet grounds. Can. to Virg. W. to Ohio. May, June. 2.—*Scape* 1—2, sometimes 3—4, feet high. *Leaves* all radical, 4—8 inches long. *Flowers* small, greenish-yellow. *Pennsylvanian Saxifrage*.

3. *S. Wolleana* Torr. & Gr.: leaves all radical, membranaceous, oblong, tapering at base into a short winged petiole, sinuate-toothed, ciliate; branches of the panicle loosely flowered, from the axils of leaf-like bracts; sepals nearly distinct, ovate, obtuse, 3-nerved, reflexed, free from the ovary, about as long as the oval obtuse petals.

On a mountain near Bethlehem, Penn. Mr. Wollé.—*Root* fibrous. *Scape* rather slender, 12—18 inches high. *Petals* small, white, with a yellowish spot near the base. Resembles *S. Pennsylvanica* in habit, but differs in its flowers.

Wollé's Saxifrage.

4. *S. rivularis* Linn.: small; stem weak, ascending, 3—5-flowered; radical leaves somewhat reniform, crenately lobed, with the petioles dilated at base; cauline ones lanceolate, nearly entire; petals ovate, scarcely longer than the calyx; capsule thick, exceeding the calyx and crowned by the short divergent styles.

White Mountains, N. H. Oakes. N. to Labrador, W. to the Rocky Mountains. ①.—*Stem* about 2 inches high. *Flowers* white, bracteate.

Alpine-brook Saxifrage.

5. *S. aizoides* Linn.: stems cespitose, leafy; leaves linear, more or less ciliate, slightly mucronate, thick; flowers panicled or sometimes solitary; sepals ovate-oblong, nearly as long as the oblong petals; stigma depressed; capsule thick, as long as the styles.

Wet rocks. Annsville, Oneida co. N. Y.; the only locality in the U. S. Torr. N. Y. Fl. N. to Labrador, W. to the Rocky Mountains. June. 2.—*Stems* numerous, 2—4 inches long, spreading. *Leaves* crowded at the base, scattered above. *Flowers* in a loose panicle, yellow. *Yellow Mountain Saxifrage*.

2. CHRYSOSPLENIUM. Linn.—Golden Saxifrage.

(From the Greek χρυσος, gold, and σπλην, spleen; in allusion to the supposed medicinal virtues of the genus.)

Calyx adhering to the ovary, the limb of 4—5 obtuse lobes. Petals none. Stamens 8—10. Styles 2. Capsule 2-beaked, 2—4-valved, at length 1-celled, many-seeded.

C. Americanum Schw.: stem decumbent, dichotomously branched; leaves opposite, upper ones often alternate, roundish-ovate, slightly crenate-lobed; flowers dichotomal, distant, sessile. *C. oppositifolium* Mich. not of Linn.

Springs and brooks. Can. to Car. April, May. 2.—*Plant* succulent, creeping, with small sessile flowers. *Calyx* usually 4-cleft. *Stamens* mostly 8. *Seeds* hispid, reddish-brown. Hooker, Darlington, Torrey and Gray, consider our plant different from *C. oppositifolium* of Europe.

American Golden Saxifrage.

3. MITELLA. Linn.—Bishop's-Cap.

(A diminutive of the Latin *mitra*, a *mitre* or *cap*; in allusion to the form of the capsule.)

Calyx campanulate, 5-cleft. *Petals* 5, inserted into the calyx, lacinate or toothed. *Stamens* 10. *Styles* 2, united. *Stigma* scarcely distinct. *Capsule* 1-celled, 2-valved; valves equal. *Seeds* numerous.

1. *M. diphylla* Linn.: radical leaves cordate-lobed, toothed and ciliate; cauline ones 2, opposite, smaller; flowers in a terminal raceme; petals toothed-pinnatifid; calyx and capsule at length membranaceous.

On wet rocks. Can. and N. S. W. to Mich. and Ken. April, May. 2.—*Stem* 8—10 inches high. *Radical leaves* on long petioles; cauline ones sessile. *Flowers* small, white. *Two-leaved Bishop's-cap.*

2. *M. cordifolia* Linn.: radical leaves cordate, sub-3-lobed, doubly crenate; scape naked or with a single leaf, scaly at base; petals fimbriate-pinnatifid. *M. nuda* Linn. Torr. & Gr. *M. reniformis* Lam.

Moist rocks. N. S. N. to Arct. Amer. W. to the Rocky Mountains. June.—*Scape* 6—8 inches high, sometimes prostrate with creeping suckers. *Radical leaves* on long petioles; cauline one much smaller and sessile. *Flowers* few, greenish-white, in a terminal spike. *Heart-leaved Bishop's-cap.*

4. TIARELLA. Linn.—Mitrewort.

(A diminutive of the Latin *tiara*, a *head-dress*; in allusion to the form of the capsule.)

Calyx 5-parted, persistent, with the lobes obtuse. *Petals* 5, inserted into the calyx, unguiculate, entire. *Stamens* 10. *Styles* 2, distinct. *Capsule* 1-celled, 2-valved; valves unequal. *Seeds* few, near the base of the capsule.

T. cordifolia Linn.: scape naked; leaves cordate, acutely lobed, unequally dentate with mucronate teeth; petals with long claws.

Shady woods. Can. to Virg. April, May. 2.—*Scape* 8—10 inches high, sending out stolons after flowering. *Radical leaves* on long petioles. *Flowers* white, in a simple terminal raceme. *Heart-leaved Mitrewort.*

5. HEUCHERA. Linn.—Heuchera.

(In honor of *John Henry Heucher*, a German botanist.)

Calyx campanulate, coherent with the ovary below, 5-cleft. *Petals* 5, small, entire. *Stamens* 5, inserted alternately with the petals into the throat of the calyx. *Styles* 2. *Capsule* with 2 beaks, 1-celled, many-seeded.

1. *H. Americana* Linn.: scabrous-puberulent and somewhat viscid; scape mostly naked; leaves roundish-cordate, with short and rounded dentate-mucronate lobes; flowers in a loose terminal panicle; petals spatulate, about as long as the calyx; stamens at length much exserted. *H. cortusa* Mich. *H. viscida* Pursh.

Shady rocks. N. Y. to Geor. W. to Miss. June, July. 2.—*Scape* 2—3 feet high. *Leaves* deeply cordate. *Flowers* small, purplish, in a long simple panicle. The root is astringent. *American Heuchera. Alum Root.*

2. *H. pubescens* Pursh.: scape naked, pulverulent-pubescent, nearly smooth below; leaves orbicular-cordate, smoothish, obtusely lobed; the lobes crenulate with short slightly mucronate teeth; flowers in a somewhat thyrsoid panicle; petals spatulate, longer than the included stamens.

Mountains and hills. Penn. Md. Virg. Ky. May, June. 2.—*Scape* about a foot high, slender. *Flowers* nearly half an inch in length. *Calyx segments* greenish-white, unequal. *Petals* violet-purple, veiny. *Pubescent Heuchera.*

ORDER LVIII.—ESCALLONIACEÆ.—ESCALLONIADS.

Calyx 5-toothed. *Petals* 5, inserted on the tube of the calyx. *Stamens* 5, alternate with the petals. *Ovary* 2—5-celled, with a large polyspermous placenta in the axis; style simple; stigma 2—5-lobed. *Fruit* capsular or baccate, surmounted by the persistent style and calyx. *Seeds* very numerous and minute; albumen oily.—Shrubs, with alternate toothed leaves and conspicuous flowers.

ITEA. Linn.—Itea.

(From the Greek *itea*, a willow; probably on account of the rapidity of its growth.)

Calyx campanulate, 5-toothed; the teeth subulate. *Petals* 5, lanceolate-linear, 1-nerved. *Stamens* 5, shorter than the petals. *Style* 1; stigma 2-lobed. *Capsule* 2-celled, 2-parted from the base to the apex.

1. *Virginica* Linn.

Borders of swamps. N. J. and Penn. to Flor. and Louis. May, June. 2.—*Stem* 4—8 feet high. *Leaves* alternate, oblong or oval, acuminate, serrulate, pubescent beneath. *Flowers* white, in simple terminal racemes.

Virginian Itea.

ORDER LIX. HYDRANGEACEÆ.—HYDRANGEADS.

Calyx 4—6-toothed, adhering more or less to the ovary. *Petals* 4—6, inserted on the calyx, deciduous. *Stamens* 8—12 in 2 rows, or many and distinct. *Ovary* of 2—5 carpels, adhering by their sides; styles as many as the carpels, distinct, with simple reniform stigmas. *Fruit* a capsule crowned by

the permanent diverging styles. Seeds minute, usually indefinite; albumen fleshy.—Shrubs, with opposite simple leaves. Flowers usually in cymes.

HYDRANGEA. *Linn.*—Hydrangea.

(From the Greek ὑδωρ *water*, and αγγιον, a *vase*; in allusion to the form of the capsule.)

Marginal flowers usually sterile. STERILE FL. Calyx membranaceous, colored, veiny, 4—5-parted. Petals, stamens, and pistils rudimentary or none. FERTILE FL. Calyx hemispheric, adnate to the ovary, 5-toothed. Petals 5, ovate. Stamens 10. Styles 2. Capsule 2-celled, opening by a foramen between the styles. Seeds numerous.

1. *H. arborescens Linn.*: leaves ovate or oblong-ovate, acuminate, obtuse or subcordate at base, toothed, smoothish; flowers in fastigiate cymes. *H. vulgaris Mich.*

Sandy banks. Penn. to Geor. W. to Miss. July. \varnothing .—Stem 4—8 feet high. Leaves large, the veins pubescent. Flowers white or yellowish-white, varying from all fertile to all sterile and radiate. *Tree Hydrangea.*

2. *H. radiata Walt.*: leaves ovate, mostly cordate, acuminate, serrate, white tomentose beneath; flowers in fastigiate cymes, some of the marginal ones radiate and sterile. *H. nivea Mich.*

Penn. to Geor. *Muhl.* Tenn. May, June. \varnothing .—Stem 6—8 feet high. Flowers large, white, very ornamental. Changes by cultivation. *Rayed Hydrangea.*

ORDER LX. UMBELLIFERÆ.—UMBELLIFERS.

Calyx entire or 5-toothed. Petals 5, usually inflexed at the point. Stamens 5, alternate with the petals. Ovary inferior, 2-celled; styles 2, distinct; stigmas simple. Fruit consisting of two carpels, which are attached to a common axis by their face (the *commissure*) from which they separate when ripe; each carpel traversed by several ribs or wings; in the intervening spaces (*intervals*) are often lodged longitudinal channels or receptacles (*vittæ*), containing colored oily matter. Seeds usually adhering to the carpel; albumen copious, horny.—Herbaceous plants with hollow stems. Leaves mostly compound and sheathing at base. Flowers in umbels.

SUBORDER I. ORTHOSPERMÆ.

Albumen flat or flattish on the face.

* *Umbels simple or imperfectly compound.*

1. HYDROCOTYLE. *Linn.* Marsh Pennywort.

(From the Greek ἵδωρ, *water*, and κοῦπλη, a *cup*; perhaps in allusion to the form of the leaves of some species.)

Calyx with the tube subcompressed and the margin of the limb obsolete. Petals ovate, entire, acute, with apex straight. Fruit laterally compressed; ribs 5, filiform, the middle and lateral ones often obsolete.—Involucre few-leaved. Flowers white.

1. *H. interrupta* *Muhl.*: stem filiform, creeping, rooting at the joints, smooth; leaves peltate, orbicular, doubly crenate, 11-nerved; flowers 5—8 in axillary umbellate heads. *H. vulgaris* *Mich.*

Wet places. Can. to Geor. *Pursh.* June—Aug. 2.—*Flowers* minute, white, on very short pedicels; peduncles longer than the petioles.

Interrupted Marsh Pennywort.

2. *H. umbellata* *Linn.*: stem glabrous, rooting at the joints; leaves peltate, orbicular, doubly crenate, 11—12-nerved, emarginate at the base; umbels 20—30-flowered; flowers distinct, pedicellate.

Boggy places. Mass. to Flor. and Louis. June—Aug. 2.—*Stem* creeping or floating. *Leaves* on long petioles. *Flowers* minute, in umbels which are sometimes proliferous.

Many-flowered Marsh Pennywort.

3. *H. Americana* *Linn.*: very smooth and shining; leaves orbicular, reniform, somewhat lobed, doubly crenate, 7—9-nerved; umbels nearly sessile, 3—5-flowered.

Moist places. Can. to Geor. June, July. 2.—*Stem* filiform, branching, with long creeping suckers. *Flowers* greenish-white, in very small axillary umbels.

American Marsh Pennywort.

4. *H. ranunculoides* *Linn.*: smooth; leaves orbicular-reniform, 5-nerved, 3—5-lobed; umbels 5—10-flowered; pedicels very short. *H. cymbalarifolia* *Muhl.*

In water. Penn. to Geor. June, July. 2.—*Stem* creeping or floating. *Leaves* mostly deeply 3-lobed. *Flowers* white; peduncles shorter than the petioles.

Lobed Marsh Pennywort.

2. CRANTZIA. *Nutt.*—Crantzia.

(In honor of *Prof. H. J. N. Crantz*, an Austrian botanist of the last century.)

Calyx with the tube subglobose; limb nearly wanting. Petals roundish, entire, obtuse. Fruit roundish; commissure excavated. Carpels unequal, with 3 marginated dorsal ribs, and 4 obtuse-angled grooves.—Involucre 5—6-leaved.

C. lineata *Nutt.*: leaves cuneate-linear, obtuse, shorter than the peduncles. *Hydrocotyle lineata* *Mich.*

Muddy banks of streams. Mass. to Flor. July. 2.—*Stem* smooth, creeping and rooting. *Leaves* about 2 at each joint, 1—2 inches long, marked with transverse lines. *Umbels* 8—10-flowered, on long peduncles. *Flowers* pedicellate, white with a tinge of red.

Narrow-leaved Crantzia.

3. ERIGENIA. *Nutt.*—Erigenia.

(From the Greek *ηριγενεια*, a name of Aurora, the harbinger of day, or of the spring; on account of its being the first conspicuous flowering plant in the U. S. *Nutt.*)

Calyx with the margin obsolete. Petals 5, obovate, entire, equal. Styles persistent, very long, subulate. Fruit oval, somewhat laterally compressed. Carpels gibbously convex, marked with 3 striæ.—General involucre none; partial one a few unequal leaflets.

E. bulbosa *Nutt.* *Sison bulbosum* *Mich.* *Hydrocotyle composita* *Pursh.*

Wet grounds. N. Y. and Penn. W. to Miss. and Tenn. March, April. 2. —Root globose, tuberous. Stem simple, 4—5 inches high, 2-leaved. Leaves 3-parted; partitions subpinnate; segments rhomboidal, cleft. Umbels terminal, 3—5-flowered. Flowers white. *Bulbous Erigenia.*

4. SANICULA. *Linn.*—Sanicle.

(From the Latin *sanio*, to heal; on account of its supposed medicinal virtues.)

Calyx with the tube echinate, the lobes somewhat leafy and persistent. Petals erect, connivent, obovate, deeply emarginate. Fruit subglobose, solid, not ribbed, armed with hooked bristles.—Leaflets of the involucre few, often divided.

1. *S. Marylandica* *Linn.*: leaves digitately 5—7-parted, the segments incisely and mucronately serrate; sterile flowers numerous, distinctly pedicellate, and nearly as long as the fertile ones; styles long and recurved.

Woods. Throughout the U. S. June—Aug. 2. —Stem about 2 feet high, branching at the top. Radical leaves on long petioles. Petals white or slightly yellowish, obovate. *Long-styled Sanicle.*

2. *S. Canadensis* *Linn.*: leaves digitately 3—5-parted, the segments incisely and mucronately serrate; sterile flowers few, slightly pedicellate, and much shorter than the fertile ones; styles shorter than the prickles.

Woods. Throughout the U. S. June—Aug. 2. —Dr. Torrey, in his Flora of New York, has given figures of these two species, by which their difference is fully shown. The latter may be distinguished by its less divided leaves, its fewer sterile flowers, and especially by its very short inconspicuous styles. Both species are medicinal and poisonous. See *Big. Med. Bot.* i. 125.

Canadian Sanicle.

5. ERYNGIUM. *Linn.*—Eryngo.

(A name given by Dioscorides to this or some allied plant, from its supposed virtue in cases of flatulence.)

Calyx 5-parted; tube rough with scales. Petals erect, connivent, oblong-obovate, deeply emarginate. Fruit scaly or tuberculose.—Flowers in a roundish or oblong head, blue or white, bracteate.

1. *E. aquaticum* *Linn.*: leaves linear-lanceolate, nerved, remotely ciliate-spinose; lower subsessile; leaflets of the involucre 7—9, mostly entire, shorter than the ovate-globose pedunculate heads. *E. yuccaefolium* *Mich.*

Wet grounds. N. J. ? to Geor. W. to Texas. Aug. ♀.—*Stem* 2—3 (sometimes 4—6) feet high, smooth, dichotomous above. *Leaves* variable in breadth. *Flowers* white or pale blue. Medicinal. See *Ell. Sk.* i. 343.

Button Snake-root.

2. *E. Virginianum* Lam.: leaves linear-lanceolate, elongated, slightly serrate, tapering at each end; flowers in large terminal umbels or cymes; leaflets of the involucre 7—8, longer than the heads, 3-cleft or dentate-spiny, whitish beneath. *E. aquaticum* Mich.

Marshes. N. J. to Flor. W. to Texas. July, Aug. ②.—*Stem* 2—5 feet high, cymosely branched at the summit, hollow. *Heads* numerous, nearly an inch in diameter, pale blue or nearly white. *Virginian Eryngo.*

** *Umbels compound or perfect.*

6. CICUTA. Linn.—Cowbane.

(A Latin name applied to a *hollow stem* or *internodes*; such as occur in this genus.)

Calyx with the margin 5-toothed. Petals obcordate, reflexed. Fruit roundish, didymous, laterally contracted. Carpels with 5 equal flattish ribs; the lateral ones margined.—General involucre none or few-leaved; partial one many-leaved.

1. *C. maculata* Linn.: stem spotted; lower leaves tri-ternate and quinately; upper bi-ternate; segments lanceolate or ovate-lanceolate, acuminate, mucronate-serrate; umbels large, axillary and terminal; partial involucre of 5—6 setaceous leaves.

Wet grounds. Can. to Geor. W. to Oregon. July, Aug. ♀.—*Stem* 4—6 feet high, terete, smooth. *Petals* white, obcordate. Poisonous and medicinal. *Big. Med. Bot.* i. 125. *Spotted Cowbane. Water Hemlock.*

2. *C. bulbifera* Linn.: leaves various, ternate and bi-ternate; leaflets linear and linear-lanceolate, remotely toothed; umbels small, axillary and terminal; partial involucre of 3—5 subulate leaves; axils of the leaves bulbiferous.

Swamps. Can. to Penn.; rare. Aug. ♀.—*Stem* 2—3 feet high, smooth and slender. *Umbels* small. *Flowers* white. *Bulb-bearing Cowbane.*

7. ZIZIA. Koch.—Meadow Parsnip.

(In honor of *J. B. Zizii*, a German botanist.)

Calyx with the margin obsolete or very short, 5-toothed. Petals elliptic, attenuated into a long inflexed point. Fruit laterally contracted, subdidymous, roundish or oval. Carpels with 5 prominent equal ribs; the lateral ribs margined.—General involucre none; partial one few-leaved.

1. *Z. aurea* Koch.: lower leaves bi-ternate, upper bi-ternate or ternate; segments oblong-lanceolate, attenuate at base, incisely serrate; partial involucre 3-leaved, unilateral. *Smyrniolum aureum* Linn.

Rocky hills. Can. to Geor. W. to Miss. June, July. ♀.—*Stem* about 2 feet high, branching at the top. *Umbel* 10—15-rayed; partial rays short. *Flowers* bright yellow. *Fruit* blackish. *Golden Alexanders.*

2. *Z. cordata* Koch.: radical leaves undivided, cordate, crenate, on long

petioles; cauline subsessile, ternate; segments petiolate, ovate or ovate-oblong, serrate; partial involucre 1—2-leaved. *Smyrniium cordatum* Walt.

Meadows. Can. to Flor. W. to Miss. May, June. 2.—Stem 12—18 inches high, smooth. *Radical leaves* sometimes a little lobed. *Umbels* on long naked peduncles. *Flowers* yellow. *Fruit* black. *Heart-leaved Alexanders.*

3. *Z. integerrima* D. C.: leaves bi-ternate, somewhat glaucous; segments oblong-ovate, entire; partial involucre 1-leaved, very short. *Smyrniium integerrimum* Linn.

Rocky woods. Can. to Geor. W. to Miss. May, June. 2.—Stem 1—2 feet high. *Umbel* with elongated filiform rays. *Flowers* yellow. *Fruit* dark brown. *Entire-leaved Zizia.*

8. DISCOPLEURA. D. C.—Discopleura.

(From the Greek *δίσκος*, a *disk*, and *πλευρά*, the *side*; the two sides of the fruit being marked with a kind of disk.)

Calyx with 5 subulate persistent teeth. Petals ovate, entire. Fruit ovate, subdidymous. Carpels with 5 ribs; 3 dorsal ribs filiform, exsert, subacute; 2 lateral ones with a thick margin.—Leaves much divided; the segments linear. Partial involucre a few linear setaceous leaflets.

D. capillacea D. C.: stem erect or procumbent; umbels 3—12-rayed; leaflets of the involucre 3—5, mostly 3-cleft; fruit ovate. *Ammi majus* Walt. *A. capillaceum* Mich.

Bogs. N. Y. to Geor. July—Sept. ①.—Stem 1—2 feet long, geniculate, smooth. *Leaves* many-parted, with the segments filiform and spreading. *Flowers* very small, white, on axillary umbels. *Few-rayed Discopleura.*

9. CRYPTOTÆNIA. D. C.—Hone-wort.

(From the Greek *κρυπτός*, *hidden*, and *ταϊνία*, a *fillet*; the narrow vittæ being concealed in the carpels.)

Calyx with the margin obsolete. Petals obovate, subentire, with a narrow inflexed point. Fruit laterally contracted, linear-oblong, crowned with straight styles. Carpels with 5 equal filiform obtuse ribs; the lateral ones nearly margined.—Umbels numerous, arranged somewhat in the form of a panicle. General involucre none; partial one few-leaved.

C. Canadensis D. C.: leaves ternate, smooth; leaflets rhomboid-ovate or lanceolate, acute, incisely toothed, acutely serrate; umbels numerous, lower ones rising from the axils of the upper leaves; fruit oblong, beaked with the persistent styles. *Sison Canadense* Linn. *Chacrophyllum Canadense* Pers.

Rocky Woods. Can. to Geor. W. to Miss. June—Aug. 2.—Stem about 2 feet high, branched above. *Leaves* sometimes quinate; the lower ones on long petioles. *Flowers* white. *Canadian Hone-wort.*

10. SIUM. Linn.—Water Parsnip.

(From the Celtic *siw*, *water*; in allusion to its place of growth.)

Calyx with the margin 5-toothed, often obsolete. Petals

obovate, emarginate, with an inflexed point. Styles divergent-reflexed, capitate at the apex. Fruit compressed or contracted at the side, subdidymous, crowned with the styles. Carpels with equal filiform and somewhat obtuse ribs.—Involucre many-leaved, rarely wanting.

1. *S. latifolium* Linn.: root creeping; stem angular and sulcate; leaves pinnate; leaflets ovate-lanceolate, unequal at base, sessile, smooth, equally serrate, sometimes pinnatifid; umbels terminal, large, many-rayed; involucre many-leaved.

Swamps. Arct. Amer. to Penn. W. to Oregon. July. ♀.—Stem 2—4 feet high, branching. *Flowers* white. When growing in water the lower leaves are bi-pinnatifid, or have the leaflets laciniate. *Broad-leaved Water Parsnip.*

2. *S. lineare* Mich.: stem erect, smooth, angular and sulcate; lower leaves pinnate, upper ones ternate; leaflets linear-lanceolate or linear, acutely and finely serrate; umbel terminal, with short rays; involucre many-leaved, linear. *S. tenuifolium* Muhl.

Swamps. Can. to Penn. W. to Oregon. July. ♀.—Stem 2—5 feet high, rather rigid. *Leaflets* very long and narrow. *Flowers* white. *Narrow-leaved Water Parsnip.*

11. BUPLEURUM. Linn.—Hare's Ear.

(From the Greek βύς, an ox, and πλευρον, a rib; probably in allusion to the ribbed leaves of some species.)

Calyx with the margin obsolete. Petals roundish, entire, involute. Fruit laterally compressed or subdidymous, crowned with the depressed style. Carpels with 5 winged acute filiform or obsolete ribs; lateral ones marginal.—Leaves mostly simple. Involucre various.

B. rotundifolium Linn.: stem leaves perfoliate, roundish-ovate; umbel 5-rayed; general involucre none; partial one of 5 mucronate leaflets. *B. perfoliatum* Lam.

Near cultivated grounds. N. Y. Penn. to N. Car. June—Aug. ①.—Stem 1—2 feet high, branching. *Leaves* perforated by the stem. *Flowers* greenish-yellow. *Common Hare's Ear. Thorough Wax.*

12. ÆTHUSA. Linn.—Fool's Parsley.

(From the Greek αἶθω, to burn; on account of its acrid quality.)

Calyx with the margin obsolete. Petals obovate, emarginate, with an inflexed point. Fruit ovate-globose. Carpels with 5 elevated, thick and acutely keeled ribs; the lateral ones margined and a little broader, and surrounded by a somewhat winged keel.—General involucre none or 1-leaved; partial one 1—3 or 5 leaved.

Æ. Cynapium Linn.: leaves bi- and tri-pinnate, dark green; segments ovate-lanceolate; partial involucre of 3 long pendant leaves.

Near cultivated grounds. Mass. and N. Y. July, Aug. ①.—*Stem* about 2 feet high, branched, hollow, not spotted. *Leaves* with the ultimate divisions linear-lanceolate. *Umbels* on long peduncles, terminal and opposite the leaves. It has a nauseous odor and is said to be poisonous. *Common Fool's Parsley*.

13. CONIOSELINUM. *D. C.*—Conioselinum.

(Name compounded of *Conium* and *Selinum*.)

Calyx with the margin obsolete. Petals obcordate or obovate, with an inflexed point. Fruit convex or compressed on the back. Carpels with 5 winged ribs; the lateral ones twice as broad as the others and marginal.—General involucre none, or few-leaved; partial one of 5—6 subulate leaves.

C. Canadense Torr. & Gr.: fruit oval, nearly twice the length of the pedicels; dorsal ridges narrowly winged. *Selinum Canadense Mich.*
Cnidium Canadense Spreng.

Swamps. Can. N. Y. and Ver. July, Aug. ②.—*Stem* 3—5 feet high, branching above, striate. *Leaves* with inflated sheathing petioles, 3-parted; the divisions pinnately compound; segments pinnatifid, long. *Umbels* of 10—16 slender rays. *Flowers* white. Closely resembles *C. Fisheri*.

Canadian Conioselinum.

14. THASPIUM. *Nutt.*—Thaspium.

(From the Isle of *Thaspi*; a name unfortunately applied.)

Calyx with the margin 5-toothed. Petals elliptic, attenuated into a long inflexed point. Fruit not contracted at the side, subelliptic. Carpels convex, with 5 winged ribs; wings subequal; intervals grooved.—General involucre none; partial one about 3-leaved.

* *Umbels opposite. Flowers dark purple.*

1. *T. atropurpureum Nutt.*: stem smooth, dichotomously branched; radical leaves subcordate, simple, serrate; cauline ones ternate, serrate; leaflets ovate-oblong. *Cnidium atropurpureum Spreng.*

Moist grounds. N. Y. N. J. and Penn. June. ③.—*Stem* about 2 feet high, smooth. *Flowers* dark purple. *Fruit* small, with membranaceous wings.

Purple Alexanders.

** *Umbels terminal. Flowers yellow.*

2. *T. actæifolium Nutt.*: stem very tall, smooth and straight; lower leaves tri-ternate; upper ones bi-ternate; leaflets oval, coarsely toothed; umbels numerous, terminal, somewhat whorled; partial involucre setaceous. *Ligusticum actæifolium Mich. Torr. & Gr.*

Banks of streams. Can. to Geor. W. to Ken. July. ④.—*Stem* 3—5 feet high. *Fruit* ovate-oblong, with the ribs somewhat winged. *Tall Thaspium.*

3. *T. barbinode Nutt.*: petioles and nodes of the stem pubescent; lower leaves tri-ternate; upper ones bi-ternate; segments cuneate-ovate, acute, unequally and incisely serrate, entire at the base; partial involucre 3-leaved, setaceous. *Ligusticum barbinode Mich. Thapsia trifoliata Spreng.*

Borders of woods. Can. to Geor. W. to Ark. June. 2.—*Stem* about 2 feet high, somewhat branched, sulcate. *Umbels* terminal and dichotomal. *Flowers* deep yellow. The oily matter in the *vittæ* of the fruit has a strongly camphorated odor.
Hairy-jointed Thaspium.

4. *T. aureum* Nutt.: lower and middle cauline leaves bi-ternately, and the uppermost ternately, divided; segments oblong-lanceolate, mostly wedgeform at the base, sharply serrate; carpels with the winged ribs nearly equal. (*Torr.*) *Smyrniium aureum* Big.

Wet meadows. Mass. N. Y. Penn. Ohio. June. 2.—*Stem* 1—3 feet high, nearly simple. *Umbels* on long peduncles 10—20-rayed, with very short involucres. Differs from *Zizea aurea* in the fruit. *Torr. N. Y. Fl.*

Golden Thaspium.

15. LIGUSTICUM. Linn.—Lovage.

(Named from *Liguria*, where the old *Ligusticum Levisticum* abounds. *Hook. Br. Fl.*)

Calyx with the margin 5-toothed or obsolete. Petals obovate, acute, emarginate, inflexed; claw very short. Fruit roundish in the transverse section, or slightly laterally compressed. Carpels with 5 equal and somewhat winged ribs; the lateral ones margined.—Involucre various; partial one many-leaved.

L. scoticum Linn.: stem erect, smooth and striate; lower leaves bi-ternate; upper ones ternate and nearly sessile; leaflets broadly ovate, coarsely serrate; umbels many-rayed; flowers equal; petals inflexed; involucres linear-lanceolate, 5—7-leaved.

Borders of salt marshes. Salem, Mass. N. to Labrador. W. to Oregon. Aug. 2.—*Stem* 1—2 feet high, flexuous. *Flowers* white. Identical with the foreign plant.
Sea Lovage.

16. ANGELICA. Linn.—Angelica.

(Named *Angelic*, from its medicinal and cordial properties.)

Calyx with the margin obsolete. Petals lanceolate, entire, acuminate, with a straight or incurved point. Fruit compressed on the back, with the central raphe two-winged on each side. Carpels with 3 dorsal filiform elevated ribs; the 2 lateral ribs dilated into a membranaceous wing.—General involucre none or few-leaved; partial one many-leaved.

1. *A. triquinata* Mich.: stem terete, pubescent above; leaves on long petioles, ternate; partitions quinate; leaflets oblong-ovate, equally serrate, smooth; lower ones 2-lobed at the base; general involucre none; partial one of 6—8 subulate leaves directed to one side. *A. hirsuta* Muhl. *Ferula villosa* Walt. *Archangelica hirsuta* Torr. & Gr.

Dry grounds. N. Y. to Car. July, Aug. 2.—*Stem* 2—3 feet high, erect and straight, white, villous below the umbel. *Umbels* mostly 3. *Flowers* numerous, white.
Triquinata Angelica.

2. *A. atropurpurea* Linn.: stem large, smooth, colored; leaves ternate, on large inflated sheathing petioles; partitions subquinate; leaflets large, oblong-ovate, coarsely serrate, sublobed; the three terminal ones often united at base; general involucre none; partial one of 8—10 subulate leaves. *A. triquinata* Big. *Archangelica atropurpurea* Torr. & Gr.

Wet meadows. Can. to Penn. June. ♀.—Stem 3—6 feet high, purplish. (Dr. Darlington says it is sometimes nearly 3 inches in diameter at base.) Flowers white. Much larger than the preceding. Root poisonous.

Dark-purple Angelica.

3. *A. lucida* Linn.: stem erect, glabrous; leaves bi- and tri-pinnate; leaflets equal, ovate, cuneate at base, incisely serrate; general involucre about 5-leaved; partial one subulate.

Shady woods. Can. to Car. Pursh. June, July. ♀.—Stem 1—2 feet high. Flowers white. Root aromatic. This is perhaps not a native of the U. S. See Torr. & Gr.

Shining Angelica.

17. ARCHEMORA. D. C.—Archemora.

(A fanciful name given by De Candolle in allusion to *Archemorus*, who is said to have died from eating parsley.)

Calyx with the margin 5-toothed. Petals obcordate, inflexed. Fruit dorsally compressed, flat, oval or obovate. Carpels with 5 subcarinate equidistant filiform ribs; lateral ribs dilated into a membranaceous margin nearly as broad as the seed.—General involucre none or few-leaved; partial one many-leaved.

1. *A. rigida* D. C.: stem erect, rigid, striate; leaves pinnate, smooth; leaflets 4—5 pairs, large, oblong-lanceolate, entire or with several remote teeth; umbels terminal, on long peduncles; general involucre none; partial one of 6—8 subulate leaves; fruit much compressed. *A. rigida* var. *a.* Torr. & Gr. *Sium rigidius* Linn. *Enanthe rigida* Nutt.

Swamps. N. Y. to Flor. Sept. ♀.—Stem 2—4 feet high. Leaves with a white and sometimes scabrous margin. Flowers white. *Rigid Archemora.*

2. *A. ambigua* D. C.: stem erect, slightly angular; leaves pinnate, smooth; leaflets narrow-linear or linear-lanceolate, long, mostly entire, somewhat glaucous beneath; umbels terminal, subsolitary; general involucre none; partial one of 3—5 subulate leaves. *A. rigida* var. *β* Torr. & Gr. *Sium longifolium* Pursh. *Enanthe ambigua* Nutt.

Swamps. N. Y. and N. J. W. to Miss. Aug. ♀.—Stem 3—5 feet high. Flowers white. Both species are supposed to be poisonous.

Ambiguous Archemora.

18. PASTINACA. Linn.—Parsnip.

(From the Latin *pastus*, food; in allusion to the use made of the root.)

Calyx with the margin obsolete or minutely denticulate. Petals roundish, entire, involute. Fruit dorsally and flatly compressed, surrounded by a dilated margin. Carpels with very slender ribs; 3 intermediate ribs equidistant; 2 lateral ones contiguous.—Involucres none or few-leaved.

P. sativa Linn.: stem smooth, sulcate; leaves pinnate; leaflets sessile, subpubescent beneath, oblong, incised, terminal one 3-lobed; umbels large, terminal; fruit oval, much compressed.

Fields and waste places. N. S. July. ②.—Stem 2—4 feet high. Leaves somewhat shining. Umbels large, fastigiate. Flowers yellow. Introduced.
Wild Parsnip.

19. HERACLEUM. Linn.—Cow Parsnip.

(Named from *Hercules*, who is said to have brought this or some allied plant into use.)

Calyx 5-toothed. Petals obovate, emarginate, with an inflexed point; outer ones often rayed, bifid. Fruit dorsally and flatly compressed, surrounded by a membranaceous margin. Carpels with 3 equidistant ribs on the back; 2 lateral ribs with a dilated margin.—General involucre caducous, often few-leaved; partial one many-leaved.

H. lanatum. Mich.: stem sulcate, pubescent; leaflets ternate, petioled, tomentose beneath; leaflets petioled, round-cordate, lobed; partial involucre 5—6-leaved; fruit orbicular.

Meadows. Can. as far N. as lat. 58°. to Penn. W. to Oregon. June. ②.—Stem 4—8 feet high. Petioles very broad and membranous. Flowers white, in very large terminal umbels. One of our largest umbelliferous plants.
American Cow Parsnip.

20. DAUCUS. Linn.—Carrot.

(From *δαυκος*, the ancient Greek name for the Carrot.)

Calyx with the margin 5-toothed. Petals obovate, emarginate, with an inflexed point; outer ones often rayed and deeply bifid. Fruit somewhat laterally compressed, ovate or oblong. Carpels with 5 primary filiform ribs; 3 intermediate dorsal ones; 2 lateral, flat, placed on the commissure; 4 secondary ones equal, with prominent wings, parted into a simple aculeate series.—General involucre with many pinnate or pinnatifid leaves; partial one with many entire or trifid leaflets.

D. Carota Linn.: stem erect, hispid; leaves tri-pinnate; leaflets pinnatifid; segments linear-lanceolate, acute; leaves of the involucre pinnatifid, nearly as long as the umbel.

Old fields, road sides, &c. Throughout the U. S. July, Aug. ②.—Stem 2—3 feet high, branching. Umbel with a solitary colored abortive flower in the centre, when in seed concave.
Wild Carrot.

SUBORDER II. CAMPYLOSPERMÆ.

Seed with the margin involute or deeply furrowed on the face.

21. CHÆROPHYLLUM. *Linn.*—Wild Chervil.

(From the Greek χαίρω, to rejoice, and φύλλον, a leaf; on account of the agreeable smell of the leaves.)

Calyx with the margin obsolete. Petals obovate, emarginate, inflexed. Fruit not beaked, laterally contracted or compressed. Carpels with 5 obtuse equal ribs; lateral ribs margined.—General involucre none or few-leaved; partial one many-leaved.

C. procumbens Lam: stem decumbent, somewhat hairy; leaves bi-pinnate; leaflets pinnatifid; segments lance-oblong, rather obtuse; umbels opposite the leaves, 2—3-rayed; partial involucre of 4—5-ovate ciliate leaves; fruit prismatic, smooth, crowned with the persistent styles. *Scandix procumbens* Linn. *Myrrhis procumbens* and *M. bifida* Spreng.

In shady situations. N. J. to S. Car. W. to Ark. April, May. ①.—Stem 6—13 inches long, slender, sometimes nearly erect. Umbels terminal and lateral, few-flowered. Flowers small, white. *Procumbent Wild Chervil.*

22. OSMORHIZA. *Raf.*—Osmorhiza.

(From the Greek οσμή, odor, and ρίζα, a root; from its sweet or fragrant root.)

Calyx with the margin obsolete. Petals ovate, scarcely emarginate, with a very short inflexed point. Fruit elongated, attenuated at base, solid, acute-angled, in the transverse section roundish. Carpels with hispid angles and 5 acute ribs; commissure sulcate.—General involucre 2—3-leaved; partial one often 5-leaved.

1. *O. longistylis* D. C.: styles filiform, nearly as long as the fruit, diverging. *Uraspermum Claytoni* Nutt. *Scandix dulcis* Muhl.

Wet meadows. N. Can. to Virg. W. to Oregon. May, June. ②.—Stem 2—3 feet high, purplish, at length nearly smooth, striate. Leaves mostly bi-ternate, the radical ones on long petioles; leaflets oblong-ovate, incisedly serrate, acute. Flowers white, twice as large as in the next species. The root has the flavor of *Aniseed*. *Long-styled Osmorhiza. Sweet Cicely.*

2. *O. brevistylis* D. C.: styles conical, erect, about half the length of the fruit. *Myrrhis Claytoni* Mich. *Uraspermum hirsutum* Big.

Shady rocks. Can. to Car. W. to Oregon. May, June. ②.—Stem about 2 feet high, branching, striate, pale-green, at length nearly smooth. Leaves bi-ternate; leaflets incised, often pinnatifid. The root has a sweetish taste, not so pleasant as that of the preceding. *Short-styled Osmorhiza.*

23. CONIUM. *Linn.*—Poison Hemlock.

(Said to be derived from the Greek κωνος, a cone or top; in allusion to the giddiness produced by its fruit.)

Calyx with the margin obsolete. Petals obcordate, somewhat emarginate, very short and inflexed. Fruit ovate, laterally compressed. Carpels with 5 prominent equal undulate

ribs; the lateral ribs margined.—Involucres 3—5-leaved; partial one dimidiate or unilateral.

C. maculatum Linn.: stem erect, branched, smooth and spotted; leaves large, tri-pinnate; leaflets lanceolate, pinnatifid; ultimate segments acute; general and partial umbels many-rayed; general involucre of several short lanceolate leaves; partial one few-leaved, linear-lanceolate, directed to one side.

Road sides. Can. and the U. S. July. ②.—Stem 2—4 feet high. Leaves smooth and shining. Flowers white, numerous. Probably introduced. Whole plant highly poisonous; fetid when bruised. Medicinal. *Big. Med. Bot.* i. 113.
Poison Hemlock.

ORDER LXI. ARALIACEÆ.—IVYWORTS.

Calyx superior, entire or toothed. Petals definite, 5—10, valvate in æstivation, occasionally none. Stamens as many or twice as many as the petals. Ovary many-celled. Fruit succulent or dry, of several-seeded cells. Seeds pendulous; albumen fleshy.—Trees, shrubs or herbaceous plants, with the habit of the Umbelliferæ.

1. ARALIA. Linn.—Aralia.

(Origin of the name unknown.)

Calyx with the margin very short, 5-toothed or entire. Petals 5, spreading. Stamens 5. Styles 5, spreading. Berry 5-celled.—Umbels often paniced.

1. *A. nudicaulis* Linn.: nearly stemless; leaf mostly solitary, tri-quinate; leaflets sessile, oblong-oval, acute, serrate, smooth; scape shorter than the leaf, 3-cleft at the top; umbels few, small, on long peduncles, without involucres.

Rocky woods. Labrador to Car. W. to the Rocky Mountains. June, July. ①.—Root thick and creeping, aromatic. Flowers small, 3-umbelled, greenish-white. *Wild Sarsaparilla.*

2. *A. racemosa* Linn.: stem herbaceous, branched; petioles 3-parted; divisions ternate and quinate; leaflets ovate, often cordate, acuminate, sharply serrate, mostly smooth; umbels numerous, compound, in large axillary panicles; involucre small, few-leaved.

Woods. Can. to Geor. W. to the Rocky Mountains. June—Aug. ②.—Stem 3—5 feet high, with spreading branches. Flowers greenish-white, in panicles 4—8 inches long. The root is highly aromatic, and is sometimes used for medicinal purposes. *Spikenard.*

3. *A. hispida* Mich.: low, suffruticose; stem and petioles hispid; leaves doubly pinnate; leaflets oblong-ovate, sharply serrate, unarmed; umbels axillary and terminal, on long peduncles.

Rocky woods. Hudson's Bay to Virg. July. ②.—Stem 1—2 feet high, with stiff and thick bristles at the base. Flowers greenish-white, in spreading umbels, *Wild Elder.*

4. *A. spinosa* Linn.: arborescent; stem and petioles prickly; leaves doubly or triply pinnate; leaflets ovate, acuminate, sessile; umbels numerous, in compound panicles; involucre small, few-leaved.

Fertile woods. Penn. to Geor. W. to Miss. Aug., Sept. 12.—Stem 8—12 (sometimes 30 or 40) feet high, with the leaves crowded at the summit. Flowers white, in very large terminal panicles. A watery infusion of the bark is said to be both emetic and cathartic. *Ell. Sk. i. 373.* *Angelica Tree.*

2. PANAX. Linn.—Ginseng.

(From the Greek παν, all, and ακος, a cure; being considered by the Chinese as a remedy for all diseases.)

Calyx with the margin very short and obsoletely 5-toothed. Petals 5. Stamens 5, inserted under the margin of the disk and alternating with the sepals. Styles 2—3, short. Fruit fleshy, compressed, orbiculate or didymous, 2-celled; cells 1-seeded.—Flowers in simple umbels, polygamous.

1. *P. quinquefolium* Linn.: root fusiform, sometimes branched; stem angular; leaves ternate-quinate; leaflets on distinct petioles, oval, acuminate, serrate; peduncles shorter than the petioles; styles and seeds 2.

Woods. Can. to Geor. June, July. 2.—Root 3—6 inches long and aromatic. Stem about a foot high, divided at the top. Flowers greenish-yellow, 8—16 in an umbel. The root is highly esteemed by the Chinese for its supposed medicinal properties. *Common Ginseng.*

2. *P. trifolium* Linn.: root roundish; stem simple, smooth; leaves ternate; leaflets subsessile, oblong-lanceolate, serrate; styles often 3; berry 3-seeded.

Woods. Can. to Geor. May. 2.—Stem 4—6 inches high. Leaves rarely quinate. Flowers white, 20—40 in an umbel. *Dwarf Ginseng.*

ORDER LXII. HAMAMELIDACEÆ.—WITCHHAZELS.

Calyx adherent, in 4 or 5 pieces. Petals 4 or 5, or none. Stamens 8, 4 alternate with the petals, and 4 sterile placed at the base of the petals. Ovary 2-celled; styles 2. Fruit half inferior, capsular, usually opening with two septiferous valves. Seeds pendulous; albumen horny.—Small trees or shrubs, with alternate deciduous leaves. Flowers axillary, often polygamous.

HAMAMELIS. Linn.—Witchhazel.

(Origin of the name uncertain.)

Calyx 4-lobed, with 2—3 bracteoles at the base. Petals 4, long, ligulate. Sterile stamens scale-like, and opposite the petals. Styles 2, short. Capsule coriaceous, 2-celled, 2-valved at the top.

H. Virginica Linn.: leaves ovate, acute, toothed, cordate, with the sinus small, scabrous beneath; flowers in axillary clusters.

var. *parvifolia* Nutt.: leaves smaller and more pubescent beneath.

Woods. Can. to Flor. and Louis. Oct., Nov. ♀.—*Stem* 6—12 feet high. *Flowers* in threes, polygamous, greenish-yellow, appearing in autumn and continuing during a great part of the winter; the *fruit* is not perfected until about September of the following year. Var. *parviflora* is found on the mountains of Pennsylvania. Witchhazel.

ORDER LXIII. CORNACEÆ.—DOGWOODS.

Sepals 4, adherent. Petals 4, distinct. Stamens 4, alternate with the petals. Ovary 2-celled; style filiform; stigma simple. Fruit a 2-celled drupe crowned with the remains of the calyx. Seed solitary; albumen fleshy.—Trees or shrubs, with opposite rarely alternate leaves. Flowers capitate, umbellate or corymbose.

CORNUS. Linn.—Dogwood.

(From the Latin *cornu*, a horn; in allusion to the toughness of the wood.)

Calyx adherent to the ovary; the limb minute, 4-toothed. Petals 4, oblong, spreading. Stamens 4. Stigma obtuse. Drupe with the cells not united.

* *Flowers capitate, surrounded by a petaloid involucre.*

1. *C. Canadensis* Linn.: herbaceous; lower leaves opposite, small; upper on short petioles, verticillate, veined; leaves of the involucre 4, broad-ovate, acuminate; flowers numerous, very small, in a terminal head; drupe globose.

Damp woods. Arct. Amer. and Labrador to Car. W. to Oregon. May, June. ♀.—*Stem* 4—6 inches high, simple, with one or two pairs of opposite leaves and a whorl of about 6 at the summit. *Involucre* greenish-white, petaloid, much longer than the flowers. *Drupe* red. Dwarf Dogwood.

2. *C. florida* Linn.: arborecent; leaves ovate, acuminate, whitish beneath; leaves of the involucre 4, large, obcordate, nerved, with a callous notch at the apex; flowers in small terminal heads; drupe oval.

Woods. Can. to Car. W. to Miss. May, June.—A tree 15—20 feet high, with grayish bark. *Flowers* greenish-yellow. *Involucre* about 3 inches in diameter, white, sometimes tinged with red. *Drupe* scarlet. Medicinal. *Big. Med. Bot.* ii. 73. Flowering Dogwood.

** *Flowers naked, in cymes.*

† *Leaves opposite.*

3. *C. circinata* L'Herit.: branches warty; leaves on short petioles, broad-oval, acuminate, white-downy beneath; cymes crowded, depressed; drupe globose. *C. tomentulosa* Mich.

Banks of streams. Can. to Virg. W. to Miss. June, July. ♀.—*Stem* 6—8 feet high, with straight slender branches. *Leaves* broad, waved on the edges. *Flowers* white. *Drupe* small, light-blue. Oval-leaved Dogwood.

4. *C. sericea* L'Herit.: branches expanded; leaves ovate, acuminate, the under surface clothed with a silky ferruginous down; cymes depressed, woolly; drupe globose. *C. lanuginosa* Mich. *C. alba* Walt.

Banks of streams. Can. to Geor. and Louis. May, June. 12.—Stem 5—10 feet high, with purplish bark. Leaves varying in form and pubescence. Flowers yellowish-white. Drupe pale-blue. Swamp Dogwood.

5. *C. stolonifera* Mich.: stem often reclined and stoloniferous, with reddish-purple branches; leaves ovate, somewhat acuminate, obtuse at base, rough with minute pubescence on both sides, whitish beneath; cymes small, flat, rather crowded; drupe globose. *C. alba* Wang. *C. sanguinea* Pursh.? not of Linn.

Banks of streams. Can. from lat. 69° to N. Y. W. to Miss. May, June. 12.—Stems sometimes 5—10 feet long, erect, or prostrate and rooting. Flowers white, in small cymes. Drupe small, white or lead-colored. *C. sanguinea* seems not to be a native of North America. The plant described under that name by our botanists, is thought by Torrey and Gray to be this species; while Darlington connects it with *C. sericea*. *C. stricta* Lam. (Beck Bot. 1st Ed.), is said to be confined to the southern states. Stoloniferous Dogwood.

6. *C. paniculata* L'Herit.: branches erect, smooth; leaves ovate-lanceolate or oval, acuminate, acute at base, rough with a minute pubescence, hoary beneath; cymes loose, usually paniculate, smooth; drupe small, depressed-globose. *C. racemosa* Lam.

Wet woods. Can. to Penn. W. to Miss. July. 12.—Stem 6—8 feet high, with a grayish bark. Flowers white, in very numerous paniced or thyrsoid cymes. Drupe white or lead-colored. Paniced Dogwood.

†† Leaves alternate.

7. *C. alternifolia* Linn.: branches alternate, warty; leaves alternate, broad-oval or ovate, acuminate, smooth above, hoary pubescent beneath; cymes depressed and spreading; drupe globose.

Shady woods. Can. to Car. W. to Ken. June.—A small tree 15—20 feet high, with spreading branches. Leaves on slender petioles. Flowers yellowish-white. Drupe dark-blue. Alternate-leaved Dogwood.

ORDER LXIV. LORANTHACEÆ.—LORANTHS.

Calyx, with 3, 4 or 8 sepals often joined into a tube, usually with 2 bracts at base, sometimes none. Petals none. Stamens as many as the sepals, and opposite to them, when they are present. Ovary 1-celled; style 1 or none; stigma simple. Fruit succulent. Seed solitary; albumen fleshy.—Shrubs, almost parasitical. Leaves fleshy, entire, mostly opposite, rarely wanting.

VISCUM. Linn.—Mistletoe.

(From the Latin *viscus*, *glue*; in allusion to its glutinous fruit.)

Flowers monœcious or diœcious. STERILE FL. Sepals 4, (rarely 3—5,) fleshy, the segments triangular. FERTILE FL.

Calyx with the margin obsolete; inner sepals (petals) 4, distinct. Stigma obtuse, sessile. Berry pulpy.

V. flavescens Pursh.: branches terete, opposite and verticillate; leaves cuneate-obovate, 3-nerved; spikes axillary, solitary, rather shorter than the leaves; sterile flowers mostly trifold. *V. verticillatum* Nutt.

Parasitic on trees. N. J. to Flor. and throughout the valley of the Mississippi. May. 4.—Stem 9—18 inches high, yellowish-green, smooth. Leaves fleshy or somewhat coriaceous. Flowers small, yellowish-green, sessile. Berries pearly white, resembling white wax. *White Misseltow.*

ORDER LXV. CAPRIFOLIACEÆ.—CAPRIFOILS.

Calyx 4—5-cleft, usually with 2 or more bracts at base. Corolla monopetalous or polypetalous, rotate or tubular, regular or irregular. Stamens epipetalous, as many as the lobes of the corolla and alternate with them. Style 1, or none; stigmas 3—5. Fruit usually a berry or drupe, rarely a capsule. Seeds solitary or numerous; albumen fleshy.—Shrubs or herbaceous plants. Leaves opposite, without stipules. Inflorescence various.

1. SAMBUCUS. Linn.—Elder.

(From the Greek *σαμβύκη*, a musical instrument, in the construction of which this wood is said to have been employed.)

Calyx with the limb small and 5-cleft. Corolla rotate or urceolate, 5-lobed; lobes obtuse. Stamens 5. Style none. Stigmas 3, sessile. Berry roundish, pulpy, 1-celled, 3—5-seeded.

1. *S. Canadensis* Linn.: stem suffrutescent; leaves pinnate; leaflets in 4 or 5 pairs, oblong-oval, acuminate, smooth and shining; nerves and petioles smooth; stipules wanting; cyme 5-parted, spreading.

Wet grounds. Can. to Car. W. to Miss. May, June. 12.—Stem 5—10 feet high. Leaves sometimes bipinnate. Flowers white. Fruit oval, deep purple or nearly black. *Common Elder.*

2. *S. pubens* Mich.: stem frutescent; leaves pinnate; leaflets in 2 or 3 pairs, oval-lanceolate, and with the petioles pubescent beneath; thyse ovoid or pyramidal, loose. *S. pubescens* Pers.

Rocky woods. Can. to Car. W. to Oregon. June, July. 12.—Stem 6—8, sometimes 15, feet high. Flowers white. Fruit small, red, rarely white. *Torr. Red-berried Elder.*

2. VIBURNUM. Linn.—Viburnum.

(Origin of the name uncertain.)

Calyx with the limb small 5-toothed and persistent. Corolla rotate, subcampanulate or tubular, 5-lobed. Stamens 5,

equal. Stigmas 3, sessile. Berry ovate or globose, 1-seeded, crowned by the teeth of the calyx.

* *Leaves serrate or toothed.*

1. *V. prunifolium* Linn.: branches spreading, smooth; leaves obovate, nearly round and oval, very smooth, acutely serrate; petioles winged; cymes sessile, lateral; fruit oblong-ovoid.

Woods. N. Y. to Geor. W. to Miss. June. h_2 .—Stem 8—15 feet high. Flowers large, white. Fruit dark-blue.

Plum-leaved Viburnum. Black Haw.

2. *V. pyrifulium* Lam.: leaves ovate-oblong, somewhat acute, subserrate, smooth; petioles naked; cymes large, spreading, on angular peduncles; fruit ovoid. *V. nudum*, var. Torr. & Gr.

Swamps. Can. and N. S. May, June. h_2 .—Stem 5—10 feet high. Flowers white, in large spreading cymes. Fruit red.

Pear-leaved Viburnum.

3. *V. Lentago* Linn.: smooth; leaves broad-ovate or oval, acuminate, sharply serrate; petioles with waved margins; cymes terminal, sessile; fruit oval.

Rocky banks of streams. Can. to Geor. W. to Mich. May. h_2 .—Stem 15—20 feet high. Flowers small, white, in spreading cymes. Fruit bluish-black.

Sweet Viburnum.

4. *V. nudum* Linn.: leaves oval-oblong, slightly acuminate, smooth above, veins and margins pubescent beneath, obsoletely crenulate; petioles naked; cymes peduncled; fruit ovoid. *V. squamatum* R. & S.

Swamps. Can. to Flor. June. h_2 .—Stem 8—12 feet high. Flowers small, crowded, white. Fruit dark-blue, nearly black.

Swamp Viburnum.

5. *V. lantanoides* Mich.: branches flexuous and often procumbent; leaves orbicular-cordate, abruptly acuminate, unequally serrate; nerves and petioles puerulent-tomentose; cymes closely sessile; fruit ovoid. *V. Lantana*, var. *grandiflorum* Ait.

Rocky woods. Can. to Virg. May, June. h_2 .—Stem 4—8 feet high. Flowers white, in flat, loose cymes, the sterile ones very large. Fruit red, black when ripe.

Large-flowered Viburnum.

6. *V. dentatum* Linn.: nearly smooth; leaves on long petioles, orbicular-ovate, with coarse serratures, plaited; axils of the veins pubescent beneath; cymes terminal, pedunculate; fruit nearly globose. *V. dentatum*, var. *glabellum* Mich.

Moist woods. Can. to Car. June. h_2 .—Stem 6—8 feet high. Leaves sometimes roundish-cordate or ovate, and pubescent beneath. Flowers white, in large expanding cymes. Fruit dark-blue, small.

Toothed Viburnum. Arrow-wood.

7. *V. pubescens* Pursh.: pubescent; leaves on very short petioles, ovate or ovate-oblong, subcordate, acuminate, dentate-serrate, villous beneath; cymes pedunculate; fruit oblong. *V. dentatum*, var. *semitentosum* Mich.

High grounds. Can. to Car. June. h_2 .—Stem 2—3 feet high, with straggling branches. Leaves smoother when old. Cymes smaller than in the preceding branches. Fruit small, reddish.

Pubescent Viburnum.

** *Leaves lobed or incised.*

8. *V. acerifolium* Linn.: leaves roundish or broad-ovate, subcordate, coarsely and acutely serrate, velvety pubescent beneath, 3-lobed; lobes

divergent; petioles hairy, with two setaceous appendages; cymes on long peduncles; fruit oval, compressed.

Rocky woods. Can. to Flor. W. to Oregon.? May, June. 12.—Stem 4—6 feet high, with slender branches. Flowers white, slightly tinged with red. Fruit nearly black. *Maple-leaved Arrow-wood.*

9. *V. pauciflorum* Pylaie: branches and petioles smoothish; leaves roundish, rarely subcordate, slightly 3-lobed or incised at the summit, mostly 5-nerved from the base, unequally serrate, smoothish; petioles without stipuliform appendages; cymes pedunculate. (*Torr. & Gr.*)

Mountains. N. H. Ver. and N. Y. Newfoundland. June. 12.—Stem 2—3 feet high. Leaves smooth or slightly pubescent beneath. Cymes seldom an inch in diameter. Fruit red. Still a doubtful species.

Mountain Bush Cranberry.

10. *V. Oxycoccus* Pursh.: leaves 3-lobed, acute at the base, 3-nerved; lobes divaricate, acuminate, remotely and obtusely toothed; petioles glandular; cymes radiate; flowers of the ray large and abortive. *V. Opulus*, var. *Americanum* Ait. *Torr. & Gr.* *V. opuloides* Muhl.

Woods. Arct. Amer. to N. J. May, June.—A small shrub with spreading branches. Fruit large, subglobose, red, intensely acid and slightly bitter; sometimes used as a substitute for cranberries. *Cranberry-like Viburnum.*

11. *V. edule* Pursh.: leaves 3-lobed, rather obtuse at the base, 3-nerved; lobes very short, with acuminate-dentate serratures; petioles glandular; cymes radiate. *V. Opulus*, var. *Americanum* Torr. & Gr.

Banks of rivers. Arct. Amer. to N. Y. July.—A smaller and more upright shrub than the preceding; berries of the same color and size, but when completely ripe more agreeable to eat. *Pursh.* *Eatable Viburnum.*

3. TRIOSTEUM. Linn.—Feverwort.

(From the Greek τρεῖς, three, and ὀστέον, a bone; in allusion to its three bony seeds.)

Calyx with the tube ovoid and the limb 5-parted; lobes linear-lanceolate, persistent. Corolla tubular, subequally 5-lobed, gibbous at base. Stamens 5, included. Stigma capitate. Berry rather dry, crowned by the calyx, with 3—5 bony nucules.

1. *T. perfoliatum* Linn.: stem glandular-hairy; leaves lance-oval or spatulate-ovate, acuminate, entire, abruptly narrowed at base, connate, velvety pubescent beneath; flowers 1—3 in the axils of the leaves, sessile. *T. majus* Mich.

Rocky woods. Mass. to Car. W to Miss. June. 24.—Stem 2—4 feet high. Flowers purple. Medicinal. *Big. Med. Bot.* i. 90. *Perfoliate Feverwort.*

2. *T. angustifolium* Linn.: stem hispid; leaves lanceolate or oblong, acuminate, tapering to the base, pubescent or almost glabrous beneath, hirsute above; flowers mostly solitary in the axils, sessile or pedunculate. *T. minus* Mich.

Shady places. Del. to Car. W. to Ark. and Miss. May, June. 24.—Smaller than the preceding. Flowers yellowish. *Narrow-leaved-Feverwort.*

4. DIERVILLA. *Tourn.*—Bush Honeysuckle.

(In honor of *M. Dierville*, a French surgeon, who introduced it into Europe.)

Calyx with the tube oblong, bibracteate at base; the limb 5-cleft. Corolla funnel-form, 5-cleft, spreading, much longer than the calyx. Stamens 5, somewhat exserted. Stigma capitate. Capsule oblong, acute, not crowned, 1-celled, many-seeded.

D. Tournefortii Mich.: peduncles axillary and terminal, dichotomous, 2—3-flowered; leaves opposite, oblong-ovate, on short petioles, serrate, acuminate, smooth. *D. Canadensis Willd.* *D. trifida Mærch.*

Rocky woods. Throughout the U. S. May, June. $\frac{1}{2}$.—Stem 2—4 feet high, branched. Flowers greenish-yellow, nearly an inch long.

Common Bush Honeysuckle.

5. LONICERA. *D. C.*—Honeysuckle.

(In honor of *Adam Lonicer*, a German botanist of the sixteenth century.)

Calyx 5-toothed. Corolla tubular, campanulate or funnel-form, 5-cleft, often irregularly. Stamens 5. Style filiform. Stigma capitate. Berry 2—3-celled, few-seeded.

* Flowers capitate-verticillate. Berry solitary, 3-celled, crowned by the calyx. LONICERA.

1. *L. flava Sims.*: smooth and somewhat glaucous; leaves ovate, obovate or oval, with a narrow cartilaginous margin; upper ones connate-perfoliate; spikes verticillate, terminal; tube not gibbous. *Caprifolium flavum Ell.* *C. Fraseri Pursh.*

Catskill Mountains, N. Y. S. to Geor. W. to Wisconsin. June, July. $\frac{1}{2}$.—Stem twining, very smooth. Flowers bright yellow, an inch or more in length.

Yellow Honeysuckle.

2. *L. hirsula Eat.*: leaves broad-ovate and obovate, pubescent and ciliate, glaucous beneath; upper ones connate-perfoliate, nearly smooth; spikes verticillate, terminal, subcapitate, glandular-pubescent; tube slightly gibbous at base. *Caprifolium pubescens Goldie.*

Rocky woods. Can. to N. Y. W. to Mich. June, July. $\frac{1}{2}$.—Stem 15—30 feet long, twining. Flowers yellow, pubescent. Berries orange.

Hairy Honeysuckle.

3. *L. parviflora Lam.*: smooth; leaves elliptic or oblong, smooth, very glaucous beneath, the upper pair connate-perfoliate, the rest mostly subconnate; flowers in verticillate pedunculate heads; corolla short, gibbous at base; filaments bearded. *Caprifolium parviflorum Pursh.* *C. bracteosum Mich.*

Rocky woods. Subarct. Amer. to Car. June, July. $\frac{1}{2}$.—Stem 6—10 feet long, twining or trailing, branched. Flowers yellow, smaller than in either of the preceding.

Small-flowered Honeysuckle.

4. *L. grata Ait.*: leaves obovate, smooth, glaucous beneath, the upper pairs connate subperfoliate; flowers verticillate in the axils of the upper

leaves; tube of the corolla long and slender, not gibbous. *Caprifolium gratum Pursh.*

Rocky woods. N. Y. to Car. and Louis. May—Aug. h_2 .—*Stem* 10—20 feet long, twining or trailing. *Flowers* about 6 in each whorl, fragrant, red or purplish. *Berries* orange-red. *Wild Honeysuckle.*

5. *L. sempervirens Ait.*: leaves oblong, glaucous beneath, shining above, the upper ones connate-perfoliate; spikes verticillate, somewhat naked, terminal; corolla nearly equal, with the tube ventricose above. *Caprifolium sempervirens Mich.*

Borders of swamps. N. Y. to Flor. May, June. h_2 .—*Stem* 6—15 feet long, twining. *Leaves* evergreen. *Flowers* scarlet and yellowish. *Berries* scarlet. *Scarlet Honeysuckle.*

** *Pedicels axillary, in pairs. Berries in pairs, distinct or more or less connate, 2-celled, many-seeded. XYLOSTEUM.*

6. *L. ciliata Muhl.*: stem erect; leaves opposite, ovate and subcordate, ciliate on the margin, younger ones villous beneath; tube of the corolla calcarate at base, ventricose above; segments short, acute; style exserted; berries distinct. *Xylosteum ciliatum Pursh.*

Hills and rocks. Can. to Penn. W. to the Rocky Mountains. May, June. h_2 .—*Stem* 3—5 feet high, with straggling branches. *Corolla* pale greenish-yellow, long, somewhat funnel-form. *Berries* ovoid, red. *Fly Honeysuckle.*

7. *L. cœrulea Linn.*: stem erect, leaves oval, entire, pubescent; peduncles shorter than the flowers; bracts longer than the ovaries; corolla gibbous at base; berries formed by the union of two ovaries. *L. villosa D. C. Xylosteum villosum Big. X. Solonis Eat.*

Woods and sides of mountains. Labrador and Arct. Amer. to Mass. and N. Y. May. h_2 .—*Stem* 1—3 feet high, with the younger branches villous. *Flowers* yellow. *Berries* closely united at the summit, deep-blue and glaucous. *Hairy Fly Honeysuckle.*

8. *L. oblongifolia Hook.*: stem erect; leaves oblong or oval, nearly smooth when old; peduncles filiform, erect, much longer than the flowers; bracts minute; corolla gibbous at the base, deeply 2-lipped; berries formed by the union of 2 ovaries. *Xylosteum oblongifolium Goldie.*

Sphagnous swamps. Can. and Western N. Y.; rare. May, June. h_2 .—*Stem* 3—4 feet high, much branched. *Flowers* greenish-yellow, tinged with purple. *Berries* small, slightly separate at the summit, purple. *Long-stalked Honeysuckle.*

6. SYMPHORICARPUS. Dill.—Snowberry.

(From the Greek *συμφῶω*, to grow together, and *καρπός*, fruit; the berries forming clusters.)

Calyx with the tube globose; the limb small, 4—5-toothed. Corolla funnel-form, subequally 4—5-lobed. Stamens 5, scarcely exserted. Stigma subglobose. Berry crowned by the calyx, 4-celled, 4-seeded; 2 of the cells sometimes abortive.

1. *S. vulgaris Mich.*: racemes axillary, almost sessile, in little glomerate heads; corolla with the lobes smoothish inside; stamens and bearded style included. *Symphoria glomerata Pursh.*

Banks of streams. Yates county, N. Y. Penn. to Car. W. to Miss. July, Aug. $\frac{1}{2}$.—*Stem* 2—3 feet high, with numerous purplish branches. *Flowers* greenish-red. *Berries* dark red, globose. *Indian Currant.*

2. *S. racemosus Mich.*: spikes terminal, loose, interrupted, often somewhat leafy; flowers on short pedicels; corolla campanulate, densely bearded inside; style and stamens included. *Symphoria racemosa Pursh.*

Rocky banks of streams. Can. Western N. Y. W. to Oregon and California. June, July. $\frac{1}{2}$.—*Stem* 2—3 feet high. *Flowers* pale red. *Berries* globose, large, very white and opaque. *Common Snowberry.*

7. LINNÆA. Gron.—Linnæa.

(In honor of the illustrious Swede.)

Calyx with the tube ovate; limb 5-parted; segments lanceolate-subulate. Corolla turbinate, subcampanulate, 5-lobed. Stamens 4, subdidynamous, included. Stigma globose. Berry dry, small, ovate-globose, 3-celled, (one cell only bearing a perfect seed.)

L. borealis Gron.

Moist woods. Arct. Amer. to N. J. W. to Oregon. June, July. $\frac{1}{4}$.—Evergreen, creeping. *Leaves* opposite, on short petioles, round-ovate, crenate, slightly hairy. *Peduncles* erect, long. *Flowers* 2, drooping, pedicelled, white or pale red. *Twin Flower.*

ORDER LXVI. RUBIACEÆ.—MADDERWORTS.

Tube of the calyx mostly adhering to the ovary; the limb usually 4—5-cleft or toothed. Corolla with as many petals as there are divisions of the calyx. Stamens as many as the petals and alternate with them. Ovary 2-celled; style mostly single; stigmas 2. Fruit various. Albumen copious, horny or fleshy.—Trees, shrubs or herbs. Leaves simple, entire, opposite or in whorls.

1. HEDYOTIS. Linn.—Hedyotis.

(From the Greek ἡδύς, *sweet*, and οἶς, ὠτος, an ear; on account of its supposed virtue in curing deafness. *Darlington.*)

Calyx with the tube ovate, the limb 4-toothed; teeth erect, persistent. Corolla funnel-form, salver-form or rotate, 4-parted. Stamens 4, somewhat exserted. Capsule ovoid or globose, 2-celled, opening transversely at the top, many-seeded.

1. *H. cærulea Hook.*: stem erect or spreading, dichotomous; radical leaves spatulate-oval; cauline oblanceolate; peduncles filiform, elongated, 1-flowered. *Houstonia cærulea Linn.*

Moist grounds. Can. to Flor. W. to Miss. April—Sept. (♂ or ♀).—*Stems* numerous, 3—6 inches high. *Flowers* blue, sometimes nearly white. The western specimens not unfrequently have the peduncles many-flowered.

Blue Hedyotis. Common Bluets. Dwarf Pink.

2. *H. ciliolata* Torr.: smooth, somewhat branched above; radical leaves oval or oblong-spatulate, tapering into a petiole, the margin ciliate; cauline oblanceolate; flowers in corymbose clusters; peduncles and pedicels short. *Houstonia ciliolata* Torr. Fl.

Wet banks. Western and Northern N. Y. Can. W. to Miss. May, Aug. ♀.—Stems usually numerous, 4—6 inches high, at length spreading. Flowers numerous, terminal, pale purple. *Fringed-leaved Hedyotis.*

3. *H. longifolia* Hook: smooth; stem erect; leaves linear and oblong-linear, tapering at base, rough on the margin, but not ciliate; radical ones narrow-oval or oblong, tapering into a petiole; flowers mostly in threes, terminal, nearly sessile. *Houstonia longifolia* Willd.

Dry hills and fields. Can. to Flor. W. to Miss. June—Aug. ♀.—Stems 5—8 inches high, slender, branched at the top, 4-sided. Flowers usually in threes, pale purple. Corolla about thrice as long as the lobes of the calyx. *Long-leaved Hedyotis.*

4. *H. glomerata* Ell.: stem erect or somewhat diffuse, branching, pubescent; leaves oblong-lanceolate, attenuate at base or slightly petioled, nearly smooth; flowers in clusters, sessile, axillary and terminal; tube of the calyx hairy, shorter than the lobes. *H. auriculata* Walt. *Oldenlandia glomerata* Mich.

Moist grounds. N. Y. N. J. to Flor. Aug. ♂.—Whole plant dull green. Stem 2—4 inches high, first simple, then branching and assurgent. Flowers usually clustered, small, white. *Cluster-flowered Hedyotis.*

5. *H. purpurea* Torr. & Gr.: stem erect or ascending, 4-sided, pubescent; leaves ovate or ovate-lanceolate, closely sessile, 3—5-nerved, smoothish above, lower surface and margins pubescent; flowers in terminal corymbs; lobes of the calyx subulate-linear. *Houstonia purpurea* Linn.

Woods. Penn. and Virg. W. to Miss. and Tenn. May—July. ♀.—Stems usually several from the same root, about a foot high, branching. Flowers purple. *Purple Hedyotis.*

2. MITCHELLA. Linn.—Partridge Berry.

(In honor of Dr. John Mitchell, a botanist of Virginia.)

Flowers in pairs, with their ovaries united. Calyx 4-toothed. Corolla funnel-form; tube cylindrical; limb 4-parted, spreading, villous on the inner side. Stamens 4, adnate to the tube, scarcely exerted. Stigma 4-cleft. Berry didymous, 4-seeded.

M. repens Linn.: stem branched, smooth, creeping; leaves opposite, petioled, roundish-ovate, often slightly cordate, smooth, very entire; flowers terminal, in pairs.

Woods, among dried leaves. Can. to Flor. W. to Ark. June, July. ♀.—A small evergreen, creeping plant. Flowers white, hairy within, fragrant. Berries red. *Partridge Berry.*

3. CEPHALANTHUS. Linn.—Button Bush.

(From the Greek κεφαλή, a head, and ανθος, a flower.)

Calyx small, angular, inversely pyramidal, 4-cleft. Corolla tubular, slender, 4-cleft. Style much exerted. Stigma glo-

bose. Capsule 2-celled, 2-seeded, mostly 2-parted. Receptacle globose, hairy.—Flowers in a globose head.

C. occidentalis Linn.: leaves petiolate, opposite or ternate, ovate or oval, acuminate, smoothish; peduncles long, often ternate at the extremity of the branches.

Borders of ponds and streams. Can. to Flor. W. to Miss. July, Aug. ½.—Stem 4—8 feet high, branched. Heads of flowers about an inch in diameter. Corolla white, somewhat funnel-form. *Button Bush. Pond Dogwood.*

4. DIODIA. Linn.—Diodia.

(Said to be derived from the Greek *διόδος*, a road or way; in allusion to its growing by way-sides. *Eat. Man.*)

Calyx with the tube ovate or obovate, often 8-nerved, 2—4-toothed. Corolla funnel-form, 4-lobed. Stamens 4, exerted or included. Style bifid or undivided. Fruit crowned with the calyx, 2-celled, bipartite; carpel 1-seeded.

D. teres Walt.: stem procumbent, diffuse, terete, hairy; leaves linear-lanceolate, nearly smooth, margin and keel serrulate; stipules with numerous long bristles; flowers axillary, solitary, alternate; corolla bearded within; fruit ovate, pubescent, crowned by the 4-lobed calyx. *Spermacoce diodina* Mich.

Sandy fields. N. J. to Flor. and Louis. W. to Ark. Aug. ①.—Stem 4—16 inches high, much branched. Flowers opposite, often clustered, white or pale purple. *Terete Diodia.*

5. GALIUM. Linn.—Bedstraw.

(From the Greek *γάλα*, milk; one of the species having been formerly used to curdle milk.)

Calyx with the tube ovate-globose or oblong; limb nearly wanting. Corolla 4-parted, rotate, (very rarely 3-parted.) Stamens short. Styles 2, short. Fruit didymous, roundish, rarely oblong.

* *Fruit smooth. Flowers yellow.*

1. *G. verum* Linn.: leaves about 8 in a whorl, narrow-linear, grooved, scabrous, with somewhat revolute margins; flowers in dense panicles.

Pastures. Mass. June, July. 2.—Stem erect, 9—18 inches high, slender, branched. Flowers yellow. Employed by the Highlanders as a reagent to curdle milk. *Hook. Br. Fl.*

** *Fruit smooth. Flowers white.*

2. *G. trifidum* Linn.: stem decumbent or ascending, scabrous downward; leaves 4—6 in a whorl, linear, obtuse, scabrous on the margin and midrib; peduncles smooth, spreading, 1—3-flowered; corolla 3—4-cleft. *G. Claytoni* Mich. *G. obtusum* Big.

Swamps and wet fields. Arct. Amer. to Car. W. to Oregon. June, July. 2.—Stem 5 inches to 1 or 2 feet long, much branched. Leaves varying from

linear to oblong, elliptic and oblanceolate. *Flowers* in threes, white, very minute. Dr. Hooker thinks the American, distinct from the European, plant.

Small Bedstraw.

3. *G. tinctorium* Linn.: stem diffuse, smoothish; leaves linear, somewhat acute; those of the stem in sixes; of the branches in fours; peduncles terminal, elongated, mostly 3-flowered; corolla 4-parted. *G. trifidum* var. *tinctorium* Torr. & Gr.

Wet woods. Can. to Car. June—Aug. 2.—*Stem* weak, branching. *Leaves* very narrow. *Corolla* white, mostly 4-cleft. Used as a red dye.

Dyer's Bedstraw.

4. *G. asprellum* Mich.: stem diffuse, very branching, the angles retroely aculeate; leaves in sixes, fives and fours, elliptical or lanceolate, the midrib and margins aculeate-hispid; branches 2—3-forked; pedicels filiform, divaricate, short. *G. micranthum* Pursh.

Moist places. Can. to Virg. June, July. 2.—*Stem* weak, 2—4 feet long, often supported on other plants by its hooked prickles. *Flowers* numerous, minute, white.

Rough Bedstraw.

*** *Fruit* hispid.

5. *G. Aparine* Linn.: stem weak, branching, retroely aculeate; leaves 6—8 in a whorl, linear-lanceolate, mucronate, with the midrib and margin rough with reflexed prickles; fruit large.

Moist woods. Can. to Del. W. to Oregon. June. ①.—*Stem* 3—4 feet long. *Flowers* white, numerous, on axillary and terminal peduncles. Perhaps introduced.

Common Cleavers. Goose Grass.

6. *G. triflorum* Mich.: stem procumbent, smoothish, the angles aculeate or hispid; leaves 5 or 6 in a whorl, narrow-elliptic or elliptic-lanceolate, acuminate, mucronate, slightly hispid or scabrous on the margin and midrib; peduncles axillary and terminal, mostly 3-flowered at the extremity. *G. cuspidatum* Muhl. Ell. *G. brachiatum* Pursh.

Moist woods. Can. to Louis. W. to Oregon and California. July, Aug. 2.—*Stem* 1—4 feet long, with short branches. *Flowers* rather few, greenish-white, small. A variable species. Dr. Torrey states that it gives out a vanilla-like odor in drying.

Sweet-scented Bedstraw.

7. *G. pilosum* Ait.: stem ascending, hispid, hairy or nearly smooth; leaves 4 in a whorl, oval or ovate, mucronate, ciliate and mostly hairy; peduncles elongated, dichotomous, often 3-flowered at the extremity. *G. puncticulosum* Mich. *G. Bermudianum* Pursh.

Dry woods. N. Y. to Louis. W. to Texas. June, July. 2.—*Stem* 1—2 feet high, mostly simple, more or less pubescent. *Flowers* brownish purple.

Hairy Bedstraw.

8. *G. cirzazans* Mich.: stem erect or ascending, nearly smooth or hairy; leaves 4 in a whorl, oval or ovate-oblong, mostly obtuse, 3-nerved, somewhat pubescent, ciliate on the margin and nerves; peduncles lateral and terminal, divaricate, few-flowered. *G. brachiatum* Muhl. *G. boreale* Walt.

var. 1. *lanceolatum* Torr. N. Y. Fl.: leaves lanceolate or ovate-lanceolate, rather acute. *G. lanceolatum* Torr. Fl.

var. 2. *montanum* Torr. & Gr.: dwarf; leaves obovate, nearly smooth.

Rocky woods and mountains. Can. to Flor. W. to Miss. June, July. 2.—*Stems* usually several from one root, 10—13 inches high. *Flowers* purple. *Fruit* clothed with dense white bristles.

Wild Liquorice.

9. *G. boreale* Linn.: stem erect, branched above, smoothish; leaves in fours, linear-acute or linear-lanceolate, 3-nerved, smooth, margin involute and scabrous; flowers in a divaricate terminal panicle. *C. septentrionale* R. & S.

Dry woods. Arct. Amer. to Penn. W. to Oregon. July, Aug. 21.—Stem 1—2 feet high. Flowers white, in a crowded terminal panicle. The whole plant is somewhat glaucous. *Northern Bedstraw.*

ORDER LXVII. VALERIANACEÆ.—VALERIANWORTS.

Calyx with a limb of various kinds either membranous or resembling pappus. Corolla tubular, regular or irregular, sometimes calcarate at the base. Stamens 1—5. Ovary inferior, 1—3-celled; style filiform; stigmas 1—3. Fruit dry, indehiscent, with 1 fertile cell and 2 empty ones. Seed destitute of albumen.—Herbaceous plants. Leaves opposite, without stipules. Flowers in cymes or panicles.

1. FEDIA. *Mench.*—Corn-Salad.

(Origin of the name uncertain.)

Calyx with the limb toothed and persistent or obsolete. Corolla not spurred; the limb 5-lobed, regular or slightly irregular. Stamens 2 or 3. Stigmas entire, 2 or 3-lobed. Fruit 3-celled; 2 cells empty (sometimes confluent into one) the other 1-seeded.

F. Fagopyrum Torr. & Gr.: fruit triangular, with an ovate outline, nearly smooth when mature, obsoletely 2—3-toothed at the apex; lateral angles acute, the anterior somewhat obtuse; upper leaves mostly entire and rather acute. *F. radiata* Torr. *Fl. Valerianella radiata* Beck *Bot. 1st Ed.*

Swampy grounds. Western N. Y. to Mich. and Ken. May. ①. ?—Stem 6—18 inches high, dichotomous above. Leaves somewhat glaucous; the lowermost spatulate, the uppermost lanceolate-oblong. Flowers white. Corolla and fruit larger than in *F. radiata*. Perhaps introduced. *Buckwheat Corn-salad.*

2. VALERIANA. *Tourn.*—Valerian.

(From the Latin *valeo*, to be powerful; on account of its medicinal effects.)

Calyx with the limb involute and at length evolved in a deciduous plumous pappus. Corolla with the tube obconic or cylindric, equal or gibbous at base, the limb obtusely 5-cleft. Stamens 3. Fruit indehiscent, 1-celled, 1-seeded.

V. sylvatica Richardson: smooth; stem slightly striate, simple; radical leaves ovate or oblong-spatulate, entire or slightly lobed at base, on slender petioles; cauline pinnate; leaflets lanceolate or ovate-lanceolate, entire or obscurely serrate; flowers all perfect and similar, in a cyme which is at

first compact, but at length open corymbose; fruit ovoid, compressed, smooth. (*Torr. N. Y. Fl.*) *V. dioica Pursh.* *V. sylvatica Beck Bot. 1st Ed.*

Swamps. Fairhaven, Ver. *Dr. Robbins.* Savannah, Wayne county, N. Y. *Dr. Sartwell.* Subarct. Amer. and the Rocky Mountains. June, July. 2.—*Root* consisting of numerous fibres, with the odor of *V. officinalis.* *Stem* 2—3 feet high, simple, erect, smooth, (slightly pubescent when young.) *Radical leaves* on long petioles, mostly-simple, but sometimes lobed or auricled at base, sometimes a little cordate; cauline pinnate; *leaflets* 3—6 pairs with a larger odd one, ovate oval or somewhat rhomboid, all sometimes entire or with a few coarse teeth. *Flowers* numerous, in a pedunculate 2—3-forked corymb. *Corolla* reddish-white, gibbous at base; the limb 5-cleft. *Stamens* much exerted. *Style* very long and filiform. *Capsule* 2-ribbed. According to Torrey and Gray, the Vermont and New York plant is a distinct variety, (*uliginosa*), but their description does not include all the forms which I have observed in the Fairhaven specimens. *Tall Swamp Valerian.*

ORDER LXVIII. DIPSACACEÆ.—TEAZELWORTS.

Calyx adhering, membranous, surrounded by a scarious involucre. Corolla tubular; limb oblique, 4—5-lobed. Stamens 4; anthers distinct. Ovary 1-celled; style 1; stigma simple. Fruit dry, indehiscent, 1-celled, crowned by the pappus-like calyx. Albumen fleshy.—Herbs or under shrubs, with opposite or whorled leaves. Flowers collected upon a common receptacle and surrounded by a many-leaved involucre.

DIPSACUS. Linn.—Teazel.

(From the Greek *διψαω*, to be thirsty; the upper connate leaves containing water in their hollows.)

Flowers collected in an ovate or roundish head. Common calyx (involucre) foliaceous, many-leaved; proper superior, of one leaf. Corolla tubular, 4-cleft. Stamens 4. Stigma longitudinal. Fruit crowned with the limb of the calyx.

D. sylvestris Linn.: leaves opposite, rarely connate; the many-leaved involucre turned upwards; scales of the receptacle straight.

Fields and waste places. N. S. July. ②.—*Stem* 3—5 feet high, strong, angular, prickly. *Flowers* blue, in dense oval heads, shorter than the scales of the receptacle. Introduced. *Wild Teazel.*

ORDER LXIX. COMPOSITÆ.—COMPOSITES.

Calyx closely adhering to the ovary, and undistinguishable from it; its limb either wanting or membranous, divided into bristles, paleæ, hairs or feathers, called *pappus*. Corolla monopetalous, either ligulate or tubular; in the latter case 4 or 5 toothed. Stamens 5, rarely fewer, the anthers cohering into a tube. Ovary 1-celled; style simple; stigmas 3, either distinct or united. Fruit an achenium, crowned with the limb of the

calyx or pappus. Seed destitute of albumen.—Herbs, rarely shrubs. Leaves alternate or opposite, without stipules. Flowers collected in dense heads upon a common receptacle, surrounded by an involucre.

SUBORDER I. TUBULIFLORÆ.

Corolla of the perfect flowers tubular, with 5, rarely 4, equal teeth.

I. VERNONIACEÆ. *Style of the perfect flowers cylindrical; its branches long and subulate, occasionally short and blunt, always covered over with bristles.*

1. VERNONIA. Schreb.—Iron Weed.

(In honor of Mr. William Vernon, an English botanist.)

Heads several or many-flowered; the flowers all equal. Involucre imbricate. Receptacle mostly naked. Corolla regular, 5-cleft. Filaments smooth. Achenia with a cartilaginous callus at the base. Pappus often double; the inner row of numerous bristles; the outer one much shorter and often chaffy.

V. noveboracensis Willd.: stem erect, smoothish; leaves on short petioles, elliptic-lanceolate, pubescent beneath; heads numerous, 20—30-flowered; scales of the involucre ovate, appressed at base, the apex produced into a spreading filiform seta: achenia smooth, shorter than the pappus.

var. *præalta Torr. & Gr.*: scales of the involucre acute or acuminate, unarmed or only a part of them filiform at the top. *V. præalta Willd.*

Wet meadows. Can. to Flor. W. to Miss. Aug., Sept. 24.—Stem stout, 3—6 feet high, striate, often purple, branching at the top. Flowers in a large terminal corymb, purple. In some places it is an obnoxious weed.

Common Iron-weed.

2. ELEPHANTOPUS. Cass.—Elephant's-Foot.

(From the Greek *ελεφας*, an elephant, and *πους*, a foot; in allusion to the form and position of the leaves in one species.)

Heads 3—5-flowered, densely crowded into clusters. Involucre compressed, in two rows; the leaflets dry, oblong, the inner ones often 3-nerved. Receptacle naked. Corolla palmate; segments acuminate, one sinus deeper than the rest. Achenia somewhat compressed, many-ribbed, oblong, pilose. Pappus in one or two rows of several chaffy bristles, dilated at the base.

E. Carolinianus Willd.: stem branched, hairy; leaves scabrous; radical ovate, or obovate-oblong, crenate-serrate, attenuate at the base; cauline oblong, narrow at base; floral ovate-oblong.

Dry soils. Penn. to Flor. W. to Miss. Sept. ♀.—*Stem* 2 feet high, hairy; especially near the base, branching towards the summit. *Heads* composed of four clusters, each 4-flowered, with the *involucre* 9—10-leaved. *Corolla* purple.
Carolinian Elephant's-foot.

II. EUPATORIACEÆ. *Style of the perfect flowers cylindrical; its branches long and clavate, with a papillose surface on the outside near the end.*

3. SCLEROLEPIS. Cass.—Sclerolepis.

(From the Greek *σκληρος*, *hard*, and *λεπτις*, a *scale*; in allusion to the scales of the pappus.)

Heads many-flowered. Involucre with the scales in two series, linear and equal. Receptacle naked. Corolla tubular, smooth, 5-toothed, the throat scarcely distinct from the tube. Style branching, exsert, cylindric-clavate. Achenia 5-angled. Pappus of 5 somewhat corneous short oval and obtuse scales in one row.

S. verticillata Cass. D.C. *Sparganophorus verticillatus* Mich.

In shallow water. N. J. to Flor. Aug., Sept. ♀.—*Stem* 1—2 feet high, simple, a little pubescent at the top. *Leaves* linear, an inch long, 6—8 in a whorl. *Heads* few, terminal, purple. *Whorled Sclerolepis.*

4. KUHNIA. Linn.—Kuhnia.

(In honor of *Dr. Adam Kuhn*, of Penn.)

Heads many-flowered. Scales of the involucre imbricated in two or three series. Receptacle naked. Corolla with the limb not distinct from the tube. Achenia elongated, sessile or stiped. Pappus in a single series, plumose.

1. *K. eupatorioides* Linn.: stem herbaceous; leaves broad-lanceolate, serrate; corymbs paniculate, terminal, few-flowered.

Shady woods. N. J. and Penn. to Flor. Aug., Sept. ♀.—*Stem* 2—3 feet high, slender, somewhat branched. *Flowers* whitish. Resembles an *Eupatorium*.
Hempweed-like Kuhnia.

2. *K. paniculata* Cass.: stem herbaceous; leaves linear or linear-lanceolate, entire, younger ones with the margin revolute; panicle corymbose, spreading, many-flowered. (D. C.) *K. Critonia* Willd. *K. eupatorioides* var. *gracilis* Torr. & Gr.

Mountains. Penn. to Ala. Aug., Sept. ♀.—*Stem* 2—3 feet high, slender, often dark purple. *Heads* in a large panicle, consisting of many corymbose clusters. *Flowers* pale yellow. *Panicled Kuhnia.*

5. LIATRIS. Schreb.—Liatris.

(Origin of the name unknown.)

Heads few, many-flowered. Involucre with few or numerous imbricate scales. Receptacle naked. Corolla tubular, 5-lobed; the lobes elongated. Style with the branches much exserted.

Achenia about 10-ribbed, somewhat cylindric. Pappus of numerous plumose or barbulate bristles.

1. *L. spicata* Willd.: stem simple, smooth; leaves linear, entire, smooth, ciliate at base, nerved and punctate; upper very short, often subulate; heads 9—13-flowered, in a dense elongated spike; scales of the involucre oblong, appressed, obtuse. *L. macrostachya* Mich. Pursh.

Meadows. Can. to Flor. Aug., Sept. ♀.—Stem 3—6 feet high. Spike terminal, 6—18 inches long. Flowers bright purple.

Long-spiked *Liatris*. Blue Blazing Star.

2. *L. pilosa* Willd.: stem simple, pubescent; leaves linear, hairy, ciliate; heads 10—14-flowered, on long pedicels, forming a loose raceme; scales of the involucre oblong, obtuse, villous.

Pine barrens. N. J. to Geor. Sept.—Nov. ♀.—Stem 2—3 feet high, a little hairy. Leaves long and linear. Raceme long, leafy. Flowers small, bright purple. Hairy *Liatris*.

3. *L. scariosa* Willd.: stem erect, pubescent; leaves lanceolate, pubescent, scabrous on the margin; lower oblong, tapering into a petiole; heads 15—40-flowered, in a spike or raceme; scales of the involucre obovate, obtuse, scarious on the margin, the lower a little spreading or squarrose. *L. heterophylla* Nutt.

Sandy woods. Can. to Flor. and Texas. Aug.—Oct. ♀.—Stem 3—5 feet high, stout, striate. Lower leaves very long. Flowers numerous, bright purple. A very variable species. Ragged-cupped *Liatris*.

4. *L. squarrosa* Willd.: stem simple, pubescent; leaves very long, linear, nerved, with the margins somewhat scabrous; heads few, about 20-flowered, on leafy pedicels, racemose; upper scales of the involucre lanceolate, rigid and spreading; segments of the flowers linear, villous internally.

Sandy woods. Can. to Flor. W. to Miss. Sept., Oct. ♀.—Stem 2—3 feet high. Heads generally 4—5, bright purple. Rough-headed *Liatris*.

5. *L. cylindracea* Mich.: stem leafy, slightly hairy; leaves linear and lance-linear, rigid, mostly 1-nerved; heads few, (1—7, rarely more,) turbinate-cylindric, sessile or pedicellate, 16—20-flowered; scales of the involucre numerous, with rounded abruptly mucronate tips. (*Torr. N. Y. Fl.*) *L. flexuosa* Thomas, in *Sill. Journ.* xxxvii. 328.

Near Niagara Falls. Thomas. S. to Car. W. to Miss. Aug. ♀.—Stem 6—18 inches high, often somewhat flexuous. Leaves 6—10 inches long. Flowers bright purple. Cylindrical-headed *Liatris*.

6. CONOCLINIUM. D. C.—Conoclidium.

(From the Greek *κωνος*, a cone, and *κλινη*, a bed; in allusion to its conic receptacle.)

Heads many-flowered. Involucre campanulate; the scales in 2—3 series, linear, acute, subequal. Receptacle naked, conic. Achenia angled. Pappus of one series, pilose, rough.

C. caelestinum D. C.: herbaceous; stem terete, pubescent; leaves opposite, petioled, ovate, truncate at base or subcordate, somewhat acute, ob-

tusely dentate, 3-nerved, somewhat scabrous; flowers in crowded corymbs. *Cælestina cærulea* Spreng. *Eupatorium cælestinum* Linn.

Woods. Penn. to Car. W. to Miss. Aug.—Oct. ♀.—Stem 2—3 feet high. Leaves on petioles, opposite, sometimes deltoid. Flowers in close fastigate corymbs, fragrant, light-blue. Involucre about 30-leaved, 40—60-flowered. Blue Conoclidium.

7. EUPATORIUM. Linn.—Hempweed.

(Named after *Eupator*, king of Pontus.)

Heads 3- many-flowered. Receptacle flat, naked. Involucre cylindric or campanulate; the scales in 1, 2 or many series. Corolla tubular, funnel-form, often dilated at base. Anthers included. Achenia angled. Pappus in a single series, pilose, rough.

* Heads 5—15-flowered. Scales of the involucre oblong, imbricate. Leaves opposite, closely sessile or connate.

1. *E. sessilifolium* Linn.: stem somewhat terete, smoothish; leaves lanceolate or ovate-lanceolate, sessile or somewhat clasping, rounded at base, acuminate, serrate, smooth; corymb compound; heads 5-flowered; scales of the involucre 10, oblong-linear, obtuse, imbricate.

Rocky hills. Mass. to Geor. Aug., Sept. ♀.—Stem 2—4 feet high, much branched above. Leaves opposite but not connate, minutely dotted beneath. Flowers in a widely spreading terminal corymb, white.

Sessile-leaved Hempweed.

2. *E. truncatum* Muhl.: stem terete, striate, villous-hispid; leaves lanceolate, clasping, obtuse at base, acuminate, rugose, dentate-serrate, villous-pubescent beneath; corymb compound, crowded; heads 5—10-flowered; scales of the involucre 12—15, imbricate, linear, obtuse.

Shady woods. Penn. to Car. July—Sept. ♀.—Very similar to the preceding, but has the stem pubescent, the leaves truncate at base, with the serratures larger and more obtuse, and the involucre more pubescent. Willd.

Truncate-leaved Hempweed.

3. *E. perfoliatum* Linn.: stem villous-hirsute; leaves connate-perfoliate, lanceolate-oblong, acuminate, crenate-serrate, rugose, tomentose beneath; corymb compound; heads 8—10-flowered. *E. connatum* Mich.

Swampy grounds. Can. to Flor. W. to Miss. Aug., Sept. ♀.—Stem 2—4 feet high, hairy or woolly, branched at the top. Leaves large, sometimes only slightly connate. Flowers in large fastigate corymbs, white. The whole plant is bitter and is used as a tonic. *Big. Med. Bot.* i. 33.

Boneset. Thoroughwort.

4. *E. resinolum* Torr.; stem erect, velvety pubescent; leaves opposite, closely sessile or partly clasping at base, linear-lanceolate, elongated, acuminate, serrate, nearly smooth above, velvety canescent beneath; corymb fastigate, compound; heads glomerate, 10—15-flowered; scales of the involucre oval, obtuse, imbricate, white-tomentose and glandular.

Swamps. N. Y. and N. J. Penn.? Aug., Sept. ♀.—Stems growing in tufts, 2—3 feet high. Leaves membranaceous, viscid with resinous globules. Heads rather small, very numerous. Resinous Hempweed.

** Heads 5—10-flowered. Scales of the involucre oblong, imbricate. Leaves mostly verticillate.

5. *E. purpureum* Linn.: stem simple, hollow, or nearly solid; leaves 3—6 in a whorl, or rarely opposite, oblong-ovate or lanceolate, more or less petioled, acuminate, veiny, rough or smooth above, somewhat pubescent beneath, serrate; heads in a large corymb, 5—9-flowered. *E. maculatum* Linn. *E. verticillatum* Willd. *E. trifoliatum* Linn. *E. punctatum* Willd. *E. amœnum* Pursh.

Low grounds. Can. and throughout the U. S. Aug.—Oct. ♀.—Stem 3—8 feet high. Leaves 2—3 inches long. Flowers in a large terminal corymb, purple. A very variable plant. The stem is sometimes solid and purplish, and the leaves three or four in a whorl, (*E. verticillatum*.) In other specimens the stem is solid and marked with purple spots, the leaves broader, more rugose and scabrous, (*E. maculatum*.) Purple Hempweed. Joe Pye's Weed.

*** Heads 8—20-flowered. Leaves petioled, opposite.

6. *E. aromaticum* Linn.: stem terete, pubescent; leaves opposite, petioled, ovate, acuminate, 3-nerved, coarsely and unequally serrate, somewhat scabrous; corymb somewhat paniced; heads about 20-flowered; scales of the involucre 10—12, linear-acute, equal. *E. melissoides* Willd. *E. ceanothifolium* Muhl.

Low woods. Mass. to Flor. Aug., Sept. ♀.—Stem 2 feet high, pubescent. Flowers in small corymbs, large, white, and aromatic. Distinguished from the next by its pubescent stem, smaller leaves and short petioles.

Aromatic Hempweed.

7. *E. ageratoides* Linn.: stem smooth, branching at the top; leaves opposite, on long petioles, broad-ovate, acuminate, 3-nerved, unequally and coarsely serrate, thin and smoothish; heads 12—20-flowered; scales of the involucre narrow-lanceolate. *E. urticæfolium* Mich.

Woods and thickets. Can. to Geor. W. to Miss. Aug.—Oct. ♀.—Stem 2—3 feet high, somewhat branched. Leaves on petioles 1—2 inches long, sometimes slightly cordate. Heads in a compound corymb, more numerous than in the preceding, mostly 12—15-flowered. Flowers pure white, somewhat fragrant.

Nettle-leaved Hempweed.

**** Heads 5-flowered. Leaves alternate or opposite, rarely whorled.

8. *E. hyssopifolium* Linn.: stem pubescent; leaves linear-lanceolate, 3-nerved, pubescent and punctate; lower opposite and dentate; upper entire, and sometimes alternate; heads 5-flowered; scales of the involucre 10, imbricate, pubescent and glandular on the back. *E. linearifolium* Wall.

Sterile soil. Mass. to Flor. Aug., Sept. ♀.—Stem 1—3 feet high. Leaves small, punctate. Flowers in a terminal corymb, white. Style exerted.

Hyssop-leaved Hempweed.

9. *E. altissimum* Linn.: stem pubescent; leaves opposite, subsessile, lanceolate, 3-nerved, attenuate at both ends, pubescent; lower serrate in the middle, upper entire; heads in a terminal corymb, 5-flowered; scales of the involucre 10, oblong-linear, imbricate, somewhat obtuse, pubescent.

Sandy woods. Penn. and Virg. W. to Miss. Aug.—Oct. ♀.—Stem 3—7 feet high. Flowers in a terminal corymb, white.

Tall Hempweed.

10. *E. leucolepis* Torr. & Gr.: stem puberulent; leaves opposite, divaricate, lanceolate or linear, obtuse, closely sessile, serrate, very rough on both sides, punctate, strongly 1-nerved; corymb fastigiate, canescent; scales of

the involucre 8—10, lanceolate, acute or acuminate, very pubescent and glandular on the back, white and scarious at the summit. *E. glaucescens* β *leucolepis* D. C. *E. linearifolium* Mich. (in part.)

Sandy swamps. Long Island, N. Y., to Flor. Aug.—Oct. ♀.—Stem 2 feet high, mostly simple, slender. Leaves 2 inches long and 4—5 lines wide, spreading and sometimes recurved. Flowers white. Style much exerted.

White-scaled Hempweed.

11. *E. pubescens* Muhl.: stem pubescent; leaves opposite, sessile, ovate, acuminate, sparingly pubescent and glandular-punctate on both sides; lower doubly serrate, upper slightly serrate; corymb compound, fastigiate; heads 5-flowered; scales of the involucre 10, linear-lanceolate, acute. *E. ovatum* Big.

Sandy woods. Mass., N. J., and Penn. Aug.—Oct. ♀.—Stem 2 feet high, the lower branches opposite. Leaves thin and slightly scabrous. Flowers white.

Pubescent Hempweed.

12. *E. album* Linn: stem pubescent at the top; leaves opposite, subsessile, broad-lanceolate, attenuate at base, with a few coarse teeth at the apex, somewhat scabrous, punctate beneath; heads 5-flowered, in a terminal corymb; scales of the involucre 10, oblong-lanceolate, acuminate, almost exceeding the corolla, glandular on the back. *E. glandulosum* Mich.

Woods. N. Y. to Flor. Aug.—Oct. ♀.—Stem erect, about 2 feet high. Flowers in a terminal fastigiate corymb, white. Scales white at the tips.

White-headed Hempweed.

13. *E. verbenaefolium* Mich.: stem roughish-pubescent; leaves opposite, (the upper often alternate,) sessile, ovate-oblong or ovate-lanceolate, scabrous, coarsely serrate-toothed; corymb compound, somewhat paniced; heads 5—6-flowered; scales of the involucre 10, oblong-lanceolate, rather acute, hispid-pubescent. *E. teucrifolium* and *lanceolatum* Willd.

Low woods. Mass. to Car. Aug.—Nov. ♀.—Stem 2—3 feet high, erect, rather slender. Leaves sometimes almost incised; the lower broad at base and closely sessile. Heads somewhat clustered, corymbose. Flowers white. Scales scarious on the margin, white at the tips. Michaux's name for this species has the claim of priority, and, as Mr. Elliott remarks, is equally, perhaps more, appropriate.

Vervain-leaved Hempweed.

14. *E. rotundifolium* Linn.: stem densely pubescent; leaves opposite, sessile, roundish-ovate or ovate-cordate, obtuse, toothed, veined, pubescent, glandular-punctate beneath; corymb fastigiate; heads 5-flowered; scales of the involucre 10, acuminate. *E. Marrubium* Walt.

Sandy fields. Can. to Flor. Aug., Sept. ♀.—Stem 2 feet high, slender, roughish-pubescent. Leaves sometimes almost orbicular, sprinkled with resinous dots. Flowers in a flat-topped corymb, white.

Round-leaved Hempweed.

8. MIKANIA. Willd.—Climbing Hempweed.

(In honor of Prof. Mikán, of Prague, a botanist of the last century.)

Heads mostly 4-flowered. Receptacle naked, narrow. Involucre 4-leaved. Corolla with the tube short, dilated or subcampanulate at the summit, 5-toothed. Anthers somewhat exerted. Achenia angled. Pappus in a single series, rough.

M. scandens Willd.: stem climbing, smooth; leaves petioled, hastate-cordate, acuminate, repand-toothed; corymbs paniced, clustered. *Eupatorium scandens* Linn.

Low grounds. Can. to Flor. July—Sept. ♀.—Stem 3—6 feet long, branching, striate. Leaves with a somewhat triangular outline. Flowers in numerous compound cymose panicles, purplish-white. *M. pubescens* Muhl., which is probably only a variety of this species, is confined to the Southern States.

Common Climbing Hempweed.

9. NARDOSMIA. D. C.—Sweet Colt's-foot.

(From the Greek *ναρδος*, *spikenard*, and *οσμη*, *odor*.)

Heads many-flowered, somewhat dioecious. STERILE FL. Flowers of the ray in a single series, pistillate, ligulate; of the disk numerous, perfect but infertile, with the corolla tubular and 5-toothed. FERTILE FL. Flowers of the ray in several series, pistillate, mostly ligulate; those of the disk few. Involucre in a single series. Receptacle flat, naked. Achenia smooth.

1. *N. frigida* Hook.: leaves cordate, unequally coarsely and obtusely toothed, somewhat lobed, smooth above, white-tomentose beneath; the lobes divergent at base. *Tussilago frigida* Pursh.

Mountain woods. N. H. Ver. and Mass. Arct. Amer. from lat. 66°. May. ♀.—Scape 5—10 inches high. Heads in a fastigate thyrses; rays white; disk purple. Northern Sweet Colt's-foot.

2. *N. palmata* Hook.: leaves reniform or roundish-cordate, palmately 5—7-lobed, tomentose beneath; segments coarsely toothed, often incised or somewhat lobed. *Tussilago palmata* Ait.

Swamps. Ver. to Penn. N. to Labrador. W. to Oregon. April, May. ♀.—Scape 6—20 inches high, stout, clothed with numerous sheathing scales. Leaves often resembling those of *Podophyllum peltatum*. Heads in a corymbose thyrses. Palmated Sweet Colt's-foot.

10. TUSSILAGO. Tourn.—Colt's-foot.

(From the Latin *tussis*, a cough; for the cure of which the plant is esteemed.)

Heads many-flowered, heterogamous. Flowers of the ray in several series, pistillate; those of the disk few, staminate, tubular, 5-toothed. Receptacle naked. Involucre of one series, the scales oblong-obtuse. Achenia of the ray oblong-cylindric, smooth; of the disk abortive. Pappus of the ray in many series; of the disk in a single series, capillary.

T. Farfara Linn.

Wet places and low meadows. N. S. March, April. ♀.—Scape 4—10 inches high, clothed with oblong brownish scales. Leaves cordate, angular, toothed, smoothish above, the lower surface and the long petiole white-tomentose. Terminal head about three-fourths of an inch in diameter. Introduced and naturalized in several parts of the Northern States. Common Colt's-foot.

III. ASTEROIDEÆ. *Style of the perfect flowers cylindrical; its branches linear, flattish on the outside, minutely and equally pubescent above.*

11. ASTER. *Linn.*—Aster.

(From the Greek *αστηρ*, a star; which the flowers resemble.)

Heads many-flowered; the ray-flowers in a single series, ligulate, pistillate; those of the disk tubular, perfect. Receptacle flat, alveolate, or rarely naked. Scales of the involucre in many series, more or less imbricated, with the tips sometimes foliaceous. Achenia usually compressed. Pappus simple, of numerous rough bristles.

* *Scales appressed, nearly destitute of herbaceous tips. Bristles of the pappus unequal. Achenia slender, scarcely compressed. Leaves large, coarsely serrate, radical ones cordate. BIOTIA D. C.*

1. *A. macrophyllus Linn.*: stem more or less hirsute above; leaves rough, serrate, acuminate; lower and radical on long petioles, cordate; upper on winged petioles or sessile, ovate; heads in large corymbs; scales of the involucre oblong-lanceolate, obtuse. *Biotia macrophylla D. C.*

Woods. Can. to Geor. Aug., Sept. ♀.—*Stem* 2—3 feet high. *Heads* in a spreading terminal corymb; *rays* white or pale-blue. *Large-leaved Aster.*

2. *A. corymbosus Ait.*: stem smooth, dichotomously corymbose at the summit; leaves ovate, mostly cordate, sharply serrate, acuminate, petiolate; heads loosely corymbose; scales of the involucre imbricate, obtuse, shorter than the disk; outer ones ovate. *Biotia corymbosa D. C.*

Dry woods. Can. to Car. July, Aug. ♀.—*Stem* about 2 feet high, sometimes purple, branched at the summit. *Heads* middle-sized, few, in a fastigate corymb; *rays* white, narrow. *Corymbed Aster.*

** *Scales of the involucre ciliate, squarrose; outer ones herbaceous. Receptacle alveolate. Bristles of the pappus rigid, unequal. Achenia hirsute, rarely smooth. Leaves scabrous, mostly entire. Heads large and showy. AMELLI Nees.*

3. *A. biflorus Mich.*: leaves sessile, narrow-lanceolate, serrate, scabrous; stem one or few-flowered above; scales of the involucre imbricate, appressed, oblong, acute, scarcely shorter than the disk. *A. strictus Pursh.*

High mountains. Penn. *Pursh.* N. to Hudson's Bay and Labrador. Sept., Oct. ♀.—*Stem* 4—6 inches high. *Heads* middle-sized; *rays* pale violet; *disk* brownish-yellow. *Flow-ered Aster.*

4. *A. surculosus Mich.*: stem simple, low and slender, minutely pubescent; lower leaves linear-lanceolate, entire or subserrate, scabrous above; upper linear, clasping; corymb 3—5-flowered, somewhat naked; involucre imbricate, subsquarrose; scales ciliate, linear-oblong, inner ones obtuse.

Woods. N. S.? S. to Car. Sept., Oct. ♀.—*Stems* several from the same surculose caudex, 6—13 inches high, somewhat angled. *Heads* rather large; *rays* long, linear, violet. Perhaps not a native of the Northern States.

Many-stemmed Aster.

5. *A. spectabilis* Ait.: stem scabrous, corymbose at the summit; leaves oblong-lanceolate, very rough; upper sessile and entire; lower serrate and petioled; involucre hemispheric; scales numerous, obtuse, squarrose, glandular-pubescent. *A. grandiflorus* Walt. *A. elegans* Willd.

Sandy soil. Mass. to Flor. W. to Ken. Aug.—Nov. ♀.—Stem 2 feet high; branches 2 or 3-flowered, somewhat hairy. Heads 10—15 in a corymb, large and blue. *Showy Aster.*

6. *A. gracilis* Nutt.: stem slightly pubescent, corymbose at the summit; leaves roughish, obscurely crenulate-serrate; radical oblong or spatulate, or naked petioles; cauline oblanceolate or narrow oblong, slightly clasping; heads in a spreading corymb; involucre obconic, as long as the disk; scales whitish and coriaceous, with spreading tips.

Pine barrens. N. J. W. to Tenn. Sept. ♀.—Stems several, often from the same surculose caudex, about a foot high, simple or with corymbose flowering branches. Heads about 30-flowered; rays violet. Resembles the preceding. *Slender Aster.*

7. *A. Radula* Ait.: stem smoothish, angular, corymbose; branches few and nearly naked; leaves lanceolate, attenuate at both ends, rugose, very rough, coarsely serrate in the middle; scales of the involucre imbricate, oblong, somewhat acute, spreading at the tips. *A. nudiflorus* Nutt.

Low grounds. Nova Scotia and Maine to Penn.; rare. Aug., Sept. ♀.—Stem 1—3 feet high, with a few spreading branches at the summit, purplish. Leaves numerous, about 3 inches long. Heads few, large, on peduncles 2 or 3 inches long; rays numerous, pale purple; disk yellow. *Rasp-leaved Aster.*

8. *A. Nova-Angliæ* Linn.: stem stout, hairy, corymbose at the summit; leaves narrow-lanceolate, hairy, clasping, auriculate, crowded on the branchlets; scales of the involucre subulate-linear, viscid, as long as the disk.

Meadows. Can. to Car. Sept.—Nov. ♀.—Stem 3—6 feet high, almost hispid, with spreading branches. Heads large, in a loose terminal panicle; rays purple; disk yellow. A very ornamental species. *New England Aster.*

9. *A. patens* Ait.: stem hairy, paniculate at the summit; leaves oblong-ovate, cordate, clasping, rough, entire; those of the divaricate slender branches very small; scales of the involucre imbricate, linear-lanceolate, somewhat rough, spreading. *A. amplexicaulis* Mich.

Moist grounds. Mass. to Flor. W. to Texas. Aug.—Nov. ♀.—Stem 1—3 feet high, slender, rough, with spreading branches. Leaves of the branches small and bract-like. Heads middle-sized, subsolitary on the slender branches; rays purplish-blue. *Spreading Aster.*

10. *A. phlogifolius* Muhl.: stem very simple, pubescent, paniculate above; leaves oblong-lanceolate, entire, narrower below the middle, auriculate and clasping at base, tapering to an acute point, pubescent beneath; scales of the involucre loose, imbricate, lanceolate. *A. patens*, var. *phlogifolius* Nees.

Moist grounds. N. Y. to Car. Aug.—Oct. ♀.—Stem 1—3 feet high. Leaves larger than in the preceding, auriculate-cordate and a little dilated at base. Heads few; rays purplish. *Phlox-leaved Aster.*

*** Scales of the involucre more or less membranaceous on the margin. Bristles of the pappus soft, capillary, nearly equal. Receptacle alveolate-toothed. Achenia smooth or slightly pubescent. *GENUINI* Nees.

† *Leaves of different forms.*

11. *A. cordifolius* Linn.: stem often flexuous, hairy, racemose, paniculate at the summit; lower leaves petiolate, cordate, acuminate, sharply serrate, hairy beneath; upper becoming gradually smaller; heads in divaricate panicles; scales of the involucre closely imbricate. *A. paniculatus* Ait. *A. heterophyllus* Willd.

Woods. Can. to Geor. Aug.—Oct. ♀.—Stem 2—4 feet high, often hairy or roughish above. *Leaves* varying from broad- to narrow-ovate, the upper small. *Heads* small, crowded on the spreading branches; *rays* pale purple or whitish; *disk* yellowish, changing to purple. *Heart-leaved Aster.*

12. *A. sagittifolius* Willd.: stem smooth, racemose-compound above; leaves ovate-lanceolate, acuminate, slightly ciliate; lower cordate-sagittate, on slender narrowly winged petioles, serrate; upper linear-lanceolate, acuminate at each end, sessile and usually entire; heads in dense compound racemes, on short peduncles; scales of the involucre closely imbricate, linear-subulate. *A. paniculatus* Muhl. not of Ait.

Dry woods. Yates county, N. Y. Dr. Sartwell. S. to Geor. W. to Miss. Aug.—Oct. ♀.—Stem 2—4 feet high, with numerous erect and rigid branches above. *Heads* small, in crowded racemes; *rays* pale purple; *disk* yellow.

Arrow-leaved Aster.

13. *A. undulatus* Linn.: stem grayish-pubescent; leaves ovate or ovate-lanceolate, rough above, somewhat woolly-pubescent beneath, acute, the margins undulate or crenate-serrate; lower cordate and on slightly margined and often dilated petioles; uppermost smaller, cordate, clasping; scales closely imbricate. *A. diversifolius* Mich.

Dry woods. Nearly throughout the U. S. Torr. & Gr. Sept., Oct. ♀.—Stem 2—3 feet high, pyramidally branched at the summit. *Heads* middle sized, the branches and pedicels pubescent; *rays* violet-blue; *disk* yellow, at length purple. *Wave-leaved Aster.*

†† *Leaves all nearly of a similar form.*

14. *A. prenanthoides* Muhl.: stem and branches hairy in lines, corymbose-paniculate at the summit; leaves spatulate-lanceolate or oval-lanceolate, incisely serrate in the middle, acuminate, cordate or auriculate-clasping at base, scabrous above, smooth beneath; scales of the involucre linear, squarrose-spreading at the apex.

Moist woods. Western N. Y. and Penn. W. to Ken. Sept., Oct. ♀.—Stem 1—4 feet high, sparingly branched. *Heads* above middle size, rather few, clustered towards the end of the branches; *rays* violet or lilac, sometimes nearly white. *Prenanthes-like Aster.*

15. *A. puniceus* Linn.: stem hispid, paniculate above; leaves oblong-lanceolate, clasping-auriculate at base, acuminate, coarsely serrate in the middle, scabrous above, smoothish beneath; scales of the involucre loosely imbricate, linear-subulate, nearly equal.

Wet grounds. Can. and N. S. Sept.—Nov. ♀.—Stem 3—6 feet high, hispid with strong prickly hairs, mostly purple. *Leaves* often rough on both sides and sparingly serrate. *Heads* above the middle size, on nearly naked pedicels; *rays* violet purple, sometimes pale. *Red-stalked Aster.*

16. *A. æstivus* Ait.: stem branching from near the base, erect, hispid; branches lax, hairy, with a head at the extremity of each; leaves lanceo-

late, ciliate, subclasping; radical, appressed-serrate; cauline entire; involucre narrow, obconic; inner scales subulate.

Dry woods. N. Y. and Penn. *Pursh.* July—Sept. ♀.—*Stem* 2 feet high. *Heads* middle-sized; *rays* blue. A doubtful species. *Summer Aster.*

17. *A. Novi-Belgii* Linn.: stem terete, smooth, often somewhat glaucous; branches rigid, racemose or corymbose; leaves lanceolate, subclasping, acute, scabrous on the margin; lower serrate in the middle; involucre loosely imbricate; scales linear-lanceolate, acuminate. *A. Novi-Belgii* and *floribundus* Willd.

Moist grounds. N. S. ? S. to Geor. W. to Miss. Aug.—Oct. ♀.—*Stem* 1—4 feet high. *Flowers* middle-sized; *rays* pale purple. *Glaucous Aster.*

18. *A. simplex* Willd.: stem smooth, racemose-decompound; branches subcorymbose at the summit; leaves lanceolate, acuminate, very smooth, scabrous on the margin; the lower serrate; involucre loosely imbricate, the scales linear-subulate.

Margins of swamps. Can. and throughout the U. S. Aug.—Oct. ♀.—*Stem* from 2—6 feet high, pubescent in lines. *Leaves* sessile or a little clasping. *Heads* middle-sized, loosely racemose or a little crowded on the short branchlets; *rays* pale purple; *disk* yellowish, at length purple-brown. A very variable species. *Simple Aster.*

19. *A. laxus* Willd.: stem smooth, racemose-compound or decompound, the branches loose and subcorymbose at the top, the branchlets elongated; leaves narrow-lanceolate, acuminate, rough on the margin; the lower serrate; those of the branches linear, obliquely spreading; scales of the involucre loose, linear, reflexed at the tips.

Sandy soils. Mass. and N. Y. Sept., Oct. ♀.—*Stem* about 3—4 feet high, with numerous rigid branches, purplish. *Heads* loosely corymbose; *rays* very numerous, purplish-blue. *Loose Aster.*

20. *A. præaltus* Poir: stem somewhat hairy, racemose-paniculate or corymbose at the summit; leaves lanceolate, somewhat clasping, acute, nearly entire, rough on the margin, smooth and somewhat shining above; lower narrowed at base; scales of the involucre loosely imbricate, linear-lanceolate, acute, often with spreading tips. *A. salicifolius* Pursh. ?

Moist woods. N. H. to Penn. Aug.—Oct. ♀.—*Stem* 1—5 or 6 feet high, branched near the summit. *Heads* large and showy; *rays* reddish-blue; *disk* changing to purple. *Tall Aster.*

21. *A. Tradescanti* Linn.: stem smoothish, racemose-compound; branches virgate, the branchlets often unilateral; leaves sessile, smooth, with rough margins; cauline linear-lanceolate, acuminate, remotely and coarsely serrate; those of the branches becoming smaller, entire, spreading and mucronate; scales of the involucre imbricated in 3—4 series, narrow-linear, acute.

var. *fragilis* Torr. & Gr.: cauline leaves, except the lowermost, minutely appressed, serrulate or entire, usually shorter; heads more scattered on the branchlets. *A. fragilis* Willd. *A. tenuifolius* Ell. not of Linn.

Fields and dry swamps. Mass. to Ala. and Louis. Aug.—Oct. ♀.—*Stem* 2—4 feet high, bushy, with numerous branches, at length widely spreading. *Heads* small, numerous, on branchlets disposed in a racemose manner; *rays* pale purple, almost white; *disk* becoming purplish. *Tradescant's Aster.*

22. *A. dumosus* Linn.: stem smooth or slightly scabrous, racemously

compound or decompound; the branches corymbose at their summits; leaves linear, entire, or remotely serrate, rough on the margin, sessile; those of the branches smaller and acute; scales of the involucre imbricate, linear-obtuse. *A. sparsiflorus* Willd. *A. foliolosus* Ait.?

Moist soils. Ver. to Flor. and Louis. W. to Mich. Aug.—Oct. ♀.—*Stem* 1—3 feet high. *Leaves* decreasing in size to the branchlets. *Heads* scattered; *rays* pale purple or nearly white. A very variable species. *Bushy Aster.*

23. *A. ericoides* Linn.: stem smoothish, racemose-compound; branches virgate, branchlets unilateral; lower leaves oblanceolate or oblong-spatulate, tapering into a short margined petiole, often serrate; upper linear-lanceolate and linear-subulate; scales of the involucre short, imbricate, subulate-spreading, the lower cuspidate. *A. sparsiflorus* Mich.

Old fields. Can. to Car. W. to Miss. Aug.—Oct. ♀.—*Stem* 1—3 feet high, often so much branched as to resemble a small bush. *Leaves* very numerous, and somewhat rigid. *Heads* arranged unilaterally; *rays* white or pale purple; *disk* at length purplish. *Heath-like Aster.*

24. *A. miser* Linn.: stem mostly pubescent or hairy, racemously branched or compound; branches erect or spreading; leaves lanceolate or oblong-lanceolate, sessile, acuminate or attenuate at each end, serrate in the middle; radical spatulate-lanceolate or oval; upper becoming smaller and often entire; scales of the involucre linear; rays short.

var. 1. *miserrimus* Torr. & Gr.: leaves elliptic- or cuneiform-lanceolate, more or less rough; flowering branches short.

var. 2. *glomerellus* Torr. & Gr.: mostly cinerous-pubescent or rough; heads glomerate-spicate at the summit of the stem, or on diverging branches. *A. diffusus* Muhl.

var. 3. *diffusus* Torr. & Gr.: branches diffuse, mostly elongated, divergent recurved-spreading or divaricate. *A. diffusus, divergens, pendulus and parviflorus* Nees.

var. 4. *hirsuticaulis* Torr. & Gr.: leaves narrow-lanceolate elongated, more or less hairy; heads racemose or spicate, on short diverging branchlets. *A. hirsuticaulis* Linn.

Old fields. Can. and throughout the U. S. Aug.—Nov. ♀.—A very variable species, the exact limits of which are not yet perhaps accurately fixed. I follow Torrey and Gray, although it will probably be found that the characters which they have given to their several varieties are not in all cases constant. The *heads* are usually numerous, but quite small, with the *rays* often inconspicuous white or very pale purple; *disk* purplish. *Pappus* dirty white. It usually has the appearance of a stunted plant; varies in height from 8 or 10 inches to 3 or 4 feet, erect or diffuse, at first nearly simple, but at length much branched. *Starved Aster.*

25. *A. concolor* Linn.: stem erect, simple or sparingly branched, virgate; leaves oblong-lanceolate, sessile, entire, minutely silky on both sides; heads in a simple or compound virgate raceme; scales of the involucre imbricate, lanceolate, acute.

Dry sandy soils. N. Y. to Flor. Aug.—Nov. ♀.—*Stem* 2—3 feet high, sparingly branched. *Leaves* at length nearly smooth. *Heads* on short bracteate peduncles, middle-sized; *rays* bluish-violet. It has somewhat the habit of a *Liatris*, and is one of our most showy species. *Racemed Violet Aster.*

26. *A. multifloris* Ait.: stem grayish-pubescent, diffusely racemose-compound; leaves crowded, linear, entire, serrulate-scabrous on the margin,

somewhat 3-nerved; those of the branchlets spreading or reflexed; scales of the involucre loosely imbricate, subspatulate, ciliate, with the mucronate tips spreading or recurved. *A. multiflorus* and *ciliatus* Willd.

Dry fields. Can. to Geor. W. to the Rocky Mountains. Sept., Oct. ♀.—*Stem* about 2 feet high, much branched, usually covered with a dense white pubescence. *Heads* small, in crowded terminal racemes, on horizontal branches; *rays* white or slightly purplish; *disk* purplish when old.

Many-flowered Aster.

27. *A. tenuifolius* Linn.: stem smooth, racemose-decompound; branches virgate; leaves narrow-lanceolate, mostly elongated, attenuate-acuminate, rough on the margin; lower serrate in the middle; those of the branches smaller, entire, spreading; involucre ovate-hemispheric; scales imbricate, linear-oblong, acute, spreading at the tips. *A. polyphyllus* and *bellidiflorus* Willd.

Low grounds. Can. to Car. Aug.—Nov. ♀.—*Stem* 2—5 feet high, mostly stout. *Leaves* variable. *Heads* middle-sized; *rays* numerous, pale purple or white; *disk* sometimes becoming purplish. *Slender-leaved Aster.*

28. *A. carneus* Nees.: smooth or with the branches somewhat pubescent in lines; leaves narrow-lanceolate, mucronate-acuminate, roughish above, with serrulate-scabrous margins; lower more or less attenuate at base; upper subclasping; heads racemose; scales of the obovate involucre closely imbricate, unequal, acute.

Moist soils. Mass. to Louis. W. to Miss. Sept., Oct. ♀.—Resembles the preceding in its foliage, but has the *heads* usually larger, the *rays* longer, broader and more showy, flesh-colored or nearly white. A variable species.

Flesh-colored Aster.

29. *A. coccineus* Willd.: stem smooth, loosely subcorymbose; branches virgate, dichotomously paniculate; leaves lanceolate, somewhat clasping; lower remotely serrate; those of the branchlets oblong, entire; scales of the closely imbricate involucre with a white margin.

Fields and woods. N. Y. and Penn. Pursh. S. to Flor. Sept.—Nov. ♀.—*Stem* 2 feet high. *Heads* middle-sized; *rays* bluish-purple. The leaves are said by Pursh to resemble those of *Phlox maculata*. It may belong to the next.

Neat Aster.

30. *A. laevis* Willd.: smooth and more or less glaucous; stem loosely paniculate or somewhat corymbose at the summit; leaves lanceolate, ovate-lanceolate or oblong, coriaceous, very smooth, with rough or sparingly serrate margins; lower narrowed towards the base or tapering into a margined petiole; upper clasping and usually auriculate or cordate at base; scales of the involucre closely imbricate, rigid, lanceolate or broad-linear, with acute or acuminate tips. *A. laevis*, *laevigatus* and *mutabilis* D. C. *A. amplexicaulis* Willd. *A. rubicaulis* Lam. (according to Torr. & Gr.)

var. *cyaneus* Torr. & Gr.: more glaucous; upper leaves cordate-clasping, oblong-lanceolate; scales more numerous. *A. cyaneus* Hoff. Pursh.

Woods and banks of streams. Can. to Geor. Aug.—Oct. ♀.—*Stem* 2—4 feet high, more or less branched at the summit, often dark purple. *Heads* middle-sized; *rays* bright violet-blue; *disk* yellow. A handsome species, but very variable. It may be recognized by its very smooth stem and shining leaves.

Smooth Blue Aster.

31. *A. versicolor* Willd.: stem smooth, paniculate-compound; branches densely corymbose; leaves oblong-lanceolate, acuminate, very smooth, of

the same color on both sides; lower serrate in the middle; upper clasping, entire; scales of the involucre imbricate, lanceolate.

Fields and woods. N. J. to Car. Aug.—Oct. 2.—*Stem* 2 feet high. *Heads* large and very numerous, clustered towards the summits of the branches; *rays* white, changing to a deep violet; *disk* yellow. *Pursh.* A doubtful species.

Various-colored Aster.

32. *A. Greenii Torr. & Gr.*: stem very smooth, racemously branched or compound; leaves nearly all remotely appressed-serrulate, smooth, acute or acuminate, rough above; cauline narrowly lanceolate, elongated, slightly clasping (not dilated) at the base, spreading; heads simply racemose on the leafy branches, on short bracteate peduncles; scales of the campanulate involucre linear-lanceolate, acute, rather closely imbricate.

Fields. Boston, Mass. *Dr. Greene.* Schenectady, N. Y. *Tuckerman.*—*Heads* racemose or crowded on the slender branches; *rays* rather short, purplish; *disk* turning to reddish-purple.

Greene's Aster.

33. *A. elodes Torr. & Gr.*: very smooth; stem simple or sparingly branched, slender; leaves varying from lanceolate to linear, somewhat coriaceous, narrowed at each end, nearly entire or serrulate, shining; upper somewhat clasping by a narrow base; scales of the hemispheric involucre spatulate-linear, acute, mucronulate, with recurved-spreading herbaceous tips. *A. paludosus Nutt.*

Swamps in pines. Mass. to Car. Aug.—Oct. 2.—*Stem* 1—2½ feet high, flexuous, simple, with a few flowers in a paniculate raceme at the summit, or somewhat compoundly branched above with the flowers more numerous. *Heads* large, seldom numerous, solitary on the shortish branchlets; *rays* large, deep blue or violet; *disk* yellow, sometimes turning purplish. (*Torr. N. Y. Fl.*)

Blue Smooth Marsh Aster.

**** *Scales of the regularly imbricate involucre with membranaceous or scarious margins, destitute of herbaceous tips. Receptacle alveolate, flat. Bristles of the pappus capillary, mostly unequal. ORTHOMERIS Torr. & Gr.*

34. *A. acuminatus Mich.*: stem simple, flexuous, pubescent, or hairy, loosely and paniculately corymbose at the summit; peduncles slender, naked; leaves broad cuneiform-lanceolate, membranaceous, conspicuously acuminate, unequally serrate above, tapering and entire towards the base, smooth above, pubescent beneath; scales of the involucre loosely imbricate, linear, acuminate.

In woods and on mountains. Can. to Virg. Aug.—Oct. 2.—*Stem* 12—18 inches high, stout. *Heads* usually few, middle-sized; *rays* white, sometimes tinged with purple.

Acuminate-leaved Aster.

35. *A. ptarmicoides Torr. & Gr.*: stem simple, rough above; leaves linear-lanceolate, rigid, acute, somewhat shining, very rough on the margin; cauline entire; lower elongated, often slightly and remotely toothed, tapering at base or somewhat petioled; corymb fastigiate; scales of the hemispheric involucre closely imbricate, rather obtuse, shorter than the disk. *Chrysopsis alba Nutt. Diplopappus albus Hook. Heleastrum album D. C.*

Rocky banks. Can. Ver. and N. Y. W. to Fort Mandan. July—Sept. 2.—*Stems* 6—18 inches high, slender, usually several from one root. *Heads* rather small, in a fastigiate corymb; *rays* white. From *Dr. Torrey's* figure in his

New York Flora, this plant appears to be a true *Aster*. It has been referred to several different genera.

Ptarmicoid Aster.

**** *Scales of the involucre membranaceous or with membranaceous margins, destitute of herbaceous tips. Receptacle somewhat alveolate. Bristles of the pappus capillary, nearly equal. Leaves thickish or succulent. OXYTRIPOLIUM D. C.*

36. *A. flexuosus* Nutt.: stem very smooth, flexuous, sparingly branched; branches mostly terminated by large solitary heads; cauline leaves linear; lower lanceolate-linear, fleshy, acute, tapering to the base; those of the branchlets subulate; scales of the campanulate involucre lanceolate-acuminate. *A. sparsiflorus* Pursh. *Tripolium flexuosum* D. C.

Salt marshes. Mass. to Flor. Sept.—Nov. ♀.—Stem 1—2 feet high, usually with a few spreading branches at the summit. Heads 1—2 on the branchlets, large; rays pale purple; disk yellow.

Perennial Salt-marsh Aster.

37. *A. linifolius* Linn.: very smooth; stem erect, racemously branched from the base; branches erect, spreading; leaves lanceolate-linear, acuminate, narrowed at base; scales of the cylindrical involucre linear-subulate; rays scarcely longer than the pappus. *A. subulatus* Mich. *Tripolium subulatum* D. C.

Salt marshes. Mass. to Car. Sept.—Nov. ①.—Stem about 2 feet high, striate-angular, with numerous spreading branches. Heads very small, in a loose terminal panicle; rays short, pale purple or nearly white.

Annual Salt-marsh Aster.

12. GALATELLA. Cass.—Galatella.

(Origin unknown.)

Heads radiate; rays in one series, neutral or bearing an abortive style; disk-florets tubular, fertile. Involucre with the imbricate scales shorter than the disk; outer scales often 3-nerved. Receptacle alveolate; the alveolar margins toothed. Achenia densely hirsute or silky-villous. Pappus consisting of numerous scabrous filiform bristles.

1. *G. linifolia* Nces.: stem erect, corymbose at the summit; leaves linear, entire, punctate, roughish, 1-nerved; branchlets with a single head, and having the leaves linear-subulate and becoming smaller; scales of the involucre lanceolate, acute, the margins somewhat membranaceous; rays not exceeding the disk. *Chrysopsis linifolia* Nutt.

Shady woods. Penn. to Virg. Sept., Oct. ♀.—Stem 12—18 inches high, terete. Heads rather large; rays few, white or pale purple. Perhaps not distinct from the next.

Flax-leaved Galatella.

2. *G. hyssopifolia* Nces.: stem erect, corymbose at the summit; the branches spreading; leaves lanceolate-linear, acute, entire, rough, 3-nerved, punctate; those of the branchlets linear-subulate; scales of the involucre acutish; rays elongated. *Aster hyssopifolius* Linn.

Sandy fields. N. J. to Car. Aug.—Oct. ♀.—Stem 1—2 feet high, smooth. Heads in small terminal fastigiate corymbs; rays 5—10, white or pale purple.

Hyssop-leaved Galatella.

3. *G. nemoralis* Nees.: stem pubescent, rough, corymbose at the summit; leaves lanceolate-linear, entire, without nerves or punctures, scabrous and somewhat revolute on the margin; scales of the involucre linear, acute, in few series, much shorter than the disk; rays elongated. *A. nemoralis* Ait. *A. ledifolius* Pursh.

Sphagnous swamps. Can. Mass. and N. J. Sept., Oct. ♀.—*Stem* simple, 12—18 inches high, fragile and thickly set with leaves which are sometimes minutely bidentate. *Heads* large; *rays* pale violet. The stem is sometimes simple and 1-flowered. (*G. nemoralis*, β . *monocephalus* D. C. *Aster uniflorus* Mich.) *Wood Galatella*.

13. SERICOCARPUS. Nees.—Sericocarpus.

(From the Greek *σηρικος*, *silky*, and *καρπος*, *fruit*; the achenia being very silky.)

Heads 12—15-flowered; the ray flowers about 5; those of the disk tubular, fertile. Involucre imbricate, ovate or oblong; the scales in several series, broad at the base, cartilaginous, nerveless, the upper part herbaceous and often spreading. Receptacle small, alveolate; the alveoli toothed or lacerate-ciliate. Achenia obpyramidal, short, densely strigose-silky. Pappus of simple, rigid, rough bristles.

1. *S. solidagineus* Nees.: smooth; stem erect, somewhat flexuous, angled with elevated lines; leaves linear-lanceolate or linear, attenuate at the base, obtuse, the margin scabrous, obscurely 3-nerved; corymb fastigiate; scales of the oblong involucre squarrose at the tips; rays elongated. *Conyza linifolia* Linn. *Aster solidaginoides* Willd.

Dry swamps and woods. Can. and N. S. to Louis.; rare. Aug., Sept. ♀.—Plant yellowish-green. *Stem* about 2 feet high, often several from the same root, slender, nearly simple or with a few short branches near the summit. *Heads* few, somewhat clustered in a fastigiate corymb; *rays* 3—8, white, longer than the *disk*. *Pappus* white. *Narrow-leaved Sericocarpus*.

2. *S. conyzoides* Nees: stem slightly pubescent, a little angular; leaves elliptic, or oval-lanceolate, obscurely 3-nerved, smooth beneath, acute at each end, ciliate; lower serrate towards the apex, narrowed to a petiole at base; involucre oblong-turbinate, the scales squarrose at the tips; rays short. *Conyza asteroides* Linn. *Aster conyzoides* Willd.

Woods and copses. Mass. to Flor. July—Sept. ♀.—*Stem* 1—2 feet high, rigid, but rather slender, *Heads* few, in small clusters. *Scales* whitish at base, green at the tip. Var. *plantaginifolius* Nees. (*Aster conyzoides* β *plantaginifolius* Nutt.), has the radical leaves spatulate, the heads somewhat pedicelled, and the rays about as long as the involucre. *Broad-leaved Sericocarpus*.

14. DIPLOPAPPUS. Cass.—Diplopappus.

(From the Greek *διπλος*, *double*, and *παππος*, *pappus*.)

Heads many-flowered; ray flowers in a single series, pistillate; those of the disk tubular, perfect. Receptacle flat, somewhat alveolate. Involucre imbricate. Achenia oblong, com-

pressed. Pappus double; inner of long rough capillary bristles; outer very short, subulate.

1. *D. linariifolius* Hook.: stem erect or somewhat decumbent; leaves linear, rigid, spreading or recurved, rough on the margin; scales of the turbinate involucre rigid, 1-nerved; the outer short and acute, inner usually obtuse. *D. linariifolius* and *rigidus* Lind. in D.C. *Chrysopsis linariifolia* Nutt. *Aster linariifolius* and *rigidus* Linn.

Hills and rocky places. Can. to Car. Aug.—Oct. ♀.—Stems 9—18 inches high, often several from the same root, or branched from near the base. Leaves about an inch long and one or two lines wide. Heads middle-sized, solitary and terminal on the branches, forming an umbellate corymb; rays pale violet; disk yellow. *Narrow-leaved Diplopappus.*

2. *D. umbellatus* Torr. & Gr.: stem striate, fastigiata-corymbose at the summit; leaves elongated, lanceolate, attenuate-acuminate, tapering at base usually into a short petiole, a little rough on the margin; scales of the short involucre obtusish, rather closely imbricate. *D. amygdalinus* and *umbellatus* Hook. *Diplostephium umbellatum* D. C. *Aster amygdalinus* Mich. *A. umbellatus* Ait.

Low grounds. Can. to Car. Aug., Sept. ♀.—Stem 2—5 feet high, branched at the summit. Leaves somewhat rough above, smooth beneath. Heads numerous, in a level-topped corymb; rays about 12, white or yellowish-white; disk yellowish. *Unbelled Diplopappus.*

3. *D. cornifolius* Darlingt.: stem slender, somewhat pubescent, sparingly and dichotomously corymbose-paniculate at the summit; leaves elliptic, acuminate, subcuneate at base, subsessile, entire, ciliate-hirsute on the margin, hairy on the veins beneath; scales of the involucre oblong-lanceolate, rather obtuse, ciliate. *Diplostephium cornifolium* D. C. *Aster humilis* Pursh. *A. cornifolius* Willd. *A. infirmus* Mich.

Woods. Can. to Car. Aug., Sept. ♀.—Stem 1—2 feet high, often flexuous, smooth or sparingly pubescent. Heads usually few, on rather rigid peduncles; rays white or yellowish; disk yellowish. *Cornus-leaved Diplopappus.*

4. *D. paludosus* Lind.: stem slightly pubescent, somewhat corymbose at the summit; leaves linear, sessile or clasping, somewhat concave, subulate, smooth, rough on the margin; scales of the involucre somewhat squarrose. *Helcastrum paludosum* D. C. *Aster palludosus* Ait.

Borders of swamps. N. J. to Flor. Nutt. Aug.—Nov. ♀.—Stem 1—2 feet high, smooth nearly to the top. Heads 3—5, large and beautiful; rays numerous, bright blue. Torrey and Gray suggest that *Aster paludosus* of Nuttall is a form of their *A. elodes*; if so, this is probably not a northern species.

Marsh Diplopappus.

15. ERIGERON. Linn.—Fleabane.

(From the Greek *ερι*, early, and *γερον*, an old man; in allusion to the bald heads of the receptacles after the flowers and fruit have fallen. Hook. Br. Fl.)

Heads many-flowered; the ray flowers numerous, very narrow, usually in more than one series, pistillate; those of the disk tubular, perfect. Receptacle naked, flat, punctate or sero-biculate. Involucre imbricate, with numerous linear scales. Pappus mostly simple.

* *Rays not exceeding the disk.*

1. *E. Canadense* Linn. : stem erect, hirsute, profusely and paniculately branched; leaves lance-linear, mostly entire, ciliate, lower sometimes serrate; heads small, very numerous; rays crowded, scarcely longer than the cylindrical involucre.

Fields and waste places. Can. to Flor. W. to Oregon and Texas. July—Oct. ①.—*Stem* 6 inches to nearly 6 feet high, depending upon the soil, mostly very hairy. *Heads* loosely racemose on the branches, forming an oblong panicle; rays white, narrow, scarcely longer than the pappus. When small it constitutes *E. pusillum* of Nuttall. *Horse-weed.*

** *Rays longer than the disk.*

2. *E. bellidifolium* Muhl. : hairy and canescent; radical leaves obovate or spatulate, slightly serrate or entire; cauline sessile, scattered, oblong-lanceolate; heads few, large, corymbose; rays very numerous, linear, twice as long as the involucre. *E. pulchellum* Mich.

Shady woods. Can. to Car. W. to Miss. June—Aug. ②.—*Stem* 12—18 inches high. *Heads* large, 2—5; the lower peduncles elongated, rather slender; rays about 50, bluish-purple, sometimes nearly white. *Robert's Plaintain.*

3. *E. Philadelphicum* Linn. : stem pubescent, weak, corymbose at the summit; lower leaves cuneate-obovate, sometimes obtusely serrate, or incisely toothed; upper clasping, usually entire; heads few, on elongated pedicels; rays very numerous, capillary, twice as long as the involucre. *E. purpureum* Ait.

Woods and fields. Hudson's Bay to Flor. W. to Oregon and California. Aug., Sept. ②.—*Stem* 1—3 feet high, hairy or villous at base. *Heads* few, middle-sized, in a loose corymb; rays 100 or more, very narrow, pale purple or flesh-color. *Philadelphia Fleabane.*

4. *E. annuum* Pers. : sparsely hairy; stem corymbosely branched above; lower leaves ovate, obtuse, coarsely toothed, tapering into a margined petiole; upper cauline lanceolate-acute, serrate in the middle; uppermost usually entire; rays very narrow, scarcely twice the length of the somewhat hispid involucre. *E. heterophyllum* Willd. *Stenactis annua* and *strigosa* D. C.

Fields and meadows. Can. to Virg. W. to Ken. June—Aug. ①. ?—*Stem* stout, 2—3 feet high, angular, more or less hirsute. *Heads* rather small; rays white or tinged with purple, narrow. A popular medicine.

Annual Fleabane. Daisy.

5. *E. strigosum* Muhl. : stem slender, hairy, corymbose-paniculate at the summit; leaves toothed or entire; lower spatulate-lanceolate, 3-nerved, tapering to a long narrow petiole; upper lanceolate or oblanceolate; rays narrow-linear, about twice as long as the hispid involucre. *E. integrifolium* Big. *E. ambiguum* Nutt. *Stenactis ambigua* D. C.

Fields and meadows. Can. to Flor. W. to Oregon. July, Aug. ① or ②.—*Stem* 1—3 feet high, angular. *Heads* rather small, in terminal corymbs at the summit of the branches; rays usually white, narrow, sublinear, the tube hairy.

Strigose Fleabane.

16. BOLTANIA. L'Herit.—Boltonia.

(In honor of James Bolton, a British naturalist and artist.)

Heads many-flowered; ray flowers in one series, linear, pistillate; those of the disk tubular, perfect. Receptacle hemi-

spheric, alveolate. Scales of the involucre as long as the disk, in two series, appressed, the margins membranaceous. Achenia flat-compressed, smoothish or slightly hispid. Pappus consisting of many minute setose bristles; in the disk florets 2—4 of them elongated, subulate and thicker.

1. *B. glastifolia* L'Herit.: leaves lanceolate, somewhat glaucous, the lower serrate; heads on short pedicels; achenia obovate, broadly winged; awns of the disk pappus many, unequal, two opposite ones thick, elongated and somewhat rigid.

Banks of streams. Can. Penn. to Car. W. to Ill. July, Aug. ♀.—Stem 3—7 feet high. Heads in a loose corymb; rays purplish; disk yellow.

Glaucous *Boltonia*.

2. *B. asteroides* L'Herit.: leaves linear-lanceolate, entire or obscurely serrate; heads on long pedicels, loosely corymbose; achenia oval, smooth; pappus very short, similar in the disk and ray, deciduous. *Chrysanthemum Carolinianum* Walt.

Swamps. Penn. to Flor.; rare. Aug. ♀.—Stem 1—2 feet high. Rays pale purple. *Aster-like* *Boltonia*.

17. CHRYSOPSIS. Nutt.—Chrysopsis.

(From the Greek χρυσος, gold, and οψις, appearance; in allusion to the yellow color of the flowers.)

Heads many-flowered; ray flowers in one series, ligulate, pistillate; those of the disk tubular, perfect. Receptacle flat, subalveolate. Involucre imbricate; the scales linear, acuminate. Achenia obovate, compressed. Pappus double; the outer short and chaffy; the inner elongated, hairy and scabrous.

1. *C. graminifolia* Nutt.: silky; stem leafy towards the summit; leaves grass-like, lanceolate or linear, acuminate, erect, acute, entire, nerved; corymb compound; scales of the involucre linear and lanceolate-subulate, subpubescent and glandular on the back. *Inula graminifolia* Mich.

Sandy woods. Del. to Flor. and Louis. Aug.—Oct. ♀.—Stem 1—2 feet high, and with the leaves covered with a silky pubescence. Leaves long, linear or lanceolate-linear. Heads numerous, corymbed; rays yellow. Closely allied to *C. argentea* Ell., but the leaves are conspicuously nerved, the corymbs generally more compact and the heads more numerous. *Grass-leaved* *Chrysopsis*.

2. *C. Mariana* Nutt.: villous with long and somewhat deciduous hairs; leaves sessile, elliptic-oblong, rather obtuse, remotely denticulate; lower spatulate-lanceolate, attenuated to a petiole at base; corymb mostly simple; scales of the involucre linear, acute, and with the peduncles glandular-viscid. *Inula Mariana* Linn.

Sandy woods. N. J. to Car. Aug.—Oct. ♀.—Stem 1—3 feet high, mostly simple, leafy, sparingly clothed with long hairs. Heads rather large, few, in a terminal somewhat umbellate corymb; rays 14—18, spatulate-linear, yellow; disk yellow. *Maryland* *Chrysopsis*.

3. *C. falcata* Ell.: woolly and villous; leaves sessile, linear, very acute,

3-nerved, subfalcate and spreading, hairy beneath; peduncles few, in axillary corymbs and with the involucre villous. *C. Mariana*, var. Nutt. *Inula falcata* Pursh.

Sandy fields. Mass. Conn. N. Y. and N. J. Sept., Oct. ♀.—Stem 6—12 inches high, leafy. Heads in a simple or compound corymb, small, bright yellow; rays about 12, oblong. *Falcate Chrusopsis*.

18. BIGELOWIA. D. C.—Bigelowia.

(In honor of Dr. J. Bigelow, of Boston, author of the *Flor. Bostoniensis*.)

Heads 3—5-flowered; the flowers all tubular and perfect. Receptacle narrow, pointed by a hyaline or scale-like cusp as long as the achenia. Involucre clavate-cylindric, imbricate; the scales linear, appressed and somewhat glutinous. Achenia somewhat obconic, hairy. Pappus a single series of rough capillary bristles.

B. virgata D. C.: herbaceous, smooth; stem virgately branched; branches corymbiferous, fastigiate; leaves narrow-linear, nerveless; heads oblong, 3—4-flowered; scales of the involucre glutinous and appressed. *B. nudata*, var. *virgata* Torr. & Gr. *Chrysocoma virgata* Nutt.

Swamps. N. J. to Flor. Aug.—Oct. ♀.—Stem about 18 inches high and branched nearly from the base. Leaves short and narrow, scattered, smooth and thickish; the radical ones broader and longer. Florets bright yellow. Resembles *Solidago tenuifolia* Pursh. *Virgate Bigelowia*.

19. SOLIDAGO. Linn.—Golden-Rod.

(From the Latin *solidari*, to unite; on account of its reputed healing qualities.)

Heads usually small, few- or many-flowered; ray flowers few, or sometimes wanting; those of the disk tubular, perfect. Receptacle narrow, naked or alveolate. Involucre oblong; the scales imbricate, appressed. Achenia many-ribbed, somewhat terete. Pappus in a single series, pilose, scabrous.—Flowers yellow (except in *S. bicolor*.)

* Scales of the involucre imbricate, free. Rays ligulate, fewer than the disk flowers. Receptacle naked or alveolate, not fimbriate. Racemes paniculate or simple, not corymbose. VIRGAUREA Tourn.

† Racemes secund, somewhat recurved.

1. Leaves 3-nerved.

1. *S. Canadensis* Linn.. stem villous; leaves lanceolate-serrate, 3-nerved, scabrous above, pubescent beneath; racemes paniculate, secund, recurved; heads small; rays short.

Fields and woods. Can. to Flor. N. to Subarct. Amer. W. to Oregon. Aug., Sept. ♀.—Stem 2—5 feet high, very villous. Leaves large, always scabrous on the upper side. Heads very small; rays 7—8. Of this very variable species, *S. procera* Ait. *S. scabra* Willd., are probably nothing more than varieties. *S. reflexa* Ait. and *S. lateriflora* Linn., are also allied to it; but according to

Torrey and Gray, they are only known as cultivated plants and their characters are very obscure. *Canadian Golden-rod.*

2. *S. serotina* Ait.: stem very smooth and often glaucous; leaves lanceolate, acuminate, acutely serrate, 3-nerved, very smooth except the veins beneath, margin and upper surface rough; racemes paniculate, secund; peduncles slender, pubescent; rays numerous, short.

Low grounds. Can. Nearly throughout the U. S. W. to Oregon. Sept., Oct. ♀.—Stem 4—8 feet high, terete, sometimes purplish. Heads middle-sized; rays 9—12. Distinguished from *S. Canadensis* by its smooth stem, and from *S. gigantea* by its rough leaves. *Late-flowering Golden-rod.*

3. *S. arguta* Ait.: smooth; stem strict; radical and lower cauline leaves large, elliptic- or lanceolate-oval, obscurely 3-nerved, sharply serrate, acuminate, tapering into winged and somewhat ciliate petioles; the others lanceolate, tapering at each end, sessile, sparingly serrate or entire; racemes dense, at length elongated and recurved, forming a corymbose panicle; scales of the involucre oblong, rather obtuse, much appressed. *S. ciliaris* Willd. *S. juncea* Ait.

Woods and fields. N. Y. and Penn. to Car. N. to Subarct. Amer. W. to Miss. Aug., Sept. ♀.—Stem 2—4 feet high, terete, sometimes purple. Heads small, very numerous, arranged in a long racemose corymbose panicle which is at length spreading. According to Torrey and Gray, *S. juncea* Ait. is a variety with narrower leaves. *Sharp-toothed Golden-rod.*

4. *S. gigantea* Ait.: stem erect, smooth; leaves smooth on both sides, lanceolate, attenuate at both ends, serrate, scabrous on the margin, 3-nerved; racemes paniculate, secund, spreading; peduncles hirsute; rays a little longer than the disk.

Fields and woods. Can. to Ala. W. to Oregon. Aug., Sept. ♀.—Stem 4—7 feet high, purplish, and with the leaves quite smooth. Heads rather large. *Tall Smooth Golden-rod.*

2. Leaves veined.

5. *S. linoides* Soland.: smooth; stem simple; leaves lanceolate, finely appressed-serrate, with scabrous margins; radical and lower cauline acute or acuminate at both ends, on slender ciliate petioles; upper oblong, sometimes entire; panicle small, turned to one side; scales of the involucre oblong-linear, obtuse (*Torr. & Gr.*)

Sphagnous swamps. Mass. and N. J. Sept., Oct. ♀.—Stem 12—20 inches high, slender. Heads small; rays 1—3, short; the disk flowers 4—5. *Flax-like Golden-rod.*

6. *S. allissima* Linn.: stem erect, hispid with rough hair; leaves ovate-lanceolate or oblong-lanceolate, acute or acuminate, coarsely serrate, very scabrous, rugose-veined; racemes paniculate, spreading or recurved; rays 7—10. *S. altissima*, *aspera*, *rugosa* and *villosa* Pursh. (according to *Torr. & Gr.*)

Fields and woods. Can. and throughout the U. S. Aug., Sept. ♀.—Stem 3—7 feet high, robust and hairy, often purplish. Leaves sometimes thin and nearly smooth above, softly hairy on the veins beneath. (*S. villosa*;) or reticulated and very rugose, (*S. rugosa*.) Heads rather small. *Tall Rough Golden-rod.*

7. *S. Muhlenbergii* Torr. & Gr.: stem smooth, angled; leaves large and thin, very smooth on both sides, sharply serrate; radical on winged

petioles; cauline elliptic-lanceolate, strongly acuminate, tapering at base; uppermost somewhat entire; racemes pubescent, disposed in an elongated open panicle. *S. arguta* Muhl. not of Ait.

Low grounds. Mass. to Penn. Aug., Sept. ♀.—Stem 2—3 feet high, simple or virgately branched. Heads rather large, on short racemes, forming a somewhat slender panicle; rays 5—7, spatulate-oblong, large.

Muhlenberg's Golden-rod.

8. *S. nemoralis* Ait.: stem tomentose, simple or branched above; radical leaves somewhat cuneate, crenate-serrate, narrowed at base into a petiole; cauline oblanceolate, nearly entire, roughish-pubescent; racemes secund, paniculate. *S. hispida* Muhl.

Sandy fields. Can. and throughout the U. S. Aug.—Oct. ♀.—Stem 1—2 feet high, often much branched at the summit. Heads middle-sized, in a small and somewhat corymbose panicle; rays spatulate-oblong, rather short. The whole plant has a grayish or pulverulent appearance.

Woolly-stalked Golden-rod.

9. *S. puberula* Nutt.: minutely puberulent; stem simple; leaves lanceolate, entire, attenuated at each end; radical subserrate; racemes spiked, axillary, erect, spreading, forming an elongated panicle; scales of the involucre linear, subulate, appressed; rays about 10, elongated.

Sandy woods. Maine to Geor. ♀.—Stem 2—4 feet high, often purplish. Racemes shorter than the lower leaves, collected into a leafy spike; rays bright yellow. Resembles the preceding, but differs in its leaves and flowers.

Puberulent Golden-rod.

10. *S. patula* Muhl.: stem erect, striate, smooth; leaves elliptic, serrate, smooth beneath, rough above; the radical oblong-spatulate; racemes secund, paniculate, spreading; peduncles pubescent.

Wet meadows. Can. to Flor. W. to Miss. Aug., Sept. ♀.—Stem 2—4 feet high, somewhat angular, often purple, branched at the top. Leaves large. Heads rather large. Panicle sometimes contracted. Rays 6—7, oblong.

Spreading Golden-rod.

11. *S. neglecta* Torr. & Gr.: stem smooth, striate; leaves mostly thickish, smooth; lower oblong or ovate-lanceolate, sessile, mostly acute at each end, finely serrate, upper entire; racemes short, dense, secund, somewhat spreading, forming an elongated leafy panicle; peduncles smoothish.

Swamps. Mass. N. Y. to Car. W. to Ind. Aug., Sept. ♀.—Stem 3—6 feet high, stout. Heads middle-sized, in racemes which are at length spreading; rays 4—5, rather large.

Neglected Golden-rod.

12. *S. ulmifolia* Willd.: stem erect, smooth, striate; leaves elliptic-lanceolate, deeply serrate, acuminate, tapering at base, villous beneath; radical obovate; racemes paniculate, secund; peduncles villous; rays short.

Shady woods. N. S. Aug.—Oct. ♀.—Stem 3—4 feet high, often with long slender branches at the summit. Heads in racemes which are often slender and usually recurved; rays about 4, small. The name is inappropriate.

Elm-leaved Golden-rod.

13. *S. elliptica* Ait.: stem erect, glabrous; leaves elliptic, smooth, serrate; racemes paniculate, secund; peduncles and pedicels minutely pubescent; scales of the involucre narrow, acute; achenia strigose-pubescent. (Torr. & Gr.)

Shady woods. Can. and N. Y. ?—Stem about 7 feet high. *Leaves* large. *Rays* middle-sized. An obscure species. *Elliptic-leaved Golden-rod.*

14. *S. recurvata Willd.*: stem erect, pubescent; leaves lanceolate, acuminate, serrate, nearly glabrous above, scabrous on the margin and nerves beneath; racemes elongated, secund, panicled.

Shady woods. Penn. and Virg. Sept.—Nov. ♀ —*Pursh.* Still doubtful as a native species. *Recurved Golden-rod.*

15. *S. sempervirens Linn.*: stem erect, smooth; leaves linear-lanceolate, fleshy, smooth, very entire, scabrous on the margin; the radical oval, tapering into a long petiole; racemes paniculate, secund; peduncles pubescent. *S. lævigata* and *viminea Ait.* *S. limonifolia Torr. Comp.*

Salt marshes. Can. to Car. Sept.—Nov. ♀.—Stem 3—6 feet high, smooth and striate. *Petioles* 6—12 inches long. *Heads* rather large; *rays* 8—10, linear-oblong, twice as long as the disk. *Salt-marsh Golden-rod.*

16. *S. odora Ait.*: stem erect, pubescent; leaves linear-lanceolate, entire, smooth, pellucid-punctate, scabrous on the margin; racemes paniculate, secund.

Fertile woods. Can. to Flor. Aug.—Oct. ♀.—Stem 2—3 feet high, with lines of pubescence from the base of the leaves. *Heads* middle-sized, in secund racemes, forming a terminal pyramidal panicle; *rays* 3—4, oblong, large. The flowers when dried, form an excellent substitute for tea, and have been exported to China. *Pursh.* The leaves yield by distillation, a fragrant volatile oil. *Big. Med. Bot.* i. 187. *Sweet-scented Golden-rod.*

17. *S. pilosa Walt.*: stem hirsute, strict, very leafy; leaves oblong-lanceolate, serrulate, slightly scabrous, often pubescent beneath; upper ovate-lanceolate or oblong, closely sessile, mostly entire; racemes recurved, secund, in a dense pyramidal panicle. *S. pyramidata Pursh.*

Damp soils. N. J. to Flor. and Louis. Sept., Oct. ♀.—Stem 3—7 feet high, stout. *Heads* very numerous, about as large as in *S. odora*; *rays* 7—10; *disk flowers* about 5, nearly as long as the rays. *Pilose Golden-rod.*

†† *Racemes erect, not secund.*

18. *S. Ohioensis Riddell*: stem very smooth, erect, fastigiata-corymbose at the summit; lower leaves lanceolate-oblong, rather obtuse, scabrous on the margin, remotely serrate near the apex, tapering into slender petioles; upper lanceolate, sessile, nearly entire; heads numerous, on slender pedicels. (*Torr. & Gr.*)

Moist meadows. Western N. Y. to Ohio. Sept., Oct. ♀.—Stem 2—3 feet high, terete, simple and virgate. *Heads* oblong, erect, in a compound raceme; *rays* 6—7, small. *Ohio Golden-rod.*

19. *S. speciosa Nutt.*: stem smooth, simple or virgately branched; leaves lanceolate, entire, somewhat fleshy, scabrous on the margin; lower oval or ovate, subserrate, petioled; upper lanceolate, entire; racemes terminal, erect and compound, pubescent; peduncles mostly shorter than the involucre. *S. sempervirens Mich.* not of *Linn.*

Shady woods. Mass. to Flor. W. to Texas. Sept., Oct. ♀.—Stem often 5 feet high, smooth and sulcate. *Leaves* large. *Heads* forming numerous terminal and erect racemes; *rays* very broad, deep yellow. *Handsome Golden-rod.*

20. *S. bicolor Linn.*: stem and leaves hairy; leaves elliptic-lanceolate

acute, white-pubescent; lower tapering into a petiole, serrate; branches leafy; racemes erect; scales of the involucre obtuse. *Aster bicolor* Nees. *Speng.*

Dry Hills. Can. to Geor. Aug.—Oct. ♀.—*Stem* 1—2 feet high, erect, very pubescent. *Heads* numerous, rather large, in short clusters, forming a long dense leafy raceme along the upper part of the stem; *rays* 7—9, nearly white.

Two-colored Golden-rod.

21. *S. stricta* Ait.: stem erect, smooth; cauline leaves lanceolate, very entire, smooth, scabrous on the margin; radical tapering into winged petioles, minutely serrate; racemes paniculate, very erect; peduncles smooth.

Sphagnous swamps. Hudson's Bay to Mass. and N. Y. July, Aug. ♀.—*Stem* 2—4 feet high, virgate, purplish. *Heads* forming a dense stiffly erect panicle which is leafy at base; *rays* 5—6, rather small. *Upright Golden-rod.*

22. *S. virgata* Mich.: stem smooth and simple, summit racemose; leaves smooth, lanceolate-oblong, somewhat obtuse, appressed to the stem, diaphanously punctate; upper smaller and entire; branches of the panicle elongate, racemed at the summit; peduncles erect, smooth, filiform and squarrose.

Swamps. N. J. to Flor. Sept., Oct.—*Stem* 2—4 feet high, much attenuated. *Leaves* gradually diminishing upwards; lower ones very large, serrulate. *Heads* small. *Long-branched Golden-rod.*

23. *S. latifolia* Linn.: stem angled, mostly flexuous, smooth; leaves broad-ovate or oval, coarsely dentate-serrate, very acuminate at both ends or abruptly attenuate into a short petiole, mostly hairy on the veins beneath; heads in short axillary racemes or clusters, racemose or paniculate at the summit of the stem. *S. flexicaulis* Ait. *S. macrophylla* Big.

Moist woods. Can. to Geor. W. to Ken. Aug.—Oct. ♀.—*Stem* 2—3 feet high, usually simple. *Heads* middle-sized, in clusters or racemes; *rays* 3—4; *disk flowers* 6—7. *Broad-leaved Golden-rod.*

24. *S. casia* Linn.: stem erect, smooth, glaucous, simple or branched; leaves lanceolate or oblanceolate, acuminate, serrate, smooth; heads in short axillary clusters or racemes; peduncles pubescent; involucre smooth. *S. flexicaulis* Linn. *S. axillaris* Pursh. *S. livida* Willd.

Woods and thickets. Can. to Geor. Aug.—Oct ♀.—*Stem* 2—3 feet high, slender, usually dark purple and glaucous. *Heads* middle-sized; *rays* 3—4. Allied to *S. latifolia*, but probably distinct. *Purple-stalked Golden-rod.*

25. *S. rigida* Linn.: stem erect, roughly pubescent, paniculate at the summit; leaves rigid, scabrous, slightly clasping; lower oval, petioled, crenate-dentate; upper ovate-oblong, sessile, entire; heads very large, in compact erect racemes; scales of the involucre obtuse.

Rocky hills. Conn. and N. Y. to Car. W. to Texas. Aug.—Oct. ♀.—*Stem* 3—4 feet high, rigid, very pubescent when young. *Heads* very large, many-flowered, clustered near the summits of the branches; *rays* 7—10, elongated.

Rigid-leaved Golden-rod.

26. *S. Virga-Aurea* Linn.: stem erect, terete, pubescent and branching at the top; cauline leaves lanceolate, serrate, attenuate at each end; lower ones elliptic, petioled; racemes erect, simple or compound; scales of the involucre linear-acute.

var. *alpina* Big.: a few inches in height, with obovate or lanceolate, mostly entire, leaves.

Woods on the sides of the White Mountains, N. H. Big. Summit of Mount Marcy, Essex county, N. Y. Torr. N. to Labrador. Aug.—Oct. ♀.—Stem flexuous, 1—3 feet high. Leaves elliptic or lanceolate, often with a long narrow base, serrate; the upper nearly entire. Heads few and large; rays about 8, elongated. Common to Europe, Asia and America. A variable species.

Common Golden-rod.

27. *S. humilis* Pursh: glabrous; stem simple, erect; radical leaves oblanceolate or spatulate, obtuse, crenate-serrate at the apex, tapering into a petiole; cauline lanceolate, acute, narrowed at the base; uppermost linear and entire; raceme simple or compound and paniculate, elongated, strict; scales of the involucre oblong, mostly obtuse. (Torr. & Gr.)

Banks of Onion river, Ver. Robbins. N. to Hudson's Bay. Aug., Sept. ♀.—Stem 6—15 inches high, smooth, but more or less glutinous. Heads middle-sized, rather crowded; rays 6—8, short.

Dwarf Golden-rod.

28. *S. thyrsoides* Meyer: stem erect, or somewhat flexuous, simple, smooth, the summit and peduncles villous-pubescent; leaves smooth, ovate, irregularly and sharply serrate, acute or acuminate, narrowed into very long petioles; uppermost oblong-lanceolate, subsessile, often pubescent beneath; heads large, in an oblong simple raceme; scales of the involucre lanceolate, acuminate, membranaceous. (Torr. & Gr.)

Wooded sides of the White Mountains, N. H. Boott. Killington Peak, Ver. Robbins. N. to Labrador. Aug., Sept. ♀.—Allied to *S. Virga-Aurea*, but has the leaves, except the uppermost, on long petioles, and the heads larger.

Thyrse-like Golden-rod.

29. *S. squarrosa* Muhl.: stem thick, very pubescent above; leaves smooth; lower very broad, spatulate-oval, serrate, acute, scabrous on the margin; upper sessile, lanceolate-elliptic, entire; racemes axillary, glomerate; involucre squarrose, many-flowered. *S. macrophylla* Pursh.

Rocky banks. Can. to Penn. Aug., Sept. ♀.—Stem 2—4 feet high, stout, simple. Heads in dense axillary clusters, forming a long leafy compound spike; rays 10—12, bright yellow, elongated. Well distinguished by its squarrose involucre.

Squarrose Golden-rod.

** Scales of the involucre much appressed, somewhat glutinous. Ray-flowers more numerous than those of the disk, very small, yellow. Receptacle fimbriate. Heads in corymbose clusters, mostly fascicled. Leaves linear, quite entire, sessile. EUTHAMIA Nutt.

30. *S. lanceolata* Linn.: stem much branched, fastigiata; leaves lanceolate-linear, very entire, 3—5-nerved, minutely scabrous-pubescent; heads ovoid-cylindric, in dense corymbose clusters, sessile. *S. graminifolia* Ell. Euthamia graminifolia Nutt.

Low grounds. Throughout the U. S. N. to Subarct. Amer. Aug., Sept. ♀.—Stem 2—4 feet high, roughish-pubescent, angular-striate. Heads rather large, in clusters at the summit of the corymbose branches; rays 15—20, small; disk flowers 8—12.

Bushy Golden-rod.

31. *S. tenuifolia* Pursh.: stem angled, scabrous, with fastigiata branches; leaves very narrow-linear, spreading, 1- or rarely 3-nerved, covered with glandular dots, scabrous on the margin; heads obovoid or turbinate, in

loose corymbose clusters. *S. lanceolata*, β . *minor* Mich. *Euthamia tenuifolia* Nutt.

Sandy fields. N. Y. and Mass. to Flor. and Louis. Aug.—Oct. 4.—*Stem* slender, 12—18 inches high. *Heads* smaller and less crowded than in the preceding; *rays* about 10; *disk flowers* 5—6. *Slender-leaved Golden-rod.*

20. BACCHARIS. Linn.—Baccharis.

(From *Bacchus*, to whom the original plant was dedicated by the Greeks.)

Heads many-flowered, dioecious; the flowers all similar and tubular. Receptacle naked or somewhat chaffy. Involucre somewhat hemispheric or oblong, imbricate, in several series. STERILE FL. Corolla dilated, 5-cleft. Anthers exerted, unawned at base; style more or less abortive. Pappus in a single series, about as long as the involucre. FERTILE FL. Corolla filiform and somewhat truncate. Anthers none. Style bifid, exerted. Pappus in one or several series, usually much longer than the involucre.

B. halimifolia Linn.: leaves obovate, incisely-toothed above, cuneate at base and attenuated into a short petiole; upper lanceolate and nearly entire; heads of the sterile plant subglobose, solitary or aggregated; of the fertile ovoid-oblong, loosely paniced.

Sandy beaches. N. Y. Conn. and N. J. S. to Flor. Sept., Oct.—A shrub 6—12 feet high, covered with a whitish resinous powder or dust. *Heads* in the sterile plant mostly clustered at the summit of the leafy branches; in the fertile, arranged in a large loose terminal panicle. *Flowers* white.

Groundsel Tree.

21. PLUCHEA. Cass.—Marsh Fleabane.

(Named in honor of *Noel Pluche*, author of "*Spectacle de la Nature*," &c.)

Heads many-flowered; the outer flowers in many series, pistillate, truncate or 2—3-toothed; the central ones perfect or sterile, 5-toothed. Receptacle flat, naked or hirsute-fimbriate. Involucre in many series, imbricate. Anthers bicaudate. Achenia cylindric, sulcate-angular. Pappus in one series, filiform, roughish.

1. *P. camphorata* D. C.: minutely viscid-pubescent; leaves ovate or ovate-lanceolate, sessile and slightly petioled, sprinkled with resinous dots, repantly-toothed; corymb fastigiate; scales of the involucre viscid-pubescent. (*Torr. & Gr.*) *P. camphorata* and *P. Marylandica* D. C. *Conyza camphorata* Big. *Erigeron camphoratum* Linn.

Salt marshes. Mass. to Flor. Aug.—Oct. ①.—*Stem* 1—2 feet high, branched at the summit. *Leaves* somewhat succulent. *Heads* in numerous crowded corymbs, purple. When bruised this plant gives out a strong spicy, but somewhat disagreeable odor. *Big.*

Seaside Marsh Fleabane.

2. *P. fetida* D. C.: smoothish or minutely pubescent; leaves oval-lan-

ceolate, acuminate at each end, distinctly petioled, membranaceous, coarsely serrate; corymb fastigiate, somewhat paniculate; scales of the involucre smoothish, dotted with minute glands. *Conyza camphorata* Pursh. *Baccharis fetida* Linn.

Wet banks. Penn. ? to Ala. and Ken. Aug.—Oct. ♀.—Stem 2—4 feet high, grooved or angled. The leaves are much larger, the heads more numerous, and the odor is more powerful, than in the preceding. *Fetid Marsh Fleabane.*

22. INULA. Linn.—Elecampane.

(Origin doubtful.)

Heads many-flowered; ray flowers in a single series, pistillate, sometimes infertile, ligulate, rarely tubular; those of the disk tubular, perfect. Involucre imbricate, in many series. Receptacle flat or somewhat convex, naked. Anthers with 2 bristles at base. Pappus capillary, roughish.

I. Helenium Linn.: leaves toothed, acute, velvety tomentose beneath; the radical ones ovate, tapering into a petiole; the cauline somewhat clasping; heads few, pedunculate, corymbose.

Road sides. N. S. July, Aug. ♀.—Stem 3—4 feet high, branching at the top. Leaves very large. Heads large, solitary, on long terminal thick peduncles, yellow; rays numerous, linear, 3-toothed. Introduced from Europe.

Common Elecampane.

23. ECLIPTA. Linn.—Eclipta.

(From the Greek *εκλειπω*, to be deficient; in allusion to its wingless achenia, by which it is distinguished from *Verbesina*. Eat. Man.)

Heads many-flowered; ray flowers in one series, pistillate, ligulate, very narrow and short; those of the disk tubular and perfect. Receptacle flattish, furnished with linear filiform chaff, as long as the achenia. Involucre in two series; the scales 10—12, ovate-lanceolate, acuminate. Achenia of the ray 3-sided; of the disk compressed at the sides, muricate-tubercular, somewhat hairy at the summit. Pappus none, or of 1—3 minute teeth.

E. erecta Linn.: stem erect or ascending, appressed-strigose; leaves oblong-lanceolate, acuminate at both ends, slightly serrate; pedicels solitary or in pairs, several times as long as the head. *E. procumbens* Mich. *Verbesina alba* Linn.

Damp sandy soil. Md. to Flor. W. to Ken. and Louis. June—Oct. (1).—Stem 1—3 feet long, often rooting at base. Heads small. *E. brachypoda* Mich. is a variety with the pedicels about as long as the heads. A very widely diffused species. *Upright Eclipta.*

IV. SENECTIONIDÆ. *Style of the perfect flowers cylindrical; its branches linear, fringed at the point, generally truncate, but sometimes extended beyond the fringe into a short cone or appendage.*

24. SILPHIUM. *Linn.*—Silphium.

(From *Silphi*, the name of a medicinal plant of Africa, transferred to this genus by Linnæus.)

Heads many-flowered; ray flowers numerous, ligulate, pistillate; the ligules in one series, elongated, the fruit in several series; those of the disk with a very short tube, hairy above, sterile. Receptacle somewhat convex, chaffy. Involucre campanulate, imbricate; the scales loose and leafy at the summit. Achenia of the ray obcompressed, surrounded with a wing which is notched or toothed at the top; those of the disk abortive, with an obsolete crown-like pappus.

1. *S. trifoliatum* *Linn.*: stem terete, slightly angled, smooth; leaves 3—4 in a whorl, ovate-lanceolate, unequally toothed and serrate, scabrous on the upper surface; lower petioled, upper nearly sessile and sometimes opposite; heads loose, corymbose or paniculate. *S. trifoliatum* and *S. ternatum* *Pursh.*

Dry woods. Near the Falls of Niagara. *Dr. Eddy.* Md. to Car. W. to Ohio. Aug.—Oct. 2.—*Stem* 4—6 feet high, slightly angled, purplish. *Heads* rather small, in a loose terminal corymb; *rays* 15—18, bright yellow, long.

Three-leaved Silphium.

2. *S. perfoliatum* *Linn.*: stem square, smooth, the branches sometimes terete; leaves opposite; lower deltoid-ovate, coarsely serrate, on winged petioles; upper connate-perfoliate, nearly entire; heads trichotomously corymbose, the central one on a long peduncle. *S. connatum* *Mich.*

Banks of streams. Penn. ? to Car. W. to Miss. Aug. 2.—*Stem* 5—6 feet high. *Leaves* very large, the lower somewhat cordate. *Heads* large; *rays* 15—30, yellow.

Perfoliate Silphium.

25. POLYMNIA. *Linn.*—Polymnia.

(Said to be named after Πολυμνια, one of the Muses.)

Heads many-flowered; the ray flowers pistillate, ligulate, in one series; those of the disk tubular, sterile. Receptacle flat, chaffy. Involucre double; the outer scales 4—5, large and leafy; the inner ones numerous, shorter, surrounding the smooth achenia. Pappus none.

* *Rays shorter than the involucre.*

1. *P. Canadensis* *Linn.*: viscid-pubescent; leaves angulate and hastate-lobed, denticulate, acuminate, the lower deeply pinnatifid or lyrate; scales of the involucre ovate, acuminate, ciliate, the outer ones a little larger.

Shady hills and in ravines. Can. to Car. W. to Miss. June, July. 2.—*Stem* 2—5 feet high, roughly pubescent and somewhat viscid, branching. *Leaves* opposite or alternate, very thin, mostly 3—5-lobed at the apex. *Heads* small, loosely paniculate; *rays* white, or very pale yellow, small, obtusely 3-lobed at the apex; *disk* yellow. *Small-flowered Polymnia.*

** *Rays longer than the involucre.*

2. *P. Uvedalia* Linn.: stem sulcate, somewhat pubescent above; leaves sinuate-lobed, broad-ovate or deltoid, roughish; lower subpalmate, decurrent into a winged petiole; outer scales of the involucre oblong-ovate, obtuse, much larger than the inner.

Dry rich grounds. Western N. Y. and Penn. to Geor. W. to Miss. July, Aug. 2.—*Stem* 3—8 feet high, terete. *Leaves* opposite or alternate, the lower very large. *Heads* few, large, arranged in loose panicles; *rays* about 10, 3-toothed at the apex, bright yellow; *disk* dull yellow.

Large-flowered Polymnia.

26. PARTHENIUM. Linn.—Parthenium.

(From the Greek *παρθενος*; on account of its supposed efficacy in certain diseases.)

Heads many-flowered; ray flowers 5, pistillate, ligulate, fertile; those of the disk tubular, abortive. Receptacle conic or cylindric, covered with membranaceous chaff. Involucre hemispheric, in 2 series; outer scales ovate, inner nearly orbicular. Achenia obcompressed, smooth. Pappus of 2 aristate or nearly orbicular scale-like processes.

P. integrifolium Linn.: stem hirsute-pubescent; leaves oval, rough, unequally crenate-toothed, or sometimes incised; lower decurrent into a petiole, upper sessile or somewhat clasping; outer scales of the involucre somewhat acute.

Dry soil. Md. to Geor. and Ala. W. to Texas. July—Sept. 2.—*Stem* 1—2 feet high. *Heads* numerous, corymbed; *rays* small, whitish.

Simple-leaved Parthenium.

27. XANTHIUM. Tourn.—Clot-weed.

(From the Greek *ξανθος*, *yellow*; a color said to be produced by this plant.)

Heads in glomerate spikes, sterile at the summit, pistillate below. STERILE FL. Involucre subglobose, many-flowered, with the scales in one series. Receptacle cylindric, chaffy. Corolla short, 5-lobed, somewhat hairy. FERTILE FL. Involucre with hooked prickles, surmounted by 1—2 beaks. Corolla filiform. Stamens none. Achenia compressed, one in each cell of the involucre.

1. *X. strumarium* Linn.: fruit-bearing involucre oval, somewhat pubescent; beaks straight; leaves cordate at base, 3—5-lobed, coarsely toothed.

Road sides and waste places. Can. to Flor. W. to the Rocky Mountains. Aug., Sept. ①.—*Stem* 1—3 feet high, angular, scabrous-pubescent. *Leaves*

3—6 inches long, and nearly of the same width. *Heads* in short axillary racemose clusters. Var. *Canadense* Torr. & Gr. has the stem spotted and the fruit-bearing involucre scabrous pubescent. *X. strumarium* Mich. Introduced? *Common Clot-weed. Small Burdock.*

2. *X. echinatum* Murr.: fruit-bearing involucre oval, very densely clothed with rigid slender prickles and with the incurved beaks strongly hispid; leaves rough, broad-cordate, irregularly sinuate-toothed, obscurely lobed. (Torr. & Gr.) *X. macrocarpon* Beck Bot. 1st. Ed. *X. orientale* Muhl. *X. maculatum* Raf.

Near salt water. Mass. and N. Y. to Car. W. to Miss. Aug.—Oct. ①.—*Stem* marked with purple spots and stripes, roughly pubescent. *Leaves* very rough. *Fruit* very large, woolly. *Sea Clot-weed.*

3. *X. spinosum* Linn.: spines 3-parted, slender; leaves ovate-lanceolate, cuneate at base, entire or somewhat 3-lobed, acuminate, minutely-pubescent above, the under surface and the veins of the upper canescent.

Waste grounds. N. Y. to Geor. Sept., Oct. ①.—*Stem* 2—3 feet high, pubescent, branched. *Leaves* entire or repand-denticulate, at length often 3-lobed. *Heads* few, axillary, solitary. A troublesome weed. Introduced from Europe. *Spiry Clot-weed.*

28. AMBROSIA. Linn.—Rag-weed.

(*Ambrosia* was the *food of the Gods*; but it is difficult to determine the application to the plants of this genus.)

Heads monœcious; the fertile at the base and the sterile at the top of the spike. STERILE FL. Involucre hemispheric or turbinate; scales few. Receptacle naked. Corolla tubular, short. FERTILE FL. Involucre 1-flowered, incurved and often armed with several tubercles or horns. Corolla none. Achenia ovoid or obovoid.

* *Upper leaves undivided.*

1. *A. integrifolia* Muhl.: leaves opposite, ovate, sessile, acuminate, serrate, hispid on both sides, ciliate at base; racemes terminal and mostly ternate. *A. trifida*, var. Torr. & Gr.

Near ponds and ditches. Penn. and Virg. ①. *Pursh*. It is said to have the lower leaves sometimes 3-lobed. Probably a variety of the next, as suggested by Torrey and Gray. *Simple-leaved Rag-weed.*

** *Leaves all 3—5-lobed.*

2. *A. trifida* Linn.: hirsute, rough; leaves 3—5-lobed, serrate; the lobes oval-lanceolate, acuminate; fruit 6-spined below the summit.

Banks of streams. Can. to Geor. W. to Miss. July—Sept. ①.—*Stem* 4—8 or 10 feet high, angular, branched above. *Leaves* very large and rough. *Heads* small; the sterile ones in long paniculate racemes; the fertile in small clusters at the base of the racemes. *Three-lobed Rag weed.*

*** *Leaves singly or doubly pinnatifid.*

3. *A. artemisiæfolia* Linn.: stem pubescent, often much branched; leaves bi-pinnatifid, rough, hoary beneath, the petioles ciliate with long hairs; racemes paniculate, terminal. *A. elatior* Linn. *A. absynthifolia* Mich.

Old fields. Can. to Flor. Aug., Sept. ①.—*Stem* 1—4 feet high, usually rough. *Heads* small; the sterile ones in long slender paniculate racemes. *Fruit* solitary or in small clusters at the base of the sterile racemes, armed with about 6 short acute teeth. A troublesome weed. *Hog-weed.*

4. *A. paniculata Mich.*: stem branching, paniculate at the summit, and with the petioles villous; leaves green on both sides, bi-pinnatifid, the segments lanceolate; fruit somewhat clustered, small, obovate, slightly awned.

Iva monophylla Walt.

Old fields. Can. to Flor. July—Sept. ①. *Pursh.*—*Stem* 2—4 feet high. *Heads* in simple terminal and axillary racemes. *Paniculate Rag-weed.*

5. *A. heterophylla Muhl.*: stem pubescent or villous, paniculate; cauline leaves pinnatifid, subdentate, petiolate; those of the branches lanceolate, sessile; petioles with long ciliæ; racemes terminal, solitary. *A. Peruviana Willd.*

Banks of streams. Penn. July—Sept. ①. *Muhl.*—*Fruit* with 5—6 acute teeth below the summit. Perhaps this and the preceding are only varieties of *A. artimisiæfolia.* *Various-leaved Rag-weed.*

29. IVA. *Linn.*—Marsh Elder.

(Origin of the name doubtful.)

Heads monœcious, not radiate. Fertile flowers 1—5, marginal, with a small tubular corolla. Sterile flowers numerous, with a tubular-campanulate corolla. Scales of the involucre 3—5 in a single series, or 6—9 and imbricated. Receptacle small, chaffy. Achenia obovoid, somewhat compressed. Pappus none.

I. frutescens Linn.: shrubby, smooth; leaves opposite, oval or oval-lanceolate, somewhat petioled, deeply-serrate, slightly scabrous; uppermost linear-lanceolate, entire; heads axillary, depressed-globose, pedicellate; scales of the involucre 5, orbicular.

Sea coast. Mass. to Flor. Aug., Sept. ②.—*Stem* 3—8 feet high, much branched. *Leaves* thick and somewhat fleshy. *Heads* numerous, small, greenish, in axillary leafy racemes, forming a large terminal panicle. *Marsh Elder. Highwater Shrub.*

30. HELIOPSIS. *Pers.*—Ox-eye.

(From the Greek *ἥλιος*, the *sun*, and *οψις*, *appearance*; in allusion to the form of the heads of flowers.)

Heads many-flowered; the ray flowers in one series, ligulate, fertile; those of the disk tubular, perfect. Involucre in 2—3 series; the outer scales leafy, the rest imbricate. Receptacle conic. Achenia angular, partly surrounded by the chaff.

H. laevis Pers.: stem smooth; leaves smoothish, ovate-lanceolate or oblong-ovate, tapering at base into a petiole, serrate, 3-nerved. *Helianthus laevis Linn.*

Banks of streams Throughout the U. S. Aug., Sept. ②.—*Stem* 2—4 feet

high, dichotomously branched above. *Heads* middle-sized, on long peduncles, solitary, or in a loose fastigiate corymb; *rays* 10—15, 2—3-toothed, yellow; *disk* dark purple, conic. *Common Ox-eye.*

31. RUDBECKIA. Linn.—Rudbeckia.

(In honor of *Olaus Rudbeck*, Professor of Botany at Upsal, in Sweden, who died in 1702.)

Heads many-flowered; ray-flowers neutral, in a single series, ligulate; those of the disk tubular, perfect. Scales of the involucre in two series, leafy, spreading. Receptacle conic or elongated; the chaff acute, concave or boat-form. Achenia quadrangular. Pappus none or minute and coroniform.

1. *R. fulgida* Ait.: stem hispid, the branches long and virgate; leaves oblong-lanceolate, denticulate, hispid, narrowed and slightly cordate at base, acuminate; scales of the involucre as long as the rays; chaff lanceolate. *R. chrysomela* Mich.

Fields and mountain woods. Penn. to Flor. July—Oct. ♀.—*Stem* 2—3 feet high, branched. *Heads* small, solitary and terminal; *rays* orange-yellow, 2-cleft at the summit; *disk* purple, nearly hemispheric. *Small-flowered Rudbeckia.*

2. *R. hirta* Linn.: very hirsute; stem virgate, sparingly branched; lower leaves spatulate-oval, 3-nerved, denticulate, petioled; upper ovate-lanceolate, sessile; scales of the involucre nearly equalling the rays; chaff of the receptacle linear.

Meadows. Can. and N. Y. to Flor. W. to Texas. July—Sept. ♀.—*Stem* 2—3 feet high, scabrous and hairy. *Heads* middle-sized, solitary, terminal; *rays* 14, bifid, hairy, pale yellow; *disk* dark-purple, conic. *Hairy Rudbeckia.*

3. *R. triloba* Linn.: hairy-hispid; stem paniculate; leaves lanceolate, acuminate at each end, serrate; the lower 3-lobed; scales of the involucre linear, shorter than the rays.

Dry soils. Can. to Flor. W. to Miss. July—Sept. ♀.—*Stem* 4—5 feet high. *Heads* numerous, on the summits of the branches; *rays* about 8, yellow; *disk* dark purple. *Three-lobed Rudbeckia.*

4. *R. speciosa* Wender.: stem hirsute or hispid, with elongated naked branches; leaves roughish-hirsute or pubescent, coarsely toothed or incised; upper lanceolate, sessile; lower ovate or ovate-lanceolate, acute or acuminate at both ends, petioled; scales of the involucre about half as long as the rays; pappus coroniform. (*Torr. & Gr.*)

Mountains. Penn. to Ohio. Aug.—Oct. ♀.—Larger than *R. fulgida*. *Radical leaves* on long petioles, 5-nerved. *Heads* large and showy; *rays* numerous, oblong-linear, elongated, bright yellow; *disk* conoid-globose, black-purple. *Showy Rudbeckia.*

5. *R. laciniata* Linn.: stem tall, smooth, branching; leaves somewhat hairy and scabrous; lower pinnate, the segments 3—5-lobed or incised, sometimes lacinate; uppermost lanceolate or ovate, incisely toothed or entire; pappus toothed. *R. lævigata* and *R. digitata* Pursh.

Borders of swamps. Can. to Ala. W. to near the Rocky Mountains. July—Sept.—*Stem* 4—6 feet high. *Leaves* gradually less and less divided from the radical to the uppermost ones. *Heads* rather large, in a loose terminal panicle; *rays* bright yellow, about twice as long as the involucre, oblanceolate, drooping; *disk* greenish-yellow, conic. *Tall Rudbeckia. Cone Flower.*

32. LEPACHYS. *Raff.*—Lepachys.

(From the Greek *λεπις*, a scale, and *παχυς*, thick; in reference to the chaff of the receptacle.)

Heads many-flowered; the ray flowers few, in a single series, neutral; those of the disk small, tubular, perfect. Scales of the involucre few, linear or subulate, spreading, sometimes with an inner series of small obtuse scales. Receptacle elongated, spiciform; chaff truncate or obtuse, thickened and hairy at the summit. Achenia of the ray 3-angled, hairy; of the disk, compressed, smooth or ciliate.

L. pinnata Torr. & Gr.: leaves pinnate; leaflets 3—7, oblong-lanceolate, acuminate at each end, sparingly serrate, the uppermost undivided; rays much longer than the disk. *Rudbeckia pinnata* Mich. and *R. digitata* Willd. *Obeliscaria pinnata* D. C.

Shores of Lake Erie, N. Y. *Dr. Sartwell*. Penn. S. to Flor. W. to Miss. July—Sept. ♀.—*Stem* 3—4 feet high, rough and pubescent, sulcate. *Heads* terminating the branches; *rays* slightly toothed at the apex, bright yellow; *disk flowers* with short recurved teeth. *Tall Lepachys.*

33. COREOPSIS. *Linn.*—Coreopsis.

(From the Greek *κορις*, a bug, and *οψις*, resemblance; in allusion to the form of the achenia.)

Heads many-flowered; ray flowers about 8, neutral; those of the disk tubular, perfect. Involucre double, each of about 8 scales; the outer narrow, leafy, spreading; the inner broader and somewhat membranaceous. Receptacle flat or slightly convex, chaffy. Achenia obcompressed, often 2-toothed or 2-awned at the summit; the awns smooth or hispid upwards.

* *Leaves alternate.*

1. *C. gladiata* Walt.: stem smooth, terete, dichotomous at the summit; leaves alternate, somewhat fleshy, entire or slightly lobed; lower oblong-lanceolate, tapering into a long and somewhat clasping petiole; scales of the outer involucre ovate-lanceolate; achenia obovate-oblong, surrounded by a pectinate wing. *C. dichotoma* Mich.

Swamps. N. J. ? N. Car. to Flor. July—Sept. ②.—*Stem* 2—3 feet high, slender. *Lower leaves* large. *Heads* on the dichotomous branches; *rays* 3-lobed, yellow; *disk* dark purple. *Forked Coreopsis.*

** *Leaves opposite, undivided.*

2. *C. rosea* Nutt.: stem smooth, leafy; leaves opposite, narrow-linear, entire; heads few, peduncled; scales of the outer involucre much shorter than the inner; rays unequally 3-toothed; achenia nearly naked. *Calliopsis rosea* Spreng.

Swamps. N. Y. and Mass. to Geor. Aug. ♀.—*Stem* about a foot high, sparingly branched. *Heads* few; *rays* about 8, rose-color; *disk* yellowish. *Rose-colored Coreopsis.*

*** *Leaves opposite, divided.*

3. *C. trichosperma* Mich.: smooth; stem obtusely 4-angled; leaves opposite, on short petioles, pinnate; leaflets 5—7, linear-lanceolate, serrate or incised; uppermost 3—5-cleft, nearly sessile; scales of the outer involucre subspatulate, ciliate-serrate; achenia cuneiform, with 2-hispid teeth.

Swamps. N. Y. and Mass. to Car. Aug.—Oct. ②.—*Stem* 2—3 feet high, much branched. *Heads* in paniculate corymbs, on long slender peduncles; rays about 8, yellow, oblong, obtuse, entire: *Tick-seed Sunflower.*

4. *C. tripteris* Linn.: smooth; leaves opposite, petiolate; radical 5-pinnate; cauline ternate; leaflets lanceolate, acute, entire, scabrous on the margins; achenia obovate, naked at the summit. *Chrysostemma tripteris* Less. D. C.

Banks of streams. Penn. to Flor. W. to Miss. Aug.—Oct. ④.—*Stem* 4—6 feet high. *Heads* rather small, in a loose terminal corymb, on short peduncles; rays about 8, yellowish. *Three-leaved Coreopsis.*

5. *C. verticillata* Linn.: smooth; leaves closely sessile, ternate; leaflets pinnate or bi-pinnate; segments narrow-linear, obtuse; achenia obovate-wedgeform, slightly winged, with 2 minute teeth. *C. tenuifolia* Pursh.

Wet grounds. Md. to Car. W. to Mich. and Ark. July—Sept. ④.—*Stem* 1—3 feet high, slender, somewhat branched. *Leaves* appearing as if whorled. *Heads* yellow; rays long and narrow, rarely obtuse and 2—3-toothed.

Whorl-leaved Coreopsis.

34. ACTINOMERIS. Nutt.—Actinomeris.

(From the Greek *ακτιν*, a ray, and *μερις*, a part; the flower being imperfectly radiate.)

Heads many-flowered; ray flowers neutral, few, elongated or sometimes wanting; those of the disk tubular, perfect. Involucre of 1—3 series; the scales leafy, acuminate. Receptacle convex, chaffy, the chaff embracing the margin of the achenia. Achenia compressed, obovate, winged, with 2 smoothish persistent awns at the summit.

A. squarrosa Nutt.: stem erect, pubescent and winged towards the summit; leaves broad-lanceolate, acute, serrate, scabrous above, pubescent beneath; lower often opposite, upper alternate; involucre in 2 series; the outer reflexed, spreading. *Coreopsis alternifolia* Linn. *Verbesina Coreopsis* Mich.

Moist grounds. Yates county, N. Y. to Car. W. to Miss. Aug., Sept. ④.—*Stem* 3—6 feet high, slender, smooth below. *Heads* small, in a terminal leafy corymbose panicle; rays few, oblanceolate, yellow; disk greenish-yellow.

Squarrose Actinomeris.

35. HELIANTHUS. Linn.—Sunflower.

(From the Greek *ήλιος*, the sun, and *αθος*, a flower.)

Heads many-flowered; ray flowers in one series, ligulate, neutral; those of the disk tubular, perfect. Involucre imbricate in several series; the scales usually with foliaceous tips. Receptacle flat or convex; the chaff embracing the compressed

or somewhat quadrangular achenia. Pappus mostly of 2 unequal chaffy scales or awns, (sometimes additional smaller ones,) deciduous.

* *Disk flowers dark purple.*

1. *H. atrorubens* Linn.: stem erect, branched above, hispid with long scattered hairs; leaves mostly opposite, oblong-spatulate or ovate, somewhat serrate, 3-nerved, scabrous; scales of the involucre lanceolate, acuminate, smooth, as long as the disk.

Gravelly soils. Penn. to Car. W. to Miss. Aug., Sept. ♀.—Stem 3—4 feet high, somewhat branched. Lower leaves very large and often slightly cordate. Heads in a loose terminal panicle; rays about 16, yellow; disk dark purple.

Dark-red Sunflower.

2. *H. angustifolius* Linn.: stem scabrous or hairy; leaves narrow-lanceolate, sessile, entire, 1-nerved, rough above, pale beneath, the margins revolute; lower opposite, upper alternate; scales of the involucre linear-lanceolate, as long as the disk; chaff 3-toothed. *Rudbeckia angustifolia* Linn.

Swamps in pine barrens. N. J. to Flor. W. to Texas. Aug.—Oct. ♀.—Stem 2—6 feet high, slender, sparingly branched. Heads small, somewhat corymbose, on slender peduncles; rays 12—20, yellow; disk dark purple.

Narrow-leaved Sunflower.

** *Disk flowers yellow.*

† *Leaves opposite, or the upper sometimes alternate.*

3. *H. mollis* Lam.: stem villous; leaves ovate or lanceolate, acuminate, somewhat clasping at base, entire or serrulate, scabrous above, tomentose canescent beneath; scales of the involucre lanceolate, villous-canescens. *H. canescens* Mich.

Low grounds. Penn. ? and Ohio to Geor. W. to Texas. July—Sept. ♀.—Stem 2—4 feet high, simple or sparingly branched. Heads few, rather large; rays 15—25, about an inch long.

Woolly Sunflower.

4. *H. strumosus* Linn.: stem rough above, smooth below; leaves ovate-lanceolate, with a long tapering point, serrate, 3-nerved, rough above, whitish and pubescent beneath, abruptly tapering into a short winged petiole; scales of the involucre lanceolate, acuminate, equalling the disk. *H. macrophyllus* Willd.

Dry woods. Can. to Geor. W. to Ark. Aug., Sept. ♀.—Stem 2—4 feet high, slender, simple or sparingly branched. Heads few, on roughly pubescent peduncles; rays about 10, bright yellow.

Sharp-leaved Sunflower.

5. *H. divaricatus* Linn.: stem smooth, simple or dichotomously branched above; leaves sessile, ovate-lanceolate, rounded at base, tapering to the point, serrate, 3-nerved, scabrous above, rough-pubescent beneath; scales of the involucre lanceolate, acuminate, ciliate, spreading.

Woods. Can. to Flor. Aug.—Oct. ♀.—Stem 1—5 feet high, sometimes purple and glaucous. Heads small, few, in a terminal panicle; rays 8—12, bright yellow; disk yellow.

Rough-leaved Sunflower.

6. *H. decapetalus* Linn.: stem erect, smooth below, rough above; leaves ovate or oblong-ovate, on short winged petioles, acuminate, coarsely serrate, 3-nerved, thin and slightly scabrous; scales of the involucre linear-lanceo-

late, squarrose, hispidly ciliate. *H. frondosus* Hook. *H. strumosus* and *tenuifolius* Ell.

Rocky woods. Can. to Geor. Aug.—Oct. ♀.—*Stem* 3—5 feet high, slender, somewhat branching at the summit. *Heads* in a fastigiate corymb; *rays* 8—10; narrow, pale-yellow. *Thin-leaved Sunflower.*

7. *H. trachelifolius* Willd.: stem rough, branched above; leaves ovate-lanceolate, acuminate, serrate, 3-nerved, very scabrous on both sides, contracted into a short petiole, the upper alternate; scales of the involucre linear-lanceolate, ciliate, outer ones large and squarrose.

Woods. Can. to Car. Aug.—Oct. ♀.—*Stem* 3—4 feet high. *Heads* in a loose terminal panicle; *rays* 10. *Wild Sunflower.*

8. *H. giganteus* Linn.: stem tall, scabrous; leaves lanceolate, acuminate, somewhat serrate, obscurely 3-nerved, very rough, attenuate and ciliate at base, the upper alternate; scales of the involucre linear-lanceolate, acuminate, ciliate. *H. altissimus* Willd.

Dry swamps. Can. to Car. Aug., Sept. ♀.—*Stem* 5—8 feet high, paniculately branched at the summit, sometimes smoothish below. *Heads* in a loose terminal panicle; *rays* 12—20, sulphur yellow; *disk* greenish yellow. *Tall Sunflower.*

9. *H. microcephalus* Torr. ♂ *Gr.*: stem smooth, 2—3-chotomously branched; leaves mostly opposite, membranaceous, ovate-lanceolate, acuminate, somewhat serrate, petioled, 3-nerved, scabrous above, tomentose-pubescent beneath; scales of the involucre ovate-lanceolate, ciliate, the outer with squarrose tips. *H. divaricatus* Mich.

Woods. Can. Penn. to Geor. W. to Ken. July—Sept. ♀.—*Stems* usually in tufts, 3—6 feet high. *Heads* small, oblong; *rays* 5—6, about an inch long. *Small-headed Sunflower.*

†† *Leaves alternate, sometimes opposite below.*

10. *H. multiflorus* Linn.: stem erect, branching, scabrous; leaves alternate, petioled, toothed, 3-nerved, scabrous, serrate; lower cordate, upper ovate; outer scales of the involucre linear-lanceolate, ciliate, inner lanceolate.

Mountain woods. Arct. Amer to Can. Penn. to Car. Hook. & Pursh. July—Sept. ♀.—*Stem* and *peduncles* scabrous. *Leaves* sometimes opposite. *Involucre* with 40—50 scales, imbricate, not squarrose. *Heads* erect; *rays* numerous, oblong. Perhaps not a native. *Many-rayed Sunflower.*

11. *H. tuberosus* Linn.: root creeping, bearing an oblong tubercle; stem erect, branching, rough; leaves alternate, petiolate 3-nerved, scabrous, serrate; lower cordate-ovate, upper ovate-acuminate; petioles ciliate at base; scales of the involucre linear-lanceolate, ciliate.

Fields and cultivated grounds. N. S. July—Sept. ♀.—*Stem* 4—8 feet high. *Leaves* large, cuneate at base; the lower ones opposite, rarely ternate. *Heads* rather large, terminal, on angular pubescent peduncles; *rays* numerous, yellow. Naturalized in various parts of the U. S. *Jerusalem Artichoke.*

36. BIDENS. Linn.—Bur-Marigold.

(From the Latin *bidens*, having two teeth; in allusion to the awns of the achenia.)

Heads many-flowered; the ray-flowers neutral, often wanting; those of the disk tubular, perfect. Involucre double, un-

equal; the outer series often large and leafy. Receptacle flat-tish, chaffy. Achenia obcompressed, not winged, crowned with 2—5 retrorsely pilose rigid awns.

1. *B. cernua* Linn.: smooth; leaves undivided, lanceolate, toothed, the upper somewhat connate; heads discoid or radiate, on slender peduncles, usually nodding; outer involucre longer than the head; achenia 4-awned, retrorsely ciliate on the margin.

Near ponds and ditches. Can. to Penn. W. to Oregon. Aug., Sept. ①.—Stem 1—2 feet high. Heads usually discoid, but sometimes more or less radiate; rays, when present, yellow. This plant is sometimes not more than 6 or 8 inches high, with very small erect flowers, when it constitutes the variety *minima*.

Swamp Beggar-ticks.

2. *H. chrysanthemoides* Mich.: stem smooth; leaves undivided, oblong-lanceolate, tapering at each end, connate at base, dentate-serrate; heads radiate, somewhat nodding; rays elliptic, longer than the involucre; achenia with 2—4 retrorsely scabrous awns.

Wet places. Can. and throughout the U. S. Aug., Sept. ①.—Stem 1—2 feet high, erect or declined at base, branching. Heads rather large, solitary at the end of the branches, erect or somewhat nodding; rays 8—10, bright yellow.

Large-flowered Bur-marigold.

3. *B. frondosa* Linn.: stem smooth or a little hairy; lower leaves quinate-pinnate, upper 3-parted; the lobes lanceolate, serrate; heads discoid, pedicellate, erect; outer scales of the involucre much longer than the head, ciliate at the base; achenia 2-awned, somewhat ciliate on the margin.

Woods and fields. Can. and throughout the U. S. July—Sept. ①.—Stem 2—5 feet high, striate, often purple, branched. Heads rather small, on long axillary branches or peduncles; rays none; disk flowers yellowish.

Leafy Bur-marigold.

4. *B. connata* Muhl.: smooth; lower leaves often ternate, with the lateral lobes decurrent into a petiole and slightly connate; upper undivided, oblong-lanceolate, serrate, attenuate at each end; heads discoid, on short peduncles; scales of the outer involucre longer than the disk; achenia 2—3-awned. *B. tripartita* Big.

Wet grounds. Can. to Geor. W. to Miss. July—Sept. ①.—Stem 1—3 feet high, branched, often purple. Leaves sometimes all undivided. Heads middle-sized, rather erect; rays none; disk greenish-yellow. *Connate Bur-marigold.*

5. *B. bipinnata* Linn.: smooth; stem erect, 4-angled; leaves petioled, bi-pinnate, the segments lanceolate or oblong-ovate; heads on slender peduncles, with 2—4 small rays; outer scales of the involucre spreading, about as long as the disk; achenia linear, 3—4-awned.

Near cultivated grounds. Conn. to Flor. W. to Ark. July—Sept. ①.—Stem 2—4 feet high, branched. Heads small, oblong, on long terminal and axillary peduncles; rays 3—4, small, yellow, obovate; disk yellow. A troublesome weed, probably introduced from the South.

Spanish Needles.

6. *B. Beckii* Torr.: stem simple or sparingly branched; leaves mostly submerged, divided into numerous capillary segments; the emersed ones few, lanceolate, coarsely serrate or pinnatifidly lacinate; heads solitary, erect, radiate, terminal; rays longer than the involucre; achenia narrow-oblong, 4—6-awned.

In water. Can. Ver. Mass. and N. Y. W. to the sources of the Mississippi. July, Aug. ♀.—*Stem* 2—6 feet long, simple, or with very small and slender branches arising from the axils of the upper leaves. *Lower leaves* very multifid, capillary, as in *Ranunculus aquatilis*, but opposite or almost verticillate; *upper* about an inch and a half long, broad-lanceolate, attenuate at each extremity, deeply serrate or incised. *Flower* solitary, at the extremity of the stem, rather large, yellow; *rays* much longer than the involucre. *Water Marigold.*

37. VERBESINA. Linn.—Verbesina.

(Said to be altered from *Verbena*, on account of the resemblance of one of the species.)

Heads many-flowered, mostly radiate. Involucre in two or more series; the scales nearly equal or imbricated. Receptacle flat or somewhat convex; the chaff concave and embracing the flowers. Achenia flat-compressed, usually winged at the angles, crowned with 2 rigid awns.

1. *V. Siegesbeckia* Mich.: stem smooth, 4-winged; leaves opposite, decurrent, ovate-lanceolate, acuminate at each end, smoothish, coarsely serrate; panicle trichotomous, corymbose at the summit; scales of the involucre few, obtuse. *V. occidentalis* Walt. *Siegesbeckia occidentalis* Linn.

Shady woods. Penn. to Car. W. to Miss. July—Sept. ♀.—*Root* creeping. *Stem* erect, 4—6 feet high, with 4 leafy wings. *Heads* in corymbs, yellow; *rays* 1—5, lanceolate, 3-toothed. *Crown Beard.*

2. *V. Virginica* Linn.: stem narrowly winged, tomentose-pubescent at the summit; leaves alternate, lanceolate or ovate-lanceolate, serrate, veined, scabrous above, pubescent beneath, acute or acuminate at each end, the lower decurrent; heads in cymose corymbs, crowded.

Dry woods. Penn. to Flor. W. to Ark. Aug., Sept. ♀.—*Stem* 3—6 feet high. *Heads* in crowded corymbs; *rays* very short, the tube and involucre pubescent. *Virginian Verbesina.*

38. HELENIUM. Linn.—False Sunflower.

(Named, it is said, after *Helen*, the wife of Menelaus.)

Heads many-flowered, radiate; the ray flowers in a single series, pistillate, ligulate, or rarely tubular, 3—5-cleft; those of the disk perfect, tubular, very short, 4—5-toothed. Involucre in 2 series; the outer scales numerous, leafy, long-linear, reflexed or spreading. Receptacle convex, globose or oblong, naked. Achenia turbinate-obovate. Pappus chaffy; chaff 5—6-awned.

H. autumnale Linn.: smooth; stem erect, branched; leaves lanceolate, serrate, acute, decurrent; disk globose; rays 3—5-cleft, spreading or reflexed.

Low grounds. Hudson's Bay to Flor. W. to Oregon. Aug.—Oct. ♀.—*Stem* 2—3 feet high, winged by the decurrent leaves. *Leaves* narrowed at base, the upper nearly entire. *Heads* middle-sized, numerous, in a terminal corymb; *rays* yellow, cuneate, mostly drooping; *disk* greenish-yellow. Whole plant intensely bitter. *Sneeze-weed.*

39. ANTHEMIS. *Linn.*—Chamomile.

(From the Greek *ανθεμον*, a flower; on account of the profusion of its blossoms.)

Heads many-flowered; the ray flowers in one series, ligulate, pistillate; those of the disk tubular, perfect. Scales of the involucre imbricate, in a few series. Receptacle convex, oblong or conic, with membraceous chaff among the flowers. Achenia terete or obtusely 4-angled, striate or smooth. Pappus none or a membranous margin.

A. arvensis *Linn.*: diffuse, pubescent; leaves pinnately parted; the lobes linear-lanceolate, with very acute teeth; heads solitary at the summits of the leafless branches; receptacle conic; the chaff lanceolate, acuminate.

Fields and cultivated grounds. N. Y. to Virg. June—Aug. ①.—*Stem* 9—15 inches high, branched. *Leaves* grayish-pubescent. *Heads* large; *rays* broad, white, spreading; *disk* yellow, convex. Introduced from Europe. *A. nobilis* *Linn.*, the common *chamomile*, is said by Nuttall to be naturalized near Lewistown, Del.
Wild or Corn Chamomile.

40. MARUTA. *Cass.*—May Weed.

(Origin not known.)

Heads many-flowered; the ray flowers ligulate, neutral; those of the disk perfect. Involucre hemispheric, in a few series, shorter than the disk. Receptacle conic or convex, chaffy throughout or only at the top. Achenia ribbed, smooth. Pappus none.

M. Cotula *D. C.*: smoothish; leaves bi-pinnatifid, the segments subulate-linear; receptacle conic, with narrow acuminate chaff at the summit.
Anthemis Cotula *Linn.*

Road sides, &c. Can. and throughout the U. S. June—Oct. ①.—*Stem* a foot high, erect, branched. *Leaves* pale green, more or less pilose; the segments very narrow. *Heads* on elongated slender peduncles; *rays* about 12, white; *disk* convex, yellow. Whole plant strongly fetid. An exotic, now almost everywhere naturalized.
Common May-weed.

41. PTARMICA. *Tourn.*—Sneezewort.

(From the Greek *πταρμος*, in allusion to its effect upon the nostrils.)

Involucre campanulate; the scales scarious on the margin. Receptacle flat or scarcely convex, broad, chaffy. Rays 5—20, flat, spreading much longer than the involucre. Achenia obcompressed; the outer ones often somewhat winged on the margin.

P. vulgaris *D. C.*: stem erect, branching above; leaves smooth, sessile, linear-lanceolate, acuminate, coarsely and equally serrate; chaff of the receptacle oblong, pubescent. *Achillea Ptarmica* *Linn.*

Dry swamps. Can. to N. Y. *Pursh.* Danvers, Mass. *Oakes.* Aug., Sept.

¶.—*Stem* 1—3 feet high, erect, branched; *heads* in a rather large terminal corymb; *rays* 8—12, white, roundish, 3-toothed; *disk* white. When dried and pulverized the plant has been employed to excite sneezing, whence its common name. Introduced from Europe. *Common Sneezewort.*

42. ACHILLEA. Linn.—Yarrow.

(So named because its healing virtues were said to have been first discovered by *Achilles*.)

Heads many-flowered; the ray flowers 4—6 pistillate, ligulate, short, or none; those of the disk perfect, tubular, 5-toothed. Involucre ovate-oblong, the scales imbricate. Receptacle small, usually flat, chaffy. Achenia oblong, smooth, somewhat compressed, margined. Pappus none.

A. Millefolium Linn.: stem erect, somewhat hairy, sulcate; leaves bipinnate, slightly hairy; the lobes linear, toothed, mucronate.

Fields and woods. Arct. Amer. to Flor. W. to Oregon and Mexico. June—Aug. ¶.—*Stem* 2—3 feet high, branched at the top. *Leaves* 2—6 inches long, cut into very numerous narrow segments. *Heads* numerous, in a dense terminal fastigate corymb; *rays* about 5, white or rose-colored. It is sometimes employed as a tonic and astringent. Introduced and extensively naturalized. *Common Yarrow or Milfoil.*

43. LEUCANTHEMUM. Tourn.—Ox-eye Daisy.

(From the Greek *λευκος*, white, and *ανθιμον*, a flower.)

Heads many-flowered; the ray-flowers numerous, pistillate, or rarely neutral; those of the disk perfect, with a fleshy somewhat two-winged tube. Involucre broad, imbricate; the scales with a somewhat scarious margin. Receptacle naked, flat, or convex. Achenia of the ray always without pappus; of the disk sometimes with a short pappus.

L. vulgare Lam.: stem erect, somewhat branched; lower leaves petiolate, obovate, toothed; cauline somewhat clasping, serrate, incisely serrate at base; scales of the involucre with a narrow brownish margin. *Chrysanthemum Leucanthemum* Linn.

Fields and road sides. Can. and throughout the U. S. June—Aug. ¶.—*Stem* 1—2 feet high, erect or subdecumbent at base, smoothish. *Leaves* often pinnatifid-toothed near the base. *Heads* large, solitary on the branches; *rays* 20—30, white; *disk* flowers numerous, yellow. Introduced, and everywhere naturalized. A very troublesome weed. *Large Ox-eye Daisy.*

44. ARTEMISIA. Linn.—Wormwood.

(Named from *Artemis*'s, the *Diana* of the Greeks.)

Heads discoid, few- or many-flowered; the outer flowers in one series, often pistillate, 3-toothed, with a long exsert bifid style; those of the disk 5-toothed, perfect, sterile or staminate by abortion of the ovary. Involucre imbricate; the scales dry

and scarious on the margin. Receptacle flattish or convex, naked or villous. Achenia obovate, with a minute epigynous disk. Pappus none.

* *Receptacle naked.*

1. *A. vulgaris* Linn.: herbaceous, erect; leaves white-tomentose beneath; cauline pinnatifid; segments lacinate, incised, coarsely serrate and entire; uppermost nearly linear, entire; heads ovoid, at length erect; outer scales of the involucre white-tomentose.

Banks of streams. Arct. Amer. Ver. and N. Y. S. to Car. Sept., Oct. 21.—*Stem* 2—3 feet high, suffruticose, much branched. *Leaves* variable. *Heads* few, sessile. Introduced? *Mugwort.*

2. *A. Canadensis* Mich.: smooth or canescent; lower leaves pinnate, petioled; upper subpinnate, sessile; segments linear or linear-lanceolate; heads hemispheric, in paniculate racemes; scales of the involucre roundish or ovate, scarious on the margin.

Sandy shores. Mass. and N. Y. N. to the Arctic Circle. W. to Oregon. July, Aug. ①.—*Stem* mostly erect, but sometimes decumbent at base, 2—4 feet high. *Radical leaves* clustered, silky beneath. *Heads* rather large, very numerous, in terminal paniculate racemes. A variable species. *Wild Wormwood.*

3. *A. cordata* Mich.: stem erect, smooth; radical and lower cauline leaves sub-bipinnate, upper sub-pinnate; segments subsetaceous, alternate, somewhat divaricate; racemes elongated, erect, paniculate; heads subglobose. *A. Canadensis* Big.

Sandy woods and shores. N. H. to Geor. W. to Miss. Aug., Sept. ②.—*Stem* 2—6 feet high, rather slender. *Leaves* slightly pubescent beneath, petioled or sessile. *Heads* erect, very numerous, in racemes which form a dense pyramidal panicle. Nearly allied to the preceding. *Tall Wormwood.*

** *Receptacle villous.*

4. *A. Absinthium* Linn.: suffruticose, erect, silky-canescens; leaves bipinnatifid; the segments lanceolate, often incised, obtuse; heads hemispheric, in leafy paniculate racemes, nodding.

Road sides. N. S. Aug. 24.—*Stems* 2—4 feet high, several from one root. *Heads* numerous. *Flowers* yellowish. Introduced and naturalized in a few places. Uncommonly bitter, and valuable for its medicinal properties.

Common Wormwood.

45. TANACETUM. Linn.—Tansy.

(The name altered from *Athanasia*; *a*, not, and *thavros*, death; because its flowers do not quickly fade.)

Heads homogamous or heterogamous, with pistillate flowers in a single series in the circumference, often 3—4-toothed. Disk-flowers 4—5-toothed. Receptacle naked, convex. Involucre campanulate, imbricate. Achenia sessile, angular, smooth, with a large epigynous disk. Pappus none or minute, membranaceous and crown-form, entire or toothed.

T. vulgare Linn.: stem herbaceous, erect, smooth; leaves smoothish, bi-

pinnate; rachis and lobes incisely serrate; heads numerous, corymbose; pappus short, equal, 5-toothed.

Road sides, near fences, &c. Can. and N. S. July, Oct. ♀.—*Stem* 2—4 feet high, ribbed, somewhat branched above. *Leaves* 2—6 inches long, dotted. *Heads* in dense terminal corymbs, deep yellow. The whole plant is bitter and aromatic, and much used as a popular medicine. Introduced and in many places completely naturalized. *Common Tansy.*

46. GNAPHALIUM. *Linn.*—Cud Weed.

(From the Greek *γναφαλον*, *soft down or wool*, with which the leaves of many species are clothed.)

Heads many-flowered, heterogamous; flowers all tubular; outer ones in many series, pistillate, very slender; those of the disk perfect. Involucre ovate, with the scales imbricate, appressed and somewhat hyaline. Receptacle flat, naked. Achenia somewhat terete, or more or less obcompressed. Pappus in a single series, of filiform roughish bristles.

* *Pistillate flowers in several series. Achenia somewhat terete.*

† *Leaves decurrent.*

1. *G. decurrens* *Ives.*: stem erect, simple, viscid-pubescent, branched at the summit; leaves linear-lanceolate, partly clasping, very acute, decurrent, roughish and green above, white and woolly beneath; heads nearly sessile, in dense roundish clusters at the summits of the branches.

Fields and hills. Can. N. Y. Mass. and N. J. Aug., Sept. ♀.—*Stem* about 2 feet high. *Heads* subsessile, in large roundish clusters. *Scales* of the involucre yellowish-white. *Decurrent Cud-weed.*

†† *Leaves not decurrent.*

2. *G. polycephalum* *Mich.*: stem erect, paniculate above, tomentose; leaves linear-lanceolate, tapering at base, acute, smoothish above, whitetomentose beneath; heads obovate, crowded in a corymb at the summits of the branches.

Fields. Can. to Louis. W. to Texas. July—Sept. ♂.—*Stem* 1—2 feet high, often much branched at the summit. *Heads* at length obovate. *Scales* of the involucre yellowish-white. The whole plant has a balsamic odor.

Fragrant Life-everlasting.

3. *G. uliginosum* *Linn.*: stem herbaceous, diffusely branched, woolly; leaves linear or linear-lanceolate, tomentose on both sides; heads in dense subglobose terminal clusters, leafy at the base.

Wet grounds. Can. and N. S. N. to Newfoundland. W. to Oregon and California. July—Sept. ♂.—*Stem* 4—6 inches high, very much branched. *Heads* small. *Scales* of the involucre yellowish-brown, shining. *Marsh Cud-weed.*

4. *G. purpureum* *Linn.*: stem erect or ascending, woolly; leaves oblong-spatulate, mostly obtuse, mucronate, tomentose beneath; heads sessile, clustered, axillary and terminal. *G. Americanum* *Willd.*

Barren soils. N. H. to Louis. W. to Texas. July—Oct. ♀.—*Stem* 8—12 inches high, slender. *Heads* somewhat spiked at the top of the stem, purplish. *Purple Cud-weed.*

** *Pistillate flowers in one series. Achenia obcompressed, obovoid.*

5. *G. supinum* Vill.: cespitose; flowering stems simple, slender, woolly above; leaves linear, woolly; heads oblong, solitary, terminal, or few and spicate-racemose; scales of the involucre oblong, acuminate, brown; achenia puberulent. *Omalotheca supina* D. C.

White mountains, N. H. Nutt. N. to Labrador. ♀.—Stem 2—4 inches high. *Low Alpine Cud-weed.*

47. FILAGO. Tourn.—Cotton Rose.

(From the Latin *filum*, a thread; in allusion to the cobweb-like threads which cover the plant.)

Heads many-flowered, heterogamous; the terminal or central flowers numerous, pistillate, perfect or infertile, tubular, 4—5-toothed; the others filiform, pistillate, scarcely-toothed. Scales of the involucre few, the outer ones woolly. Receptacle elongated, filiform, chaffy. Pappus of the central flowers filiform; of the outer none or dissimilar.

F. Germanica Linn.: stem dichotomous or proliferously branched at the summit; leaves linear-lanceolate, acute, tomentose; heads few-flowered, in subglobose clusters, terminal and dichotomal; scales of the involucre awned. *Gnaphalium Germanicum* Willd.

Fields and pastures. N. Y. to Virg. July, Aug. ①.—Stem 4—8 inches high, more or less branched, woolly-tomentose. Heads small, in roundish capitate clusters. Scales of the involucre yellowish, very acute. Introduced? *Herba Impia.*

48. ANTENNARIA. Gart.—Antennaria.

(Named in allusion to the bristles of the pappus, which resemble the *antennæ* of some insects.)

Heads many-flowered, diœcious; the corolla tubular; in the pistillate flowers filiform, 5-toothed. Scales of the involucre imbricate, colored, scarious. Receptacle convex, alveolate. Achenia nearly terete. Pappus in a single series; in the pistillate flowers filiform; in the staminate clavate.

1. *A. plantaginica* R. Brown: stem simple, with procumbent shoots; leaves silky-villous when young, but when old smoothish above and canescent beneath; radical oval, petiolate, 3-nerved; cauline linear: heads in a small crowded corymb. *Gnaphalium plantagineum* Linn. *G. dioicum* var. *plantaginifolium* Mich.

Woods. Hudson's Bay to Flor. W. to the Rocky Mountains. April—June. ♀.—Stem 3—8 inches high, downy. Radical leaves often large and broad. Heads few, (sometimes a single large one,) oblong, pedicellate, with a white involucre. *Plantain-leaved Cud-weed.*

2. *A. margaritacca* R. Brown: stem erect, tomentose; leaves linear-lanceolate, acuminate, 1-nerved, green and lanuginous above, tomentose beneath; heads in a terminal corymb. *Gnaphalium margaritacum* Linn.

Woods and fields. Can. to Car. W. to Oregon. Aug., Sept. ♀.—Stem

1—2 feet high, clothed with a thick wool. Heads numerous, rather large, pedicellate, in a spreading corymb. Involucre pearly white. Flowers yellowish.
Pearly Everlasting.

49. ERECHTITES. Raf.—Fire Weed.

(An ancient name of a species of *Senecio*, from which this genus was separated.)

Heads many-flowered, heterogamous; marginal flowers pistillate, somewhat 3—5-toothed; the central ones perfect, 4—5-toothed. Involucre cylindric, in one series; the scales linear, acute. Receptacle naked, somewhat papillose. Achenia oblong, striate. Pappus in many series, of very fine somewhat roughish hairs.

E. hieracifolia Raf.: stem striate, simple or paniculate above; leaves oblong-lanceolate, sessile, attenuate at base, coarsely and unequally serrate; upper auriculate at base and partly clasping; involucre cylindric, with linear-subulate bracteoles at the base. *Senecio hieracifolius* Linn.

Road sides and burnt grounds. Can. and throughout the U. S. July, Aug. ①.—Stem 2—5 feet high, stout, succulent, more or less hairy. Heads numerous, middle-sized, in a compound terminal panicle; rays none; disk flowers numerous, white or yellowish.
Common Fire-weed.

50. ARNICA. Linn.—Arnica.

(Said to be a corruption of *Ptarmica*.)

Heads many-flowered, radiate; ray flowers pistillate; those of the disk tubular, perfect. Involucre campanulate; the scales in two series, linear-lanceolate, equal. Receptacle flat, somewhat hairy. Achenia tapering at each end, somewhat hairy. Pappus in one series of rough rigid bristles.

1. *A. nudicaulis* Nutt.: hirsute; leaves sessile; the radical clustered, elliptic-ovate, nerved, entire or slightly toothed; cauline 1—2 pairs, lance-ovate; heads terminal, on loosely corymbose peduncles. *A. Claytoni* Pursh. *Doronicum nudicaule* Mich.

Meadows. Chester county, Penn. *Darlington*; rare. S. to Flor. July, Aug. ②.—Stem 1—2 feet high, with a few peduncle-like branches at the summit, somewhat viscid. Heads large; rays numerous, deep yellow, 2—3-toothed at the apex; disk greenish-yellow. *Naked-stemmed Arnica*. *Leopard's-bane*.

2. *A. mollis* Hook.: villous-pubescent; stem leafy, bearing 1—5 heads; leaves lanceolate or oblong, smoothish when old, repand-denticulate; upper ones closely sessile; the lower narrowed at base or tapering into a petiole; scales of the involucre acuminate, hairy.

Borders of rivulets, in the mountains of Essex county, N. Y. Aug. *Torr*. White Mountains, N. H. ③.—Root creeping. Stem 12—20 inches high, simple, more or less pubescent. Heads about 3, large; rays 2—3-toothed at the summit, pale yellow. Pappus nearly plumose.
Pubescent Arnica.

51. CACALIA. *Linn.*—Indian Plantain.

(An ancient Greek name, the etymology of which is obscure.)

Heads many-flowered, the flowers all tubular and perfect. Involucre in one series, 5—30-leaved. Receptacle flat, not chaffy. Achenia oblong, smooth, not beaked. Pappus in one series of minute capillary bristles.

1. *C. suaveolens* *Linn.*: stem erect, smooth, striate and angled; leaves petiolate, hastate-sagittate, serrate, smooth and green on both sides; heads many-flowered; scales of the involucre about 13. *Senecio suaveolens* *Ell.*

Banks of streams. Can. to Geor. W. to Ken. and Ill. Sept. 24.—*Stem* 3—4 feet high, smooth. *Radical leaves* on long petioles. *Heads* 25—30-flowered, in a compound corymb, yellowish-white. *Sweet-scented Indian Plantain.*

2. *C. atriplicifolia* *Linn.*: stem erect, smooth; leaves petioled, smooth, glaucous beneath; lower deltoid-cordate, sinuate-angled and toothed; upper rhomboidal, acute, wedgeform at base, coarsely toothed; involucre oblong, 5-leaved, 5-flowered. *Senecio atriplicifolius* *Hook.*

Moist grounds. Can. to Geor. W. to Miss. Aug., Sept. 24.—*Stem* erect, 3—6 feet high. *Lower leaves* 4—6 inches long and nearly as wide, on long petioles. *Heads* numerous, in a terminal corymb, greenish-white.

Common Indian Plantain.

3. *C. reniformis* *Muhl.*: stem sulcate-angled; leaves petioled, smooth, hairy on the veins beneath; radical broad-cordate, reniform, repand-toothed; cauline oblong, toothed, wedgeform and very entire at base; corymb fastigiate; involucre 5-leaved.

Low grounds. Penn. to Car. W. to Ill. Aug., Sept. 24.—*Stem* 4—8 feet high. *Radical leaves* often 2 feet wide. (*Torr. & Gr.*) *Heads* 5-flowered, white. *Kidney-leaved Indian Plantain.*

52. SENECEO. *Linn.*—Groundsel.(From the Latin *senex*, an *old man*; the pappus resembling a white beard.)

Heads many-flowered, radiate or discoid; rays pistillate. Involucre in one series or calyculate, with smaller accessory scales at base. Receptacle naked or alveolate. Achenia not beaked. Pappus of numerous slender nearly equal bristles.

* *Rays none.*

1. *S. vulgaris* *Linn.*: stem erect, often branching; leaves deeply pinnatifid, clasping, toothed; the lower tapering into petioles; heads in a corymb, nodding; rays none; pappus equalling the corolla.

Waste places. N. S. May—Oct. ①.—*Stem* about a foot high. *Heads* yellow. *Calyculate scales* shorter than the involucre. Introduced from Europe.

*Common Groundsel.*** *Heads radiate.*

2. *S. aureus* *Linn.*: smooth or somewhat lanuginous; radical leaves cordate-ovate, obtuse, serrate, on long petioles; cauline pinnatifid, toothed, sessile, the terminal segments lanceolate; heads few, in a somewhat umbel-like corymb.

Wet shady woods. Arct. Amer. to Louis. W. to Oregon. June, July. 2.—
Stem 1—2 feet high, branched above, often woolly. Heads middle sized, nume-
rous, on long slender peduncles which are thickened near the involucre; rays
8—12, and with the disk yellow. *Golden Groundsel. Squaw-weed.*

3. *S. Balsamita* Muhl.: stem erect, villous at base; radical leaves ob-
long-lanceolate, dentate-serrate, on long petioles; cauline lyrate-pinnatifid,
sessile, the segments toothed; heads in a compound umbellate corymb.

Moist grounds. Arct. Amer. to Louis. W. to Oregon. June, July. 2.—
Stem 1—2 feet high, densely woolly at the base. Heads rather small, yellow;
rays 8—12, narrow; disk flowers about 20. *Balsamita-like Groundsel.*

4. *S. obovatus* Muhl.: stem erect, smoothish; radical leaves varying from
roundish-obovate to oblong-spatulate, crenate-serrate, petiolate; cauline
pinnatifid, toothed, sessile; heads in a nearly simple somewhat umbelled
corymb, on long peduncles which are scarcely thickened at the summit.

Rocky woods. Arct. Amer. to Louis. W. to Oregon. June, July. 2.—Stem
a foot high, branched at the summit. Heads rather small, yellow; rays about
10. Torrey & Gray consider this and the preceding species, as mere varieties
of *S. aureus*; to which also they refer *S. lanceolatus* Oakes and *S. gracilis*
Pursh. *Obovate-leaved Groundsel.*

5. *S. tomentosus* Mich.: white-tomentose and woolly; radical leaves
oval-oblong or oval-lanceolate, serrulate-crenate, toothed at base, on long
petioles; cauline oblong, somewhat divided; corymb small, somewhat um-
belled. *S. integrifolius* Nutt. *Cineraria integrifolia* and *heterophylla*
Pursh.

Dry rocks on the Blue Mountains, Penn. Pursh. S. to Flor. May, June.
2.—Stem 1—2 feet high. Heads yellow, larger than in *S. aureus*; rays 12—15,
elongated. *Downy Groundsel.*

6. *S. elongatus* Pursh.: smooth; radical leaves spatulate, serrate, atten-
uated into a petiole; cauline pinnatifid, toothed, very remote; heads on
elongated peduncles, arranged in a somewhat umbelled corymb.

Rocks on banks of streams near Easton, Penn. July, Aug. 2.—Resembles
S. Balsamita, but is destitute of ray flowers. Pursh. *Elongated Groundsel.*

V. CYNARÆ. Style in the perfect flowers thickened near the sum-
mit, and often fringed at the tumor; its branches distinct or united,
pubescent externally.

53. CENTAUREA. Linn.—Knap Weed. Blue Bottle.

(From the Centaur Chiron, who is said by this plant to have cured himself of
a wound received from Hercules.)

Heads many-flowered; ray flowers mostly large and sterile,
funnel-form, sometimes wanting. Scales of the involucre imbricate,
various. Receptacle bristly-paleaceous. Achenia com-
pressed. Pappus mostly in many series, pilose, sometimes
wanting.

1. *C. Jacea* Linn.: stem erect, branched; leaves linear-lanceolate;
lower broader and toothed, petioled; scales of the involucre scarious and
torn, the outer pinnatifid; heads radiate; pappus very short or none.

Waste places. Penn. Muhl. July, Aug. ④.—*Heads* with numerous purple flowers. *Involucre* pale-brown, shining. Introduced from Europe.

Brown Knap-weed.

2. *C. nigra* Linn.: stem erect, branched; leaves scabrous; lower angular-lyrate, petioled; upper lanceolate; scales of the involucre ovate, fringed with capillary teeth; rays none; pappus very short, tufted.

Fields. Mass. and Penn. July, Aug. ④.—*Stem* 2—3 feet high. *Heads* terminal, solitary. *Flowers* purple. *Scales* of the involucre almost black, the teeth brown. Introduced from Europe and becoming in some places a troublesome weed.

Black Knap-weed.

3. *C. Cyanus* Linn.: cottony-tomentose; stem erect, branched; upper leaves linear, entire; lowermost toothed or pinnatifid at base; scales of the involucre serrate; pappus short.

Cultivated grounds. N. S. July, Aug. ①.—*Stem* 2—3 feet high. *Heads* in terminal peduncles; rays few, spreading, bright blue; *disk flowers* smaller, purple. Introduced from Europe and naturalized in a few places.

Corn Blue-bottle.

54. CNICUS. Vaill.—Blessed Thistle.

(From the Greek κνιζω, to prick or wound.)

Heads many-flowered; the rays sterile, slender, nearly equal to the disk. *Involucre* ovoid; scales coriaceous, produced into a long hard pinnated spinose appendage. *Receptacle* bristly. *Achenia* smooth, striate. *Pappus* triple; outer series very short; intermediate of 10 long rigid bristles; inner of 10 short bristles.

C. benedictus Linn. D. C. *Centaurea benedicta*. Linn. Ed. 2.

Road sides; rare. N. Y. June. Torr. ①.—*Stem* 1—2 feet high, branching. *Leaves* clasping, somewhat decurrent and pinnatifid, the lobes spiny. *Heads* large. Introduced.

Common Blessed Thistle.

55. ONOPORDON. Linn.—Cotton Thistle.

(From two Greek words expressive of the effect, ascribed by Pliny, to the ass who eats the plant. Hook. Br. Fl.)

Heads homogamous, many- and equal-flowered. *Involucre* ovate-globose; scales imbricate, coriaceous, terminating in a lanceolate appendage bearing a spine at the summit. *Receptacle* honey-combed. *Achenia* four-cornered, transversely rugose. *Pappus* in several series, rough, deciduous.

O. Acanthium Linn.: leaves ovate-oblong, sinuate and spinous, decurrent, woolly on both sides; scales of the involucre linear-subulate, the outer spreading and woolly at the base.

Waste grounds. Mass. July. ②.—*Stem* 4—6 feet high, branched and winged at the summit; wings very spinous. *Heads* large, solitary. *Flowers* purple. Introduced from Europe. Cultivated in Scotland as the *Scotch Thistle*.

Common Cotton Thistle.

56. CIRSIUM. *Tourn.*—Thistle.

(From the Greek κίρσιος, a *swelled vein*; on account of its being supposed to heal that disease.)

Heads many-flowered; the flowers perfect or dioecious. Scales of the involucre more or less spinous at the summit. Receptacle bristly. Corolla with the tube short and the border 5-cleft. Achenia oblong, compressed, smooth, not ribbed. Pappus of numerous plumose bristles, deciduous.

* *Leaves decurrent.*

1. *C. lanceolatum* Scop.: stem branched, hairy; leaves decurrent pinnatifid, hispid above, woolly beneath; segments divaricate and spinous; scales of the involucre linear-lanceolate, spinous, outer ones spreading. *Carduus lanceolatus* Linn. *Cnicus lanceolatus* Willd.

Fields and road sides. N. S. July—Oct. ♀.—Stem 2—4 feet high, winged by the decurrent leaves. Heads terminal, ovoid, middle-sized. Flowers purple. Common Thistle.

** *Leaves sessile.*

2. *C. altissimum* Spreng.: stem tall, branched, pubescent; leaves ciliate-spinous, scabrous above, tomentose beneath; radical petioled, pinnatifid; cauline sessile, oblong-lanceolate, sinuate-toothed; scales of the involucre ovate-lanceolate, spinous, appressed. *Carduus altissimus* Linn. *Cnicus altissimus* Willd.

Old fields. Penn. to Car. W. to Miss. Aug., Sept. ♀.—Stem 3—8 feet high, and on the Missouri, according to Mr. Nuttall, 12—18 feet. Leaves variable. Heads large, terminal. Flowers purple. Tall Thistle.

3. *C. discolor* Spreng.: stem hairy, divaricately branched; leaves lanceolate, sessile or clasping, more or less deeply pinnatifid, smoothish above, tomentose beneath; segments 2-lobed, ciliate and spinous; involucre subglobose; the scales ovate, spinous. *Carduus discolor* Nutt. *Cnicus discolor* Muhl.

Old fields. Can. to Car. July—Sept. ♂.—Stem 3—6 feet high, sparsely hairy. Heads large, terminal. Flowers purple. Two-colored Thistle.

4. *C. arvensis* Scop.: stem paniculate; the branches somewhat woolly; leaves oblong-lanceolate, sessile, sinuate-pinnatifid, spinous, undulate, smoothish; involucre ovoid; scales ovate-lanceolate, the outer armed with a short spine. *Carduus arvensis* Smith. *Cnicus arvensis* Willd.

Fields and road sides. Can. and N. S. July. ♀.—Root creeping. Stem 2—3 feet high. Leaves very thorny. Heads numerous, terminal, small. Flowers purple, rarely whitish. A very troublesome weed. Introduced from Europe. Canada Thistle. Cursed Thistle.

5. *C. muticum* Mich.: stem smoothish, sparingly branched; leaves sessile, deeply pinnatifid, woolly beneath; segments lanceolate, acute, spinulose; involucre subglobose; scales viscid, woolly, unarmed, or the outer ones with a very short spine. *C. Bigelowii* D. C. *Carduus muticus* Nutt. *C. glutinosus* Beck Bot. 1st. Ed.

Low grounds. Can. to Louis. W. to Texas. Aug., Sept. ④ or ⑤.—*Stem* 3—5 feet high, striate and angular. *Heads* middle-sized, terminal. *Flowers* purple. *Awnless Thistle.*

6. *C. pumilum* Spreng.: stem low, hairy, 1—3-flowered; leaves lance-oblong, pinnatifid, somewhat clasping, green on both sides; segments irregularly lobed, ciliate and spinous; involucre sub-globose; scales appressed, ovate-lanceolate, acuminate, spinous. *Carduus pumilus* Nutt.

Dry fields. N. Y. Mass. and Penn. July, Aug. ②.—*Stem* 1—2 feet high, (sometimes much taller,) erect or subdecumbent. *Heads* very large. *Flowers* pale purple. *Pappus* more than an inch long. Var. *Hystrix* of Nuttall, has the stem simple, 1-flowered, and the leaves densely margined with spines. It occurs on the banks of the Hudson, near the city of New York. *Low Thistle.*

7. *C. Nuttallii* D. C.: stem much branched; leaves sessile, smooth or smoothish on both sides, pinnatifid; lobes lanceolate, acuminate and with the teeth spinous; involucre ovoid; scales lanceolate, appressed, with a short somewhat reflexed spine at the apex, somewhat pubescent and viscid upon the back. *Carduus glaber* Nutt. *Cnicus glaber* Ell.

Low grounds. N. J. Nutt. S. to Geor. ④.—*Stem* 4—5 feet high, slenderly branched. *Heads* somewhat paniculate. *Flowers* pale purple. Allied to *C. muticum*, and perhaps only a variety. *Nuttall's Thistle.*

8. *C. horridulum* Mich.: stem simple or sparingly branched, arachnoid when young; leaves lanceolate, partly clasping, pinnatifid, acutely divided, very spinous, woolly beneath; heads with a whorl of spinous bracts at base; involucre subglobose; scales linear, acute, scarcely spinous. *Carduus spinosissimus* Walt. *Cnicus horridulus* Pursh.

Sandy fields. N. Y. to Flor. and Louis. July—Sept. ④.—*Stem* 2—3 feet high, stout, hollow, lanuginous. *Heads* large, axillary and terminal, with 20—30 bracts at base, the outer of which have spines somewhat in pairs. *Flowers* dull yellow, rarely pale purple. *Yellow Thistle.*

9. *C. Virginianum* Mich.: stem slender, mostly simple, arachnoid; leaves sessile, lance-linear, revolute on the margin, distantly and spinosely serrate, smooth above, white-tomentose beneath; involucre ovate; scales appressed, shortly mucronate, glutinous. *Carduus Virginianus* Willd. *Cnicus Virginianus* Pursh.

Woods. Penn. ? to Geor. W. to Ken. July—Sept. ④.—*Stem* 2—4 feet high, covered with a white down, especially towards the summit. *Heads* small, mostly solitary. *Flowers* purple. *Virginian Thistle.*

57. LAPPA. *Tourn.*—Burdock.

(Said to be derived from the Celtic *llap*, a hand; because it lays hold of everything near it. *Torr.*)

Heads many-flowered; the flowers similar and perfect. Corolla 5-cleft; tube 10-nerved. Involucre globose; scales imbricate, coriaceous, with a long subulate inflexed point. Receptacle flat, covered with bristly chaff. Achenia oblong, compressed, smooth, transversely rugose. Pappus of numerous short distinct filiform rough bristles, caducous.

L. major Gært.: scales of the involucre subulate, smooth or with a cobweb-like down; lower leaves cordate, petiolate; cauline ovate. *Arctium Lappa* Linn.

Waste grounds, road sides, &c. N. S. July—Oct. ♀.—*Stem* stout, 3—4 feet high. *Radical leaves* very large, (often 1—2 feet long and a foot wide,) wavy on the margin. *Heads* globose, numerous, often clustered. *Flowers* purple. *Involucres* with hooked scales, by which they are fastened to clothes and the coats of animals. Introduced from Europe. *Common Burdock.*

SUBORDER II. LIGULIFLORÆ.

Flowers all ligulate and perfect.

VI. CICHORACEÆ. *Style cylindrical above; its branches rather long and obtuse, equally pubescent.*

58. CICHORIUM. Tourn.—Succory.

(Said to be derived from the Arabic *Chikouryeh*.)

Heads many-flowered. Involucre double; the outer of about 5 short scales; inner long, 8—10-leaved. Receptacle flattish, naked or slightly hairy. Achenia somewhat compressed, smooth, striate. Pappus of numerous very short and somewhat obtuse scales, in one or two series.

C. Intybus Linn.: lower leaves runcinate, scarios-hispid on the midrib; upper lanceolate, nearly entire; heads axillary, sessile, mostly 2—3 together.

Old fields and road sides. N. S. July—Sept.—*Stem* 2—3 feet high, with numerous rough branches. *Heads* axillary, mostly in pairs, sessile. *Flowers* bright blue or purplish. The roots are largely used for the purpose of adulterating coffee. Introduced from Europe. *Succory* or *Chicory.*

59. KRIGIA. Schreb.—Dwarf Dandelion.

(In honor of *David Kreig*, a German botanist.)

Heads many-flowered, (15—30). Involucre in a single series, with 8—12 scales. Receptacle naked. Achenia turbinate, somewhat pentagonal, not beaked. Pappus in a double series; the outer of 5 broad, short, chaffy scales; inner of 5 long scabrous bristles, alternating with the scales.

K. Virginia Willd.: somewhat glaucous; primary leaves roundish, entire; the succeeding ones lyrate, nearly smooth; heads solitary, on scapes which are finally longer than the leaves. *Cynthia Virginia* Beck Bot. 1st Ed. *Hyoseris Virginia* Linn.

Fields and dry soils. Can. to Flor. W. to Texas. May—Aug. ①.—*Scapes* 2—10 inches high, often several from one root. *Head* solitary, terminal, small. *Flowers* deep yellow. This plant continues in flower for some time; during which it varies greatly in the length of the scape. *K. dichotoma* of Nuttall, although marked as distinct by De Candolle, can be nothing more than a variety of this species. *Dwarf Dandelion.*

60. CYNTHIA. *Don.* —Cynthia.

(Supposed to be named from Mount *Cynthus*; which was sacred to Apollo and Diana. *Darlingt. Fl. Ces.*)

Heads many-flowered. Scales of the involucre numerous, in one or two series. Receptacle naked, dotted. Achenia quadrangular, smoothish, not beaked. Pappus double; the outer of numerous very short chaffy scales; inner hair-like, deciduous.

1. *C. Virginica Don.*: smooth and glaucous; stem scape-like, often bifid or trifid, few-leaved; radical leaves petioled, lyrate, sinuate-dentate or pinnatifid; cauline lanceolate, clasping, nearly entire, smooth. *C. amplexicaule Beck Bot. 1st Ed. Krigia amplexicaulis Nutt.*

Wet woods. N. Y. to Geor. W. to Miss. May—July. ♀.—*Stems* a foot or more high, often 2 or 3 from one root, divided into long slender branches, with a clasping leaf at the forks. *Heads* solitary, at the extremities of the branches, large, orange-yellow. *Virginian Cynthia.*

2. *C. Dandelion Linn.*: scapes usually several from the same root; primary leaves spatulate-oblong; the others linear-lanceolate, elongated, mostly acute, either entire, repand-denticulate, remotely sinuate-toothed or laciniate-subpinnatifid; the triangular-lanceolate divaricate lobes 2—3 on each side (*Torr. & Gr.*) *C. Dandelion* and *Boscii D. C. Krigia Dandelion Nutt. Gen.*

Low grounds. Md. to Geor. W. to Texas. March—May. ♀.—*Roots* tuberiferous. *Scapes* or *stems* 6—15 inches high, sometimes decumbent. *Flowers* yellow. *Dandelion-like Cynthia.*

61. OPORINIA. *Don.*—Hawkbit.

(From the Greek *οπωρινός*, *autumnal*; in allusion to the time of flowering.)

Heads many-flowered. Involucre obconic, in one series; scales lanceolate, acuminate, with numerous accessory ones at the base. Receptacle naked. Achenia oblong, somewhat terebrate, attenuated at both ends, transversely rugulose. Pappus in one series, persistent, plumose, scarious and dilated at base.

O. autumnale Don.: scape branched, scaly upwards; leaves lanceolate, toothed or pinnatifid, smoothish; peduncles swollen beneath the somewhat downy involucre. *Apargia autumnalis Willd.*

Fields and road sides. N. S. July—Sept. ♀.—*Scape* spreading, branched into a few peduncles which are furnished with remote scales. *Heads* middle-sized, bright yellow, resembling the *Dandelion*. Introduced from Europe. *Autumnal Hawkbit.*

62. LACTUCA. *Tourn.*—Lettuce.

(From the Latin *lac*, *milk*; the plant giving out a milky juice.)

Heads few- or many-flowered. Involucre cylindric; scales calyculate-imbricate, in 2—4 series; the outer short. Receptacle naked. Achenia flat, obcompressed, wingless, abruptly

produced into a filiform beak. Pappus of copious soft and white capillary bristles.

L. elongata Muhl.: stem erect, smoothish, paniculate at the summit; leaves subclasping, pale beneath; the lower runcinate-pinnatifid; upper mostly lanceolate and entire, sometimes elongated; heads in an elongated leafless panicle. *G. longifolia* Mich.

var. *integrifolia* Torr. & Gr.: leaves nearly all undivided, lanceolate. *L. integrifolia* Big.

var. *sanguinea* Torr. & Gr.: leaves nearly all runcinate; flowers purplish or red. *L. sanguinea* Big. and *L. hirsuta* Nutt.

Woods and road sides; often growing up from ground newly burnt over. Can. to Geor. W. to Miss. July—Sept. ②.—Stem 2—8 feet high; in var. *sanguinea* smaller. Heads rather smaller than in garden lettuce. Flowers yellow, purple or red. I follow Torrey and Gray in uniting with this species the three which have heretofore been described as distinct. *Wild Lettuce. Fire-weed.*

63. TARAXACUM. Haller.—Dandelion.

(From the Greek *ραπαριον*; on account of its medicinal qualities.)

Heads many-flowered. Involucre double; the outer scales small, spreading or reflexed; the inner in a single series, erect. Receptacle naked. Achenia oblong, striate, muricate on the ribs, produced into a long beak. Pappus in many series, white, pilose.

T. Dens-leonis Desf.: smooth; leaves equally and acutely runcinate, the segments toothed; outer scales of the involucre reflexed; achenia muricate at the apex. *Leontodon Taraxacum* Linn.

Pastures, &c. Throughout Can. and the U. S. April—Nov. ④.—Root thick. Scapes often several from the root, each with one large terminal head. Flowers yellow. In its young state it is used as a potherb. Introduced, but almost everywhere naturalized. *Common Dandelion.*

64. SONCHUS. Linn.—Sow Thistle.

(An ancient Greek name, the meaning of which is obscure.)

Heads many-flowered, dilated at base. Involucre imbricate. Receptacle naked. Achenia compressed, not winged or beaked, longitudinally ribbed, transversely rugose. Pappus of numerous soft and very white hairs.

1. *S. oleraceus* Linn.: smooth or with the branches glandular-pilose; cauline leaves runcinate-pinnatifid or the upper undivided, clasping, slightly spinulose-toothed; the auricles acute; peduncles somewhat tomentose when young. *S. ciliatus* Lam.

Waste grounds. Can. and throughout the U. S. July—Sept. ①.—Stem 2—4 feet high, hollow and succulent. Leaves 2—6 inches long, variously divided. Heads in a somewhat umbelled corymb. Flowers pale yellow. Pappus very white and silky. Introduced from Europe. *Common Sow-thistle.*

2. *S. asper* Vill.: smooth or somewhat glandular hairy at the summit; lower leaves spatulate or oval; cauline undivided, undulate or slightly

uncinate, spinulose-toothed, cordate-clasping; heads umbellate-corymbose. *S. spinulosus*, var. *asper* Linn. *S. spinulosus* Big.

Fields and waste places. Throughout the U. S. Aug., Sept. ①.—*Stem* about 2 feet high, smooth or slightly hairy. *Heads* small, somewhat umbelled. *Flowers* yellow. Introduced from Europe. *Spiny-leaved Sow-thistle.*

3. *S. arvensis* Linn.: root creeping; stem erect, smooth; leaves runcinate-pinnatifid, spinulose-toothed, cordate-clasping; the auricles obtuse; panicle umbellate-corymbose; pedicels and involucre glandular-hispid.

Near cultivated grounds. Ver. to Penn. Newfoundland Hook. Aug., Sept. ②.—*Stem* 2—3 feet high. *Heads* as large as in the *Dandelion*. *Flowers* yellow. Introduced from Europe. *Large Sow-thistle.*

65. HIERACIUM. Linn.—Hawk Weed.

(From the Greek *ἵεραξ*, a hawk; because birds of prey were supposed to employ this plant to strengthen their powers of vision. Hook. Br. Fl.)

Heads many-flowered. Involucre ovate or cylindric; scales linear-obtuse, imbricate, rarely only in two series. Receptacle alveolate or pitted and fimbriate. Achenia 5-sided, somewhat striate, mostly clavate, not beaked. Pappus in a single series of very dense dull-white rigid scabrous hairs.

* Stem leafy.

1. *H. Canadense* Mich.: stem erect, simple or sparingly branched above; leaves sessile, oblong-lanceolate, acute, smooth or somewhat pubescent, acutely and divaricately toothed; heads corymbose; involucre smoothish; outer scales mostly spreading in fruit. *H. virgatum*, *fasciculatum* and *macrophyllum* Pursh. *H. Kalmii* Spreng. not of Linn. (according to Torr. & Gr.)

Rocky woods. Can. N. Eng. and N. Y. N. to lat. 66°. W. to Oregon. July, Aug. ②.—*Stem* stout, smooth, pubescent or hairy. *Heads* axillary and terminal, on downy or hispid peduncles. *Flowers* pale-yellow.

Canadian Hawk-weed.

2. *H. scabrum* Mich.: stem erect, stout, hispid below, rough above; leaves obovate or oval, entire or somewhat denticulate, hairy, the lower narrowed at the base, the upper closely sessile; peduncles and involucre hispid and downy. *H. marianum* Willd. *H. Gronovii*, β. Hook.

Woods. Can. to Geor. W. to Miss. July, Aug. ②.—*Stem* about 2 feet high, often very rough below. *Heads* numerous, in a fastigiate corymb. *Flowers* yellow. *Rough Hawk-weed.*

3. *H. Gronovii* Linn.: stem erect, leafless and paniculate above; leaves entire or denticulate, pale, sparingly villous-hirsute; the lower oblong-obovate or spatulate; upper oval or oblong, sessile or clasping; peduncles and involucre glandular-hispid.

Dry woods. Can. to Flor. W. to Texas. July, Aug. ②.—*Stem* about 2 feet high, nearly naked. *Heads* in a long naked panicle. *Flowers* yellow. Differs from the preceding in its more slender, nearly naked stem and much longer peduncles. *Gronovius's Hawk-weed.*

4. *H. paniculatum* Willd.: stem erect, loosely paniculate, smooth above,

whitish tomentose below; leaves lanceolate, oblong, few-toothed, sessile, membranaceous, smooth; peduncles slender, divaricate; bracts setaceous.

Woods. Can. to Geor. W. to Miss. July—Sept. 2.—*Stem* slender, 1—3 feet high. *Heads* small, on long slender peduncles, forming a large panicle. *Flowers* yellow. *Panicled Hawk-weed.*

5. *H. Scouleri* Hook.: clothed with long brownish rigid and spreading hairs; stem paniculate, branched; leaves broad-lanceolate, somewhat coriaceous, rigid, acute, slightly toothed; radical attenuated into a short petiole; cauline very remote, sessile; involucre rusty-pubescent, with long scattered hairs.

On the Columbia river; and also gathered in Penn. by Schweinitz. *Hooker.* *Stem* a foot high. *Heads* small. *Flowers* yellow. *Scouler's Hawk-weed.*

** *Stem naked or nearly so.*

6. *H. venosum* Linn.: stem scape-like, naked or with a single leaf, smooth and branching above; leaves obovate-oblong and lanceolate, entire or obscurely denticulate, hairy on the margin and midrib beneath; veins purple; involucre mostly smooth.

Dry and sandy woods. Can. to Geor. W. to Ken. June—Aug. 2.—*Stem* 1—2 feet high, naked or with 1—2 leaves, branched at the summit. *Radical leaves* spreading on the ground, colored with dark veins. *Heads* small, on slender peduncles, forming a loose panicle. *Flowers* yellow. This is one of the plants in common repute as an antidote or remedy for the poison of the rattlesnake; but we are still in want of proof in regard to its medicinal power.

Veiny Hawk-weed.

66. NABALUS. Cass.—Nabalus.

(Origin unknown.)

Heads 5—30-flowered. Involucre cylindric, of 10—14 linear scales, calyculate at base. Receptacle naked. Achenia oblong, subcylindraceous, sulcate, smooth, truncate at the apex. Pappus in many series of yellow or brownish rough rigid hairs.

1. *N. Serpentarius* Hook.: leaves toothed, rough; radical palmate; cauline on long petioles, sinuate-pinnatifid, somewhat 3-lobed, the middle segment 3-parted; upper leaves lanceolate; racemes terminal, paniculate, short, nodding; involucre 8-leaved, 12-flowered. *N. albus*, var. *Serpentaria* Torr. & Gr. *Harpalyce Serpentaria* Don. *Prenanthes Serpentaria* Pursh.

Woods on hill sides. Hudson's Bay to Car. Aug., Sept. 2.—*Stem* 2—5 feet high, simple or much branched. *Heads* in loose terminal panicles. *Involucre* purplish. *Flowers* white or yellowish. A very variable species, which may perhaps be more properly united with the next, as has been done by Torrey and Gray, and Dr. Darlington. It has gained some notoriety as a cure for the bite of the rattlesnake, but I apprehend that the statements on this point are entitled to very little credence. *Rattlesnake Root.* *Lion's Foot.*

2. *N. albus* Hook.: smooth and somewhat glaucous; stem paniculate at the summit; leaves angular-hastate, irregularly toothed, sinuate-incised or pinnately 3—5-parted; the lower petioled, upper sessile; racemes short, paniculate; involucre about 8-leaved, 8—10-flowered. *Harpalyce alba* Don. *Prenanthes alba* Linn.

Woods. Can. to Car. Aug. 2.—*Stem* 3—5 feet high. *Heads* numerous, in a loose panicle which is composed of small terminal clusters. *Flowers* white. *Achenia* yellow. *Pappus* deep cinnamon-color. *White Lettuce.*

3. *N. altissimus* Hook.: stem erect, smooth, branched; leaves all petioled, undivided, or the lower 3—5-cleft or parted; the lobes or leaves acuminate, repandly toothed or denticulate; heads in small axillary or terminal clusters; involucre 5-leaved, 5—6-flowered. *N. cordatus* and *N. deltoideus* D. C. *Harpalyce altissima* and *cordata* Don. *Prenanthes altissima* and *cordata* Pursh.

Woods. Can. to Geor. W. to Ken. Aug., Sept. ♀.—Stem 4 or 5 feet high, slender. Leaves sometimes cordate, deltoid or triangular-hastate. Heads nodding, in racemes arranged in a large leafy panicle. Flowers yellowish-white. Pappus dirty white. Tall Nabalus.

4. *N. virgatus* D.C.: smooth; stem simple; leaves narrow-lanceolate; the lower sinuate or dentate, upper entire; racemes simple, terminal; heads nodding, 8—10-flowered; involucre smooth, 8-leaved. *Harpalyce virgata* Don. *Prenanthes virgata* Mich.

Sandy fields. N. J. to Flor. Aug., Sept. ♀.—Stem 2—5 feet high. Heads in a long terminal virgate raceme. Flowers pale purple. Virgate Nabalus.

5. *N. Fraseri* D. C.: stem erect, slightly pubescent, branched; leaves mostly deltoid, 3—7-lobed, contracted into winged or margined petioles; upper nearly sessile and undivided; involucre smoothish, of about 8 scales, 8—12-flowered. *N. Fraseri*, *trilobatus*, *integrifolius* and *Serpentarius*, β. D. C. *Prenanthes rubicunda* Pursh, (according to Torr. & Gr.)

Dry sterile and sandy soils. Can. and N. Y. to Flor. Aug.—Oct. ♀.—Stem 2—4 feet high. Leaves very variable. Involucre often purplish, usually quite smooth. Flowers cream-color, sometimes with a tinge of purple. Pappus straw color. Very near *N. albus*, and some of its forms can only be distinguished from that species by its light-colored pappus. Fraser's Nabalus.

6. *N. nanus* D. C.: smooth; stem simple; leaves on slender petioles, varying from undivided and angular or toothed to hastately or palmately 3-lobed or parted; heads clustered, forming a racemose panicle; involucre 10—15-flowered; inner scales about 8; the calyculate scales very short, triangular-ovate. (Torr. & Gr.) *Harpalyce alba*, var. *nana* Beck Bot. 1st Ed. *Prenanthes alba*, var. *nana* Big.

White Mountains, N. H. Big. Summit of Mount Marcy, Essex county, N. Y. Torr. Aug. ♀.—Stem 5—12 inches high, smooth. Heads nodding. Flowers whitish. Pappus straw-color. Dwarf Nabalus.

7. *N. Boottii* D. C.: stem simple, pubescent at the summit; leaves petioled, smooth; lower subcordate or hastate-cordate, obtuse; the middle cordate-lanceolate; upper linear-lanceolate, acuminate and entire; heads in a nearly simple raceme; involucre 10—18-flowered; the inner scales 10—15, obtuse; the calyculate scales linear, lax, nearly half the length of the proper involucre. (Torr. & Gr.) *Prenanthes alba*, var. *nana* Big. (in part)

White Mountains. N. H. Boott. Summit of Whiteface Mountain, Essex county, N. Y. Torr. Aug., Sept. ♀.—Stem 5—8 inches high. Leaves variable. Heads slightly nodding. Flowers whitish, odorous. Pappus straw-color. Distinguished from the preceding by the narrow loose and elongated calyculate scales of the involucre. Torr. Boott's Nabalus.

67. MULGEDIUM. Cass.—Mulgedium.

(From the Latin *mulgeo*, to milk; on account of its yielding a white juice when cut.)

Heads many-flowered. Involucre calyculate-imbricate, the outer scales much shorter than the inner. Receptacle naked, honey-combed. Achenia smooth, compressed, attenuated into a beak at the summit, appearing as if a part of the achenium, and expanded into a short thick cup-form disk. Pappus in one or a few series of stiff rough white or tawny hairs.

1. *M. macrophyllum* D. C.: stem stiffly erect, hispid at the summit; leaves broad-lyrate, cordate at base, hairy beneath; terminal lobe large, cordate; petioles winged; heads in a loose hispid panicle; involucre slightly hispid. *Sonchus macrophyllus* Willd. *Agathysus macrophyllus* Don.?

Wet grounds. Penn. to Car.? Aug., Sept. ④.—Root tuberous. Stem 4—7 feet high. Heads about as large as those of *Cichorium Intybus*. Flowers blue. A doubtful species. *Large-leaved Mulgedium.*

2. *M. Floridanum* D. C.: smooth; stem erect, purplish or somewhat glaucous, paniculate above; cauline leaves runcinate-pinnatifid, petioled; the lobes few, sinuate-toothed; uppermost triangular, acute; heads in a loose erect panicle. *Sonchus Floridanus* Linn. *Agathysus Floridanus* Don.

Woods and road sides. N. Y. to Geor. July, Aug. ②.—Stem 3—6 feet high, often purplish. Heads rather small, in an oblong terminal panicle. Flowers blue, Pappus dirty white. Pursh states that this plant is used as a cure for the bite of the rattlesnake in the same manner as *Nabalus Serpentarius*, and is known by the name of *Gall of the Earth.*

3. *M. acuminatum* D. C.: stem erect, smooth, simple; cauline leaves ovate, acute, sparingly toothed, attenuated into a winged petiole, slightly hairy on the midrib and veins beneath; radical sometimes slightly runcinate; heads in a thyrs-like panicle; peduncles somewhat scaly. *Sonchus acuminatus* Willd. *Lactuca villosa* Jacq.

Shady woods. N. Y. to Geor. and Louis. Aug., Sept. ②.—Stem 3—6 feet high, paniculate above. Heads small, not numerous, in a widely spreading terminal panicle; the peduncles with a few ovate ciliate scales. Flowers blue. *Sharp-leaved Mulgedium.*

4. *M. leucophæum* D. C.: stem very leafy, smoothish, paniculate at the summit; leaves somewhat runcinate-pinnatifid, coarsely toothed, somewhat hairy beneath; heads in a large compound panicle; peduncles scaly. *Sonchus leucophæus* Willd. *Agathysus leucophæus* Don.

Waste grounds and road sides. Can. to Car. W. to Oregon. July—Sept. ②.—Stem 3—10 feet high, (Torr.) smooth, or slightly hairy. Lower leaves very large. Heads numerous, small, in an elongated panicle. Flowers bluish-white. *Tall Mulgedium.*

ORDER LXX. CAMPANULACEÆ.—BELLWORTS.

Calyx usually 5-lobed, (3—8,) persistent. Corolla usually 5-lobed, (3—8,) withering, valvate. Stamens alternate with the

lobes of the corolla; anthers distinct. Style covered with collecting hairs. Capsule 2—3, several-celled, opening by apertures or valves. Seeds numerous; embryo in the axis of fleshy albumen.—Herbaceous plants, with a milky juice. Leaves alternate, without stipules. Flowers usually showy.

1. CAMPANULA. *Linn.*—Bell Flower.

(From the Latin *campanula*, a little bell; in reference to the shape of the flower.)

Calyx 5-cleft. Corolla 5-lobed or 5-cleft, usually campanulate. Stamens 5, free. Filaments broad and membranaceous at base. Stigmas 3 or 5, filiform. Capsule 3—5-celled, opening by 3—5 lateral valves.

1. *C. rotundifolia* *Linn.*: radical leaves petioled, reniform-cordate, crenate or cut; cauline linear, entire; segments of the calyx subulate, about one-third as long as the campanulate corolla.

Rocky banks. Arct. Amer. to Penn. W. to the Rocky Mountains. June, July. ♀.—Stems 8—12 inches high, erect or assurgent, sometimes branched from the base, or several from one root. *Radical leaves* cordate, (withering early.) *Flowers* few, large, blue, in a loose terminal panicle or raceme.

Flax Bell-flower. Harebell.

2. *C. Americana* *Linn.*: leaves ovate-lanceolate, much acuminate, uncinately-serrate; lowest often somewhat cordate, contracted into a petiole at base; flowers in a terminal-leafy spike; segments of the calyx linear-acuminate, shorter than the somewhat rotate corolla. *C. acuminata* *Mich.*

Moist shady places. N. Y. to Geor. W. to Mich. July, Aug. ♀.—Stem 2—3 feet high, simple or slightly branched. *Flowers* numerous, blue, sessile, 2—3 together in the axils of the leaves.

American Bell-flower.

3. *C. aparinoides* *Pursh.*: stem slender, much branched, acutely-angled; angles with the margin and nerves of the leaves aculate backwards; leaves linear-lanceolate, sessile, somewhat crenate-serrate, smooth above; pedicels slender, flexuous; lobes of the calyx triangular, one-third as long as the campanulate corolla. *C. erinoides* *Muhl.*

Wet meadows. Can. to Car. W. to Ohio. June, July. ♂!—Stem about a foot high, weak. *Flowers* very small, white, nodding.

Prickly Bell-flower.

2. SPECULARIA. *D. C.*—Specularia.

(From the ancient name of one of the species, *Speculum Veneris.*)

Calyx 5-lobed, by abortion 3—4-lobed; the tube elongated, prismatic or obconic. Corolla rotate, 5-lobed. Stamens 5, free. Filaments membranaceous, hairy, shorter than the anthers. Stigmas 3. Capsule elongated, prismatic, 3-celled, opening laterally by 3 valves near the summit.

S. perfoliata *D. C.*: stem simple, angular; angles hispid; leaves roundish-

cordate, crenate-dentate, clasping; flowers solitary or glomerate in the axils of the leaves. *Campanula perfoliata* Linn. *C. amplexicaulis* Mich.

Fields. Can. to Car. W to Miss. May—July. ①.—*Stem* 9—18 inches high, (sometimes 2—3 feet,) mostly simple. *Leaves* about three-fourths of an inch long, and sometimes broader than long, closely embracing the stem, but never perfoliate. *Flowers* small, purple, sessile, 1—4 in the axil of each leaf.

Clasping Bell-flower.

ORDER LXXI. LOBELIACEÆ.—LOBELIADS.

Calyx 5-lobed or entire. Corolla irregular, 5-lobed or 5-cleft. Stamens 5; anthers cohering. Stigma fringed. Fruit capsular, 1 or more celled, many-seeded, dehiscent at the apex; embryo in the axis of the albumen.—Herbaceous plants or shrubs, often with milky juice. Leaves alternate, without stipules. Flowers axillary or terminal.

LOBELIA. Linn.—Lobelia.

(In honor of *Matthias de Lobel*; a Flemish botanist.)

Calyx 5-lobed. Corolla irregular, cleft on the upper side, 2-lipped; lower lip 3-cleft. The two lower anthers, rarely all, bearded at the summit. Capsule inferior or semisuperior, 2 or 3-celled, opening at the summit.

1. *L. Dortmanni* Linn.: stem erect, simple, nearly naked; radical leaves in a cluster, terete, fleshy, 2-celled; cauline few and minute; flowers few, in a terminal raceme, remote, pedicellate, nodding.

Ponds and swamps. Hudson's Bay to Geor. July—Sept. ①.—*Stem* scape-like, 9—18 inches high. *Radical leaves* growing in a single tuft, consisting of two empty united tubes, obtuse, spreading and recurved. *Flowers* 3—4, very remote, pale-blue. *Water Gladiole.*

2. *L. paludosa* Nutt.: stem erect, angular, smooth, nearly simple and naked; leaves smooth, flat, fleshy, remotely crenulate; radical crowded, linear-oblong, obtuse; cauline remote, erect, linear; flowers few, in a spiked raceme, remote; corolla six times as long as the lobes of the calyx, with the lower lip hairy.

Sphagnous swamps. Del. to Geor. ②.—*Stems* or *scapes* several from the same root, 2 feet in length, fistulous, sometimes a little branched. *Radical leaves* in a large cluster, 4—12 inches long. *Flowers* small, pale-blue, subtended by minute bracts often nearly 2 inches apart. Resembles the preceding, but probably distinct. *Marsh Lobelia.*

3. *L. Kalmii* Linn.: smooth; stem mostly branched; leaves remotely toothed; radical oblong-spatulate; cauline linear; racemes terminal, loose, few-flowered, leafy; pedicels longer than the fruit, with 2 minute bracteoles near the flower.

Wet places. Can. to N. Y. July, Aug. ②.—*Stem* 8—18 inches high, slender, erect or assurgent. *Flowers* blue, on slender pedicels which are from 6—12 lines long. *Kalm's Lobelia.*

4. *L. Nuttallii* R. & S.: stem erect, minutely scabrous, simple or with

filiform branches; leaves remotely denticulate; radical oblong-spatulate; cauline oblong-linear; racemes virgate; pedicels shorter than the flower, with minute bracteoles near the base; capsule obtuse below. *L. gracilis* Nutt. *L. Kalmii*, var. *Bart. Ell.*

Sandy swamps and near salt marshes. N. Y. to Car. Aug., Sept. ②.—*Stem* 1—2 feet high, filiform, erect or flexuous. *Flowers* in a slender raceme, pale-blue, smaller than in the preceding; the bracteoles near the base of the pedicels and often colored. *Nuttall's Lobelia.*

5. *L. spicata* Lam.: stem erect, simple, pubescent; leaves pubescent, obtuse, nearly entire; radical spatulate; cauline oblong; raceme virgate, naked; segments of the calyx subulate, nearly as long as the tube of the corolla. *L. Claytoniana* Mich. *L. pallida* Muhl.

Fields. Can. to Car. N. to Lake Winnipeg. July, Aug. ②.—*Stem* 1—2 feet high, generally simple. *Flowers* pale-blue, as large as those of *L. Kalmii*, from 6—30 in a spike-like raceme. *Spiked Lobelia.*

6. *L. puberula* Mich.: pubescent; stem erect, simple; leaves oblong-ovate, obtuse, repand-serrulate; flowers nearly sessile, in a 1-sided spike; calyx hirsute at base, the lanceolate ciliate segments as long as the tube of the corolla.

Moist low grounds. Penn. to Geor. Sept. ②.—*Stem* 2 feet high. *Lower leaves* obovate; upper lanceolate. *Flowers* rather large, in a second spike or raceme, nearly sessile, bright blue. Allied to the next, but smaller in all its parts. *Pubescent Lobelia.*

7. *L. syphilitica* Linn.: stem erect, somewhat hairy; leaves closely sessile, ovate-lanceolate, unequally serrate, with scattered hairs on the upper surface; raceme leafy, with the flowers on short pedicels; calyx hispidly-ciliate, with the auricles reflexed and 2-cleft.

Bogs and low wet grounds. Can. to Car. Aug., Sept. ②.—*Stem* 2—3 feet high, simple, hairy on the margin. *Flowers* on short pedicels, in a long leafy raceme, large, blue. This plant was formerly supposed to be medicinal. *Blue Cardinal Flower.*

8. *L. inflata* Linn.: stem erect, hairy, branched; leaves ovate-lanceolate, sessile, crenate-dentate, hairy; racemes leafy, somewhat paniculate; capsule ovoid, inflated.

Fields and woods. Can. to Car. W. to Miss. July—Sept. ②.—*Stem* 12—18 inches high. *Flowers* numerous, small, pale-blue, in leafy spikes or racemes. Plant acrid and powerfully medicinal. *Big. Med. Bot. i. 177.*

Indian Tobacco.

9. *L. cardinalis* Linn.: stem erect, simple, pubescent; leaves oblong-lanceolate, acute at each end, unequally dentate-serrate, minutely pubescent; raceme somewhat secund and leafy below; stamens longer than the corolla.

Low wet grounds. Can. to Car. W. to Ohio. July, Aug. ②.—*Stem* 2—3 feet high. *Flowers* very large, bright scarlet, in a terminal raceme which is from 8—10 inches long. One of the most splendid plants in the Northern States. *Cardinal Flower.*

ORDER LXXII.—ERICACEÆ.—HEATHWORTS.

Calyx 4 or 5-cleft, nearly equal, persistent. Corolla 4 or 5-cleft, regular or irregular. Stamens definite, equal in number

to the segments of the corolla, or twice as many. Ovary many-celled; style 1. Fruit capsular, baccate or drupaceous. Seeds indefinite, minute; embryo in the axis of fleshy albumen.—Shrubs or under shrubs. Leaves evergreen, rigid, without stipules.

1. ARCTOSTAPHYLOS. *Adans.*—Bear Grape.

(From the Greek *αρκτος*, a bear, and *σταφύλη*, a grape.)

Calyx 5-parted, persistent. Corolla ovate-urceolate; the orifice 5-toothed, revolute. Stamens 10, included. Anthers compressed, with two pores at the summit, laterally 2-awned, the awns reflexed. Berry drupaceous, globose, mostly 5-celled; cells 1-seeded.

1. *A. Uva-ursi* *Spreng.*: procumbent, smooth; leaves petioled, cuneate-obovate, very entire, coriaceous, shining; flowers in small terminal racemes; fruit smooth. *Arbutus Uva-ursi* *Linn.*

On mountains and in sandy soils. Subarct. Amer. to N. Y. W. to Rocky Mountains. April, May. ♀.—A trailing evergreen. *Stems* numerous and spreading. *Leaves* thick and rigid, less than an inch long. *Flowers* drooping, pale-red. *Berry* small, red. The leaves are astringent and medicinal. See *Big. Med. Bot.* i. 66. *Bear Berry.*

2. *A. alpina* *Spreng.*: procumbent; leaves membranaceous, deciduous, obovate, acute, serrate, ciliate when young; bracteoles broad-ovate, ciliate, about as long as the pedicels.

White Mountains, N. H.; rare. *Gray & Tuckerm.* May? ♀.—*Stem* trailing. *Leaves* tapering into a short petiole, becoming red in the autumn. *Flowers* white or very pale rose-color. *Berry* black. *Alpine Arbutus.*

2. GAULTHERIA. *Linn.*—Partridge Berry.

(In honor of *M. Gautier*, a French physician of Quebec. The original name of Kalm, seems to have been *Gautiera*.)

Calyx 5-lobed, bi-bracteate at base. Corolla ovate, the orifice 5-toothed. Stamens 10, with the filaments hirsute. Anthers two-horned at the summit. Capsule 5-celled, invested by the calyx which becomes a berry.

G. procumbens *Linn.*: stem procumbent, with the branches erect; leaves obovate, wedgeform at the base, ciliate-denticulate; flowers few, subterminal, nodding.

Dry woods. Can. to Virg. W. to Ohio. May—July. ♀.—*Stem* creeping; branches ascending, 4—6 inches high. *Leaves* evergreen and shining. *Flowers* axillary, white. *Fruit* having the appearance of a bright scarlet berry.

Partridge Berry. Spicy Wintergreen.

3. OXYDENDRUM. *D. C.*—Sorrel Tree.

(From the Greek *οξυς*, an acid, and *δενδρον*, a tree; on account of the sour taste of its leaves.)

Calyx 5-parted, the lobes acuminate. Corolla ovate, 5-

toothed. Stamens 10. Filaments hairy. Anthers erect, oblong, not awned. Style pentagonal. Capsule pyramidal, pentagonal, 5-celled, 5-valved, the valves septiferous in the middle.

O. arboreum D. C.: smooth; branches terete; leaves petioled, oblong, acuminate, serrate; panicles terminal, many-spiked; corolla ovate, pubescent on the outside. *Andromeda arborea* Linn.

Mountain valleys. Penn. and Ohio to Flor. June, July.—A beautiful tree 40—50 feet high. Leaves large, shining above, paler beneath, having an acid taste. Flowers white, in large terminal panicles consisting of numerous secund racemes or spikes. *Sorrel Tree.*

4. ANDROMEDA. Linn.—Andromeda.

(Thus named in allusion to the fabled exposure of *Andromeda*; from the place of growth of some species.)

Calyx 5-parted, the segments acute. Corolla ovate, globose or somewhat campanulate, 5-cleft. Stamens 10. Capsule 5-celled, 5-valved.

* *Leaves evergreen.*

1. *A. hypnoides* Linn.: leaves imbricate, subulate, smooth; pedicels terminal, 1-flowered; corolla nodding, globose-campanulate, deeply 3-cleft. *Cassiope hypnoides* D. C.

White Hills, N. H. N. W. Coast. June. h_2 .—Stem creeping; flowering branches erect. Flowers white, tinged with red. It resembles a moss.

Moss Andromeda.

2. *A. polyfolia* Linn.: leaves linear-lanceolate, revolute on the margin, whitish-glaucous beneath; flowers in short terminal racemes.

Sphagnous swamps. Labrador to Penn. June. h_2 .—Stem 12—18 inches high. Leaves 1—2 inches long, coriaceous, varying from linear to oblong. Flowers white, tinged with red. *Wild Rosemary.*

3. *A. calyculata* Linn.: leaves elliptic-oblong, rather obtuse, subrevolute, ferruginous beneath; racemes terminal, leafy; corolla ovate-oblong, with the orifice contracted; calyx bi bracteate. *Cassandra calyculata* Don.

Swamps. Can. to Car. W. to Miss. April, May. h_2 .—Stem 3—4 feet high. Leaves coriaceous, covered with white dots above, pale beneath. Flowers white, solitary, on short secund pedicels. *Box-leaved Andromeda.*

** *Leaves deciduous.*

4. *A. Mariana* Linn.: leaves oval, somewhat acute, entire, smooth above, pale and somewhat pubescent beneath, subcoriaceous; flowering branches nearly naked; pedicels fasciculate; calyx leafy; corolla ovoid-cylindric; filaments hairy. *Leucothoe Mariana* D. C.

Sandy soils. N. Y. to Flor. June, July. h_2 .—Stem 2—3 feet high. Leaves on short petioles. Flowers white and pale-red, large, arranged in short sessile fasciculate racemes. Supposed to be poisonous to lambs. *Kill-lamb.*

5. *A. racemosa* Mich.: leaves oblong, serrulate, membranaceous, smooth above, somewhat pubescent beneath; racemes terminal, secund, simple or branched; corolla oblong-cylindric, contracted at the mouth; anthers 4-awned at the summit. *A. paniculata* Walt. *Zenobia racemosa* D. C.

Swamps and wet woods. Can. to Flor. June, July. γ_2 .—Stem 4—6 feet high, irregularly branched. Leaves on short petioles. Flowers white, in racemes which are 3 or 4 inches long. *Racemed Andromeda.*

6. *A. ligustrina* Muhl.: pubescent; leaves obovate-oblong, acuminate, minutely serrulate; flower-bearing branches terminal, paniculate, naked; corolla nearly globose, pubescent; anthers unawned. *A. paniculata* Pursh. *Vaccinium ligustrinum* Linn. *Lyonia paniculata* Nutt.

Swamps, &c. Can. to Car. June, July. γ_2 .—Stem 4—6 feet high, much branched. Flowers in compound nearly naked and erect panicles. Corolla small, white, pubescent. *Privet Andromeda.*

5. CLETHRA. Linn.—Sweet Pepper Bush.

Calyx 5-parted, persistent. Corolla 5-parted, almost 5-petalled; the petals ovate-oblong. Stamens 10. Filaments subulate. Style straight. Capsule 3-celled, 3-valved, enclosed by the calyx.

C. alnifolia Linn.: leaves cuneate-obovate, acute, serrate, smooth, green on both sides; racemes spiked, simple, bracteate, hoary tomentose.

Swamps. Can. to Geor. W. to Ohio. July, Aug. γ_2 .—Stem 4—6 feet high. Leaves sometimes slightly pubescent beneath. Flowers white, in long terminal racemes or spikes, with downy pedicels.

Common Sweet Pepper-bush.

6. MENZIESIA. Smith.—Menziesia.

(Named in honor of *Archibald Menzies*, a botanist and physician who accompanied Vancouver in his voyage around the world.)

Calyx campanulate, 4-cleft or 4-toothed. Corolla tubular or globose; limb very short, 4-toothed, revolute. Stamens 8, included. Filaments subulate, smooth. Stigma obtuse. Capsule 4-celled, 4-valved.

M. globularis Salisb.: branches and pedicels somewhat hairy; leaves oval-lanceolate, ciliate, pubescent except on the nerves beneath, with a sharp glandular point; calyx 4-cleft; corolla globose. *M. Smithii* Mich.

Mountains. Penn. to Car. June. γ_2 .—Stem 4 feet high. Leaves very hairy when young. Flowers yellowish-brown. *Globose Menziesia.*

7. PHYLLODOCE. Salisb.—American Heath.

(From the Greek *φύλλον*, a leaf, and *δοκεω*, to see; in allusion to its peltate stigma?)

Calyx 5-parted, the lobes often acuminate. Corolla ovate, the orifice contracted, 5-toothed. Stamens 10, included. Filaments smooth, slender. Anthers awnless. Stigma peltate. Capsule 5-celled, 5-valved, many-seeded.

P. taxifolia Salisb.: stem branched; leaves linear, toothed; peduncles terminal, 1-flowered, glandular-pilose; lobes of the calyx lanceolate, acu-

minate; anthers smooth, one-third the length of the filaments. *Andromeda cærulea* Linn. *Menziessia cærulea* Swartz.

White Mountains, N. H. N. W. Coast and Labrador. July.—An evergreen shrub, resembling a heath in its foliage and flowers. *Leaves* one-third of an inch long. *Flowers* large, purple, on long red peduncles. *American Heath.*

8. KALMIA. Linn.—American Laurel.

(In honor of *Peter Kalm*, a Swedish botanist, who travelled in this country about the middle of the last century.)

Calyx 5-parted. Corolla salver-form; border on the under side producing 10 cornute protuberances and as many cavities in which the anthers are concealed. Stamens 10. Capsule globose, 5-celled, 5-valved, many-seeded.

1. *K. glauca* Ait.: branches ancipital; leaves opposite, subsessile, oblong, smooth, glaucous beneath, revolute on the margin; corymbs terminal, bracteate; peduncles and calyx very smooth.

var. *rosmarinifolia* Pursh.: leaves linear, conspicuously revolute, nearly green beneath.

Sphagnous swamps. Arct. Amer. to Penn. W. to Lake Superior. June, July. $\frac{1}{2}$.—*Stem* 12—18 inches high, with opposite lanceolate leaves. *Flowers* pale rose-color, in terminal corymbs or umbels. Var. *rosmarinifolia* is found in a swamp two miles east of Albany, N. Y. *Glaucous Kalmia. Swamp Laurel.*

2. *K. angustifolia* Linn.: branches terete; leaves scattered or ternate, petiolate, oval-oblong, obtuse, smooth, sometimes slightly ferruginous beneath; corymbs lateral; peduncles and calyx glandular-pubescent.

Sandy woods. Can. to Car. W. to Ohio. June, July. $\frac{1}{2}$.—*Stem* 12—18 inches high. *Leaves* on short petioles, somewhat glaucous beneath. *Flowers* small, deep rose-color, in lateral corymbs, forming a kind of whorl around the stem. *Sheep Laurel.*

3. *K. latifolia* Linn.: branches terete; leaves on long petioles, scattered and ternate, oval-lanceolate, acute at each end, green on both sides; corymbs terminal, viscidly pubescent.

Hills and mountains. Can. to Car. W. to Ohio. June, July. $\frac{1}{2}$.—*Stem* 4—10 feet high, with irregular branches. *Leaves* 2—3 inches long, thick and coriaceous. *Flowers* rose-color, arranged in terminal spreading corymbs. Medicinal. *Big. Med. Bot.* i. 133. *Mountain Laurel. Calico Bush.*

9. EPIGÆA. Linn.—Ground Laurel.

(From the Greek $\epsilon\pi\iota$, upon, and $\gamma\eta$, the earth; in allusion to its prostrate habit.)

Calyx deeply 5-parted, colored, with 3 bracts at the base. Corolla salver-form; the border 5-parted, spreading. Stamens 10. Capsule subglobose, depressed, 5-celled, surrounded by the persistent calyx.

E. repens Linn.: stem decumbent, creeping; leaves cordate-ovate, petioled, very entire; corolla hairy inside.

Side hills, roots of trees, &c. Can. to Del. April. $\frac{1}{2}$.—A small trailing and creeping evergreen. *Stem* and *leaves* hirsute with coarse hairs. *Flowers* white

tinged with red, very fragrant. It is said, but perhaps incorrectly, to be injurious to cattle, when eaten by them. It is sold by the Shakers under the name of *Gravel Plant*.

Ground Laurel. Trailing Arbutus.

10. RHODORA. *Linn.*—*Rhodora*.

(From the Greek *ροδον*, a *rose*.)

Calyx 5-toothed, persistent. Corolla adnate to the calyx, ringent, the upper lip 2—3-parted, the lower one 2-lobed. Stamens 10, declined. Filaments unequal. Capsule 5-celled, 5-valved, opening at the top.

R. Canadensis Linn. Rhododendron Rhodora Don. Torr.

Mountain bogs. Can. and N. S. May. $\frac{1}{2}$.—*Stem* 2 feet high, with smooth erect branches. *Leaves* alternate, oval, very entire, nearly smooth above, pubescent and glaucous beneath. *Flowers* purple, in terminal clusters or umbels, appearing before the leaves.

Rhodora. False Honeysuckle.

11. RHODODENDRON. *Linn.*—*Rose-bay*.

(From the Greek *ροδον*, a *rose*, and *δενδρον*, a *tree*; in allusion to the color of the flowers.)

Calyx 5-parted. Corolla somewhat funnel-form, 5-cleft. Stamens 5—10, declinate. Anthers opening by 2 terminal pores. Capsule mostly 5-celled, 5-valved.

* *Stamens* 5—10.

1. *R. Lapponicum Wahl.*: procumbent and divaricately branched; leaves elliptic, obtuse, rigid, covered with minute scales on both sides; flowers few, terminal, umbellate; corolla campanulate. *Azalea Lapponica Linn.*

Highest summits of Mounts Marcy and McIntyre, N. Y. *Torr.* White Mountains, N. H. Arct. Amer. and the Rocky Mountains. July. $\frac{1}{2}$.—*Stem* with numerous straggling branches, a few inches high. *Leaves* 5—7 lines long, evergreen. *Flowers* deep purple, in terminal clusters or umbels.

Low Alpine Rose-bay.

2. *R. maximum Linn.*: arborescent; leaves elliptic-oblong, evergreen, acuminate, thick, smooth, paler beneath; corymbs somewhat racemose; segments of the calyx ovate-oblong, obtuse; corolla campanulate.

Swamps and bogs. Mass. to Car. June, July. $\frac{1}{2}$.—*Stem* 10—15 feet high. *Leaves* large, coriaceous. *Flowers* rose-color, in a large compact cone-like raceme, covered when young with large acuminate ferruginous bracts. Several varieties occur in various parts of the U. S. Medicinal. *Big. Med. Bot.* iii. 101.

American Rose-bay.

** *Stamens* 5.

3. *R. nudiflorum Torr.*: oblong, acute, ciliate, pubescent above and on the veins and midrib beneath; flowers in rather naked corymbs, slightly viscid; tube of the corolla a little longer than the lobes; stamens exerted. *Azalea nudiflora Linn. A perichlymenoides Mich.*

Woods. Can. to Geor. April, May. $\frac{1}{2}$.—*Stem* 2—6 feet high, much branched above. *Leaves* crowded at the ends of the branches. *Flowers* reddish, in terminal clusters, appearing a little before the leaves. Of this species there are a number of varieties. Among others mentioned by Pursh, is one which has from 10—20 stamens. *Upright Wild Honeysuckle. Pinxter Blom.*

4. *R. viscosum* Torr. : branchlets hispid; leaves oblong-obovate, acute, smooth and green on both sides, ciliate on the margin, the midrib bristly; flowers glutinous, hairy, appearing with the leaves; tube as long again as the segments; stamens scarcely longer than the corolla. *Azalea viscosa* Linn. and *A. glauca* Pursh.

Woods. Can. to Geor. June. $\bar{1}_2$.—Stem 6—8 feet high, much branched. Leaves 1—2 inches long, sometimes glaucous beneath. Flowers white, in terminal clusters, sweet scented. Corolla viscid and pubescent.

White Wild Honeysuckle.

5. *R. calendulaceum* Torr. : branchlets somewhat villous; leaves oblong, pubescent on both sides, at length hirsute; flowers large, in rather naked corymbs, not viscid; teeth of the calyx oblong; tube of the corolla hairy, shorter than the segments. *Azalea calendulacea* Mich. *A. nudiflora* var. *coccinea* Ait.

Penn. to Car. May. On Clear Creek, Ohio, Dr. J. M. Bigelow. $\bar{1}_2$.—Stem 2—6 feet high. Flowers yellow or flame-color. One of the handsomest shrubs in the U. S.

Yellow-flowered Rose-bay.

6. *R. arborescens* Torr. : branchlets smooth; leaves obovate, somewhat obtuse, smooth on both sides, glaucous beneath, ciliate on the margin, midrib almost smooth; flowers in leafy corymbs, not viscid; tube longer than the segments; calyx leafy, with the segments oblong, acute; filaments exserted. *Azalea arborescens* Pursh.

Blue Mountains, Penn. May—July. $\bar{1}_2$. Pursh.—Stem 10—20 feet high. Flowers large, reddish; scales of the flower-buds large, yellowish-brown, surrounded with a fringed white border. Pursh.

Arborescent Azalea.

7. *R. nitidum* Torr. : branches somewhat smooth; leaves oblanceolate, submucronate, coriaceous, smooth on both sides, shining above; midrib bristly beneath, margin revolute-ciliate; flowers viscid, in leafy corymbs; tube a little longer than the segments; calyx very short. *Azalea nitida* Pursh.

Mountain swamps. N. Y. to Virg. June, July. $\bar{1}_2$.—Leaves dark green and shining, smaller than in any other species. Flowers white, with a reddish tinge. Pursh.

Shining Rhododendron.

8. *R. hispidum* Torr. : branches straight, very hispid; leaves long-lanceolate, hispid above, smooth beneath, glaucous on both sides, ciliate on the margin, the midrib bristly; flowers very viscid, appearing with the leaves; tube scarcely longer than the segments; teeth of the calyx oblong, rounded; filaments exserted. *Azalea hispida* Pursh.

Margins of lakes, on high mountains. N. Y. and Penn. Pursh. July, Aug. $\bar{1}_2$.—Stem 10—15 feet high. Flowers white, with a red border. Stamens often 10. This shrub is said by Pursh to have a bluish appearance, by which it may be distinguished from all others at a great distance; but Dr. Torrey thinks it is scarcely distinct from *R. viscosum*.

Hispid Rhododendron.

12. AZALEA. Linn.—Azalea.

(Supposed to be derived from the Greek $\alpha\zeta\alpha\lambda\epsilon\omicron\varsigma$, *dry*, from its habitat.)

Calyx 5-parted. Corolla short, campanulate, 5-cleft. Stamens 5, equal, shorter than the corolla; anthers opening longi-

tudinally. Style straight, included. Capsule 5-celled, 5-valved, opening at the top.

A. procumbens Linn.: stem procumbent, diffusely branched; leaves opposite, elliptic, smooth, revolute on the margin; stamens included. *Loisileuria procumbens* R. & S. D. C.

White Mountains, N. H. N. to Arct. Amer. July. $\frac{1}{2}$.—Stem 3—6 inches long, branched, leafy above. Leaves evergreen, thick, obtuse, small. Flowers small, reddish-white, in terminal clusters. *Trailing Azalea.*

13. LEDUM. Linn.—Labrador Tea.

(From the Greek ληδον, a shrub; which this resembles.)

Calyx minute, 5-toothed. Corolla 5-petalled, spreading. Stamens 5—10, exserted. Anthers opening by two terminal pores. Capsule subovate, 5-celled, 5-valved, opening at the base, pedicellate. Seeds numerous, linear, with a membranaceous wing at each extremity.

1. *L. latifolium* Ait.: leaves elliptic-oblong, revolute on the margin, ferruginous tomentose beneath; stamens 5, as long as the corolla. *L. palustre* var. *latifolium* Mich. Torr.

Sphagnous swamps. Arct. Amer. to Penn. June.—An evergreen shrub about 2 feet high and with the stem irregularly branched; the branches woolly. Leaves alternate, broad-oblong, obtuse. Flowers in terminal corymbs, white. *Broad-leaved Labrador Tea.*

2. *L. palustre* Linn.: leaves linear, revolute on the margin, ferruginous tomentose beneath; stamens 10, longer than the corolla.

Swamps. Arct. Amer. to Penn. June.—A shrub smaller than the last and with narrower leaves. I have found both species in a sphagnous swamp near Fairhaven, Vt. They have both been used as substitutes for tea, but the latter is said to be preferable for this purpose. *Narrow-leaved Labrador Tea.*

14. LEIOPHYLLUM. Pers.—Sleek Leaf.

(From the Greek λειος, smooth, and φυλλον, a leaf; in allusion to its foliage.)

Calyx deeply 5-parted, persistent. Corolla 5-petalled. Stamens 10, longer than the corolla. Anthers lateral, opening on the inside longitudinally. Capsule globose, 3-celled, 3-valved, opening at the top. Seeds many, ovate.

L. buxifolium Ell.: stem erect; leaves oval or obovate, nearly sessile, alternate; capsule smooth. *Ledum buxifolium* Ait. *Ammyrsine buxifolium* Pursh.

Pine barrens, N. J. and high mountains, S. Car. May, June.—A small evergreen shrub 6—18 inches high, branching, smooth. Leaves small, entire, smooth, coriaceous, with the margin revolute. Flowers numerous, white, in small terminal corymbs. *Sleek Leaf. Sand Myrtle.*

ORDER LXXIII. VACCINIACEÆ.—CRANBERRIES.

Calyx entire, or 4—6-lobed. Corolla with as many lobes as the calyx. Stamens distinct, double the number of the lobes

of the corolla. Ovary inferior, 4—5-celled; style and stigma simple. Berry crowned with the persistent limb of the calyx, succulent, many-seeded. Seeds minute.—Shrubs or small trees, with the leaves often evergreen.

1. VACCINIUM.—*Linn.* Whortleberry.

(Etymology unknown.)

Calyx adherent to the ovary, 4—5-toothed. Corolla urceolate, cylindric, campanulate or somewhat rotate, 4—5-cleft. Stamens 8—10, inserted on the ovary. Berry globose, 4—10-celled, many- (or by abortion few-) seeded.

* *Leaves deciduous.*

† *Corolla campanulate.*

1. *V. stamineum* *Linn.*: much branched, the younger branches pubescent; leaves ovate or oval, acute, very entire, glaucous beneath; pedicels solitary, axillary, filiform, nodding; corolla campanulate, spreading; anthers exerted, with two awns on the back. *V. album* *Pursh.*

Dry woods. Can. to Flor. W. to Miss. May, June. ½.—*Stem* 2—3 feet high, diffusely branched. *Flowers* white, on the lateral branches of the stem which appear like leafy racemes. *Berry* large, pale green or purplish, scarcely eatable. *Deerberry.*

2. *V. dumosum* *Curt.*: minutely pubescent; younger branches, leaves and racemes sprinkled with resinous dots; leaves obovate-oblong, mucronate, entire, green on both sides; racemes with large foliaceous bracts; pedicels short, axillary, subsolitary; corolla campanulate. *V. hirtellum* *Ait.* *Gaylussacia hirtella* *Torr. & Gr.*

Wet sandy soils. N. J. to Flor. June. ½.—*Stem* 12—18 inches high. *Flowers* large, white, nodding, in leafy racemes. *Berry* large, globose, black and shining, tasteless. *Low Swamp Whortleberry.*

3. *V. frondosum* *Linn.*: smooth; leaves obovate-oblong, obtuse, very entire, sprinkled with resinous dots, glaucous beneath; racemes lateral, loose, bracteate; pedicels filiform, bracteolate in the middle; corolla globose-campanulate. *V. glaucum* *Mich.* *Gaylussacia frondosa* *Torr. & Gr.*

Sandy woods. Can. to Geor. June. ½.—*Stem* 3—5 feet high, with slender branches. *Racemes* lateral, few-flowered. *Flowers* small, white. *Berry* large, bluish, sweet and well flavored. *Whortleberry. Blue-tangle.*

†† *Corolla urceolate, ovoid, oblong or cylindric.*

a. Flowers racemose or fasciculate.

4. *V. resinsum* *Ait.*: younger branches pubescent; leaves petiolate, oblong-oval, mostly obtuse, very entire, sprinkled with resinous dots beneath; racemes lateral, secund, bracteate; corolla ovoid-conic, pentagonal, at first contracted at the mouth, at length open. *Gaylussacia resinosa* *Torr. & Gr.*

Woods and hills. Can. to Car. W. to Ohio. May, June. ½.—*Stem* 2—4 feet high. *Flowers* reddish-green, in short lateral racemes or fascicles. *Berry* globose, black, slightly acid, but agreeable. *Black Whortleberry.*

5. *V. vacillans* Kalm: branches angular, smooth; leaves oval, elliptic or obovate, serrulate, smooth on both sides, acute or rather obtuse, mucronulate; racemes very short, clustered; corolla campanulate-cylindric. (*Torr. N. Y. Fl.*)

Woods and thickets. N. Y. *Torr.* May. \varnothing .—*Stem* 1—2 feet high, much branched. *Leaves* an inch or more long, deciduous. *Flowers* greenish-white tinged with red, on short pedicels. *Berry* dark-blue, glaucous, very sweet. It has probably been confounded with *V. Pennsylvanicum*.

Sugar Whortleberry.

6. *V. Pennsylvanicum* Lam.: branches angular, (green;) leaves sessile, ovate-lanceolate or elliptic-lanceolate, mucronate, serrulate, smooth and shining on both surfaces; fascicles of flowers subterminal; corolla ovoid. *V. virgatum* Ait. *V. tenellum* Pursh.

Dry hills. N. Y. to Geor. May, June. \varnothing .—*Stem* 12—18 inches high, much branched. *Flowers* pale red, 6—8 in a fascicle. *Berry* large, bluish-black, somewhat glaucous, sweet. *Low Blue Whortleberry.*

7. *V. corymbosum* Linn.: flower-bearing branches almost leafless; leaves oblong-oval, rather acute at each end, nearly entire, the young ones pubescent; racemes short, sessile, bracteate; corolla cylindric-ovoid. *V. amœnum* Pursh. *V. disomorphum* Mich.

Swamps and wet woods. Can. to Virg. June. \varnothing .—*Stem* 4—8 feet high, with a few straggling branches. *Flowers* purplish-white, in racemes which are crowded near the summit of the naked branches. *Berry* large, purplish-black, subacid. *High Swamp Whortleberry.*

8. *V. Canadense* Kalm: flower-bearing branches leafy; leaves oblong-lanceolate, very entire, acute, and with the branches covered with a white pubescence; flowers in crowded racemes; corolla ovoid-campanulate. (*Torr. N. Y. Fl.*) *V. disomorphum* Big. not of Mich.

Swamps. Can. and Western N. Y. May, June. \varnothing .—*Stem* 1—2 feet high, with numerous warty branches. *Leaves* about an inch and a half long. *Racemes* numerous, few-flowered. *Corolla* reddish-white. *Berry* bluish-black, sweet. Resembles the preceding, for which it has probably been mistaken.

Black Bilberry.

9. *V. tenellum* Ait.: leaves oblong-elliptic, subcuneiform, serrulate, nearly smooth; racemes bracteate, sessile, few-flowered.

Boston, Mass. *Big.* N. J. and Penn. *Muhl.* April, May.—A low shrub growing in patches. *Flowers* in short crowded clusters, reddish-white. *Berry* large, blue, agreeable. *Dwarf Whortleberry.*

10. *V. ligustrinum* Mich.: branches angular and erect; leaves subsessile, erect, lanceolate, mucronate, serrulate; fascicles gemmaceous, sessile; flowers nearly sessile; corolla oblong-ovoid.

Dry woods. Penn. and Virg. May, June.—A small shrub with straight and slender branches. *Flowers* purplish-red. *Berry* black. It is said to vary very much in the shape and size of its leaves. *Privet-like Whortleberry.*

b. *Flowers solitary and axillary.*

11. *V. uliginosum* Linn.: procumbent; branches rigid; leaves obovate, very obtuse, entire, smooth above, veined and glaucous beneath; flowers subsolitary, octandrous; corolla short, urceolate, 4—5-cleft; anthers awned on the back. *V. uliginosum* var. *alpinum* Big.

White Hills, N. H. Essex county, N. Y. N. to Arct. Amer. July.—A procumbent shrub with numerous erect branches 6—12 inches high. *Leaves* about

half an inch long. *Flowers* single or in pairs, nearly sessile. *Berry* oblong, deep blue, crowned with the style. *Alpine Marsh Whortleberry.*

** *Leaves evergreen.*

12. *V. Vitis Idæa* Linn. : stem creeping ; branches erect ; leaves obovate, evergreen, dotted beneath, subentire and revolute at the margin ; flowers in terminal drooping racemes ; corolla cylindric-campanulate.

Woods and mountains. Mass. N. to Arct. Amer. May. June.—A low shrub with a creeping stem and angular branches. *Leaves* small, coriaceous. *Flowers* few, in a raceme, pale red. *Corolla* mostly 4-cleft, with 4 stamens. *Berry* red, acid. Also a native of Europe. *Red Whortleberry. Cowberry.*

2. OXYCOCCUS. Pers.—Cranberry.

(From the Greek *οξύς*, *acid*, and *κόκκος*, a *berry*.)

Calyx adnate to the ovary, with the limb 4-cleft. Corolla 4-parted, with the segments somewhat linear and revolute. Stamens 8. Filaments connivent. Anthers tubular, 2-parted. Berry 4-celled, many-seeded.

1. *O. macrocarpus* Pursh : stem creeping, with the branches ascending ; leaves oblong, nearly flat, obtuse, glaucous beneath ; pedicels elongated, 1-flowered. *Vaccinium macrocarpon* Ait.

Sphagnous swamps. Can. to Del. June. 12.—*Stem* creeping, and throwing up short erect branches. *Leaves* about half an inch long, obscurely serrulate. *Flowers* white or pale red, on slender axillary pedicels. *Berry* large, bright scarlet, agreeably acid. *Common Cranberry.*

2. *O. palustris* Pers. : stem filiform, creeping ; leaves ovate, acute, entire, with revolute margins ; pedicels elongated, terminal, 1-flowered ; segments of the corolla oval. *O. vulgaris* Pursh. *Vaccinium Oxycoccus* Linn.

Alpine bogs. Can. to N. Y. June. 12.—A small evergreen creeping plant. *Leaves* 3—4 lines long, glaucous beneath. *Flowers* red. *Berry* bright purple, globose, very acid, smaller than the preceding. *Small Cranberry.*

3. PHALEROCARPUS. G. Don.—Snowberry.

(From the Greek *φαλῆρός*, *white*, and *καρπός*, *fruit*.)

Calyx bi-bracteate, adhering to the ovary ; the limb 4-parted, thin and membranaceous. Corolla short-campanulate, 4-cleft. Stamens 8. Filaments short and dilated. Anthers awnless. Berry globose-ovoid, white, crowned with the teeth of the calyx, 4-celled ; the cells many-seeded.

P. serpyllifolia G. Don : stem filiform, creeping, hispid ; leaves roundish-ovate, acute, with slightly revolute margins, smooth above, paler and somewhat hispid beneath ; flowers solitary, axillary, subsessile. *Gaultheria serpyllifolia* Pursh. *Vaccinium hispidulum* Linn. *Chiogenes hispidula* Torr. & Gr.

Alpine swamps. Mass. Conn. and N. Y. May, June. 12.—*Stem* creeping, much branched. *Leaves* evergreen, small. *Flowers* solitary, on recurved pedicels. *Corolla* and *berry* white ; the taste of the latter resembling that of *Gaultheria procumbens*. *Creeping Snowberry.*

ORDER LXXIV. PYROLACEÆ.—WINTERGREENS.

Sepals 5, persistent. Corolla regular, deciduous, 4—5-parted. Stamens twice as numerous as the divisions of the corolla; anthers 2-celled, opening by pores. Ovary superior, 4—5-celled; style 1; stigma indusiate. Fruit capsular, 4—5-celled. Seeds many, minute, winged.—Herbaceous plants, rarely under shrubs, with simple leaves.

1. PYROLA. *Linn.*—Wintergreen.

(A diminutive of the Latin *pyrus*, a pear; from the resemblance of its leaves.)

Calyx minute, 5-cleft or 5-parted. Petals 5. Stamens 10, slightly united at base. Anthers opening by 2 pores at base. Stigma 5-lobed. Capsule 5-celled.

* *Flowers in racemes. Sutures of the capsules woolly.*

† *Stamens ascending. Style declined. Stigma annulate.*

1. *P. rotundifolia* *Linn.*: leaves roundish, entire or slightly crenulate, coriaceous and shining, scarcely as long as the dilated petiole; scape many-flowered, bracteate; calyx 5-parted, the segments ovate-lanceolate; stigma obtusely 5-toothed.

var. *asarifolia* *Hook.*: leaves larger, reniform-roundish. *P. asarifolia* *Mich.*

Woods. Can. to Car. W. to Mich. July. ♀.—*Leaves* all radical, 1½—2 inches in diameter, on petioles as long or longer. *Scape* 8—12 inches high. *Flowers* nodding, white, fragrant, 8—20 in a raceme. The largest of the species.
Round-leaved Wintergreen.

2. *P. chlorantha* *Swartz*: leaves orbicular, retuse, obsolete crenulate, half as long as the narrow petiole; scape nearly naked; raceme few-flowered; segments of the calyx very short, obtuse; stigma with the disk 5-lobed.

Woods. Can. and N. Y. June. ♀.—*Leaves* about an inch long, varying from orbicular to broad-obovate. *Scape* 6—8 inches high. *Flowers* 5—3 in a raceme, greenish-white, odorless.
Greenish-flowered Wintergreen.

3. *P. elliptica* *Nutt.*: leaves elliptic-ovate, membranaceous, serrulate, longer than the dilated petiole; scape naked or with a single subulate bract; calyx 5-cleft, very short, the segments ovate; stigma clavate, 5-lobed.

Dry woods. Can. to Virg. July. ♀.—*Leaves* all radical, membranaceous, finely serrate, with an attenuated base, much longer than the petiole. *Scape* 6—10 inches high, about 5-angled. *Flowers* 8—12 in a raceme, greenish-white, fragrant. Distinguished from *P. rotundifolia*, by its longer, thin and dull leaves, and shorter calyx.
Thin Leaf.

4. *P. uliginosa* *Torr. & Gr.*: leaves nearly orbicular, obscurely crenate-denticulate, coriaceous, longer than the petiole; scape bracteate; raceme many-flowered; calyx one-fourth as long as the petals; the segments broad-ovate, acute; stigma with 5 small erect teeth.

Sphagnous swamps. Oneida county, N. Y. June. ♀.—Leaves $1\frac{1}{2}$ —2 inches in diameter, abruptly decurrent on the petiole. Scape 6—12 inches high, with 2—4 bracts. Flowers dull purple, 7—12 in a raceme. Intermediate between *P. rotundifolia* and *P. chlorantha*: differing from the former in its smaller, less coriaceous and nearly dull leaves, smaller purplish-flowers and much shorter calyx; from the latter in its larger leaves, bracteate scape and acuminate calyx-segments, as well as in the color of the flowers. (Torrey.) I have met with the same plant in the vicinity of Albany, but supposed it to be a variety of *P. rotundifolia*. It may still prove to be not distinct. *Swamp Wintergreen.*

† Stamens erect. Style straight. Stigma not annulate.

5. *P. minor* Linn.: leaves roundish or oval, coriaceous, repandly crenate, longer than the somewhat dilated petiole; raceme spiked; bracts as long as or longer than the pedicels; lobes of the calyx very short; style included; stigma 5-lobed.

Western N. Y. Pursh. Penn. Muhl. N. to Arct. Amer. June. ♀.—Leaves on short petioles, mucronate at the apex. Scape angular. Flowers in crowded or lax racemes. Corolla globose, white, or very pale rose-color. It is still doubtful whether this plant is a native of the northern states. *P. minor* of Pursh and Muhlenberg, may be our *P. chlorantha*; from which, however, the true Linnæan plant is quite distinct. *Small Wintergreen.*

6. *P. secunda* Linn.: leaves ovate, acute, membranaceous, serrate, longer than the narrow petiole; raceme many-flowered, secund; segments of the calyx rounded; petals oblong; style exerted; stigma depressed, 5-lobed.

Sandy woods. Can. to Virg. July. ♀.—Stems decumbent, 2—3 inches long. Leaves about an inch long. Peduncle scape-like, 3—6 inches high. Flowers greenish-white, in a one-sided raceme which is 1—2 inches long.

One-sided Wintergreen.

** Flowers solitary, in corymbs or umbels. Sutures of the capsules not woolly.

7. *P. uniflora* Linn.: leaves orbicular, serrate; scape 1-flowered; style straight; stigma 5-rayed. *Moneses grandiflora* D. C.

Can. N. H. Mass. N. Y.; rare. July. ♀.—A small and very delicate species. Flower terminal, large, white, fragrant, nodding.

One-flowered Wintergreen.

8. *P. umbellata* Linn.: leaves cuneate-lanceolate, serrate, in fours or sixes; peduncle pubescent, corymbed; bracts linear-subulate; appendages of the filaments ciliate; style immersed in the ovary. *Chimaphila umbellata* Nutt.

Woods. Can. to Virg. July. ♀.—Root woody and creeping. Stem ascending, somewhat woody. Leaves evergreen, smooth and coriaceous, lower surface somewhat paler. Peduncle solitary, 4—6 inches long. Flowers large, greenish-white tinged with purple, in a terminal corymb or imperfect umbel, on nodding pedicels. It is known by the Indians by the name of *Pipsissauwa* or *Sipsissauwa*. Medicinal. See *Gr. Med. Bot.* ii. 15. *Prince's Pine.*

9. *P. maculata* Linn.: leaves lanceolate, acuminate, incisely serrate, discolored, opposite or in threes; peduncles pubescent, corymbed; bracts linear; appendages of the filaments woolly; style very short. *Chimaphila maculata* Pursh.

Sandy woods. Can. to Car. July. ♀.—This species may be distinguished by its variegated leaves. Stem 3—4 inches high. Peduncles 1—2, puberulent, 3—5 inches long. Flowers large, reddish-white, nodding, fragrant, 2 or 3 in a corymb or umbel. *Spotted Wintergreen.*

2. MONOTROPA. Linn.—Bird's Nest.

(From the Greek *μονος*, *one*, and *τρεπω*, *to turn*; from its flowers turning chiefly to one side.)

Calyx none. Corolla 4—5-petalled, persistent, cucullate at base. Stamens 8—10. Filaments alternating at the base, with short reflexed tooth-like processes. Anthers 1-celled, at length opening flat. Stigma orbicular, umbilicate or depressed. Capsule 4—5-celled. Seeds subulate.

* *Stem many-flowered.* HYPOPTHYS Nutt.

1. *M. lanuginosa* Mich.: stem, bracts, and flowers pubescent; flowers in a terminal raceme; capsule globose. *Hypopithys lanuginosa* Nutt.

var. *glabriuscula* Torr.: stem and scales nearly or quite smooth; flowers somewhat pubescent. *M. Hypopithys* Mich. *Hypopithys Europæa* Nutt.

Roots of trees. Can. to Car. July, Aug. ♀.—*Stems* clustered, erect, 4—8 inches high, simple. *Leaves* merely scales, lanceolate-ovate, crowded near the root, scattered above. *Flowers* in a terminal raceme, which is at first nodding but finally erect. Whole plant of a yellowish-brown color (rarely reddish), turning black by decay or drying. *Pine-sap.* *False Beachdrops.*

** *Stem 1-flowered.* MONOTROPA. Nutt.

2. *M. uniflora* Linn.: stem smooth, 1-flowered; flower with 10 stamens erect or cernuous. *M. Morisoniana* Mich.

Shady woods. Can. to Flor. June. ♀.—*Scape* 5—8 inches high. *Flowers* large, at first nodding but afterwards erect. Whole plant white and smooth, becoming purplish-black in drying. *Indian Pipe.*

3. PTEROSPORA. Nutt—Tall Bird's Nest.

(From the Greek *πτερον*, a *wing*, and *σπορα*, a *seed*.)

Calyx 5-parted. Corolla monopetalous, ovate; margin 5-toothed, reflexed. Stamens 10, included. Filaments subulate. Anthers with 2 bristles on the back near the base, 2-celled. Style short, terete. Stigma obtusely 5-lobed. Capsule depressed-globose, 5-celled. Seeds numerous, minute, furnished with a large terminal reticulated wing.

P. Andromeda Nutt.

Clayey and limestone soils. Can. Ver. and N. Y. W. to the Columbia river; not common. July. ♀.—*Plant* covered with brownish viscid hairs. *Stem* 1—2 (sometimes more than 3) feet high, straight, simple, grooved, brownish-red or purplish, clothed at the base with imbricate lanceolate scales. *Flowers* very numerous, in a long terminal raceme, rose-red and white. *Pedicels* filiform, nodding, longer than the flowers. *Tall Bird's Nest.*

SUBCLASS III. COROLLIFLORALS.

Petals united into a hypogynous corolla, or not attached to the calyx. Stamens inserted into the corolla.

ORDER LXXV. EBENACEÆ.—EBENADS.

Flowers usually polygamous. Calyx in 3—7 nearly equal divisions, persistent. Corolla 3—7-divided, deciduous, somewhat coriaceous. Stamens twice to four times as many as the segments of the corolla. Ovary sessile, many-celled; style divided, seldom simple; stigmas bifid or simple. Fruit fleshy, few-seeded. Embryo in the axis of cartilaginous albumen.—Trees or shrubs, without milky juice. Leaves alternate, mostly entire, without stipules.

DIOSPYROS. *Linn.*—Persimmon.

(From the Greek *Δίος, δίος, Jupiter*, and *πυρος, grain or fruit*; the application obscure.)

Dioecious. Calyx 4—6-cleft. Corolla urceolate, 4—6-cleft. STERILE FL. Stamens 8—16, often producing 2 anthers. FERTILE FL. Stamens about 8, abortive. Style divided. Stigmas simple, or 2-cleft. Fruit globose or ovoid, 4—8-celled.

D. Virginiana Linn.: leaves oval or ovate-oblong, acuminate, reticulately veined, nearly smooth; petioles pubescent; buds smooth.

Woods. N. Y. to Geor. and throughout the Western States. May.—A small tree, seldom more than 30—40 feet high. Leaves alternate. Flowers 1—3 together, axillary, on short peduncles, greenish-yellow. Fruit as large as a common plum, reddish-orange, well flavored when fully ripe, but very astringent before that time.

Common Persimmon.

ORDER LXXVI. AQUIFOLIACEÆ.—HOLLYWORTS.

Sepals 4—6, imbricated in æstivation. Corolla 4—6-parted, the stamens as many as the segments and alternating with them. Ovary 2—6- or more-celled; stigma sessile, lobed. Fruit fleshy, with 2—6 or more stones or nucules. Seed suspended, with large fleshy albumen and small embryo.—Trees or shrubs, often with angular branches, and mostly with leathery evergreen leaves. Flowers small, by abortion often polygamous.

1. ILEX. *Linn.*—Holly.

(Etymology uncertain.)

Flowers mostly perfect. Calyx 4—5-toothed, persistent. Corolla 4—5-parted nearly to the base, rotate. Stamens 4—5, alternating with the petals. Ovary sessile, 4-celled. Stigmas sessile, 4—5, sometimes distinct, sometimes united. Fruit with 4—5 ribbed or veined nucules.

1. *I. opaca* Ait.: leaves ovate, flat, coriaceous, acute, smooth, their margins with sharp spines; flowers scattered at the base of the young branches; teeth of the calyx acute. *I. aquifolium* Walt.

Sandy woods. Can. to Flor. W. to Ark. June.—An evergreen tree 10—15 feet high. *Leaves* tough, smooth and shining, with rigid spines at the edges. *Flowers* growing in bunches around the branches, small, white. It is stated by the younger Michaux, that birdlime may be extracted from the bark. The wood is fine grained and compact, and is employed by cabinet makers and turners.
American Holly.

2. *I. ambiguus* Torr.: leaves deciduous, ovate, acuminate, obtuse or acute at the base, thin, smooth, serrate; flowers tetrandrous, on short pedicels, aggregated at the extremity of short lateral branches. *Prinos ambiguus* Mich. not of Ell. or Nutt.

On the Catskill Mountains, N. Y., and on the mountains near Bethlehem, Penn. Torr.—A shrub about 6 feet high. *Leaves* about 3 inches long, clustered at the ends of the branches. *Flowers* polygamous, white. Dr. Torrey thinks that if this plant is not the *P. ambiguus* of Michaux, it must be undescribed. He has placed it under *Ilex* on account of its sulcate nucules. *N. Y. Fl.*

Ambiguous Ilex.

2. NEMOPANTHES. Raf.—Mountain Holly.

(From the Greek *νεμος*, a grove, *οψ*, an eye, and *ανθος*, a flower. *Lind.*)

Flowers by abortion diœcious or polygamous. Calyx small, scarcely conspicuous. Petals 3—5, distinct, oblong-linear, deciduous. Stamens 3—5, alternating with the petals. Ovary in the fertile flowers hemispherical. Style none. Stigmas 3—5, sessile. Fruit subglobose; nucules usually 4, smooth, bony.

N. Canadensis D. C. *N. fascicularis* Raf. *Ilex Canadensis* Mich.

Swamps in low grounds or on mountains. Can. to Car. May, June. 12.—A shrub 3—6 feet high. *Leaves* ovate or oval, entire or slightly denticulate, smooth, petioled. *Flowers* on slender pedicels of about an inch in length, small, green. *Fruit* about as large as a pea, scarlet.

Mountain Holly. Black Alder.

3. PRINOS. Linn.—Winterberry.

(Said to be derived from the Greek *πριω*, to saw; in allusion to its serrated leaves.)

Flowers mostly diœcious or polygamous. Calyx minute, 4—6-toothed. Corolla somewhat rotate, usually 6-parted. Stamens mostly 6. Ovary superior, 4—6-celled. Fruit with 4—6 smooth bony nucules.

1. *P. verticillatus* Linn.: leaves deciduous, oval or obovate, acuminate, serrate, pubescent beneath; sterile flowers axillary, subumbellate; fertile flowers aggregated. *P. Gronovii* Mich.

Swamps. Can. to Car. June, July. 12.—*Stem* 6—8 feet high, much branched. *Leaves* 2—3 inches long. *Flowers* numerous, small, white, diœcious. *Fruit* globose, bright scarlet when ripe.

Common Winterberry.

2. *P. lavigatus* Pursh: leaves deciduous, lanceolate, with appressed

serratures, smooth on both sides, shining above; nerves beneath scarcely pubescent; flowers 6-cleft; fertile ones axillary, subsessile; sterile scattered, pedunculate.

In swamps. N. Y. W. to Miss. July. \varnothing .—*Stem* 6—8 feet high. *Leaves* $2\frac{1}{2}$ inches long. *Fruit* large, red. The characters of this species do not seem yet to be well ascertained. *Smooth Winterberry.*

3. *P. glaber* Linn.: leaves evergreen, wedgeform, lanceolate, coriaceous, smooth and shining, somewhat toothed at the extremity; pedicels axillary, subsolitary, mostly 3-flowered.

Swamps. N. Y. to Car. July. \varnothing .—*Stem* 3—4 feet high, much branched. *Leaves* crowded, about an inch and a half long. *Flowers* white. *Fruit* globose, black and shining. *Evergreen Winterberry. Inkberry.*

ORDER LXXVII. OLEACEÆ.—OLIVEWORTS.

Flowers monoclinal, sometimes diceious. Calyx 4-lobed or 4-toothed, persistent. Corolla 4-cleft, sometimes of 4 petals, rarely wanting. Stamens 2, alternate with the segments of the corolla. Ovary free, 2-celled; style 1 or none; stigma entire or bifid. Fruit often by abortion 1-seeded. Seeds with dense albumen.—Trees or shrubs. Leaves opposite, simple, sometimes pinnatifid. Flowers in racemes or panicles.

1. LIGUSTRUM. Linn.—Privet.

(Said to be derived from the Latin *ligo*, to bind; in allusion to the use made of its branches.)

Calyx minutely 4-toothed. Corolla funnel-form, the limb 4-cleft. Stamens 2, included. Style very short. Stigma 2-cleft. Berry globose, 2-celled; cells 2-seeded, or by abortion 1-seeded.

L. vulgare Linn.: leaves elliptic-lanceolate, somewhat acute, smooth; panicles crowded.

Woods. N. Y. to Virg. W. to Miss. May, June. \varnothing .—*Stem* 4—6 feet high, with numerous opposite branches. *Leaves* varying from elliptic to obovate, and from acute to obtuse. *Flowers* white, in terminal thyrsoid panicles. *Berry* black, globose. *Common Privet or Prim.*

2. CHIONANTHUS. Linn.—Snowdrop Tree.

(From the Greek $\chi\iota\omega\nu$, snow, and $\alpha\nu\theta\omicron\varsigma$, a flower; in allusion to its snow-white flowers.)

Calyx 4-parted. Corolla with the tube very short, the limb deeply 4-parted; the lobes long and linear. Stamens 2. Anthers nearly sessile on the tube. Drupe 1-seeded. Nut striate.

C. Virginica Linn.: panicle terminal; peduncles 3-flowered; leaves acute.

var. 1. *montana* Pursh: leaves oval-lanceolate, coriaceous, smooth; panicles dense; drupe oval.

var. 2. *maritima Pursh*: leaves obovate-lanceolate, membranaceous, pubescent; panicles very loose; drupe elliptic.

Var. 1, on mountains; var. 2, on the sea coast. Penn. to Car. May, June.—A small tree, 6—10 feet high, with opposite branches. *Flowers* white, in pendulous panicles. *Drupe* purple. The *corolla* is sometimes 5 or 6-cleft.

Snowdrop Tree. Fringe Tree.

3. FRAXINUS. Linn.—Ash.

(Supposed to be derived from the Greek *φραξις*, a *hedge*; in allusion to the use sometimes made of it.)

Flowers polygamous or dioecious. Calyx small, 4-cleft or none. Corolla none or 4-petalled; the petals cohering at the base in pairs, oblong or linear. Stamens 2. Stigma 2-cleft. Samara 2-celled, compressed, winged at the apex, by abortion 1-seeded. Seeds pendulous, compressed.

* *Flowers naked.*

1. *F. sambucifolia Lam.*: leaves pinnate; leaflets in 4—5 pairs, sessile, ovate-lanceolate, somewhat rounded and unequal at the base, acuminate, serrate, smooth above, somewhat villous on the veins beneath; samara elliptic-oblong, obtuse at both ends.

River banks and swamps. Can. to Virg. W. to Miss. April.—A tree 30—40 feet high; the young branches smooth, sprinkled with black dots; buds blue. *Leaflets* rugose and shining above, with a somewhat villous tuft at the base of the midrib beneath. *Samara* broadish, of nearly uniform width. The wood is less valuable than that of either of the following species.

Black Ash. Water Ash.

** *Flowers calyculate, apetalous.*

2. *F. Americana Linn.*: leaves pinnate; leaflets in 3—4 pairs, on short petioles, elliptic-ovate, acuminate, entire or slightly serrate, glaucous beneath; petioles and branches terete; samara linear-oblong, obtuse, narrower at the base. *F. acuminata Lam. F. discolor Muhl.*

Woods. Can. to Geor. and Louis. May.—A large tree 50—60 feet high; the bark light-gray; the young branches smooth and marked with white dots. *Leaves* at first downy, but finally almost smooth and green above, pubescent and glaucous beneath. *Flowers* mostly triandrous, in loose compound axillary panicles. *Petals* none. The wood of this tree is highly valuable, being much used, on account of its toughness and elasticity, by wheelwrights, coach-makers, &c.

White Ash.

3. *F. pubescens Walt.*: leaves pinnate; leaflets in 3—4 pairs, on short petioles, lanceolate or elliptic-lanceolate, long acuminate, remotely serrate; petioles and young branches tomentose; samara smooth, narrow-lanceolate, obtuse, mucronate. *F. tomentosa Mich.*

Moist woods. Can. to Car. April, May.—A tree 30 to 40 feet high, with slender branches. *Leaflets* narrower, longer, more acuminate and pubescent than in the preceding. This tree is generally smaller than *F. Americana*, but its wood is used for the same purposes.

Red Ash.

4. *F. juglandifolia Lam.*: branches smooth; leaves pinnate; leaflets in 3—4 pairs, on short petioles, ovate, opaque, serrate, glaucous beneath; axils of the veins pubescent; samara cuneate-lanceolate, obtuse. *F. concolor Muhl.*

Wet woods. Can. to Car. May.—Said to be a small tree, but there is still some doubt in regard to its being a distinct species. *Swamp Ash.*

*** *Flowers calyculate, 4-petalled.* ORNUS. *Pers.*

5. *F. Ornus Linn.*: leaves pinnate; leaflets in 3—4 pairs, somewhat petioled, lanceolate, attenuate, serrate at the apex, entire at the base, pubescent on the veins beneath; samara linear-lanceolate, obtuse, attenuated at each end.

var. *latifolia Ait.*: leaflets ovate-oblong. *Ornus Americana Pursh.*

Shady woods. Md. and Virg.; rare. May. *Pursh.*—A tree with opposite and unequally pinnate leaves. *Flowers* in crowded panicles resembling those of *Chionanthus*. *Fruit* small and winged. *Flowering Ash.*

ORDER LXXVIII. APOCYNACEÆ.—DOG BANES.

Calyx 5-parted, persistent. Corolla regular, 5-lobed, twisted in æstivation. Stamens 5, with the filaments distinct and the anthers 2-celled; pollen granular. Ovaries 2, distinct or rarely united; styles 2 or 1; stigma 1. Fruit usually a follicle, single or double. Seeds with fleshy albumen.—Trees or shrubs, usually milky. Leaves entire, mostly opposite, without stipules. Flowers in cymes or panicles.

APOCYNUM. *Linn.*—Dog's Bane.

(From the Greek *απο*, *far from*, and *κυν*, a *dog*; it being supposed to poison that animal.)

Calyx 5-parted. Corolla campanulate, 5-cleft; the base of the tube furnished with 5 triangular scales, alternating with the lobes. Stamens 5, included. Anthers sagittate, connivent, adhering to the stigma. Ovaries 2, oblong. Stigma nearly sessile, ovoid, obscurely 2-lobed. Follicles slender, elongated, coriaceous. Seeds comose.

1. *A. androsæmifolium Linn.*: leaves ovate, mostly obtuse at base, smooth above, slightly pubescent beneath; cymes lateral and terminal, few-flowered; tube of the corolla longer than the calyx.

Fields, &c. Subarct. Amer. to Car. W. to Miss. June, July. 2.—*Stem* 2—3 feet high, erect, smooth, with numerous spreading branches. *Leaves* on short petioles. *Flowers* in loose paniculate cymes, pale-red, with the limb spreading. Medicinal. *Big. Med. Bot.* ii. 148. *Common Dog's Bane.*

2. *A. cannabinum Linn.*: leaves on short petioles, lanceolate or lance-oblong, acute at each end, smooth above, slightly pubescent beneath; cymes paniculate, many-flowered; calyx as long as the tube of the corolla; limb erect.

Fields and woods. Can. to Car. W. to Miss. July, Aug. 2.—*Stem* 2—4 feet high, mostly erect, branched. *Lower leaves* sometimes cordate at base. *Flowers* small, greenish-white, in terminal cymes. It has the leaves narrower and the flowers smaller than in the preceding. *Indian Hemp.*

3. *A. hypericifolium* Ait. : leaves oblong, smooth, on very short petioles, mucronate, obtuse and subcordate at base; cymes shorter than the leaves; calyx nearly as long as the tube of the corolla.

Gravelly banks of streams. Can. to Virg. W. to Miss. June, July. ♀.—*Stem* 2 feet high, erect. *Leaves* on very short petioles. *Flowers* greenish-white, in terminal and lateral cymes. Plant smaller than the preceding.

Hypericum-leaved Dog's Bane.

4. *A. pubescens* R. Brown : leaves on short petioles, ovate-oblong, mucronate, hoary-pubescent beneath; cymes short, pubescent; corolla longer than the calyx. *A. cannabinum* Mich.

Fields. Can. to Car. July, Aug. ♀.—*Stem* 2—3 feet high. *Flowers* small, greenish-white. It is perhaps nothing more than a variety of *A. cannabinum*.

Pubescent Dog's Bane.

ORDER LXXIX. ASCLEPIADACEÆ.—MILKWEEDS.

Calyx 5-divided, persistent. Corolla 5-lobed, regular, deciduous; aestivation imbricate, rarely valvate. Stamens 5, inserted into the base of the corolla; filaments usually connate; anthers 2-celled or incompletely 4-celled; pollen, when the anther bursts, coalescing into masses which are as numerous as the cells, or sometimes confluent by pairs, and sticking to the 5 processes of the stigma. Ovaries 2; styles 2, close to each other; stigma 1, common to both styles, 5-cornered. Follicles 2, 1 of which is sometimes abortive. Seeds numerous, comose, with thin albumen.—Shrubs or herbaceous plants, almost always milky and often twining. Leaves entire, having ciliæ between their petioles instead of stipules. Flowers somewhat umbelled, fascicled or racemose, proceeding from between the petioles.

1. ASCLEPIAS. Linn.—Milkweed. Silkweed.

(The Greek name of *Æsculapius*; to whom this genus is dedicated.)

Calyx small, 5-parted; segments lanceolate. Corolla 5-parted; the lobes lanceolate, reflexed. Staminal crown (nectary) 5-leaved; leaflets opposite the anthers, each mostly producing from its base a subulate averted process or little horn. Pollen-masses 5 distinct pairs, compressed, affixed by their attenuated summits in the cells of the anthers. Stigma depressed. Follicles ventricose, smooth or muricate. Seeds comose.

* *Nectary or Staminal crown with horns.*

† *Follicles muricate.*

1. *A. Syriaca* Linn : stem sub-simple, smoothish; leaves oblong-lanceo-

late, acute or shortly acuminate, petiolate, tomentose beneath; umbel sub-terminal, many-flowered, somewhat nodding; leaflets of the crown ovate, the margin 2-toothed. *A. Cornuti Decaisne.*

Fields and road sides. Can. to Virg. W. to Miss. July, Aug. 2.—Stem 2—4 feet high. *Leaves* 6—8 inches long. *Umbels* lateral and terminal, 15—20-flowered. *Flowers* large, pale purple. *Follicles* 2—5 inches long, covered with soft flexible spines. The leaves are said to be used in preparing the indigo dye in woollen manufactories. The reasons given for changing the old name of this plant do not appear to me to be satisfactory. *Common Milkweed.*

† *Follicles smooth.*

a. *Leaves opposite.*

2. *A. phytolaccoides Pursh*: stem erect, simple; leaves broad-lanceolate, acuminate, smooth above, paler and somewhat pubescent beneath; umbels many-flowered, lateral and terminal, solitary, on long peduncles, nodding; leaflets of the crown truncate, the inflexed margin 2-toothed at the summit; horn much exerted, subfalcate. *A. exallata* and *acuminata Muhl.* *A. nivea Hook.*

Wet rocky grounds. Can. to Car. W. to Miss. June, July. 2.—Stem 3—4 feet high. *Leaves* large, and resembling those of *Phytolacca decandra.* *Umbels* few-flowered, on long peduncles. *Flowers* large, greenish-purple. A more delicate species than the preceding. *Poke-leaved Milkweed.*

3. *A. incarnata Linn.*: stem erect, branched above, more or less pubescent; leaves lanceolate, subsessile, somewhat tomentose; umbels numerous, erect, mostly in pairs and terminal; leaflets of the crown not toothed; horn exerted, subulate. *A. pulchra Willd.*

Banks of streams. Can. to Car. W. to Miss. July, Aug. 2.—Stem 2—4 feet high, with pubescent lines or hairy tomentose. *Umbels* numerous, rather small. *Flowers* bright purple. *Swamp Silkweed.*

4. *A. purpurascens Linn.*: stem simple, with two pubescent lines; leaves ovate-elliptic or ovate, mucronate, abruptly attenuated into a short petiole, smoothish above, pubescent and paler beneath; leaflets of the crown oblong; horn falcate, horizontal, acute. *A. amœna Mich.*

Woods. Mass. to Virg. Ohio, and Ken. July, Aug. 2.—Stem 2—3 feet high, rather slender. *Leaves* with the midrib broad and purple. *Umbels* many-flowered, near the summit of the stem. *Flowers* deep purple. Well defined by the peculiar curvature of the horn. *Purple Silkweed.*

5. *A. obtusifolia Mich.*: stem simple, erect, smooth; leaves closely sessile, somewhat cordate and clasping, oblong, obtuse, undulate on the margin, very smooth, glaucous beneath; umbel terminal, long peduncled, generally solitary, many-flowered; leaflets of the crown slightly 2-toothed; horn exerted. *A. purpurascens Walt.*

Sandy fields. N. Y. to Car. June. 2.—Stem 2—3 feet high. *Umbels* 1—3, terminal, on long peduncles. *Flowers* large, pale purple. *Wavy Milkweed.*

6. *A. variegata Linn.*: stem simple, with 2 pubescent lines; leaves ovate or obovate, attenuated at base into a petiole, smooth, at length somewhat waved; umbels on short peduncles; the peduncles and pedicels woolly; leaflets of the crown without teeth; horn broad, with a horizontal point. *A. hybrida Mich.*

Woods. N. Y. to Car. July, Aug. ♀.—*Stem* 3—4 feet high. *Leaves* slightly acuminate, on pubescent petioles. *Umbels* 1—4, terminal and on the upper part of the stem, rather densely flowered. *Flowers* greenish-white, tinged with purple within. *Variegated Silkweed.*

7. *A. laurifolia* Mich.: stem erect, simple, slightly pubescent; leaves ovate-lanceolate, very acute, subcordate or often rounded at base, subsessile, somewhat distant, smooth, scabrous-serrate on the margin; umbels mostly terminal; leaflets of the crown acute, with the horns scarcely as long. *A. acuminata* Pursh. *A. periplocifolia* Nutt.

Low grounds. N. J. to Car. July, Aug. ♀.—*Root* tuberous. *Stem* 18 inches to 2 feet high. *Leaves* subsessile or on very short petioles. *Umbels* 1—3, near the summit. *Flowers* yellowish-green and purple. *Laurus-leaved Silkweed.*

8. *A. quadrifolia* Jacq.: stem simple, slender, smooth; leaves lance-ovate, acuminate, petiolate, smooth, 4 larger ones in a whorl near the middle of the stem; umbels 2, terminal, erect, loose; pedicels capillary; leaflets of the crown 2-toothed; horn very short.

Stony woods. Can. to Car. W. to Miss. June. ♀.—*Stem* 1—2 feet high. *Leaves* thin and membranaceous, the upper and lower ones opposite. *Umbels* mostly 2, sometimes solitary, on long slender peduncles. *Flowers* small, white or pale purple. *Four-leaved Silkweed.*

b. Leaves alternate or verticillate.

9. *A. verticillata* Linn.: stem simple, marked with pubescent lines; leaves mostly whorled, narrow-linear, revolute on the margin; umbels terminal and axillary; leaflets of the crown short, obtuse, 2-toothed; horn falcate, much exserted.

Dry hills. Can. to Car. W. to Miss. and Texas. June—Sept. ♀.—*Stem* 1—3 feet high, very slender, often a little branched at the summit. *Umbels* numerous, about an inch in diameter, terminal and subterminal. *Flowers* small, greenish-white. *Whorled Silkweed.*

10. *A. tuberosa* Linn.: hairy; stem erect, oblique or decumbent, with spreading branches; leaves oblong-lanceolate, linear-lanceolate or linear, mostly alternate, subsessile; umbels numerous, often forming corymbs; horn subulate, rather erect. *A. decumbens* Willd.

Sandy fields. Can. to Car. W. to Miss. June—Aug. ♀.—*Root* large, tuberous. *Stem* 1—3 feet long. *Leaves* sometimes broad and cordate, at others linear and somewhat tapering at base. *Flowers* large, in numerous erect umbels, bright orange. Plant without milky juice. Medicinal. See *Big. Med. Bot.* ii. 59. *Butterfly Weed. Pleurisy Root.*

** *Nectary or staminal crown without horns.* ACERATES. *Ell.*

11. *A. viridiflora* Raf.: stem erect or ascending, hairy; leaves oval, ovate and obovate, on short petioles, tomentose-pubescent on both sides, obtuse; umbels subglobose, many-flowered, subsessile, nodding; pedicels tomentose. *A. nutans* Muhl. *A. lanceolata* Ives. *Acerates viridiflora* and *obovata* Ell.

Sandy fields. Can. to Car. W. to Miss. July. ♀.—*Stems* 1—2 feet high, sometimes clustered. *Leaves* 2—3 inches long, rather thick and coriaceous, varying in form. *Umbels* 2—4, subterminal, on short thick hairy peduncles. *Flowers* green. I follow Decaisne, Torrey and Darlington, in uniting *A. lanceolata* of Ives with this species. *Green-flowered Silkweed.*

2. GONOLOBUS. *Mich.*—Gonolobus.

(From the Greek *γωνία*, an *angle*, and *λόβος*, a *pod*; on account of its angular follicles.)

Calyx 5-parted, the sepals spreading. Corolla rotate, 5-parted. Staminal crown scutelliform, 5-lobed. Anthers opening transversely, terminated by a membrane. Pollen-masses 5 pairs, not separating into grains. Stigma flattish-depressed. Follicles 2, ventricose, somewhat ribbed. Seeds comose.

1. *G. macrophyllus Mich.*: stem hirsute with long hairs; leaves broadly ovate-cordate, with the sinus nearly closed, acuminate, finely pubescent, at length smoothish above; segments of the corolla linear or linear-oblong, with the margin reflexed; follicles ribbed and angled. *G. obliquus Brown.*
Cynanchum obliquum Muhl.

Near Philadelphia. *Barton.* Chester county, Penn. *Darlington.* July. ♀.—Stem several feet long, twining. *Flowers* in loose cymose umbels, purple and greenish, fetid. *Large-leaved Gonolobus.*

2. *G. hirsutus Mich.*: stem twining; younger branches very hairy; leaves cordate-ovate, or ovate-roundish, attenuate or somewhat obtuse, hairy on both sides; peduncles shorter than the petiole, few-flowered; segments of the corolla oblong; follicles muricate. *Gonolobium hirsutum Pursh.*

Hedges near streams. Penn. to Car. *Pursh.* June, July. ♀.—Stem trailing and climbing, 3—4 feet long, pubescent. *Leaves* slightly auriculate at base. *Umbels* axillary, 3—4-flowered. *Flowers* dark purple. *Hairy Gonolobus.*

ORDER LXXX. LOGANIACEÆ.—LOGANIADS.

Calyx inferior, 4—5-parted. Corolla regular or irregular, 4—5 or 10-cleft. Stamens 5, arising from the corolla. Ovary 2-celled; style continuous; stigma simple. Fruit capsular, drupaceous or berried. Seeds usually peltate, sometimes winged, with fleshy or cartilaginous albumen.—Shrubs, herbaceous plants or trees. Leaves opposite, entire, usually with stipules in the form of interpetiolar sheaths.

SPIGELIA. *Linn.*—Worm Grass.

(In honor of *Adam Spigeli*, an old botanist of considerable note.)

Calyx 5-parted, persistent; the segments linear-subulate. Corolla funnel-form, 5-cleft. Stamens 5. Anthers linear, erect, 2-lobed at base. Capsule ovoid-compressed, didymous, 2-celled, few-seeded.

S. Marylandica Linn.: stem simple, square, smooth; leaves opposite,

ovate-lanceolate, sessile, acute or acuminate, the margin and nerves rough, hairy; lobes of the corolla four times as long as the calyx; anthers exerted.

Woods. Penn and Md. to Flor. W. to Ark. June. ♀.—*Stem* 6—18 inches high. *Flowers* sessile, 3—8 in a spike or raceme, an inch and a half long, crimson, yellow within. A celebrated vermifuge. *Big. Med. Bot.* i. 142.

Pink-root. Perennial Worm Grass.

ORDER LXXXI. GENTIANACEÆ.—GENTIANWORTS.

Calyx divided, persistent. Corolla usually regular, with an imbricate, twisted, rarely induplicate, æstivation; its lobes of the same number as those of the calyx, generally 4 or 5, (rarely 6—10.) Stamens inserted upon the corolla and equal in number to its lobes. Ovary composed of 2 carpels, 1- or partly 2-celled; style 1, continuous; stigmas 2. Capsule or berry many-seeded. Seeds small; albumen fleshy.—Herbaceous plants, rarely shrubs, sometimes twining. Leaves almost always opposite and entire. Flowers showy.

I. GENTIANEÆ. *Corolla imbricate.*

1. GENTIANA. *Linn.*—Gentian.

(Named from *Gentius*, king of Illyria, who, according to Pliny, brought into use the species so much valued in medicine.)

Calyx 4—5-cleft. Corolla tubular-campanulate, funnel-form or somewhat salver-form; the limb 4—5-cleft, sometimes with intermediate plaits. Stamens 4—5, inserted upon the tube of the corolla. Styles very short. Stigmas 2. Capsule 1-celled, 2-valved.

* *Corolla somewhat tubular; intermediate lobes or plaits large.*

1. *G. Andrewsii* Griseb.: stem ascending; leaves ovate-lanceolate, acuminate, 3-nerved, rough on the margin; flowers aggregated, subsessile, bracteate; lobes of the calyx shorter than the tube; corolla connivent; the lobes very short, smaller than the somewhat 2-lobed plaits. (*D. C.*) *G. Saponaria* Fræl. not of *Linn.*

Woods and meadows. Can. to Car. W. to Mich. Sept., Oct. ♀.—*Stem* 1—2 feet high, simple. *Flowers* large, principally in a dense terminal fascicle or head, bright blue. *Andrews's Gentian.*

2. *G. Saponaria* β. *linearis* Griseb.: stem ascending; leaves linear-lanceolate, obtuse, rough on the margin; flowers aggregated, somewhat sessile, bracteate; lobes of the corolla ovate, twice or thrice as long as the cleft plaits. (*D. C.*) *G. Pneumonanthe. G. linearis* Fræl. and *puberula* Mich.

Valleys of the Adirondack Mountains, Essex county, N. Y. Torr. Swamp near Portland, Maine. *Big.* Aug., Sept. ♀.—*Stem* about a foot high, slender, smooth. *Flowers* bright blue, 3—5 in a terminal fascicle, with one or two in the axils of the next pair of leaves below. *Soap Gentian.*

3. *G. ochroleuca* Fræl.: stem ascending; leaves ovate-lanceolate and obovate, rough on the margin; flowers aggregated, subsessile, bracteate; lobes of the calyx unequal, as long as the tube; corolla with the lobes acute, and the plaits very short and entire. *G. Saponaria* Walt. *G. villosa* Linn.

Sandy fields. N. J. to Flor. Aug., Sept. ♀.—Stem 9—15 inches high, simple, somewhat angular, the angles a little rough. Flowers yellowish-white, tinged with green and purple, in a terminal bracteate fascicle.

Yellowish Gentian.

4. *G. angustifolia* Mich.: stem terete, simple, slender, 1-flowered; leaves linear, obtuse, smooth on the margin; calyx deeply 5-cleft, with the lobes linear; lobes of the corolla ovate-oblong, obtuse, twice as long as the calyx, the plaits many-cleft or lacerate. *G. purpurea* Walt.

Sandy fields. N. J. to Car. Aug., Sept. ♀.—Stem a foot high. Flower large, sky-blue, terminal.

Narrow-leaved Gentian.

** *Corolla funnel-form, without plaits.*

5. *G. quinqueflora* Lam.: stem square, branched; leaves ovate-lanceolate, subclasping, acute, 5-nerved; flowers somewhat in fives, axillary and terminal, pedicellate; corolla 5-cleft, the lobes triangular and setaceous acute. *G. amarelloides* Mich. *G. quinquefolia* Linn.

Woods. N. Y. to Car. W. to Miss. July, Aug. ♀?—Stem 12—18 inches high. Flowers small, pale blue, generally 3—5 on the summit of the branches.

Five-flowered Gentian.

*** *Corolla fimbriate on the margin, without plaits.*

6. *G. delonxa* Fries: stem erect; leaves oblong-lanceolate or linear, scabrous on the margin, spatulate at the base; corolla 4—5-lobed; the lobes oblong, obtuse, ciliate at base, crenate at the summit. (*D. C.*)

Wet limestone rocks, Goat Island, Niagara Falls, N. Y. Torr. N. to Hudson's Bay. W. to the Rocky Mountains. Sept. ①.—Stem 8—12 inches high, mostly simple. Leaves 1—2 inches long. Flowers 1—3, on elongated terminal peduncles, bright blue; the tube yellowish and white. Distinguished from the next by its narrow leaves and less fringed corolla.

Smaller Fringed Gentian.

7. *G. crinita* Willd.: stem erect, branched above; branches elongated, 1-flowered; leaves lanceolate, rounded or cordate at base; the lower ones obovate, obtuse; corolla 4-cleft; the lobes cuneate-obovate, fringed at the top.

Pastures and woods. Can. to Car. Sept., Oct. ②?—Stem 1—2 feet high, terete below, square above. Flowers large, bright blue, on peduncles at the ends of the branches.

Large Fringed Gentian.

2. HALENIA. Borkh.—Halenia.

(Etymology unknown.)

Calyx 4—5-parted. Corolla campanulate, 4—5-cleft; the lobes erect, equalling the tube, with a glanduliferous spur at the base. Stamens 4—5. Stigma 2-lobed, nearly sessile. Capsule 1-celled, 2-valved, many-seeded.

H. deflexa Griseb.: stem erect, leafy; leaves 3—5-nerved; lower ones oblong-spatulate, attenuated into a petiole as long as the lamina; cauline oblong-lanceolate, subsessile, acute; spurs cylindrical, obtuse, deflexed, half as long as the corolla. (*D. C.*) *Swertia deflexa* Smith. *S. corniculata* Mich.

Swamps. Can. and N. Y. N. to Hudson's Bay. W. to the Rocky Mountains. Aug. ②.—*Stem* 18 inches high, 4-angled. *Leaves* about an inch long, *Flowers* blue, in terminal cymes and subterminal whorls. The plant turns nearly black in drying. *Deflexed Halenia.* Felwort.

3. SWERTIA. Linn.—Swertia.

(In honor of Emanuel Sweet, gardener to the Emperor Rudolphus II.)

Calyx 4—5-parted. Corolla rotate, 4—5-parted; the segments with 2 glanduliferous fimbriate pores at the base of each. Stamens 4—5. Stigmas reniform, mostly 2-lobed (rarely 2, distinct.) Style none. Capsule 1-celled, 2-valved, many-seeded.

S. pusilla Pursh: stem simple, 1-flowered; leaves few, small, oblong; corolla twice as long as the calyx; the segments oblong, acuminate.

White Hills, N. H. June. Pursh. ①? N. to Labrador.—*Stem* about an inch high. *Leaves* 1 or 2 pairs, small. *Flowers* large, blue. It is still doubtful whether it belongs to this genus. *Small Swertia.*

4. FRASERA. Walt.—Frasera.

(In honor of John Fraser, a collector of North American plants.)

Calyx 4-parted. Corolla deciduous, rotate, 4-parted, with 1 or 2 fringed glands on each lobe. Stamens 4. Styles united. Stigmas 2. Capsule compressed, 1-celled, 2-valved. Seeds few, large, winged.

F. Caroliniensis Walt.: stem smooth; leaves opposite and whorled; panicle elongated; glands oval-orbicular, one on each lobe of the corolla. *F. Walteri* Mich. *F. verticillata* Muhl.

Swamps. Near Fairfield, Herkimer county, N. Y. Prof. Hadley. Moscow, Livingston county. Dr. Bradley. S. to Car.; rare. July. ②.—*Stem* 3—6 feet high, nearly square, branched, furrowed. *Leaves* smooth, usually whorled, sometimes opposite, oblong-lanceolate. *Flowers* on whorled peduncles, greenish-yellow. *Peduncles* 1-flowered. The root of this plant is esteemed as a bitter tonic. See *U. S. Dispensatory.* *American Columbo.*

5. SABBATIA. Adans.—Sabbatia.

(In honor of Liberatus Sabbati, an Italian botanist.)

Calyx 5—12-parted. Corolla rotate, 5—12-parted. Stamens 5—12. Anthers at length revolute. Stigmas 2, spiral. Capsule 1-celled, 2-valved.

1. *S. stellaris* Pursh: stem slightly angular, dichotomously branched; branches elongated, 1-flowered; leaves sessile, ovate-lanceolate, somewhat

acute; segments of calyx linear-subulate, half as long as the obovate lobes of the corolla. *S. gracilis* Ell.

Salt marshes. N. Y. to Car. Aug., Sept. ②.—Stem 12—18 inches high, often branched from near the root. Leaves somewhat fleshy, obscurely 3-nerved. Flowers solitary at the extremity of the branches, forming a small corymb, rose-color. *Salt-marsh Centaury.*

2. *S. angularis* Pursh: stem erect, square, somewhat winged; leaves ovate, clasping; peduncles elongated, corymbed; segments of the calyx lanceolate, much shorter than the obovate-elliptic lobes of the corolla. *Chironia angularis* Linn.

Wet meadows. Can. to Car. W. to Miss. Aug. ②.—Stem 1—2 feet high, with opposite branches. Leaves about an inch long, obscurely 5-nerved. Flowers rose-color. *American Centaury.*

3. *S. gracilis* Salisb.: stem teretish; branches alternate; leaves linear, the lower ovate or lanceolate; calyx as long as the corolla, the tube very short; lobes of the corolla elliptic-oblong, obtuse. *S. campanulata* Torr. *Chironia campanulata* Linn.

Wet grounds. Penn. to Car. July, Aug. ②.—Stem a foot high, with long branches. Panicle terminal, the branches spreading and few-flowered. Flowers purple. *Slender Sabbatia.*

4. *S. calycosa* Pursh: stem terete, dichotomously branched; the branches 1-flowered; leaves elliptic-oblong, 3-nerved; segments of the calyx oblong-lanceolate, leafy, larger than oblong obtuse lobes of the corolla. *Chironia calycosa* Mich. *C. dichotoma* Walt.

Wet meadows. N. Y. to Car. Aug. ②.—Stem a foot high, slightly angled, with few branches. Leaves sessile, oval, thin. Flowers terminal, often solitary, rose-color. *Dichotomous Sabbatia.*

5. *S. chloroides* Pursh: stem weak, somewhat angled, with few 1-flowered branches; leaves lanceolate, erect; branches few, 1 flowered; flowers 7—12-parted; segments of the calyx linear, much shorter than the elliptic-lanceolate lobes of the corolla. *Chironia chloroides* Mich. *Chlora dodecandra* Linn.

Salt bogs. N. Y. to Car. Aug. ②.—Stem 1—2 feet high. Leaves closely sessile, without nerves, the lower ones ovate-spatulate. Flowers large, bright rose-color. This and the preceding are very variable. *Large-flowered Sabbatia.*

6. *S. corymbosa* Bald.: stem erect, nearly square, with opposite branches; leaves ovate-lanceolate, 3-nerved, sessile; flowers corymbed; segments of the calyx linear, much shorter than the obovate oblong lobes of the corolla. *S. paniculata* var. *a.* Pursh. *Chironia lanceolata* Walt.

Swamps. N. J. to Car. Aug., Sept. ②.—Stem a foot high, branched near the summit. Leaves somewhat clasping. Corymb few-flowered. Corolla white, 5—6-parted. *Corymbose Sabbatia.*

6. ERYTHRÆA. Rich.—Centaury.

(From the Greek *ερυθρος*, red; the prevailing color of the flowers.)

Calyx tubular, 5-cleft. Corolla funnel-form; limb short, 5-cleft. Stamens 5. Anthers, after flowering, spirally twisted.

Style erect. Stigmas 2, roundish. Capsule linear, 1—2-celled, 2-valved. Seeds minute.

1. *E. Centaurium Pers.*: stem erect, nearly simple; leaves ovate-oblong, nerved; flowers subsessile, fasciculate-cymose; calyx half as long as the tube of the corolla. *Chironia Centaurium Willd.*

Dry grounds. Near Oswego, and in Putnam county, N. Y.; rare. July, Aug. ①.—Stem 8—12 inches high. Leaves variable; the lower ones broader than the upper. Flowers rose-color, in fasciculate cymes near the top of the stem. *Common Centaury.*

2. *E. Muhlenbergii Griseb.*: stem simple or branching; leaves ovate-oblong, somewhat obtuse; flowers in loose dichotomous cymes, the central ones pedicellate; corolla after flowering twice the length of the calyx; the lobes oblong-lanceolate. (D. C.) *E. pulchella Darlingt.*

Wet meadows. Flushing, N. Y. Torr. Penn. and Virg. *Darlingt.* July. ①.—Stem 2—6 inches high, sharply 4-angled. Flowers smaller than in the preceding; limb bright-purple. It is perhaps not distinct from the preceding. *Muhlenberg's Centaury.*

7. EXACUM. Linn.—Exacum.

(From the Latin *ex, out, and ago, to drive*; it being supposed to have the power of expelling poison from the stomach.)

Calyx deeply 4-parted. Corolla 4-lobed, with the tube globose. Stamens 4. Style 1. Stigma 2-cleft. Capsule bisulcate, 2-celled, many-seeded.

E. pulchellum Pursh: lower leaves roundish, the rest subulate; panicle corymbose; peduncles filiform; calyx 4-parted, segments subulate. *Cicendria pulchella? Griseb. in D. C.*

Sea coast, N. J.; rare. Aug. ①.—Flowers small, rose-color.

Pretty Exacum.

8. CENTAURELLA. Mich.—Centaurella.

(A diminutive of *Centaurea*.)

Calyx 4-parted, appressed. Corolla subcampanulate, 4-parted; segments somewhat erect. Stamens 4. Stigma thick, glandulous and partly bifid. Capsule 1-celled, 2-valved, many-seeded, surrounded by the persistent calyx and corolla.

C. paniculata Mich.: stem somewhat branched, smooth; peduncles opposite, the lower ones branched; leaves minute, subulate, alternate below, nearly opposite above; flowers in panicles; corolla as long as the calyx; style very short. *C. autumnalis Pursh. Bartonia tenella Muhl.*

Damp grounds. N. Y. to Car. Aug., Sept. ①.—Stem 4—8 inches high, square, often twisted. Leaves scarcely 2 lines in length. Flowers small, greenish-white, on the ends of the branches. *Late-flowered Centaurella.*

II. MENYANTHÆ. *Corolla induplicate.*9. LIMNANTHEMUM. *Gmel.*—Limnanthemum.

(From the Greek λιμνας, *inhabiting a lake*, and ανθεμον, *a flower*.)

Calyx 5-parted. Corolla rotate, 5-parted; the lobes bearded or scaly at base and furnished with glands. Stamens 5. Anthers erect. Style short or none. Stigma 2-lobed, persistent. Capsule 1-celled, few-seeded.

L. lacunosum Griseb.: floating; leaves reniform-cordate, obscurely crenate, smoothish above, spongy beneath; segments of the calyx ovate-oblong, one-third as long as the corolla. (*D. C.*) *Villarsia lacunosa* Pursh. *Menyanthes trachysperma* Mich.

Ponds and lakes. Can. to Car. July, Aug. ♀.—*Stem* long, filiform, rooting in the mud. *Leaves* about an inch long, on elongated petioles, somewhat fleshy, greenish above and mostly purplish and spongy below. *Flowers* white, fasciculate, on peduncles produced from the petiole about half an inch below the leaf. Abundant in Sand Lake, N. Y. *Floating Heart.*

10. MENYANTHES. *Linn.*—Buckbean.

(From the Greek μην, the *moon*, (a *month*), and ανθος, a *flower*; because the plant continues in flower about that time. *Eaton.*)

Calyx 5-parted. Corolla funnel-form; limb spreading, 5-lobed, equal, hairy within. Stamens 5. Style 1, filiform. Stigma 2-lobed, persistent. Capsule 1-celled, with the axis of the valves seminiferous.

M. trifoliata Linn.

Marshes. Subarct. Amer. to Virg. W. to the Rocky Mountains. May. ♀.—*Plant* 8—12 inches high. *Root* creeping. *Leaves* ternate, on long petioles which are sheathing at base; leaflets obovate, nearly entire. *Peduncles* scape-like, longer than the leaves. *Flowers* pale red, in a terminal raceme. *Buckbean. Marsh Trefoil.*

ORDER LXXXII. BIGNONIACEÆ.—BIGNONIADS.

Calyx divided or entire, sometimes spathaceous. Corolla usually irregular, 4—5-lobed. Stamens 5, unequal, always 1, sometimes 3, sterile; when 4 are fertile, they are didynamous. Ovary seated in a disk, 2-celled, or spuriously 4-celled. Style 1; stigma of 2 plates. Capsule 2-celled, sometimes spuriously 4-celled, 2-valved. Seeds transverse, compressed, often winged, without albumen.—Trees or shrubs, often twining or climbing. Leaves opposite, rarely alternate, without stipules. Flowers somewhat panicled.

1. TECOMA. *Juss.*—Trumpet Flower.

(Etymology unknown.)

Calyx campanulate, 5-toothed. Corolla with the tube short; the limb 5-lobed, equal or somewhat 2-lipped. Stamens 4, didynamous, with the rudiment of a fifth. Capsule 2-celled, 2-valved; dissepiments contrary to the valves. Seeds winged.

T. radicans *Juss.*: stem creeping; leaves pinnate; leaflets in 4—5 pairs, ovate, acuminate, toothed-serrate, pubescent on the nerves beneath; tube of the corolla three times as long as the calyx. *Bignonia radicans* *Linn.*

Banks of streams. Penn. to Flor. W. to Miss. July, Aug. ½.—Creeping on rocks and trees. *Flowers* 2—3 inches long, scarlet, in a terminal corymb.
Ash-leaved Trumpet-flower.

2. CATALPA. *Juss.*—Catalpa.(Said to be a corruption of *Catawba*, the Indian name of this tree.)

Calyx 2-parted. Corolla campanulate; tube ventricose; limb 5-lobed, unequal. Stamens 2 fertile, 2—3 sterile. Stigma in 2 plates. Capsule pod-form, long, cylindric, 2-valved; dissepiments opposite the valves. Seeds membranaceously winged, lacinate at the summit.

C. cordifolia *Ell.*: leaves roundish-cordate, acuminate, entire, petiolate; flowers paniced. *C. syringifolia* *Sims.* *Bignonia Catalpa* *Linn.*

Fields, near houses, &c. N. Y. to Flor. and throughout the Western and Southwestern States. July.—A large tree with irregular branches. *Leaves* large, smooth above, somewhat pubescent beneath, on long petioles. *Flowers* large, white, variegated with yellow and purple, in large pyramidal panicles. Probably introduced, as it is generally found in the vicinity of habitations, Indian encampments, &c. *Common Catalpa. Bean Tree.*

ORDER LXXXIII. PEDALIACEÆ.—PEDALIADS.

Calyx divided in 5 nearly equal pieces. Corolla irregular; the throat ventricose, the limb somewhat 2-lipped. Stamens 4, didynamous, (2 sometimes sterile,) with the rudiment of a fifth. Ovary seated in a glandular disk, 1 or 2-celled, sometimes with spurious cells; style 1; stigma divided. Fruit drupaceous or capsular. Seeds usually few, wingless, without albumen.—Herbaceous plants, mostly covered with glandular hairs. Leaves opposite or alternate, often angular or lobed, without stipules. Flowers usually large, axillary.

MARTYNIA. *Linn.*—Martynia.(In honor of *John Martyn*, Professor of Botany in Cambridge, Eng.)

Calyx 5-cleft, campanulate, gibbous at base; the limb un-

equally 5-lobed. Stamens 4, didynamous, with the rudiment of a fifth. Capsule ligneous, corticate, 4-celled, with a long hooked beak which at length splits into two horns.

M. proboscidea Linn.: stem viscid, pubescent, branched, mostly decumbent; leaves alternate, cordate, nearly round, very entire, villous; flowers axillary, on long peduncles. *M. alternifolia* Lam.

River banks, N. Y. to Car. W. to Miss. Aug., Sept. ①.—Stem 1—2 feet long. Leaves 3—5 inches in diameter. Flowers dull yellow, large, spotted. Whole plant fetid. The fruit is esteemed as a pickle. Probably introduced into the Northern States from the Southwest. *Unicorn Plant.*

ORDER LXXXIV. POLEMONIACEÆ.—PHLOXWORTS.

Calyx 5-parted. Corolla regular, 5-lobed. Stamens 5, inserted into the tube of the corolla. Ovary superior, 3-celled; style simple; stigma trifid. Capsule 3-celled, 3-valved, with a loculicidal dehiscence; the valves separating from the axis. Seeds angular or oval, sometimes mucilaginous and furnished with spiral threads; albumen horny.—Herbaceous plants, with opposite or alternate simple or compound leaves.

1. PHLOX. Linn.—Phlox.

(From the Greek φλοξ, *flame*; a name which is said to have been originally applied to a species of *Lychnis*, and transferred to this genus by Linnæus.)

Calyx prismatic, the segments erect. Corolla salver-form; tube long, somewhat curved; the limb flat, 5-lobed. Stamens inserted about the middle of the tube of the corolla, very unequal. Capsule roundish-ovoid, 3-seeded.

1. *P. paniculata* Linn.: stem erect, smooth, paniculately branched above; leaves oblong or ovate-lanceolate, acuminate; panicle pyramidal, corymbose, many-flowered; teeth of the calyx setaceous-acuminate; lobes of the corolla obovate.

Meadows. Penn. to Car. W. to Miss. June, July. ②.—Stem 2—3 feet high. Leaves opposite, rough on the margin, the upper ones slightly cordate at base. Flowers numerous, crowded at the summits of the branches, purple.

Panicled Phlox.

2. *P. maculata* Linn.: stem erect, simple, and somewhat scabrous; leaves oblong-lanceolate, smooth, with the margin scabrous; panicle oblong, thyrsoid or somewhat pyramidal; teeth of the calyx lanceolate, acute; lobes of the corolla rounded. *P. pyramidalis* Smith. *P. suaveolens* Ait.

Moist meadows. N. J. to Car. June. ③.—Stem 2—3 feet high, mostly simple, roughish pubescent above, sometimes spotted with dark purple. Upper leaves ovate, and somewhat cordate at base. Flowers in pedunculate axillary corymbs at and near the summit of the stem, varying from deep purple to nearly white. I follow De Candolle in uniting the above species, as it is difficult to point out the distinctive characters.

Spotted Phlox.

3. *P. aristata* Mich.: stem erect, weak, viscid-pubescent; leaves linear or linear-lanceolate, pubescent; corymb crowded, few-flowered; teeth of the calyx pubescent, very long, awn-like; lobes of the corolla obovate, entire.

P. pilosa Linn.

Wet woods. N. J. to Car. W. to Miss. June. ♀.—*Stem* 12—18 inches high, simple. *Leaves* sometimes nearly linear, with the margins revolute. *Flowers* terminal, loosely corymbose, on villous peduncles, pale purple or white.

Hairy Phlox.

4. *P. divaricata* Linn.: stem decumbent, pubescent; leaves oval-lanceolate or lance-ovate, acute, membranaceous, ciliate on the margin; panicle loose, corymbose, few-flowered; teeth of the calyx linear-subulate; lobes of the corolla slightly obcordate.

Banks of streams. Can. to Flor. W. to Miss. May, June. ♀.—*Stems* numerous, prostrate and spreading, with erect branches. *Upper leaves* almost clasping and often alternate. *Flowers* few, in a loose terminal somewhat trichotomous panicle, bluish or dark purple.

Divaricate Phlox.

5. *P. reptans* Mich.: stem erect, with procumbent suckers at base, pubescent; radical leaves spatulate-obovate; cauline oval-lanceolate, sessile; corymb few-flowered, divaricate; teeth of the calyx subulate, reflexed; lobes of the corolla obovate, entire. *P. stolonifera* Pursh.

Rocky places. Penn. to Car. W. to Ken. June. ♀.—*Stem* 6—8 inches high. *Leaves* more or less pilose and ciliate on the margin. *Flowers* in a small corymb, blue, with a purple centre.

Creeping Phlox.

6. *P. subulata* Linn.: stem procumbent, cespitose, much branched, pubescent; leaves linear-subulate, rigid, ciliate; corymb few-flowered; teeth of the calyx short, subulate; lobes of the corolla wedgeform, emarginate.

P. scetacea Linn.

Rocky places. N. J. to Car. April, May. ♀.—*Root* creeping. *Stems* 6—12 inches long, with numerous assurgent branches 2 or 3 inches high. *Leaves* half an inch long, with the rudiments of smaller ones or of branches in the axils. *Flowers* pink or nearly white, with a purple centre. Very abundant near New Brunswick, N. J.

Mountain Pink.

2. POLEMONIUM. Linn.—Greek Valerian.

(From the Greek *πολεμος*, war; which is said by Pliny to have been waged by two kings for the honor of its discovery.)

Calyx campanulate, 5-cleft. Corolla campanulate-rotate; tube very short, closed by the dilated bases of the filaments. Capsule ovoid, obtuse, the cells many-seeded.

P. reptans Linn.: stem weak, erect or declined; leaves pinnate; leaflets 7—9, (rarely 11,) ovate-lanceolate, acute; flowers terminal, nodding.

Moist woods. N. Y. to Car. W. to Miss. May. ♀.—*Stem* 12—18 inches high, nearly smooth, branching. *Leaflets* mostly opposite, the common petiole winged. *Flowers* blue, in small nodding corymbs at the end of the branches.

Jacob's Ladder.

ORDER LXXXV. CONVOLVULACEÆ.—BINDWEEDS.

Calyx persistent, in 5 divisions, remarkably imbricated. Corolla regular, deciduous; the limb 5-lobed, plaited; the tube

without scales. Stamens 5, inserted into the base of the corolla. Ovary simple, mostly 2—4-celled; styles united or more or less distinct; stigmas obtuse or acute. Capsule 1—4-celled. Seeds with a small quantity of mucilaginous albumen, a curved embryo and leafy shrivelled cotyledons.—Herbaceous plants or shrubs, usually twining and milky. Leaves alternate, very often cordate, entire or lobed. Flowers large and showy.

CONVOLVULUS. *Linn.*—Bindweed.

(From the Latin *convolvere*, to entwine.)

Calyx 5-parted, naked or with 2 bracts at base. Corolla funnel-form or campanulate, with 5 plaits. Stamens 5, shorter than the limb. Style undivided. Stigma capitate or lobed. Capsule 2—3-celled, 2—3-valved.

1. *C. arvensis* *Linn.*: stem twining, angular; leaves sagittate-hastate, with acute lobes; peduncles mostly 1-flowered; bracts minute, remote from the flower; sepals roundish-ovate.

Fields. Maine to Car.; rare. June, July. ♀.—*Root* long, creeping. *Stem* 2—3 feet long, climbing, somewhat hairy. *Leaves* small, ovate-oblong, on short petioles. *Flowers* white, an inch long, on axillary peduncles which are longer than the leaves. Introduced, and, on account of its deep and spreading roots, becoming in many places a troublesome weed. *Common or Corn Bindweed.*

2. *C. Sepium* *Linn.*: stem twining; leaves sagittate, very acute, with the lobes truncate; peduncles square, 1-flowered; bracts large, cordate, close to the flower. *Calystegia Sepium* *Brown.*

Moist grounds. Can. to Car. W. to Miss. June, July. ♀.—*Stem* 3—12 feet long, climbing or trailing, nearly smooth. *Flowers* large, white, on peduncles which are longer than the leaves. *Great Bindweed.*

3. *C. panduratus* *Linn.*: stem twining; leaves cordate or panduriform, acuminate, the lobes rounded; peduncles long, with small bracts at the base; flowers in fascicles; corolla tubular-campanulate.

Sandy fields. N. Y. to Flor. W. to Ohio. July. ♀.—*Root* very large and thick. *Stem* 4—6 feet long, mostly trailing, at length nearly smooth. *Flowers* mostly 2—5 in a fascicle, on peduncles 3 or 4 inches long. *Corolla* white, the tube purple. *Medicinal. Man of the Earth.*

4. *C. spithameus* *Linn.*: stem erect or oblique; leaves oval or oblong, subcordate, pubescent, hoary; peduncles 1-flowered, about as long as the leaves; bracts close to the flower, much larger than the calyx. *C. stans* *Mich.* *Calystegia tomentosa* and *spithamea* *Pursh.*

Sandy woods. Can. to Virg. June. ♀.—*Stem* 8—18 inches long, sometimes nearly procumbent. *Leaves* varying from acute to obtuse and rounded. *Flowers* white, on peduncles which are about as long as the leaves. A variable species. *Upright Bindweed.*

5. *C. purpureus* *Linn.*: stem twining and climbing; leaves cordate, acuminate, undivided, entire; peduncles 2—3-flowered; pedicels thickened, nodding; capsule smooth. *Ipomœa purpurea* *Pursh.* *Pharbitis hispida.* *Choisy, in D. C.*

Fields, &c July, Aug. ①.—*Stem* hairy, climbing to a great height. *Leaves* 2—6 inches long, on petioles of about the same length. *Flowers* large, blue, purple or nearly white. Introduced. *Common Morning Glory.*

6. *C. lacunosus Spreng.*: stem smooth, twisted; leaves cordate acuminate, angled at base; peduncles short, 1—3-flowered; calyx hairy; corolla tubular, short; capsule hairy. *Ipomœa lacunosa Linn.*

Penn. Muhl. S. to Flor. Aug., Sept. ①.—*Flowers* white, with a purple rim. *Ragged Bindweed.*

7. *C. nil Linn.*: stem hairy, twining; leaves cordate, 3-lobed, the intermediate lobe dilated at the base, the lateral ones shorter, acute; peduncles short, 2—3-flowered; segments of the calyx ovate-lanceolate, hairy at the base. *Ipomœa nil Pursh. Pharbitis nil Choisy in D. C.*

Penn. Muhl. S. to Car. Aug. ①.—*Flowers* 2 or 3, on peduncles shorter than the petioles. *Corolla* white at base, blue near the border. *Morning Glory.*

ORDER LXXXVI. CUSCUTACEÆ.—DODDERS.

Calyx 4—5-parted, persistent, with an imbricate æstivation. Corolla cut round at the base; the limb 4—5-cleft, with alternating scales. Stamens as many as the segments of the corolla. Ovary 2-celled; styles 2, or none; stigmas 2. Fruit capsular or baccate, 2-celled; cells 1—2-seeded. Seeds with a fleshy albumen and a spiral acotyledonous embryo.—Leafless climbing colorless parasites, with the flowers in dense clusters.

CUSCUTA. Linn.—Dodder.

(Etymology uncertain.)

Calyx 5- rarely 4-parted. Corolla globose-urceolate, 4—5-cleft. Stamens 4—5. Filaments often with scales at the base. Styles 2. Stigmas filiform or capitate. Capsule 2-celled, opening all round transversely.

1. *C. Epilinum Weh.*: heads of about 5 sessile flowers; calyx 5-parted, the lobes obtuse; corolla globose cylindric, about as long as the calyx; styles erect, at length divergent. (*D. C.*) *C. Europœa. Beck Bot. 1st Ed.*

Parasitic on flax. Schenectady, N. Y. Mass. Dewey. Chester county, Penn. *Darlingt.* July. ①.—*Stem* filiform, long and climbing, orange-colored, leafless. *Flowers* in small dense heads, pale-yellow or rose-color. Introduced? Dr. Darlington's *C. Europœa*, which seems to be identical with the New York plant, is referred to this species by the author above quoted. *Flax Dodder.*

2. *C. Gronovii Willd.*: stem branched; flowers pedunculate or more lax, generally 5-parted; corolla deeply campanulate, open, pellucid-punctate, longer than the roundish obtuse calyx-segments; scales convergent, fimbriate. *C. Americana Linn.*

Low grounds. N. Y. to Ala. W. to Ohio. July—Sept. ①.—*Stem* filiform, orange-colored, twining around other plants. *Flowers* in small cymes or much crowded, yellowish-white, marked with little roundish glands.

Common Dodder.

3. *C. umbrosa* *Beyrich*: stem low, branching; flowers 5-parted, somewhat pedunculate, at length in spikes; corolla campanulate, longer than the obtuse calyx-segments; stamens as long as the limb; scales pinnatifid-laciniate, convergent. (*Torr. N. Y. Fl.*)

Western part of N. Y. *Dr. Gray*.—Distinguished from the preceding by the more open campanulate corolla, which is destitute of pellucid glands, and the form of its lobes as well as those of the calyx. *Torr.*

Smooth-flowered Dodder.

ORDER LXXXVII. DIAPENSIACEÆ.—DIAPENSIADS.

Calyx of 5 imbricate sepals, with 3 bracts at the base. Corolla somewhat salver-form, 5-lobed. Stamens 5, equal; filaments petaloid. Ovary superior, 3-celled; style single, continuous; stigma sessile. Capsule membranous or papery. Seeds pitted, with a very small embryo in a mass of fleshy albumen.—Prostrate under-shrubs, with small densely imbricate leaves and solitary terminal flowers.

DIAPENSIA. *Linn*.—*Diapensia*.

(Said to be an ancient Greek name for the *Sanicle*, applied to this plant by Linnæus.)

Calyx with the sepals unequal, smooth. Corolla 5-lobed. Stamens 5. Filaments broad-linear, inserted into the throat of the corolla. Capsule 3-celled, 3-valved, many-seeded.

1. *D. Lapponica* *Linn.*: cespitose; leaves spatulate, smooth; flower terminal, solitary, on a short peduncle; anthers simple. *D. obtusifolia* *Pursh.*

Summits of the White Mountains, N. H., and of Mount Marcy and Mount McIntyre, N. Y. N. to Labrador and Arct. Amer. June, July. ♀.—*Stems* short, forming thick firm tufts, densely covered with small fleshy evergreen leaves. *Flower* white. *Lapland Diapensia.*

2. *D. barbulata* *Ell.*: leaves lanceolate-wedgeform, pubescent at base; flower solitary, terminal, sessile; anthers horizontal, beaked at base. *D. cuneifolia* *Pursh.* *Pyxidantha barbulata* *Mich.*

Pine barrens. N. J. to Car. May, June. ♀.—*Plant* small, creeping, forming dense mats; branches assurgent, 1-flowered. *Upper leaves* crowded near the base of the *flower*, which is small and white. Very abundant in New Jersey. *Beaked Diopensia.*

ORDER LXXXVIII. BORAGINACEÆ.—BORAGEWORTS.

Calyx persistent, 5-divided. Corolla 5-lobed, generally regular, and sometimes with a row of scales in the throat. Stamens 5, inserted in the corolla and alternate with its lobes. Ovary 4-parted; style simple; stigma simple or bifid. Fruit consisting of 4 little nuts or achenia. Seed without albumen.—

Herbaceous plants or shrubs, with round stems. Leaves alternate, often rough, without stipules. Flowers usually in one-sided spikes or racemes.

1. LITHOSPERMUM. *Linn.*—Gromwell.

(From the Greek *λίθος*, a stone, and *σπέρμα*, seed; on account of the stony hardness of its seeds or nuts.)

Calyx 5-parted. Corolla funnel-form, 5-lobed; the throat naked, rarely with minute scales. Nuts imperforate at base, shining, smooth or rugose.

1. *L. arvense* *Linn.*: stem erect, branched; leaves sessile, linear-lanceolate, rather acute, veinless, rough, hairy; calyx a little shorter than the corolla, at length spreading; nuts rugose.

Fields. N. Y. and Mass. to Del. W. to Ohio. May. ①.—*Plant* hispid-pilose. *Stem* 12—18 inches high, more or less branched. *Flowers* solitary, axillary, white. *Calyx* with the segments thrice as long as the fruit. Introduced from Europe. *Corn Gromwell.*

2. *L. officinale* *Linn.*: stem erect, much branched, covered with rigid hairs; leaves broad-lanceolate, acute, nerved, rough above, hairy beneath; tube of the corolla as long as the calyx; nuts smooth.

Dry waste places. N. Y. and Mass. to Penn. and Ohio. May. ②.—*Stem* 12—18 inches high, often branched and diffuse. *Flowers* pale yellow, in leafy spike-like racemes. *Nuts* whitish-brown, highly polished. Introduced from Europe. *Common Gromwell.*

2. BATSCHIA. *Gmel.*—Puccoon.

(In honor of *John George Batsch*, a German botanist of the last century.)

Calyx 5-parted. Corolla salver-form, rather large; tube straight, much longer than the calyx, closed at the base by a bearded ring; orifice naked or partially closed; the limb nearly flat, with 5 rounded lobes. Stamens very short. Nuts smooth and shining, not perforate at the base.

1. *B. canescens* *Mich.*: stem erect, simple, villous; leaves oblong-lanceolate, obtuse, slightly mucronate, silky above, subvillous beneath; tube of the corolla as long again as the calyx. *Anchusa canescens* *Muhl.* *Lithospermum canescens* *Lehm.*

Hills. Subarct. Amer. to Virg. W. to Miss. June, July. ②.—*Stem* 8—12 inches high. *Flowers* axillary, crowded near the top of the stem, bright orange. Found near Fairfield, N. Y. by Prof. Hadley. Used by the Indians as a red dye. *Common Puccoon.* *Alkanet.*

2. *B. Gmelini* *Mich.*: plant hirsute; stem simple; leaves linear-lanceolate, hairy on both sides, ciliate; floral ones ovate-lanceolate; segments of the calyx linear, hairy, scarcely as long as the tube of the corolla. *B. Caroliniensis* *Gmel.* *Anchusa hirta* *Muhl.* *Lithospermum hirtum* *Lehm.*

Woods. Penn. to Car. June, July. ②.—*Stem* 8—12 inches high. *Flowers* in a terminal raceme, orange. *Gmelin's Puccoon.*

3. ONOSMODIUM. *Mich.*—Onosmodium.

(So named from its resemblance to *Onosma*, another genus of this order.)

Calyx deeply 5-parted; segments linear. Corolla tubular-campanulate; throat naked; limb 5-cleft, the lobes acute and connivent. Anthers sessile, included. Style much exserted. Nuts imperforate, shining, ovoid.

1. *O. hispidum Mich.*: stem hispid, branched; leaves obovate-lanceolate, hairy, papillose-punctate; segments of the corolla subulate. *O. Virginianum D. C.* *Lithospermum Virginianum Linn.* *Purshia hispida Lehm.*

Fields, &c. N. Y. to Car. W. to Ohio. Aug. ♀.—Stem 1—2 feet high. Flowers white, in simple leafy secund racemes, which at first are recurved and afterwards straight. *Hairy Onosmodium.*

2. *O. molle Mich.*: whole plant white-villous; leaves oblong-oval, somewhat 3-nerved; segments of the corolla semi-oval. *O. Carolinianum D. C.* *Lithospermum molle Muhl.* *Purshia mollis Lehm.*

Sandy grounds, near Albany, N. Y. *G. A. Clinton.* Penn. to Tenn. July, Aug. ♀.—Differs from the former in its soft white pubescence, and in the broader segments of its corolla. *Soft Onosmodium.*

4. SYMPHYTUM. *Linn.*—Comfrey.

(From the Greek *συμφω*, to unite; on account of its reputed healing powers.)

Calyx 5-parted, 5-cleft or 5-toothed. Corolla tubular-campanulate; throat closed with 5 connivent subulate scales; limb with 5 broad and short lobes. Nuts ovoid, rugose.

S. officinale Linn.: stem hispid, winged above; radical leaves on long petioles, rough; cauline ovate-lanceolate, attenuated at base and very decurrent.

Springy grounds. N. Y. Mass. and Penn. June. ♀.—Stem 1—3 feet high, branched above. Racemes in pairs, secund, drooping. Corolla large, yellowish-white, or rarely purplish. Introduced, but apparently native near Fairfield, N. Y. *Common Comfrey.*

5. ECHIUM. *Linn.*—Viper's Bugloss.

(From the Greek *εχις*, a viper; on account of the fancied resemblance of the seed to the head of that animal.)

Calyx 5-parted; the lobes linear-lanceolate, erect. Corolla subcampanulate; tube very short; throat open; the limb unequally and obliquely 5-lobed. Stamens unequal. Nuts imperforate at base, tuberculate.

E. vulgare Linn.: stem simple, hispid with tubercles; leaves linear-lanceolate, hispid; radical ones petiolate, spreading, very long; flowers in lateral spikes; stamens longer than the corolla.

Fields and road sides. N. Y. to Virg.; common in New Jersey. June, July. ♂.—Stem 2—3 feet high, branched above. Flowers large, blue, in lateral

spikes which are at first recurved but gradually become erect. Introduced. A very showy plant when in full flower, but in many places becoming troublesome. *Viper's Bugloss. Blue Thistle.*

6. LYCOPSISIS. *Linn.*—Bugloss.

(From the Greek *λυκος*, a *wolf*, and *οψις*, a *face*; from a fancied resemblance to the head of that animal.)

Calyx 5-cleft. Corolla funnel-form, with a curved tube; the mouth closed with convex connivent scales. Nuts perforate at the base.

L. arvensis Linn.: leaves lanceolate, repand-denticulate, very hispid; lower ones tapering into a petiole; upper sessile, subclasping; calyx erect while in flower, about as long as the tube of the corolla. *Anchusa arvensis Lehm.*

Sandy fields. N. Y. and Mass. June, July. ①.—*Plant* very hispid. *Stem* 12—18 inches high. *Flowers* small, bright blue, in one or more leafy racemes. Introduced from Europe. *Small Bugloss.*

7. MYOSOTIS. *Linn.*—Scorpion Grass.

(From the Greek *μυς*, *μυς*, a *mouse*, and *ους*, *ωρος*, an *ear*; in allusion to the shape of the leaves.)

Calyx 5-cleft or 5-parted. Corolla salver-form; tube short; limb flat; orifice closed with short connivent scales. Nuts smooth or rugose, with a cavity at the base.

1. *M. cæspitosa Schultz*: stem terete, erect, branching, appressed pubescent; leaves linear-oblong, obtuse; calyx 5-cleft, appressed-hairy, shorter than the pedicels, spreading when in fruit; style very short. (*D.C.*)

var. *laxa D.C.*: smoothish; pedicels longer. *M. laxa Lehm. M. palustris Torr.*

Ditches and wet grounds. Can. to Virg. W. to Miss. May—Sept. ②?—*Stem* 12—18 inches high, slender, erect or oblique, branching above, smooth or sprinkled with a few appressed hairs. *Leaves* 1—3 inches long, the upper sessile, the lower often petioled. *Flowers* very small, bright blue, in racemes which are at length elongated. *Marsh Scorpion Grass.*

2. *M. stricta Link*: stem erect, simple or branched, hispid-villous; leaves oblong, obtuse; racemes leafy at base; fruit-bearing pedicels erect, shorter than the calyx; calyx 5-parted, closed when in fruit, clothed with divaricate hairs; tube of the corolla included. (*D.C.*) *M. arvensis Reich. M. verna Nutt.*

Sandy fields. Can. to Virg. W. to Miss. May, June. ①.—*Plant* grayish-pubescent. *Stem* 4—10 inches high, at length branching. *Flowers* very small, white, in terminal racemes which are elongated when in fruit.

Field Scorpion Grass.

8. ECHINOSPERMUM. *Lehm.*—Stickseed.

(From the Greek *εχινος*, a *hedgehog*, and *σπέρμα*, *seed*; the fruit being covered with prickles.)

Calyx 5-parted. Corolla salver-form; throat closed by short

scales; the limb with obtuse lobes. Nuts fixed to a central column, imperforate at base, aculeate on the margin.

E. Lappula *Lehm.*: stem branched above; leaves lanceolate or linear-lanceolate, hairy; corolla longer than the calyx; border erect, spreading; nuts with two rows of hooked prickles on the margin. *Myosotis Lappula* *Linn.* *Rochelia Lappula* *R. & S.*

Road sides. Can. to Virg. W. to Oregon. N. to Subarct. Amer. July, Aug. ①.—*Stem* a foot high, branched above. *Flowers* minute, blue, in leafy racemes. *Fruit* erect. Introduced? *Common Stickseed.*

9. CYNOGLOSSUM. *Linn.*—Hound's-Tongue.

(From the Greek *κυνων*, a *dog*, and *γλωσσα*, a *tongue*; in allusion to the shape of the leaves.)

Calyx 5-parted. Corolla short, funnel-form; orifice closed with convex connivent scales; limb with 5 obtuse lobes. Nuts depressed, affixed to the styles by their inner margin, echinate.

1. *C. officinale* *Linn.*: silky-pubescent; lower leaves lanceolate, oblong, attenuated into a petiole; upper lanceolate, somewhat cordate or clasping at base; racemes without bracts; lobes of the calyx oblong, obtuse, shorter than the corolla.

Road sides, &c. Can. to Virg. W. to Ohio. June, July. ②.—*Plant* dull green, soft and downy, fetid. *Stem* 1—2 feet high. *Flowers* purplish-red, in naked secund racemes. *Fruit* rough. Introduced from Europe.

Common Hound's-tongue.

2. *C. Virginicum* *Linn.*: hairy; lower leaves oval-oblong, petiolate; upper lanceolate-oblong, sessile, clasping and cordate at base; racemes somewhat corymbose, naked; pedicels elongated, recurved-spreading; lobes of the calyx acute, villous, about half as long as the tube of the corolla. *C. amplexicaule* *Mich.*

Shady woods. Can. to Car. W. to the Rocky Mountains. May, June. ④.—*Stem* 2—3 feet high, very hairy. *Radical leaves* 6 inches long; *upper* ones smaller. *Flowers* blue or nearly white, in a terminal corymbose panicle consisting of 2 or 3 divisions. *Wild Comfrey.*

3. *C. Morisoni* *D. C.*: stem erect, somewhat hairy, divaricately branched; leaves ovate or lanceolate-oblong, acute, attenuate at base, scabrous above, pubescent beneath; racemes forked, bracteate; pedicels at length deflexed; fruit covered with hooked bristles. *Echinosperrum Virginicum* *Lehm.* *Myosotis Virginiaiana* *Linn.*

Borders of woods, &c. Can. to Car. W. to Ken. July. ②.—*Stem* 2—3 feet high. *Leaves* thin and membranaceous; *lower* ones petioled. *Flowers* small, pale blue or white, in forked terminal racemes.

Small-flowered Hound's-tongue.

10. MERTENSIA. *Roth.*—Mertensia.

(In honor of *F. C. Mertens*, a German botanist who wrote upon the *Algæ*.)

Calyx short, 5-cleft or 5-parted. Corolla with the tube cylindrical, the limb somewhat campanulate, 5-cleft; throat naked

or with 5 plaits. Stamens inserted into the upper part of the tube. Nuts somewhat drupaceous, smooth, or reticulate and rugose.

1. *M. Virginica* D. C.: smooth; stem erect; radical leaves obovate-oblong, obtuse; cauline narrower; calyx three or four times shorter than the tube of the corolla. *Pulmonaria Virginica* Linn. *Lithospermum pulchrum* Lehm.

Wet grounds. N. Y. to Car. W. to Miss. May. ♀.—Stem 8—12 inches high, succulent, mostly simple. Leaves smooth and a little glaucous. Flowers large, bright blue, in a loose racemose panicle. The plant turns black by drying. *Virginian Cowslip. Lungwort.*

2. *M. maritima* G. Don: stem procumbent or ascending, branched; leaves ovate, rough with callous dots, fleshy, glaucous; upper lanceolate; calyx about half as long as the corolla. (D. C.) *Pulmonaria maritima* Linn. *Lithospermum maritimum* Lehm.

Sea shores. N. Eng. Pursh. N. to Subarct. Amer. July. ♀.—Stem diffuse, much branched. Lower leaves on petioles and acute; upper ones sessile. Flowers purplish-blue, in leafy racemes. *Seaside Mertensia.*

3. *M. denticulata* G. Don: stem erect; leaves nerved, somewhat glaucous, margin rough with minute teeth; radical ones ovate, petiolate; cauline elliptic, sessile; segments of the calyx denticulate on the margin, three or four times shorter than the corolla. (D. C.) *Pulmonaria Sibirica* Pursh App. *Lithospermum denticulatum* Lehm.

Can. N. Y.? W. to the Columbia river. June. ♀.—Stem 6—10 inches high. Leaves 3—5-nerved. Flowers numerous, purple, in somewhat nodding racemes. *Denticulate Mertensia.*

ORDER LXXXIX. HYDROPHYLLACEÆ.—HYDROPHYLS.

Calyx deeply 5-cleft, the sinuses often with appendages, persistent. Corolla regular, shortly 5-cleft, mostly between campanulate and rotate. Stamens 5, inserted into the corolla. Ovary simple, 1—2-celled; styles 2, united into 1; stigma bifid. Fruit a capsule. Seeds few, reticulated, with abundant cartilaginous albumen.—Herbaceous plants, often hispid, with alternate lobed or pinnatifid leaves. Flowers in cymose clusters, or in one-sided racemes.

1. HYDROPHYLLUM. Linn. Water Leaf.

(From the Greek ὕδωρ, water, and φύλλον, a leaf.)

Calyx 5-parted, the lobes subulate and the sinuses mostly naked. Corolla campanulate, 5-cleft, with 5 longitudinal margined grooves on the inside alternating with the lobes. Stamens exserted. Filaments bearded in the middle. Stigma

bifid. Capsule globose, 2-valved, 1-seeded, 3 other seeds mostly abortive.

* *Sinuses of the calyx naked.*

1. *H. Virginicum* Linn.: stem nearly smooth; leaves pinnatifid and pinnate; the lobes oval-lanceolate, with deep serratures; clusters of flowers crowded; peduncles longer than the petioles; segments of the calyx lance-linear, hispid-ciliate.

Moist woods. Can. to Car. W. to Miss. June, July. 74.—Stem 12—18 inches high, often branched from the base. *Leaves* pinnately cut into 5—7 segments, on long petioles. *Flowers* blue and white, in compact peduncled lateral and axillary clusters.
Virginian Waterleaf.

2. *H. Canadense* Linn.: somewhat hairy; leaves angularly sub-5-lobed, mostly cordate at base, coarsely toothed; flowers in crowded fascicles; peduncles shorter than the petioles; segments of the calyx narrow-linear, slightly hairy.

Shady woods. Can. to Car. W. to Ohio. June. 74.—Stem 12—18 inches high. *Leaves* large and broad, somewhat palmate, about 5—7-lobed; lobes broad, cut and toothed. *Flowers* blue and white, in crowded clusters.
Canadian Waterleaf.

3. *H. macrophyllum* Nutt.: leaves oblong, pinnately divided at base, with the segments towards the apex pinnatifid or subpinnate, hairy on both sides; the lobes ovate, with coarse ovate mucronulate teeth; peduncles very long and with the calyx hairy; segments of the calyx ovate at base, long-acuminate. (*D. C.*) *Phacelia bipinnatifida* Frank not of Mich.

Alleghany Mountains, Penn.? *Short.* Ohio. Gray.—*Leaves* a foot or more in length. *Corolla* white, scarcely longer than the calyx. *Large Waterleaf.*

** *Sinuses of the calyx appendiculate.*

4. *H. appendiculatum* Mich.: stem hairy; leaves hairy above, pubescent beneath; lower pinnately divided; upper palmately 5-lobed; sinuses of the calyx with minute oval appendages. *Nemophila paniculata* Spreng.

Moist woods. Can. to Virg. W. to Miss. May. 72?—Stem about a foot high, branching at the summit. *Leaves* on long petioles, the lobes toothed. *Flowers* blue, on short peduncles, in somewhat paniculate racemes.
Hairy Waterleaf.

2. PHACELIA. Juss.—Phacelia.

(From the Greek φακελος, a bundle; in allusion to its fascicled spike.)

Calyx 5-parted, the sinuses naked. Corolla tubular-campanulate, caducous, 5-cleft or half 5-cleft, with 10 plaits or scales on the inside. Stamens often exserted. Style bifid. Capsule ovoid, 2-valved. Seeds 4, oblong.

P. bipinnatifida Mich.: stem somewhat erect, hairy; leaves pinnately divided, on long petioles; lateral segments 2—4, ovate, acute, incisely-lobed; terminal one 3—5-cleft; racemes elongated, mostly bifid; lobes of the calyx linear-acuminate, half as long as the corolla.

Wet woods. Penn. to Car. W. to Miss. May, June. ②?—*Stem* a foot high. *Leaves* 3—4 inches long, thin and smoothish. *Flowers* blue, in terminal racemes. *Jagged Phacelia.*

3. COSMANTHUS. Nolte.—Cosmanthus.

(Etymology uncertain.)

Calyx 5-parted; the sinuses naked. Corolla broadly campanulate, caducous, 5-cleft; tube without scales. Filaments slender, about as long as the corolla. Style bifid. Capsule 2-valved, septiferous in the middle. Seeds 4—10, ovoid-angular.

* *Lobes of the corolla naked.*

1. *C. parviflorus* D.C.: stem diffuse, pubescent; leaves subsessile, pinnatifid or trifid, hairy on both sides, the uppermost sometimes undivided; lobes of the lower ones ovate or oblong, entire; racemes solitary. *Phacelia parviflora* Pursh. *Polemonium dubium* Willd.

Low grounds. Penn. Ohio, and Virg. May. ①.—*Stem* 6—8 inches high. *Flowers* small, pale-blue; lobes of the corolla rounded, entire, somewhat hairy on the outside. *Stamens* hairy at the base. *Small-flowered Cosmanthus.*

** *Lobes of the corolla fimbriate.*

2. *C. fimbriata* Nolte: whole plant hairy; stem ascending; lower leaves petiolate, pinnately divided, the segments few and entire; upper sessile, pectinate-pinnatifid; the lobes oblong and entire; racemes terminal, elongated, few-flowered; lobes of the calyx linear-lanceolate, half as long as the corolla. (D. C.) *Phacelia fimbriata* Mich.

Low grounds. Penn. to Geor. W. to Miss. May, June. ①.—*Stem* 8—12 inches high, ascending, slender, branched. *Radical leaves* with the lobes very obtuse. *Flowers* pale-blue, in a simple terminal raceme, at first revolute, afterwards erect. *Fimbriate Cosmanthus.*

ORDER XC. SOLANACEÆ.—NIGHTSHADES.

Calyx 5- seldom 4-parted, persistent. Corolla with the limb 5- seldom 4-cleft, mostly regular, deciduous. Stamens inserted upon the corolla, as many as the segments of the limb. Ovary 2-celled; style continuous; stigma simple. Fruit a capsule or berry. Seeds numerous, with the embryo straight or curved, in fleshy albumen.—Herbaceous plants or shrubs, with alternate undivided or lobed leaves. Inflorescence various.

* *Fruit a berry.*

1. SOLANUM. Linn.—Nightshade.

(Etymology uncertain.)

Calyx 5—10-parted. Corolla rotate or subcampanulate; limb plaited, 5—10-cleft. Stamens 5. Filaments very short;

Anthers erect, large, connivent, opening at the top by two pores. Berry 2—6-celled. Seeds numerous.

1. *S. Dulcamara* Linn.: stem shrubby, flexuous, climbing, without thorns, smooth or pubescent; leaves ovate-cordate, smooth; upper ones hastate; flowers in lateral clusters.

Low grounds. N. S. July, Aug. 12.—Stem 6—8 feet long, somewhat pubescent. Flowers purple, with 2 green tubercles at the base of each segment. Berry bright red, oval. Introduced from Europe.

Woody Night-shade. Bitter-sweet.

2. *S. nigrum* Linn.: stem herbaceous, without thorns, angular, rough on the angles; leaves ovate, obtusely toothed and waved; flowers subumbelled. *S. nigrum* var. *Virginianum* Linn.

Old fields. Can. to Car. July, Aug. ①.—Stem 1—2 feet high, much branched, angular or slightly winged. Flowers nodding, white, 3—6 in an umbel. Berry spherical, black, 2-celled. Introduced from Europe.

Common Night-shade.

3. *S. Carolinense* Linn.: herbaceous, prickly; leaves ovate-oblong, acute, sinuate-angular, often subhastate, stellate-pubescent; raceme simple, loose.

Road sides, &c. N. Y. to Car. W. to Miss. June, July. 24.—Stem erect, branched, a foot high, armed with short prickles. Leaves aculeate on the midrib and larger nerves on both sides. Flowers white, in lateral racemes. Berry globose, orange-yellow.

Horse Nettle.

2. PHYSALIS. Linn.—Ground Cherry.

(From the Greek *φύσα*, a bladder or bag; in allusion to the inflated calyx.)

Calyx 5-cleft, persistent, finally becoming ventricose. Corolla campanulate-rotate; limb plaited, somewhat 5-lobed; tube very short. Stamens 5, connivent. Anthers opening longitudinally. Berry 2-celled. Seeds numerous.

1. *P. viscosa* Linn.: herbaceous, pubescent and more or less viscid; stem dichotomously branched, with the branches at length spreading; leaves solitary or in pairs, varying from roundish-ovate to lanceolate-ovate, subcordate at base, mostly acute, more or less repand-toothed; flowers solitary, axillary, pendulous. *P. obscura* Mich. and *P. Pennsylvanica* Linn.

Road sides, fields, &c. N. Y. to Car. W. to Miss. July, Aug. 24.—Stem low, spreading divaricately. Leaves varying in form, on petioles, 1—2 inches long. Flowers on short pedicels, greenish-yellow with brownish spots at base. Berry globose, viscid, yellowish, enclosed by the inflated calyx.

Clammy Ground Cherry.

2. *P. lanceolata* Mich.: stem herbaceous, dichotomously branched, densely pubescent; leaves mostly in pairs, ovate-lanceolate, entire, acuminate, narrowed at the base into a petiole; flower solitary, nodding; calyx villous.

Penn. Muhl. & Darlingt.; rare. S to Car. July. 24.—Stem 1—2 feet high, angular. Leaves often very unequal at base. Flowers usually in the upper axils, pale greenish-yellow, with fuscous spots at base.

Spear-leaved Ground Cherry.

3. NICANDRA. *Adans.*—Nicandra.(In honor of *Nicanter*, an ancient Greek physician.)

Calyx 5-parted, 5-angled, the angles compressed, segments sagittate. Corolla campanulate, dry; the limb plaited and nearly entire. Stamens incurved. Berry 3—5-celled, covered by the calyx.

N. physaloides *Gært.*: stem herbaceous; leaves sinuate-angled, glabrous; flowers solitary, axillary, on short peduncles; calyx closed, with the angles very acute. *Atropa physaloides* *Linn.*

Cultivated grounds, road sides, &c. N. Y. to Geor. July, Aug. ①.—*Stem* 2—3 feet high, much branched. *Leaves* 2—4 inches long, alternate. *Flowers* solitary, axillary, on short peduncles, pale-blue. Introduced. Originally from Peru, where it is said to be much used as a narcotic. *Nicandra.*

** *Fruit a capsule.*4. NICOTIANA. *Linn.*—Tobacco.(After *John Nicot*, who introduced tobacco into Europe.)

Calyx tubular-campanulate, 5-cleft. Corolla funnel-form; the limb 5-lobed and plaited. Stamens 5, equal. Stigma capitate. Capsule 2-celled, 2—4-valved, many-seeded. Seeds minute.

N. rustica *Linn.*: plant viscid-pubescent; stem terete; leaves petioled, ovate, very entire; tube of the corolla cylindrical, longer than the calyx, the lobes rounded.

Western part of New York. *Nutt.* Long Island. *Torr.* ①.—*Stem* 12—18 inches high. *Flowers* greenish-yellow, in a terminal panicle or raceme. According to Mr. Nuttall it has been introduced by the Indians. It contains the same poisonous principle as the common tobacco. *Wild Tobacco.*

5. DATURA. *Linn.*—Thorn Apple.(Supposed to be derived from *Tatorah*, the Arabic name of the plant.)

Calyx tubular and usually 5-angled, separating from the persistent base. Corolla funnel-form, the tube long, the limb 5-angled and plaited. Stamens 5. Stigma bilamellate. Capsule usually prickly or muricate, 2-celled, 4-valved; cells 2—3-parted, many-seeded.

D. Stramonium *Linn.*: stem dichotomously branched; leaves ovate, smooth, angularly-toothed, somewhat cordate; capsule spiny, erect.

var. *Tabula* *Torr.*: stem and flowers purple. *D. Tatula* *Linn.*

Waste grounds, &c. Throughout the U. S. July—Sept. ①.—*Stem* 2—6 feet high, yellowish-green or purple. *Flowers* solitary, large, white or bluish-purple, on peduncles. Very fetid. Medicinal and poisonous. *Big. Med. Bot.* i. 16. *Jamestown Weed.* *Thorn-apple.*

6. HYOSCYAMUS. *Linn.*—Henbane.

(From the Greek *ἵς, ἴος*, a hog, and *κνῆμος*, a bean; because hogs are said to eat without injury the fruit, which bears some resemblance to a bean.)

Calyx tubular, 5-cleft. Corolla funnel-form, irregular, lobes obtuse. Stamens 5, declined. Stigma capitate. Capsule ovoid, opening with a lid.

H. niger Linn.: stem erect, very leafy; leaves sinuate and angularly toothed, clasping; flowers sessile, arranged in terminal recurved leafy spikes; corolla reticulate.

Waste places. N. Y. and Penn. June. ① or ②.—*Plant* covered with unctuous fetid hairs. *Stem* 12—18 inches high, much branched. *Leaves* oblong, acute. *Flowers* large, dull yellow, with purple veins. A powerful narcotic. Introduced from Europe. *Common Henbane.*

ORDER XCI. OROBANCHACEÆ.—BROOMRAPES.

Calyx divided, persistent. Corolla irregular, persistent, with an imbricate æstivation. Stamens 4, didynamous. Ovary superior, 1-celled, seated in a fleshy disk, with 2 or more parietal placentæ; style 1; stigma 2-lobed. Fruit a capsule, enclosed within the withered corolla. Seeds numerous, very minute.—Herbaceous leafless parasites. Stem covered with brown or colorless scales.

1. OROBANCHE. *Linn.*—Broom Rape.

(From the Greek *οροβος*, a pea-like plant, and *αγχεῖν*, to strangle; from its supposed injurious effect.)

Flowers perfect. Calyx 2—5-cleft, segments often unequal. Corolla tubular, the limb somewhat ringent; upper lip entire or 2-lobed, the lower 3-lobed. Stamens 4, didynamous. Stigma mostly 2-lobed. Capsule ovoid, 2-valved, many-seeded.

1. *O. Americana Linn.*: stem clothed with ovate-lanceolate imbricate scales; spike terminal, smooth; corolla slightly curved; stamens exerted.

Shady woods. Can. to Geor. June. ②.—*Plant* 6—8 inches high, mostly growing in clusters. *Flowers* sessile, with lanceolate bracts at the base, dirty white or pale brown. *Squaw-root.*

2. *O. uniflora Linn.*: stem very short, often branched at base, clothed with oblong scales; flowers solitary, on scape-like pubescent peduncles; calyx equally 5-cleft; lobes of the corolla oblong-oval, with a pubescent colored margin; stamens included, smooth.

Woods. Can. to Car. W. to Miss. May, June. ②.—*Plant* 4—6 inches high, brownish-yellow. *Peduncles* 2—5 inches long, mostly 2 or 3 on each short stem. *Flowers* incurved, pale purple. *One-flowered Broom-rape.*

2. EPIPHAGUS. *Nutt.*—Beech Drops.

(From the Greek *επι*, upon, and *φηγος* or *φαγος*, a beech tree.)

Flowers polygamous; the upper complete but sterile; the lower imperfect, fertile. STERILE FL. Calyx 5-toothed. Corolla tubular, compressed, curved; upper lip emarginate; the lower 3-toothed. Stamens as long as the corolla. Style exerted. Ovary abortive. FERTILE FL. Calyx 5-toothed. Corolla small, rarely expanding, 4-toothed, deciduous. Stamens 4, 3 usually sterile. Style short. Capsule roundish-ovoid, gibbous, opening on the upper side.

E. Americanus *Nutt.* *Orobanche Virginiana* *Linn.*

Shady beech woods. Can. to Car. Aug., Sept. ♀.—*Plant* 6—12 inches high, yellowish-brown, smooth. *Stem* angular, branching from near the base; the branches with small lance-ovate scales below. *Flowers* alternate, distant, nearly sessile, small; fertile ones deciduous; sterile larger, white striped with purple. Parasitic. Reputed to be medicinal. *Beech-drops.* *Cancer-root.*

3. OBOLARIA. *Linn.*—Obolaria.

(From the Greek *οβολος*, a small Athenian coin, which the leaves are said to resemble.)

Calyx 2-parted, in the form of bracts. Corolla campanulate, 4-cleft; the lobes entire, sometimes crenulate. Stamens 4, subdidynamous, proceeding from the clefts of the corolla. Stigma emarginate. Capsule ovoid, 1-celled, 2-valved, many-seeded.

O. Virginica *Linn.*

Woods. Penn. and Ohio to Ala. April, May. ♀?—*Stem* 4—6 inches high, cespitose, nearly simple, smooth. *Leaves* opposite, rather fleshy, cuneate-obovate, sessile, glaucous. *Flowers* in pairs or threes towards the top of the stem, white or pale red. *Pennywort.*

ORDER XCII. SCROPHULARIACEÆ.—FIGWORTS.

Calyx of 4 or 5 more or less united sepals, persistent. Corolla with the limb 2-lipped or more or less irregular, with an imbricated æstivation. Stamens didynamous, rarely equal; the uppermost or fifth stamen altogether deficient, or sterile, or very rarely fertile, and shorter than the rest; sometimes the two lower ones are sterile or deficient. Ovary 2-celled; style mostly simple. Fruit capsular, 2-valved. Seeds numerous.—Herbs or sometimes shrubs, usually with opposite or whorled, but occasionally alternate leaves.

SUBORDER I. ANTIRRHINIDÆ.

Inflorescence entirely centripetal or compound. Æstivation of the corolla bilabately imbricated, the two upper segments being external.

I. VERBACEÆ.

1. VERBASCUM. *Linn.* Mullein.

(Name altered from *Barbascum*; the leaves being covered with a *barba* or beard.)

Calyx deeply 5-cleft or 5-parted. Corolla rotate, 5-lobed, the lobes nearly equal. Stamens 5, all perfect, declined, often hairy; the anterior longer. Style compressed-dilated at the apex. Capsule globose, ovoid or oblong, dehiscent.

1. *V. Thapsus* *Linn.*: densely woolly; stem simple; leaves ovate-oblong, decurrent; flowers in a long dense terminal spike; stamens unequal, two smooth.

Road sides, &c. Throughout the U. S. June. ②.—*Stem* 3–6 feet high, angular, winged. *Leaves* 6–12 inches long. *Flowers* yellow, in a long dense cylindrical spike. Introduced from Europe. *Common Mullein.*

2. *V. Blallaria* *Linn.*: stem nearly smooth, angled; leaves oblong, clasping, crenate-serrate; the radical ones petioled, sinuate-pinnatifid; flowers pedicellate, in an elongated raceme.

Road sides, &c. N. Y. to Car. June, July. ②.—*Stem* 2 feet high, angular. *Leaves* acute, serrate or toothed. *Flowers* yellow or white, with a purplish tinge. Considered by some as a variety of the preceding. Introduced from Europe. *Moth Mullein.*

3. *V. Lychnitis* *Linn.*: stem angular; leaves oblong, wedgeform, nearly smooth above, white and woolly beneath; flowers numerous, in a pyramidal panicle; filaments white-woolly.

Old fields. Near Oneida Lake, N. Y. *Torr.* Penn. *Pursh.* July, Aug. ②.—*Stem* 2–5 feet high. *Flowers* rather small, cream-colored. Introduced from Europe. *White Mullein.*

II. ANTIRRHINÆ.

2. LINARIA. *Tourn.*—Toad Flax.

(From the Latin *linum*, *flax*; on account of the resemblance of the leaves in many species.)

Calyx deeply 5-parted. Corolla personate; tube with a spur at base; upper lip 2-cleft, erect; throat closed by the prominent palate. Stamens 4, didynamous. Capsule ovoid or globose, 2-celled, usually opening at the summit by several valves. Seeds ovoid.

1. *L. Elatine* *Mill.*: stem procumbent, hairy; leaves broad-hastate,

acute; the lowest ovate, slightly toothed and opposite; peduncles solitary, axillary, very long. *Antirrhinum Elatine* Linn.

Sandy fields. N. Y. to Virg. July. ①.—*Stem* 1—2 feet long, with spreading branches. *Flowers* small, yellowish, the upper lip purple. Introduced? *Sharp-pointed Toadflax.*

2. *L. vulgaris* Mill.: stem erect, mostly simple; leaves linear-lanceolate, scattered, crowded; flowers imbricated in a terminal spiked raceme; calyx smooth, shorter than the spur. *Antirrhinum Linaria* Linn.

Road sides. Can. to Virg. June—Oct. ②.—*Stem* 1—2 feet high, somewhat glaucous, sometimes a little branched. *Flowers* large, yellow, in a dense terminal bracteate raceme, rarely with 3 or 5 spurs. A very troublesome weed. Introduced from Europe. *Common Toadflax. Snapdragon.*

3. *L. Canadensis* Spreng.: stem erect or assurgent, mostly simple; leaves scattered, erect, linear, obtuse; flowers racemose; sterile branches procumbent. *Antirrhinum Canadense* Linn.

Low grounds. Can. to Car. May—Aug. ①.—*Stem* about a foot high, slender, often throwing out suckers at base. *Flowers* very small, blue, in a naked terminal raceme. *Canadian Toadflax.*

III. CHELONEÆ.

3. SCROPHULARIA. Linn.—Figwort.

(So named from its being supposed to cure the *scrophula*.)

Calyx deeply 5-cleft or 5-parted. Corolla subglobose; limb contracted, with 2 short lips; upper lip 2-lobed, frequently with a scale or abortive stamen within; lower lip 3-lobed. Capsule 2-celled, 2-valved; valves opening at the apex.

S. Marylandica Linn.: stem angled, smoothish; leaves ovate or ovate-lanceolate, acute, coarsely serrate, mostly rounded or cordate at base; petioles ciliate; panicle thyrsoid-like, the branches composed of loosely flowered clusters. *S. nodosa* Benth. in D. C. *S. nodosa* var. *Americana* Mich. *S. lanceolata* Pursh.

Woods. Can. to Car. W. to California. June—Aug. ②.—*Stem* 3—5 feet high, 4 angled, branched above, slightly pubescent. *Leaves* opposite, slightly pubescent beneath. *Flowers* purple-brown tinged with green, in a large terminal oblong panicle. *Capsule* globular. Very closely allied to, if not identical with, *S. nodosa* of Europe. *Figwort.*

4. COLLINSIA. Nutt.—Collinsia.

(In honor of the late *Zaccheus Collins*, of Philadelphia.)

Calyx 5-cleft. Corolla bilabiate, the orifice closed; upper lip bifid, lower trifid; intermediate segment carinately saccate and closed over the declinate style and stamens. Capsule globose, partly 1-celled and imperfectly 4-valved. Seeds 2—3, umbilicate.

C. verna Nutt.: assurgent, nearly smooth; leaves remotely and somewhat obtusely serrate; radical ones oblong or cordate and petiolate; cauline ovate-oblong, sessile or clasping; uppermost ternate

Banks of streams. Western N. Y. W. to Miss. July. ①.—*Stem* a foot high. *Peduncles* axillary, 1-flowered, opposite or verticillate. *Corolla* part-colored, yellowish-white and blue. *Early Collinsia*.

5. CHELONE. *Linn.*—Shell Flower.

(From the Greek *χελωνη*, a *tortoise*; the flower resembling the head of that animal.)

Calyx 5-parted. *Corolla* ventricose-tubular; upper lip broad, concave, emarginate or shortly bifid; lower one spreading, 3-cleft. *Stamens* 4, didynamous, with a fifth shorter sterile filament. *Anthers* woolly. *Capsule* 2-celled, 2-valved. *Seeds* membranaceously margined.

C. glabra Linn.: smooth; leaves opposite, lanceolate or oblong-lanceolate, acuminate, serrate; flowers in dense spikes.

Wet grounds. Can. to Car. W. to Miss. Aug.—Oct. ♀.—*Stem* 2 feet high, simple. *Leaves* thick and somewhat coriaceous. *Flowers* large, white or reddish, in compact terminal or subaxillary spikes. *Snake-head*.

6. PENTSTEMON. *Linn.*—Pentstemon.

(From the Greek *πεντε*, five, and *στημων*, a *stamen*; in allusion to the fifth large abortive stamen.)

Calyx deeply 5-parted or 5-sepalled. *Corolla* bilabiate, ventricose. The fifth sterile filament longer than the rest and bearded on the upper side. *Anthers* smooth. *Capsule* ovoid, 2-celled, 2-valved. *Seeds* numerous, angular.

1. *P. pubescens Linn.*: stem pubescent; leaves lanceolate-oblong, serrulate, sessile, clasping; sterile filament bearded from the top to below the middle.

Hill sides. Can. to Flor. W. to Miss. June. ♀.—*Stem* 12—15 inches high, simple or branching. *Leaves* smoothish. *Flowers* pale purple, in terminal panicles. *Pubescent Pentstemon*.

2. *P. laevigatus Ait.*: smooth; leaves ovate-oblong, clasping at base, slightly toothed, the lower entire; sterile filament bearded near the top. *Chelone Pentstemon Walt. P. pubescens Benth. in D. C.*

Low grounds. Penn. to Flor. June. ♀.—*Stem* 1—2 feet high. *Flowers* in terminal panicles. *Smooth Pentstemon*.

IV. GRATIOLEÆ.

7. MIMULUS. *Linn.*—Monkey Flower.

(From the Greek *μυω*, a *monkey*; in allusion to its grinning-flowers.)

Calyx tubular, 5-angled, 5-toothed. *Corolla* ringent; upper lip 2-lobed, erect or reflexed at the sides; lower lip 3-lobed, spreading. *Stamens* 4. *Stigma* thick, 2-cleft. *Capsule* 2-celled, many-seeded. *Seeds* minute.

1. *M. ringens* Linn.: erect, smooth; leaves sessile, lanceolate, acuminate, serrate; peduncles axillary, opposite, longer than the flowers; teeth of the calyx oblong, acuminate.

Wet grounds. Can. to Car. W. to Miss. Aug. ♀.—Stem 2 feet high, angular, somewhat branched. Leaves a little clasping. Flowers large, pale purple. Common Monkey-flower.

2. *M. alatus* Linn.: erect, smooth; stem winged; leaves petioled, ovate, acuminate, toothed-serrate; peduncles axillary, opposite, shorter than the flowers; teeth of the calyx round, mucronate.

Wet meadows. N. Y. to Car. Aug. ♀.—Stem 2 feet high, with winged angles, somewhat branched. Leaves tapering at base into a short petiole. Flowers pale blue. Abundant in the western part of New York.

Stem-winged Monkey-flower.

8. HERPESTIS. Gart.—Herpestis.

(From the Greek ἑρπῆστις, a creeper.)

Calyx 5-parted, unequal. Corolla bilabiate; upper lip emarginate or 2-lobed; lower one 3-lobed. Stamens 4, didynamous, ascending. Capsule bisulcate, 2-celled, 2-valved. Seeds numerous, small.

1. *H. Monnieria* Humb.: creeping, smooth; leaves cuneate-obovate, entire or obscurely crenate near the summit; pedicels with two bracteoles near the end; lower segment of the calyx ovate. *H. cuneifolia* Pursh. *Monnieria cuneifolia* Mich.

Inundated banks. Penn. to Car. Pursh. From Car. to Buenos Ayres and Chili. D. C. Aug. ♀.—Stem prostrate, creeping. Leaves opposite, thick, somewhat clasping, variable in size and form. Flowers very small, pale purple, solitary, axillary, on peduncles about as long as the leaves.

Wedge-leaved Herpestis.

2. *H. amplexicaulis* Pursh: stem villous; leaves clasping, ovate, obtuse, entire, nerved, smooth or sparingly pubescent beneath; pedicels solitary, shorter than the calyx. *Monnieria amplexicaulis* Mich.

In ponds and ditches, N. J. to Louis. D. C. Car. and Geor. Pursh. June—Aug. ♀.—Leaves 6—9 lines long. Flowers blue, larger than in the preceding.

Clasping-leaved Herpestis.

9. GRATIOLA. Linn.—Hedge Hyssop.

(From the Latin *gratia*, grace or favor; in allusion to its supposed medicinal virtues.)

Calyx 5-parted, often with 2 bracts at the base. Corolla tubular, subbilabiate; upper lip entire or shortly bifid; lower one 3-lobed, the palate not prominent. Stamens 4, 2 sterile. Stigma 2-lobed. Capsule ovate, 2-celled, 2-valved, the valves at length 2-cleft. (4-valved. D. C.)

1. *G. aurea* Muhl.: smooth; stem assurgent; leaves linear-oblong, sub-clasping, obscurely-toothed; segments of the calyx linear-lanceolate, equal; sterile filaments minute. *G. officinalis* Mich. *G. Caroliniensis* Pers.

Sandy swamps. Mass to Flor. July, Aug. ♀.—Root creeping. Stem assur-

gent, 4—8 inches high, 4-angled, branching. *Leaves* nerved and marked with pellucid dots. *Flowers* bright yellow, on axillary peduncles.

Golden Hedge Hyssop.

2. *G. Virginica* Linn.: stem assurgent, terete, pubescent above; leaves smooth, lanceolate, sparingly dentate-serrate, attenuate and connate at the base; segments of the calyx linear-lanceolate, equal; sterile filaments nearly wanting.

Inundated meadows. Can. to Louis. W. to Oregon. July, Aug. ♀.—*Stem* 6 inches high, branched at base. *Peduncles* shorter or longer than the leaves; upper ones opposite. *Flowers* yellowish-white. A variable species.

Common Hedge Hyssop.

3. *G. megalocarpa* Ell.: leaves lanceolate, serrate, pubescent; peduncles opposite, longer than the leaves; segments of the calyx linear, as long as the globose capsule. *G. acuminata* Pursh. (excl. *syn.*)

Ditches and pools. Penn. to Flor. July, Aug. ♀.—*Flowers* pale-yellow, large. *Capsule* larger than in any other species.

Large-fruited Hedge Hyssop.

10. LINDERNIA. Linn.—Lindernia.

(In honor of *F. B. Von Lindern*, a German botanist.)

Calyx 5-parted, naked at base. Corolla tubular, ringent; upper lip short, reflexed, emarginate; lower one trifid, unequal. Stamens 4, 2 longer forked and sterile. Stigma emarginate. Capsule ovoid-oblong, 2-celled, 2-valved; dissepiment parallel with the valves.

1. *L. dilatata* Muhl.: leaves ovate or oblong, dilated at the base, clasping, remotely toothed; peduncles longer than the leaves. *L. Pyxidaria* Pursh. *Gratiola anagalloidea* Mich.

Inundated banks. Can. to Car. W. to Miss. July, Aug. ①.—*Stem* 6 inches high, erect or assurgent, 4-sided, smooth, often much branched. *Leaves* 6—7 lines long. *Flowers* pale-purple, on alternate and opposite peduncles.

Long-stalked Lindernia.

2. *L. attenuata* Muhl.: leaves lanceolate and obovate, serrate-toothed, narrowed at the base; peduncles shorter than the leaves, erect. *L. Pyxidaria* var. *major* Pursh.

Inundated banks. Can. to Car. July—Sept. ①.—*Stem* erect or assurgent, branched, stouter than in the preceding. *Peduncles* mostly shorter than the leaves.

Short-stalked Lindernia.

3. *L. monticola* Nutt.: stem slender, dichotomous; radical leaves spatulate; cauline ones linear, small and remote; peduncles very long, at length deflected.

White hills, N.H.? June. ♀.—*Stem* erect, 4—6 inches high. *Radical leaves* obscurely toothed, punctate; cauline ones very few. *Flowers* pale-blue.

Mountain Lindernia.

11. HEMIANTHUS. Nutt.—Hemianthus.

(From the Greek ἡμι, (for ἡμις), half, and ανθος, a flower; on account of the form of the flower.)

Calyx tubular, cleft on the under side; border 4-toothed. Corolla with the upper lip obsolete; the lower 3-parted; inter-

mediate segment ligulate and truncate, much longer, closely incurved. Stamens 2. Filaments bifid, lateral fork antheriferous. Style bifid. Capsule 1-celled, 2-valved, many-seeded.

H. micranthemoides Nutt. *Herpestis micrantha* Pursh, (excl. syn.)

Inundated banks. Penn. to Virg. Aug., Sept. ①.—*Stem* creeping, dichotomous. *Leaves* opposite, crowded, sessile, obscurely 3-nerved. *Flowers* white, minute, solitary, axillary. *Hemianthus*.

SUBORDER II.—RHINANTHIDEÆ.

Inflorescence entirely centripetal or compound. Æstivation irregularly imbricated, one of the lateral segments being generally external, while the two upper are always internal.

I. SIBTHORPEÆ.

12. LIMOSELLA. Linn.—Mudwort.

(From the Latin *limus*, *mud*; in allusion to its place of growth.)

Calyx 5-cleft. Corolla shortly campanulate, 5-cleft, equal. Stamens 4, approximating by pairs. Capsule 2-valved, sub-bilocular, many-seeded.

L. subulata Ives: leaves linear, very narrow, scarcely dilated at the apex; scape 1-flowered, as long as the leaves. *L. tenuifolia* Nutt.

Muddy shores. N. Y. and Penn. Aug. ♀.—*Plant* rooting and creeping in the mud. *Leaves* about an inch long. *Flowers* bluish-white, minute, on peduncles a little longer than the leaves. *Common Mudwort*.

II. VERONICEÆ.

13. VERONICA. Linn.—Speedwell.

(Name of doubtful origin.)

Calyx 4- rarely 5-parted. Corolla rotate, unequally 4-lobed; the lower segment narrower. Stamens 2, inserted into the tube, exserted. Capsule 2-celled, mostly emarginate or obtuse. Seeds few.

* *Spikes or racemes terminal*.

1. *V. serpyllifolia* Linn.: stem ascending; leaves broadly ovate or elliptic, slightly crenate, smoothish; raceme elongated, many-flowered; capsule inversely reniform, as long as the style.

Meadows, &c. Throughout the U. S. May—Aug. ♀.—*Stem* procumbent, 3—8 inches long, sometimes creeping. *Flowers* small, pale blue, in a long spike or raceme. Introduced from Europe. *Thyme-leaved Speedwell*.

** *Spikes or racemes axillary*.

2. *V. scutellata* Linn.: stem slender, nearly erect; leaves linear or lance-linear, sessile, somewhat toothed; racemes lateral, alternate; pedicels divaricate in fruit.

Moist places. N. Y. and Penn. W. to Miss. May. 2.—*Stem* erect, weak, 6—12 inches long. *Flowers* flesh-colored, in simple rarely compound racemes.
Skullcap Speedwell.

3. *V. Anagallis* Linn.: stem erect; leaves lanceolate, clasping, serrate; racemes opposite.

Ditches and moist places. Can. to Car. June—Aug. 2.—*Stem* 1—2 feet high, succulent. *Leaves* varying in width. *Flowers* numerous, blue or purplish, in long racemes. *Pedicels* shorter than in the preceding, but never reflexed.
Water Speedwell.

4. *V. Americana* Schwein.: smooth; stem decumbent at base, erect above; leaves mostly petioled, ovate or oblong, acute or slightly obtuse, serrate, somewhat cordate at base; capsule roundish, turgid, emarginate, (D.C.) *V. Beccabunga* var. *Americana* Torr.

Wet grounds. Can. to Car. W. to Oregon. July. 2.—Intermediate between *V. Anagallis* and *V. Beccabunga*, but probably distinct. It has the habit of the former, but the leaves are mostly petioled, shorter and broader. The capsule and seeds are similar to those of the latter.
Intermediate Speedwell.

5. *V. Beccabunga* Linn.: stem procumbent at the base and rooting; leaves elliptic, obtuse, somewhat serrate, smooth; racemes opposite.

Ditches, &c. N. S. June. 2.—Whole plant smooth and shining. *Racemes* many-flowered, longer than the leaves. *Flowers* bright blue. *Brooklime.*

6. *V. officinalis* Linn.: stem procumbent, downy; leaves broad-ovate and obovate, serrate, roughly-pubescent; racemes spiked; capsule obovate, deeply notched.

Pastures and dry woods. Can. to Car. May—July. 2.—*Stem* 6—12 inches long, rooting below. *Flowers* pale blue, in erect pedunculate spikes.
Common Speedwell.

** *Flowers axillary, solitary.*

7. *V. agrestis* Linn.: stem procumbent, hairy; leaves all petiolate, cordate-ovate, incisely-serrate, as long as the peduncles; capsule of 2 rounded keeled lobes.

Sandy fields. Can. to Car. May. ①.—*Stem* 3—4 inches long, hairy. *Peduncles* rather longer than the leaves and recurved when in fruit. *Flowers* small, pale blue or whitish. Introduced from Europe.
Procumbent Speedwell.

8. *V. peregrina* Linn.: stem erect; leaves oblong, rather obtuse, dentate-serrate; flowers solitary, sessile. *V. Caroliniana* Walt. *V. Marilandica* Linn.

Clay grounds. Arct. Amer. to Car. W. to Miss. May—July. ①.—Whole plant smooth. *Stem* simple, or branched only at base. *Flowers* very small, white or pale blue, nearly or quite sessile.
Neck-weed.

9. *V. arvensis* Linn.: stem ascending; leaves cordate-ovate, serrate; the lower ones petiolate; the upper or bracts sessile, lanceolate, alternate, nearly entire; flowers subsessile.

Fields, &c. N. Y. to Car. April, July. ①.—*Stem* somewhat branched at base. *Flowers* nearly sessile, very small, pale blue. *Capsule* compressed and ciliate. Introduced from Europe.
Small Speedwell.

10. *V. hederifolia* Linn.: stem procumbent; leaves all petiolate, cordate, 5—7-lobed; segments of the calyx cordate, ciliate, acute; capsule of two turgid lobes.

Shady rocks. N. Y. and Penn. March, April. ①.—*Stem* slender, 4—10 inches long, somewhat pubescent. *Peduncles* longer than the leaves. *Corolla* shorter than the calyx. *Ivy-leaved Speedwell.*

14. LEPTANDRA. Nutt.—Leptandra.

(From the Greek λεπτος, *slender*, and ανηρ, ανδρος, a man; in allusion to the stamens.)

Calyx 5-parted; segments acuminate. *Corolla* tubular-campanulate; border 4-lobed, a little ringent, the lower segment narrower. *Stamens* 2, and with the pistil at length much exserted. *Capsule* ovoid, acuminate, 2-celled, many-seeded, opening at the summit.

L. Virginica Nutt.: stem erect; leaves whorled in fours or fives, lanceolate, serrate, petiolate; spikes aggregated. *Veronica Virginica* Linn. *Paderota Virginica* Torr.

Woods. Can. to Car. W. to Miss. July, Aug. ②.—*Stem* 2—4 feet high, angular, smooth, simple. *Leaves* slightly pubescent beneath. *Flowers* white, in long dense terminal spikes. The root is cathartic and diaphoretic. *Culver's Physic.*

III. BUCHNEREÆ.

15. BUCHNERA. Linn.—Buchnera.

(In honor of John Gottfried Buchner, a German botanist.)

Calyx tubular, shortly 5-toothed. *Corolla* somewhat salverform; tube slender; limb almost equally 5-lobed; the lobes oblong or obovate. *Stamens* 4, didynamous. *Capsule* straight, 2-celled, opening elastically.

B. Americana Linn.: hairy-hispid; stem simple; leaves lanceolate, sessile, somewhat toothed, scabrous and hairy; spike long, with the flowers at length remote.

Sandy places. N. Y. to Car. W. to Miss. July. ②.—*Stem* 12—18 inches high. *Leaves* 3-nerved, opposite, sessile. *Flowers* blue. The plant blackens by drying. *Blue Hearts.*

IV. GERARDIÆ.

16. GERARDIA. Linn.—Gerardia.

(In honor of John Gerard, an old English botanist.)

Calyx campanulate, 5-toothed or 5-cleft. *Corolla* tubular-funnel-form or somewhat campanulate; the border unequally 5-lobed, the lobes broad and entire. *Stamens* 4, didynamous, included. *Capsule* obtuse or shortly acuminate; the valves coriaceous, usually entire. *Seeds* numerous.

* *Flowers purple.*

1. *G. purpurea* Linn.: stem angular, much branched; leaves linear, long, very rough; flowers nearly sessile; teeth of the calyx lanceolate-subulate.

Swamps and low grounds. Can. to Car. Aug.—Oct. ①.—Stem 1—2 feet high, much branched above, rough on the angles. *Flowers* large, axillary, purple, pubescent. *Rough-leaved Gerardia.*

2. *G. tenuifolia* Vahl: stem much branched, smooth; leaves linear, acute at each end, smoothish; peduncles axillary, opposite, longer than the flowers; teeth of the calyx short, acute. *G. erecta* Walt.

Fields and woods. N. Y. to Car. W. to Miss. July—Sept. ①.—Stem 6—12 inches high, 4-angled, much branched. *Flowers* small, purple. Differs from the preceding in its more slender growth, its smoother leaves, larger flowers and longer peduncles. *Slender Gerardia.*

3. *G. maritima* Raf.: stem angular; leaves linear, fleshy, short, rather obtuse; peduncles much shorter than the flowers; calyx truncate, the teeth short and somewhat obtuse; corolla smooth. *G. purpurea* var. *crassifolia* Pursh.

Salt marshes. Mass. N. Y. and N. J. July—Sept. ①.—Stem 6—12 inches high. *Flowers* middle-sized, purple, axillary and terminal. Easily distinguished by its obtuse leaves and by its short calyx-teeth.

Salt-marsh Gerardia.

4. *G. auriculata* Mich.: stem subsimple, roughly hirsute; leaves ovate-lanceolate, auriculate at base, sessile, very entire; flowers sessile. *Otophylla Michauxii* D. C.

Low grounds. West Chester and Nazareth, Penn. *Darlington*. S. to Car. W. to Ill.—Stem 12—15 inches high. *Flowers* sessile, often opposite, purple, rarely white, hairy-pubescent. *Auriculate Gerardia.*

** *Flowers yellow.* DASYSTOMA.—Raf.

5. *G. flava* Linn.: pubescent; stem mostly simple; leaves lanceolate or oblong-lanceolate; the upper ones entire or sinuate-toothed, nearly sessile; the lower incised or somewhat pinnatifid, on longer petioles; flowers axillary, opposite, nearly sessile.

Rocky woods. N. Y. to Flor. W. to Miss. Aug., Sept. ②.—Stem 2—3 feet high. *Flowers* large, yellow. *Pubescent False Foxglove.*

6. *G. glauca* Eddy: stem paniculately branched, smooth, glaucous; leaves ovate-lanceolate, petiolate, smooth, the lower ones pinnatifid; flowers on pedicels, axillary; calyx smooth, the segments lance-linear. *G. quercifolia* Pursh.

Woods. N. Y. to Car. W. to Miss. Aug., Sept. ②.—Stem 3—5 feet high. *Flowers* large, yellow. *Glaucous False Foxglove.*

7. *G. Pedicularia* Linn.: stem much branched, pubescent; leaves oblong, smoothish, pinnatifid; segments uncinatate, serrate; flowers axillary, on pedicels; segments of the calyx leafy, notched and toothed.

Woods. Can. to Car. July, Aug. ②.—Stem 2—3 feet high, much branched. *Flowers* smaller than in the preceding, yellow, villous, very caducous.

Bushy Gerardia.

V. EUPHRASIEÆ.

17. SCHWALBEA. *Linn.*—Schwalbea.(In honor of *Christian Schwalbe*; a German botanist.)

Calyx declined, very oblique, tubular, 10—12-ribbed, 5-toothed; the upper tooth much smaller; the 2 lower connate. Corolla bilabiate; upper lip oblong, obtuse, entire; the lower short, erect, with 3 very short obtuse lobes. Stamens didynamous. Capsule ovoid-roundish, 2-celled, 2-valved. Seeds numerous, winged.

S. Americana *Linn.*

Pine barrens. N. Y. to Flor. and Louis. July, Aug. ♀.—*Stems* several from the same root, 12—18 inches high, and with the rest of the plant somewhat viscid-pubescent. *Leaves* alternate, sometimes nearly opposite, lanceolate or ovate-lanceolate, obscurely 3-nerved. *Flowers* in a terminal raceme, large, dark purple; upper lip villous. Found in the sandy plains near Albany, N. Y.
American Schwalbea.

18. RHINANTHUS. *Linn.*—Yellow Rattle.

(From the Greek *ῥινα*, a nose, and *ἄθος*, a flower; its ringent corolla resembling the snout of an animal.)

Calyx inflated, 4-toothed. Corolla ringent; upper lip ovate, obtuse, compressed laterally; lower one of 3 nearly equal lobes. Stamens inserted into the throat of the corolla. Capsule orbicular, compressed, 2-celled. Seeds numerous, margined.

R. minor Ehrh.: smooth or a little pubescent; leaves varying from oblong to lanceolate, serrate; calyx smooth; upper lip of the corolla broad-ovate. *R. Crista-galli* *Linn.*

Meadows. Arct. Amer. Can. N. Y. and Mass. W. to Oregon. June, July. ①.—*Stem* 1—2 feet high, branching, sometimes not more than a few inches high and simple. *Leaves* opposite, veiny, varying in width. *Flowers* axillary, but somewhat spiked, yellow. When the fruit is ripe, the seeds rattle in the husky capsule, whence its English name. *Common Yellow Rattle.*

19. PEDICULARIS. *Linn.*—Lousewort.

(From the Latin *pediculus*, a louse; supposed to be because it produces the lousy disease in sheep that feed upon it.)

Calyx ventricose, unequally 5-toothed or 2-lipped; upper lip 2-toothed or entire; lower 3-toothed or sometimes obliquely truncate. Corolla ringent; upper lip compressed, galeate and often rostrate, emarginate; lower 3-lobed, the middle lobe smaller. Capsule ovate or lanceolate, compressed, more or less falcate or oblique, 2-celled, 2-valved, opening at the top.

1. *P. lanceolata* *Mich.*: stem erect, somewhat branched, smoothish; leaves subopposite, lanceolate, crenately incised, with the segments toothed-serrate,

rough on the margin; calyx bifid, with the segments roundish-ovate, leafy and dentate; helmet of the corolla truncate at the apex. *P. pallida* Pursh.

Low grounds. Can. to Virg. W. to Miss. Sept. 21.—Stem 1—2 feet high. Flowers large, straw-yellow. Capsule short and broad-ovate.

Tall Lousewort.

2. *P. Canadensis* Linn.: stem simple, oblique, pubescent; leaves pinnatifid, the segments notched and toothed; spike leafy at the base, hairy; calyx obliquely truncate; helmet of the corolla with two setaceous teeth. *P. gladiata* Mich.

Meadows. Can. to Car. W. to Miss. May—July. 24.—Stems 8—12 inches high, often several from one root. Flowers yellow and purple, in a short terminal spike. Common Lousewort.

20. EUPHRASIA. Linn.—Eye-bright.

(From *Euphrosyne*, expressive of joy and pleasure, in allusion to its properties. Hook. Brit. Fl.)

Calyx tubular, 4-cleft, rarely with a fifth tooth. Corolla bilabiate; upper lip bifid; lower one of 3 obtuse or emarginate lobes. Anthers with their lobes mucronate at base. Capsule ovate-oblong, 2-celled. Seeds striate.

E. officinalis Linn.: leaves ovate, deeply toothed, furrowed; flowers axillary towards the summit; calyx 4-toothed, hairy; lobes of the lower lip of the corolla emarginate.

Pastures. Arct. Amer. Richardson. N. Eng. Muhl. July—Sept. ①.—Stem varying from one inch with often only a single flower, to 6 and 8 inches and branched. Flowers axillary, but crowded at the extremities of the branches, white or reddish, streaked with purple. Hook. Common Eye-bright.

21. CASTILLEJA. Mutis.—Painted Cup.

(Named by Mutis after his friend *Castillejo*.)

Calyx tubular, ventricose, spathe-like, 2—4-cleft. Corolla 2-lipped; upper lip long and narrow; the lower with 3 very short teeth. Stamens 4. Capsule ovoid-compressed, septiferous in the middle. Seeds numerous, with a loose reticulated testa.

1. *C. coccinea* Spreng.: pubescent; radical leaves rosulate; cauline lanceolate, pinnatifidly incised; floral trifid or incised, colored at the summit; lobes of the calyx truncate, retuse or entire, nearly as long as the corolla. *Euchroma coccinea* Nutt. *Bartsia coccinea* Linn.

Wet grounds. Can. to Flor. W. to Miss. April, May. 24.—Stem 8—15 inches high, simple, reddish or purple, pubescent. Floral leaves scarlet towards the summit. Flowers in a crowded spike, greenish-yellow. The variety *palens* of Pursh, having the floral leaves yellow, and the whole plant of a pale yellowish-green, has been found by Dr. Darlington at Downington, Penn.

Scarlet Painted Cup.

2. *C. septentrionalis* Lind.: smooth or hispid-hairy; leaves lanceolate, the upper or all incised; floral oblong or obovate, colored, incised; lobes of the

calyx bifid; the teeth ovate-oblong, acute, about as long as the corolla. *Bartsia pallida Pursh* not of *Linn.*

White Mountains, N. H. N. to Subarct. Amer. Aug. 24.—*Stem* about 12 inches high. *Floral leaves* purple. *Flowers* yellow, pubescent, in a terminal spike. I follow Bentham in referring the New Hampshire plant to this species, although the description given by Lindley does not entirely warrant such a union. *Yellow Painted Cup.*

22. MELAMPYRUM. *Linn.*—Cow Wheat.

(From the Greek μέλας, *black*, and πῦρος, *wheat*; the seeds resemble grains of wheat, and are said, when mixed with flour, to make black bread. *Hook. Br. Fl.*)

Calyx tubular, 4-cleft or 4-toothed. *Corolla* ringent or perisomate; upper lip compressed, with the margins folded back; the lower lip a little longer, bi-convex, shortly 3-lobed. *Stamens* 4. *Capsule* compressed, ovate, oblique or falcate, 2-celled. *Seeds* usually 2 in each cell.

M. Americanum Mich.: lower leaves lanceolate or linear-lanceolate; floral ones lanceolate, toothed at the base; flowers axillary, distinct. *M. lineare Lam.* and *M. latifolium Muhl.*

Woods. Can. to Car. June, July. ①.—*Stem* 8—12 inches high, branched at the upper part. *Flowers* yellow. It varies considerably in the form of the leaves. *American Cow-wheat.*

ORDER XCIII. LABIATÆ.—LABIATES.

Calyx tubular, persistent, 2-lipped or regularly 5- or 10-toothed. *Corolla* bilabiate; the upper undivided or bifid, overlapping the lower, which is larger and 3-lobed. *Stamens* 4, didynamous, the 2 upper sometimes wanting. *Ovary* deeply 4-lobed; *style* 1, proceeding from the base of the lobes; *stigma* bifid. *Fruit* 1—4 small nuts or achenia enclosed within the persistent calyx. *Seeds* with little or no albumen.—Herbaceous plants or under shrubs. *Stem* 4-cornered. *Leaves* opposite, without stipules. *Flowers* usually in opposite nearly sessile axillary cymes resembling whorls.

I. MENTHOIDÆ. *Corolla* somewhat campanulate or funnel-form; the tube scarcely longer than the calyx; the limb almost equally 4—5-cleft. *Stamens* distant, straight or diverging, nearly equal, or the upper pair sometimes wanting.

1. LYCOPUS. *Linn.*—Water Horehound.

(From the Greek λύκος, a *wolf*, and πῦς, a *foot*; on account of the fancied resemblance in the cut leaves to a wolf's paw.)

Calyx tubular, 5-cleft, mouth naked. *Corolla* tubular-cam-

panulate, nearly equal, 4-lobed; upper segments broader and notched. Stamens 2, distant, simple. Achenia 4, smooth.

1. *L. sinuatus* Ell.: stem erect, acutely 4-angled, smoothish; leaves petiolate, oblong-lanceolate, sinuate-toothed, the lower pinnatifid in the middle; whorls many-flowered; calyx with 5 acute spinous teeth. *L. Europæus* Pursh not of Linn. *L. Americanus* Muhl.

Moist places. Arct. Amer. to Car. W. to Oregon. July, Aug. ♀.—*Stem* erect, 1—2 feet high, square. *Leaves* opposite, upper ones slightly, lower ones deeply, toothed. *Flowers* in dense whorls, white. Calyx with spines, longer than the achenia. *Common Water Horehound.*

2. *L. Virginicus* Linn.: stem stoloniferous at base, smoothish; leaves oblong or ovate-lanceolate, remotely toothed, tapering at each end; calyx with 4 ovate spineless teeth. *L. uniflorus* Mich.

Wet places. Can. to Car. W. to Rocky Mountains. July, Aug. ♀.—*Stem* 12—18 inches high, simple or sparingly branched. *Leaves* opposite, sessile, purplish. *Flowers* minute, white, in compact whorls. Formerly in great repute as a remedy for hæmoptysis. *Bugle Weed.*

2. ISANTHUS. Mich.—Isanthus.

(From the Greek *ισος*, equal, and *ανθος*, a flower; the corolla being nearly regular.)

Calyx campanulate, 10-nerved, deeply 5-toothed; the throat naked inside. Corolla scarcely longer than the calyx; tube straight and short; limb campanulate; of 5 equal rounded lobes. Stamens 4, nearly equal, erect, about as long as the corolla. Style 2-cleft at the summit. Achenia obovate.

I. cœruleus Mich.

River banks. N. Y. to Car. W. to Miss. July, Aug. ①.—*Plant* viscidly pubescent, about a foot high. *Leaves* elliptic-lanceolate, acute at both ends, 3-nerved. *Flowers* pale blue, 1—3 on axillary peduncles.

False Pennyroyal.

3. MENTHA. Linn.—Mint.

(From *μινθα* or *μινθη*, an ancient Greek term.)

Calyx tubular or campanulate, 5-toothed, equal or somewhat 2-lipped. Corolla nearly regular, 4-lobed, the upper lobe broader and emarginate. Stamens 4, equal, distant. Achenia smooth.

* *Flowers in spikes.*

1. *M. piperita* Linn.: stem smooth; leaves ovate-lanceolate, petiolate, acute, serrate, smoothish; spikes interrupted; pedicels and base of the calyx smooth; calyx-teeth hispid.

Marshy grounds on the Hudson and in Western part of N.Y. July. ♀.—*Stem* ascending, 12—15 inches long, branched, often purplish. *Leaves* rounded at base. *Flowers* pale purple, in spikes which consist of a few whorls. Introduced from Europe. *Peppermint.*

2. *M. viridis* Linn.: stem erect, smooth; leaves ovate-lanceolate, nearly sessile, unequally serrate, smoothish; flowers in verticillate slender spikes; bracts and teeth of the calyx somewhat hairy. *M. tenuis* Mich.

Marshy places. N. Y. to Geor. July, Aug. ♀.—Stem 1—2 feet high, branched. Spikes numerous, terminal, forming a kind of panicle. Flowers in distant whorls, pale purple. Introduced from Europe. *Spearmint*.

** Flowers in axillary whorls.

3. *M. Canadensis* Linn.: stem ascending, pubescent; leaves lanceolate or oval-lanceolate, petiolate, serrate, acute at each end; whorls many-flowered, remote; stamens exserted. *M. borealis* Mich.

Moist grounds. Hudson's Bay to Virg. W. to Miss. July—Sept. ♀.—Plant of a grayish-green color. Stem 12—18 inches high, ascending or decumbent, simple or branched. Leaves hairy, especially beneath. Flowers in dense axillary whorls, pale purple. *Canadian Mint*.

II. MONARDEÆ. Corolla 2-lipped. Stamens 2, fertile, (rarely 4,) ascending. Anthers linear and confluent at the summit or halved, the cells separated by a long linear connective, which is transversely articulated to the top of the filament.

4. SALVIA. Linn.—Sage.

(From the Latin *salvo*, to save or heal; in allusion to its supposed healing properties.)

Calyx subcampanulate, 2-lipped; upper lip mostly 3-toothed; lower bifid, the throat naked. Corolla 2-lipped; upper lip erect, straight or falcate and vaulted. Stamens 2. Anthers dimidiate.

1. *S. lyrata* Linn.: stem nearly leafless, retrose pubescent; radical leaves lyrate-toothed, hispid on both sides; cauline oblong-lanceolate; uppermost oblong-linear; upper lip of the corolla very short.

Woods. Penn. to Geor. June. ♀.—Stem about a foot high, densely covered with reflexed hairs. Leaves mostly radical, more or less lyrate or pinnatifid, very obtuse. Flowers purple, about 6 in a whorl. *Lyre-leaved Sage*.

2. *S. Claytoni* Ell.: leaves cordate-ovate, sinuate-toothed, rugose; teeth of the upper lip of the calyx connivent. *S. verbenacea* Muhl.

Woods. Penn. to Car. Muhl. June—Oct. ♀.—Stem erect, 8—12 inches high. Flowers in whorls, violet. A doubtful species. *Clayton's Sage*.

3. *S. urticifolia* Linn.: viscous and villous; leaves ovate, rhomboid, petioled, somewhat acute, crenate; floral ones broad-ovate; whorls many-flowered, distant; calyx 3-cleft, upper segment 3-toothed.

Rocky grounds. N. J. to Car. June. ♀.—Leaves very pubescent. Flowers blue, viscous, in remote whorls. *Nettle-leaved Sage*.

5. MONARDA. Linn.—Monarda.

(In honor of Nicholas Monardez, a Spanish botanist.)

Calyx tubular, elongated, 15-nerved, nearly equal, 5-toothed. Corolla ringent, with a long cylindrical tube; upper lip linear,

nearly straight and entire, involving the filaments; lower reflexed, broader, 3-lobed, the middle lobe longer. Stamens 2, exserted from the upper lip of the corolla.

1. *M. didyma* Linn.: leaves ovate or ovate-lanceolate, acuminate, mostly rounded or somewhat cordate at base, mucronate, serrate, a little hairy, on ciliate petioles; floral ones and exterior bracts oblong-lanceolate, nearly sessile, colored; calyx incurved, smooth, naked in the throat; corolla smoothish. *M. purpurea* Lam. *M. coccinea* Mich. *M. Kalmiana* Pursh.

Moist grounds. Can. to Car. July, Aug. 2.—*Stem* 2—3 feet high, acute-angled, simple or branched at the top, somewhat pubescent. *Leaves* quite variable, sometimes tapering at base as in Pursh's figure of *M. Kalmiana*, but usually rounded or even subcordate. *Flowers* scarlet or crimson, in 2 very rarely 3 terminal whorls which resemble proliferous heads. *Osvego Tea*.

2. *M. fistulosa* Linn.: leaves ovate-lanceolate, rounded and somewhat cordate at base, acuminate, coarsely toothed, thin and nearly smooth, on slightly pubescent petioles; floral ones and outer bracts slightly colored; calyx somewhat curved, with the throat bearded; corolla pubescent.

Rocky banks. N. Y. to Car. ? July, Aug. 2.—*Stem* 2 feet high, obtuse-angled, simple, usually hollow. *Leaves* yellowish-green and somewhat membranaceous; *petioles* about half an inch long. *Flowers* pale yellow, in 1 or 2 whorled heads which are smaller than in the preceding. Abundant near Rochester, N. Y. *Pale Monarda*.

3. *M. allophylla* Mich.: leaves ovate-lanceolate, remotely toothed, smooth above, somewhat hairy beneath; floral ones and the outer bracts colored; calyx short, densely bearded at the throat. *M. longifolia* Lam. *M. oblongata* Ait. *M. clinopodia* Linn.

Rocky banks. Can. to Car. W. to Miss. July. 2.—*Stem* 3—4 feet high, obtuse-angled, much branched and hairy above. *Leaves* tapering or slightly rounded at base, with a few coarse teeth, varying in the degree of pubescence. *Flowers* pale violet or bluish, in simple heads which are about as large as in the preceding. The habit of this plant is entirely different from that of *M. fistulosa*; the stem is taller and constantly much branched, the leaves are thicker and more hairy, and the color of the flowers is uniformly different. It is also, I think, more common. *Horse Mint*. *Wild Bergamot*.

4. *M. punctata* Linn.: minutely pubescent; leaves lanceolate, petiolate, remotely serrate, narrowed at base; flowers in dense remote capitate whorls; bracts lanceolate, colored; calyx pubescent, with 5 unequal teeth; corolla smooth. *M. lutea* Mich.

Sandy fields. N. Y. to Flor. W. to Miss. Aug., Sept. 2.—*Stem* 2—3 feet high, obtuse-angled, branched, with a minute pubescence. *Flowers* in several whorled heads. *Corolla* dull yellow; the upper lip villous at the tip; the lower spotted. It contains an essential oil, which is sometimes used medicinally. See *Philad. Med. Recorder*, ii. 494. *Horse Mint*.

6. BLEPHILIA. Raf.—Blephilia.

(From the Greek *βλεφαρίς*, *eye-lash*; probably in allusion to the fringed calyx-teeth.)

Calyx ovoid-tubular, 13-nerved, 2-lipped, throat naked; upper lip of 3 awned teeth; lower 2-toothed. Corolla 2-lipped;

upper lip entire; lower 3-lobed; tube dilated. Stamens 2. Style bifid at the summit.

B. hirsuta Benth.: plant hairy; leaves on long petioles, ovate, rounded and somewhat cordate at base, hairy on both sides; lower teeth of the calyx short, without awns. *Monarda hirsuta* Pursh.

Low woods. Mass. and N. Y. to Car. W. to Miss. June, July. 2.—Stem 2—3 feet high, branched. Leaves usually with a tuft of down near the midrib beneath. Whorls 2—4, on the upper part of each branch. Corolla small, pale blue, dotted with purple. *Hairy Blephilia*.

III. SATUREINÆ. Corolla somewhat 2-lipped; the lips flat. Stamens 4, (sometimes 2,) straight, diverging; the lower pair longer. Anthers not dimidiate.

7. PYCNANTHEMUM. Mich.—Mountain Mint.

(From the Greek πυκνος, dense, and ανθεμον, a flower; in allusion to the inflorescence.)

Heads of flowers surrounded by an involucre of many bracts. Calyx ovoid or tubular, about 13-nerved, 5-toothed, more or less 2-lipped. Corolla somewhat 2-lipped; upper lip nearly entire; lower trifid, the lobes ovate and obtuse. Stamens 4, nearly equal, distant. Anthers with the cells parallel.

1. *P. incanum* Mich.: leaves oblong-ovate, petiolate, acute, remotely serrate, tomentose-pubescent beneath; the upper ones hoary on both sides; heads compound, pedunculate, cymose; bracts linear-subulate. *Clinopodium incanum* Linn.

Low fields. Can. to Car. and Alabama. July—Sept. 2.—Stem 2—3 feet high, branching above, 4-angled, pubescent. Flowers pale-red, in dense lateral and terminal cymes. Nearly the whole plant is covered with a white soft down. *Hoary Pycnanthemum*.

2. *P. clinopodioides* Torr. & Gr.: leaves oblong-lanceolate, on short petioles, acute at each end, slightly serrate, smooth above, villous-pubescent beneath; heads cymose, contracted; teeth of the calyx short, subulate.

Dry rocky hills Kingsbridge on the Island of New York. Torr. Aug., Sept. 2.—Stem 1½—2 feet high, sparingly branched. Leaves pale-green, but never hoary, (the floral ones slightly.) Heads more than half an inch in diameter. Distinguished from the preceding principally by the want of hoariness in the foliage, and the small size of the heads. (Torr.)

Basil-leaved Pycnanthemum.

3. *P. aristatum* Mich.: leaves lanceolate-ovate, subserrate, on very short petioles, nearly smooth on both sides; heads dense, sessile; bracts acuminate, subulate; corolla pubescent within. *Nepeta Virginica* Linn.

Woods. Md. to Car. W. to Tenn. July, Aug. 2.—Stem 1—2 feet high. Upper leaves hoary. Flowers very small, white, in one or two sessile whorls and a terminal head. Bracts and calyx terminated by long awns.

Spear-leaved Pycnanthemum.

4. *P. Torrei* Benth.: stem strict, pubescent; leaves varying from linear-lanceolate to oblong-linear, smoothish, acute, remotely toothed, tapering

into a petiole; cymose heads contracted, depressed-hemispheric; calyx with nearly equal lanceolate acuminate teeth. *P. Virginicum Nutt.*

Dry rocky hills. Near Kingsbridge, N. Y. and Princeton, N. J. Torr. Aug., Sept. ♀.—*Stem* 2 feet high, sparingly branched, *Leaves* pale green. *Heads* of flowers more than an inch in diameter, formed of densely aggregated cymules. Intermediate between *P. clinopodioides* and *P. lanceolatum*, but distinct. (Torr. N. Y. Fl.)
Torrey's Pycnanthemum.

5. *P. linifolium Pursh*: stem much branched, smooth; leaves linear, sessile, rigid, entire; bracts linear, acute, rigid; teeth of the calyx lanceolate-subulate. *Brachystemum linifolium Willd.*

Moist woods. N. Y. to Car. W. to Miss. July, Aug. ♀.—*Stem* 12—18 inches high, fastigiately branched. *Flowers* white with purple spots, in numerous crowded hemispheric heads which are about 4 lines in diameter.

Narrow-leaved Virginian Thyme.

6. *P. lanceolatum Pursh*: stem paniculately branched above, pubescent on the angles; leaves lanceolate and lance-linear, entire, rigid, smoothish; bracts ovate-lanceolate; teeth of the calyx obtuse. *P. Virginicum Pers. Brachystemum Virginicum Mich.*

Borders of woods. N. Y. to Car. July, Aug. ♀.—*Stem* about 2 feet high, obtusely 4-angled. *Heads* numerous, dense, fastigiately, about 4 lines in diameter. *Flowers* small, reddish-white with purple dots. According to Bentham, *P. verticillatum* of Persoon is a broad-leaved variety of this species.

Broad-leaved Virginian Thyme.

7. *P. muticum Pers.*: stem pubescent, paniculate at the summit; leaves subsessile, ovate-lanceolate, acute, subserrate, veined, obtuse or rounded at the base, smoothish, the upper ones canescent; whorls dense, mostly in terminal heads; outer bracts ovate-lanceolate, acuminate. *Brachystemum muticum Mich.*

Dry hills. N. Y. to Geor. July, Aug. ♀.—*Stem* 2 feet high, with widely spreading branches. *Flowers* reddish-white with purple spots, in dense terminal heads which are about half an inch in diameter.

Veiny-leaved Mountain Mint.

8. THYMUS. Linn.—Thyme.

(From the Greek *θυμος*, strength; in allusion to its cordial qualities.)

Flowers whorled or capitate. Calyx ovoid, 13-nerved, bilabiate; upper lip 3-toothed; lower bifid, the throat hairy. Corolla with the upper lip erect, nearly flat, emarginate; the lower longer, spreading and 3-cleft.

T. Scrypyllum Linn.: stem branched, decumbent; leaves flat, ovate, obtuse, entire, petioled, more or less ciliate at base; flowers capitate.

Fields. Penn.; naturalized. Nutt. & Darlingt. July, Aug. ♀.—*Stem* spreading, decumbent, branched. *Leaves* more or less hairy. *Flowers* purple, in terminal heads.
Wild Thyme.

9. ORIGANUM. Linn.—Marjoram.

(From the Greek *ορος*, a hill, and *γαρος*, joy; in allusion to its fragrance and beauty in its native habitat.)

Flowers collected into 4-sided dense spikes or heads. Calyx ovoid-tubular, 5-toothed. Corolla somewhat 2-lipped; upper

lip erect, nearly flat, emarginate; lower spreading, almost equally 3-cleft. Stamens 4, the lower ones longer.

O. vulgare Linn.: erect, villous; leaves broad-ovate, petiolate, obtuse, nearly entire; spikes roundish, paniced, clustered, smooth; bracts ovate, longer than the calyx.

Rocky fields. N. S. July—Sept. ♀.—Stem 8—12 inches high, hairy. Flowers pale-purple, in numerous small spikes which are crowded together so as to form a terminal head. Introduced? *Common Marjoram.*

10. COLLINSONIA. Linn.—Horse Balm.

(In honor of *Peter Collinson*, of London, a patron of botany.)

Calyx ovoid, about 10-nerved, 2-lipped; upper lip 3-toothed; lower bifid. Corolla subcampanulate, somewhat 2-lipped; the lower lobe longer than the rest, toothed or fimbriate; throat dilated. Stamens mostly 2, much exerted, diverging.

C. Canadensis Linn.: stem smoothish; leaves broad-ovate, acuminate, coarsely serrate, thin and smoothish; flowers diandrous, in a loose terminal panicle.

Woods. Can. to Car. July, Aug. ♀.—Stem 2—3 feet high, somewhat branched, 4-angled. Leaves large, cordate or obtusely cuneate at base. Flowers large, greenish-yellow. Sold by the Shakers under the name of *Stone-root.*

Common Horse-balm.

11. CUNILA. Linn.—Dittany.

(A name borrowed from the ancient Roman naturalists.)

Calyx ovoid-tubular, about 13-nerved, 5-toothed; throat densely villous. Corolla 2-lipped; upper lip flat and emarginate; lower 3-lobed. Stamens 2, erect, exerted, distant. Style bifid at the summit.

C. Mariana Linn.: herbaceous; leaves sessile, ovate, somewhat cordate at base, serrate; cymes pedunculate, loosely corymbose.

Dry hills and rocks. Can. to Car. W. to Arkansas. July—Aug. ♀.—Stem 8—12 inches high, 4-angled, much branched, purple. Leaves sessile or on very short petioles, smoothish. Flowers pale red. *Common Dittany.*

IV. MELISSINÆ. Calyx mostly 13-nerved, 2-lipped. Corolla 2-lipped; the divisions flattish, or the upper lip rarely galeate. Stamens 4, or sometimes 2, ascending.

12. HEDEOMA. Pers.—Pennyroyal.

(From the Greek *ἡδέα*, sweet, and *οσμή*, odor; in allusion to its fragrance.)

Calyx ovoid-tubular, gibbous on the under side at the base, 2-lipped; upper lip 3-toothed or 3-cleft; lower 2-cleft. Corolla 2-lipped; upper lip erect, flat; lower spreading, 3-cleft. Stamens 2 sterile, rudimentary or wanting; 2 fertile and ascending.

H. pulegioides Pers.: stem erect, branched, pubescent; leaves ovate, serrate, petiolate, narrowed at base; whorls axillary, about 6-flowered; corolla about as long as the calyx. *Cunila pulegioides* Linn.

Dry hills and woods. Can. to Car. July, Aug. ①.—Stem 6—12 inches high, 4-sided, branched above. Flowers small, pale-blue, about 3 in each opposite axil. A popular and really valuable aromatic, stimulant and diaphoretic.

Pennyroyal.

13. MICROMERIA. Benth.—Micromeria.

(From the Greek μικρος, *small*, and μερις, *a part*.)

Calyx tubular, 13—15-nerved, with 5 nearly equal teeth, or somewhat 2-lipped; the throat often villous. Corolla 2-lipped; upper lip flattish, entire or emarginate; the lower spreading, with the lobes nearly equal, or the middle one broader. Stamens 4, didynamous, the lower pair longer and ascending.

M. glabella var. *angustifolia* Torr.: smooth; stem herbaceous, erect, with prostrate suckers at the base; radical leaves ovate, petiolate; cauline oblong-linear, obtuse; all entire; flowers axillary, solitary, or 2—5 in cymes, on long pedicels. *M. glabella* Benth. (excl. syn. Mich.) *Cunila glabella* Beck Bot. 1st. Ed.

Limestone rocks, near Niagara Falls. W. to Miss. Aug. ②.—Stems 6—10 inches high, branched from below. Corolla violet, much longer than the calyx. Found by the late Dr. D. Houghton at the Falls of St. Anthony. According to Dr. Torrey, the true *Cunila glabella* of Michaux, which occurs on rocks in Tennessee, differs from the Niagara plant in being much larger, the leaves all ovate or obovate-oblong and toothed.

Niagara Thyme.

14. MELISSA. Linn.—Balm.

(From the Greek μελισσα, *a bee*; because the flowers are sought by that insect.)

Calyx tubular, 13-nerved, often striated, 2-lipped; upper lip mostly spreading, 3-toothed; lower bifid. Corolla 2-lipped; upper lip erect, flattish; lower spreading, 3-lobed, the middle lobe mostly broader. Stamens 4, ascending, mostly approximated in pairs at the summit.

1. *M. Clinopodium* Benth.: herbaceous, erect, villous; leaves petiolate obtuse, subcrenate, rounded at base; whorls many-flowered, depressed-globose; bracts subulate, as long as the calyx. *Clinopodium vulgare* Linn.

Borders of woods. Can. to Virg. W. to Miss. July, Aug. ②.—Stem 12—18 inches high, simple or sparingly branched. Flowers pale purple or rose-colored, in 2—3 roundish depressed heads which are both axillary and terminal. Smell aromatic. Introduced from Europe. *Wild Basil.*

2. *M. officinalis* Linn.: herbaceous, erect; leaves oblong-ovate, rather acute, coarsely crenate-serrate, rugose, sometimes obtuse or cordate at base; whorls dimidiate or secund, loose, axillary; bracts few, lance-ovate, petiolate.

Road sides, &c. N. S. July, Aug. ②.—Stem 1—2 feet high, branched, more or less pubescent. Flowers in small axillary peduncled cymes, white or

yellowish. Introduced and naturalized in some places. It is cultivated as a medicinal herb; the infusion being considered as a useful drink in fevers.

Common Balm.

V. SCUTELLARINÆÆ. *Upper lip of the calyx truncate, entire or somewhat 3-toothed. Corolla 2-lipped; the upper lip galeate. Stamens 4, ascending; the lower pair longer.*

15. PRUNELLA. *Linn.—Self Heal.*

(From the German *Brunelle*, again derived from *Braeune*, the *quinsy*; because the plant was supposed to cure that disease.)

Calyx tubular-campanulate, 2-lipped; upper lip flat, dilated, truncate, with 3 short teeth; lower 2-cleft. Corolla 2-lipped; upper lip erect, vaulted, entire; lower depending, 3-lobed. Stamens 4, ascending. Filaments 2-toothed at the apex.

P. vulgaris Linn.: leaves petiolate, oblong-ovate, toothed at base; lips of the calyx unequal; the upper one truncate, 3-awned. *P. Pennsylvanica Willd.*

Meadows. Can. to Car. W. to Miss. June—Aug. ♀.—*Stem 8—12 inches high, erect or ascending, somewhat branched, hairy. Flowers large, purple, densely whorled, so as to form an imbricated oblong spike. Introduced?*

Common Self-heal.

16. SCUTELLARIA. *Linn.—Skullcap.*

(From the Latin *scutella*, a *little dish* or *cup*; in allusion to the appearance of the calyx with its appendage.)

Calyx campanulate, 2-lipped; lips entire; upper one with a galeate appendage on the back, deciduous. Corolla 2-lipped; the tube elongated; upper lip vaulted; lower dilated, convex. Stamens 4, ascending under the upper lip of the corolla.

1. *S. canescens Nutt.:* stem tall, branched, pubescent; leaves ovate or ovate-lanceolate, acute, crenate, petiolate, pubescent on both sides, white beneath; lower somewhat cordate; flowers in loose paniculate racemes; calyx white-tomentose. *S. pubescens Muhl.*

Woods. Can. to Virg. W. to Miss. July. ♀.—*Stem 2—3 feet high, erect, branched, hoary-pubescent. Leaves 2—3 inches long. Flowers 8—9 lines long, deep blue, in lateral and terminal racemes. Canescent Skullcap.*

2. *S. pilosa Mich.:* stem erect, mostly simple, pubescent; leaves remote, rhombic-ovate, crenate-serrate, petiolate; upper cuneate or narrowed at base; lower rounded or cordate; raceme terminal, loose, mostly branched; bracts elliptic-ovate.

Open woods. N. Y. to Car. June, July. ♀.—*Stem 12—18 inches high, often purplish. Lower leaves sometimes cordate, on petioles an inch or more long. Flowers large, in a somewhat paniculate terminal raceme, white, tinged with violet at the summit. A variable species. Hairy Skullcap.*

3. *S. integrifolia.:* *Linn* stem nearly simple, pubescent; leaves oblong-lanceolate or linear, obtuse, smoothish, on short petioles, entire or very ob-

scurely toothed; racemes terminal, subpaniculate, loose, leafy; bracts lanceolate. *S. hyssopifolia* Linn. *S. Caroliniana* Pursh.

Moist grounds. N. Y. to Geor. W. to Miss. June, July. 2.—*Stem* 1—2 feet high, sparingly branched above, grayish-green. *Flowers* very large, in loose terminal and subterminal racemes, blue at the summit, the tube nearly white. A very showy species. *Entire-leaved Skullcap.*

4. *S. galericulata* Linn.: stem simple or divaricately branched; leaves ovate-lanceolate, on very short petioles, acute, roundish and cordate at base, crenate; flowers axillary, solitary, on short pedicels.

Wet meadows. Can. Mass. N. Y. W. to Oregon. Aug. 2.—*Stem* 12—18 inches high, smooth or pubescent. *Flowers* half an inch long, blue, pubescent. *Common Skullcap.*

5. *S. parvula* Mich.: stem decumbent or oblique, slender, branching from the base, minutely pubescent; leaves ovate or lance-ovate, remotely serrate or entire, sessile, subcordate at base, prominently veined; flowers small, axillary. *S. ambigua* Nutt.

Rocky grounds. Can. to Virg. W. to Miss. June, July. 2.—*Root (rhizoma)* consisting of a succession of tubers. *Stem* 4—8 inches high, simple or branched from near the base and spreading, mostly purplish. *Leaves* 4—8 lines long, rather closely sessile, distinctly veined, purplish beneath. *Flowers* from 3—4 lines long, blue, axillary, hairy. The specimens found by Dr. A. F. Holmes, in Canada, and by Dr. D. Houghton, on the Upper Mississippi, agree exactly with those from New Brunswick, N. J. *Small Skullcap.*

6. *S. nervosa* Pursh: stem erect, mostly simple, smoothish; lower leaves roundish-cordate, petiolate; middle ones broad-ovate, crenate-dentate, sessile; upper ovate-lanceolate, entire; flowers axillary, solitary, opposite. *S. gracilis* Nutt. *S. parviflora* Muhl?

Shady rocks. N. Y. and Penn. W. to Miss. and Louis. May, June. 2.—*Root* fibrous. *Stem* 9—15 inches high, sometimes curved and decumbent at base. *Leaves* strongly nerved. *Flowers* small, pale-blue. *Nerved Skullcap.*

7. *S. lateriflora* Linn.: smoothish; stem erect, much branched; leaves on long petioles, ovate-lanceolate, acuminate, coarsely serrate, rounded or slightly cordate at base; racemes axillary, leafy.

Wet meadows. Can. to Car. W. to Oregon. July, Aug. 2.—*Stem* 1—2 feet high, much branched, with the angles roughish. *Flowers* small, blue, in numerous leafy racemes. Some years since this plant was in great repute as a cure for hydrophobia; but like many other specifics, it has had its day. *Mad-dog Skullcap.*

VI. NEPETEÆ. *Calyx* oblique or somewhat 2-lipped. *Corolla* 2-lipped; the upper lip galeate. *Stamens* 4; the upper pair longer.

17. LOPHANTHUS. Benth.—Giant Hyssop.

(From the Greek *λοφος*, a crest, and *ανθος*, a flower; in allusion to the flowers.)

Calyx tubular, 15-nerved, oblique, 5-toothed, the upper teeth somewhat longer. *Corolla* 2-lipped; upper lip emarginately bifid; lower 3-lobed; the middle lobe broader, crenate. *Stamens* divaricate, upper pair longer.

1. *L. nepetoides* Benth.: stem smooth, with the angles acute or winged; leaves opposite, ovate and lance-ovate, serrate-crenate, green on both sides,

smoothish ; teeth of the calyx ovate, somewhat obtuse. *Hyssopus nepetoides* Linn.

Woods. Can. to Virg. W. to Miss. July, Aug. ♀.—Stem 3—6 feet high, branched, yellowish-green. Leaves pale-green, slightly pubescent beneath. Flowers small, greenish-yellow, in terminal cylindric spikes which are interrupted at base. Yellow Giant Hyssop.

2. *L. scrophulariæfolius* Benth.: stem pubescent, with the angles obtuse ; leaves ovate, acute, serrate-crenate, green on both sides, smooth above, pubescent beneath ; teeth of the calyx lanceolate, acute. *Hyssopus scrophulariæfolius* Linn.

Woods. N. Y. to Virg. W. to Ill. July, Aug. ♀.—Stem 3—5 feet high, mostly of a purple color, branched. Leaves often cordate at base, on pubescent petioles. Flowers pale-purple, in terminal cylindric spikes which are interrupted at base. Purple Giant Hyssop.

18. NEPETA. Linn.—Cat Mint.

(Named, some say, from *Nepi*, a town in Italy, others, from *Nepa*, a scorpion, for whose bite this plant was considered a cure. Hook. Brit. Fl.)

Calyx tubular, 13—15-nerved, obliquely 5-toothed. Corolla 2-lipped ; upper lip erect, emarginate or bifid ; lower 3-lobed, middle lobe largest ; throat dilated ; tube slender below. Stamens 4, ascending.

1. *N. Cataria* Linn.: hoary-pubescent ; stem erect, tall ; leaves oblong-cordate, petiolate, acute, coarsely crenate, rugose ; whorls many-flowered, upper ones crowded in a spike ; calyx half as long as the corolla.

Old fields and cultivated grounds. N. S. June—Aug. ♀.—Stems 2—4 feet high, often several from the same root, downy and whitish. Leaves softly pubescent and green above, canescent beneath. Flowers yellowish-white, tinged and spotted with red. Introduced from Europe.

Common Cat-mint. Catnep.

2. *N. Glechoma* Benth.: stem procumbent, rooting at the base ; leaves petiolate, cordate-reniform, rounded, crenate, somewhat hairy ; whorls few-flowered, axillary ; corolla three times as long as the calyx. *Glechoma hederacea* Linn.

Road sides, &c. N. S. May, June. ♀.—Stems about a foot long, slender, with ascending branches. Flowers large, blue, in distant axillary whorls. Introduced from Europe. Ground Ivy.

19. DRACOCEPHALUM. Linn.—Dragon's Head.

(From the Greek *δρακον* a dragon, and *κεφαλη*, a head ; in allusion to the form of the flowers.)

Calyx tubular, 13—15-nerved, 5-toothed ; upper tooth broader and often larger, the 3 upper sometimes approximated. Corolla 3-lipped ; upper lip erect and emarginate ; lower spreading, 3-lobed. Stamens 4, ascending ; the lower pair shorter.

D. parviflorum Nutt: stem erect, branched ; leaves ovate-lanceolate, coarsely or incisely crenate or serrate, petiolate, green on both sides ; whorls in a terminal capitate spike ; upper tooth of the calyx broad-ovate ; corolla scarcely longer than the calyx.

Barren fields and woods. Arct. Amer. to N. Y. W. to Miss. May—Aug. ②.—Nearly smooth. *Stem* 8—15 inches high, obtusely 4-angled. *Flowers* pale-blue, in ovoid or globose spikes which are about an inch in diameter.

Small-flowered Dragon's Head.

VII. STACHYDEÆ. *Calyx* 5—10-nerved or irregularly veined. *Corolla* 2-lipped. *Stamens* 4, ascending; the lower pair longer. *Achenia* smoothish when dry.

20. PHYSOSTEGIA. *Benth.*—Physostegia.

(From the Greek *φυσα*, a bladder, and *στέγη*, a covering; in allusion to its inflated calyx.)

Calyx 5-toothed or truncate, at length inflated-campanulate. *Corolla* 2-lipped; tube exerted, destitute of a ring within; upper lip nearly erect, somewhat concave; lower with 3 rounded lobes, the middle one larger and emarginate. *Stamens* 4, ascending under the upper lip; the lower pair rather longer.

P. Virginiana Benth.: calyx acutely and almost equally 5-toothed. *Dracocephalum Virginianum Linn.* and *D. denticulatum Ait.* *D. variegatum Vent.*

Low grounds. Can. to Flor. W. to Miss. June—Aug. ②.—*Stem* about 2 feet high, smooth except at the summit. *Leaves* sessile, opposite, varying from narrow-lanceolate to ovate-lanceolate, acutely serrate or denticulate, coriaceous. *Flowers* large, pale-purple, sometimes variegated, nearly sessile and usually opposite, in long spikes, crowded or somewhat distant. I follow Bentham in uniting the two or three species heretofore considered distinct, but not without considerable hesitation. I cannot help thinking, with Dr. Darlington, that *D. denticulatum* of previous authors will eventually prove to be, if not a distinct species, at least a constant variety.

Dragon's Head.

21. LAMIUM. *Linn.*—Dead Nettle.

(From the Greek *λαμος*, the throat; on account of the shape of the flower.)

Calyx tubular-campanulate, about 5-nerved, with 5 nearly equal subulate teeth. *Corolla* 2-lipped; upper lip oblong or ovate, galeate; throat dilated; lower lip with the middle or lower lobe broad, emarginate, contracted at base. *Stamens* 4, the lower pair longer.

L. amplexicaule Linn.: leaves rounded, crenately incised; lower ones petiolate; floral sessile, clasping; tube of the corolla naked within.

Fields and road-sides. N. S. May—Nov. ①.—*Stem* 6—10 inches high, branched from the base. *Flowers* with the tube slender, purple, in dense whorls. Introduced from Europe.

Common Dead Nettle. Hen-bit.

22. LEONURUS. *Linn.*—Motherwort.

(From the Greek *λεων*, a lion, and *ουρα*, a tail; on account of a fancied resemblance in the plant.)

Calyx turbinate, 5-nerved, with 5 subulate equal teeth. *Corolla* 2-lipped; upper lip very hairy above, entire; lower

spreading, 3-cleft, the middle lobe obcordate. Stamens 4, ascending; the lower pair longer.

L. Cardiaca Linn.: lower stem leaves palmately divided; upper ovate, lobed; floral cuneate-oblong, mostly trifid; tube of the corolla with a villous ring inside; upper lip flattish, hirsutely villose.

Waste grounds. Can. to Car. July, Aug. ♀.—Stem 2—3 feet high, branched, villous. Leaves pubescent, pale beneath. Flowers in crowded whorls, white with a reddish tinge. Introduced from Europe. *Common Motherwort.*

23. GALEOPSIS. Linn.—Hemp Nettle.

(From the Greek γαλενη, a weasel, and οψις, appearance; the lips of the flower resembling the snout of that animal.)

Calyx tubular-campanulate, about 5-nerved, 5-toothed; the teeth armed with spine-like tips, nearly equal. Corolla 2-lipped; upper lip entire, arched; lower spreading, 3-lobed, the middle lobe bifid or obcordate; throat dilated. Stamens 4, ascending; the lower pair longer.

G. Tetrahit Linn.: stem hispid, swollen below the joints; leaves petiolate, ovate serrate, and with the calyx smooth or hairy.

Old fields, &c. N. S. July. ♀.—Stem 1—2 feet high, retrorsely hispid, branched. Flowers numerous, pale-purple, with darker spots, in whorls, which are usually approximated towards the summit of the stem and branches. According to Bentham this is a very variable species, and should probably include that which has been described by American botanists under the name of *G. Ladanum*. Introduced from Europe. *Common Hemp Nettle.*

24. STACHYS. Linn.—Hedge Nettle.

(From the Greek, σταχυς, a spike; in allusion to its mode of flowering.)

Calyx tubular-campanulate, 5—10-nerved, 5-toothed; the teeth equal or the upper ones longer. Corolla 2-lipped; upper spreading and somewhat vaulted; lower mostly longer, spreading, 3-lobed; the middle lobe largest. Stamens 4, ascending; the lower ones longer.

1. *S. hyssopifolia* Mich.: herbaceous, smooth; stem slender, ascending; leaves oblong or linear-lanceolate, sessile, remotely toothed; whorls about 4-flowered; calyx smooth; the teeth lanceolate, acute. *S. tenuifolia* Willd.

Meadows. N. Y. to Car. W. to Miss. July. ♀.—Stem 6—12 inches high. Leaves often linear, very finely denticulate. Flowers sessile, in whorls near the summit of the stem, purple. *Smooth Hedge Nettle.*

2. *S. aspera* Mich.: stem erect, angles hairy backwards; leaves subpetiolate, lanceolate, acutely serrate, smoothish; whorls about 6-flowered; calyx-teeth divaricate, spiny. *S. arvensis* Walt. *S. hispida* Pursh.

Fields. Can to Car. W. to Miss. July. ♀.—Stem about 2 feet high, sparingly branched. Flowers in whorls, forming a terminal leafy spike, purple. *Rough Hedge Nettle.*

3. *S. palustris* Linn.: herbaceous, erect; stem hairy; leaves subsessile,

cordate-ovate or ovate-lanceolate, serrate-crenate, rugose, hispid, the lower smooth; whorls 6—10-flowered, distinct; teeth of the calyx lanceolate, acute and somewhat spiny. *S. sylvatica* Nutt.

Moist woods. Can. to Car. W. to Oregon. July, Aug. 2.—Stem 2—3 feet-high, branched, mostly hispid on the angles. Flowers purplish; the whorls forming a long terminal spike. Marsh Hedge Nettle.

25. MARRUBIUM. *Linn.*—Horehound.

(Of doubtful origin, some say from a town so called in Italy.)

Calyx tubular, 5—10-nerved, with 5—10 spreading teeth; the throat hairy. Corolla 2-lipped; upper lip flattish or concave; lower 3-lobed, the middle lobe broader and usually emarginate. Stamens 4, included; the lower pair longer.

M. vulgare *Linn.*: stem erect, white and woolly; leaves roundish-ovate, toothed, rugose, very woolly beneath; whorls villous, many-flowered; calyx with 10 setaceous hooked teeth.

Road sides. Can. to Car. W. to Miss. July, Aug. 2.—Stem 12—18 inches high, branched from the base, covered with a white wool. Flowers small, white, in crowded whorls. Smell aromatic; flavor bitter. Medicinal. Introduced from Europe. White Horehound.

26. BALLOTA. *Linn.*—Fetid Horehound.

(From the Greek βαλλω, to reject; on account of its disagreeable smell.)

Calyx funnel-form, 10-nerved, with 5—10 broad mucronate teeth. Corolla 2-lipped; upper lip erect, somewhat concave, emarginate; lower trifid, the middle lobe largest and emarginate. Stamens 4, ascending; the lower pair longer.

B. nigra *Linn.*: hairy or smoothish; leaves ovate, truncate at base, green on both sides, more or less hairy; teeth of the calyx 5, dilated at the base, subulate-mucronate at the summit.

At Hull, Mass. Big. July. 2.—Stem 2—3 feet high. Flowers purple, rarely white, in whorls. Whole plant fetid. Introduced from Europe. Black Horehound.

VIII. AJUGOIDEÆ. Corolla with the upper lip very short, sometimes bifid, with the segments mostly depending. Stamens 2 or 4, ascending, exerted. Achenia more or less reticulate-rugose.

27. TRICHOSTEMA. *Linn.*—Trichostema.

(From the Greek θριξ, τριχος, a hair, and σθημα, a stamen; in allusion to its hair-like stamens.)

Calyx campanulate, oblique, resupinate, unequally 5-cleft; the three upper teeth (apparently lower) elongated; the two others short. Corolla with the tube slender; upper lip falcate. Stamens 4, very long and curved.

1. *T. dichotoma* Linn.: stem pubescent; leaves lance-oblong or rhomboid-lanceolate, petiolate, entire.

Dry hills. N. Y. to Flor. W. to Miss. June—Aug. ①.—Stem 6—12 inches high, much branched, obtusely 4-angled. Flowers blue, in dichotomous panicles. Stamens very long, slender, and curved.

Forked Trichostema. Blue Curls.

2. *T. linearis* Walt.: stem viscidly pubescent; leaves linear, smooth, sessile, acute at each end; teeth of the calyx awned. *T. dichotoma* var. *linearis* Pursh.

Sandy fields. N. J. to Car. June—Sept. ①.—Resembles the former in habit, but is smaller. It is considered distinct by Nuttall and Elliott.

Narrow-leaved Trichostema.

28. TEUCRIUM. Linn.—Germander.

(From *Teucer*, a prince of Troy, who is said to have first used this plant medicinally.)

Calyx tubular or campanulate, almost equally 5-toothed. Corolla with the tube short; 4 upper lobes of the limb nearly equal; the lowest lobe longest, oblong or rounded. Stamens exerted from a cleft between the upper lobes of the corolla.

T. Canadense Linn.: hoary-pubescent; leaves ovate-lanceolate, serrate, petiolate, obtuse at base, hoary beneath; whorls crowded in a single terminal spike; calyx campanulate, with the 3 upper teeth broader. *T. Virginicum* Linn.

Low grounds. Can. to Car. W. to Miss. July, Aug. ②.—Stem 2—3 feet high, square, usually simple. Leaves varying from ovate to oblong-lanceolate, on short petioles. Flowers purple, in a terminal whorled spike.

Canadian Germander. Wood Sage.

ORDER XCIV. VERBENACEÆ.—VERVAINS.

Calyx tubular, persistent. Corolla tubular, deciduous, generally with an irregular limb. Stamens usually 4, didynamous, seldom equal, sometimes only 2. Ovary 2—4-celled; style 1; stigma bifid or undivided. Fruit nucamentaceous, sometimes berried, composed of 2 or 4 nucules in a state of adhesion, (rarely with 1 nucule). Seeds with the albumen wanting or fleshy.—Trees, shrubs or herbaceous plants, with the leaves opposite, and the flowers usually in corymbs.

1. VERBENA. Linn.—Vervain.

(From the Celtic *ferfain*, derived from *fer*, to drive away, and *faen*, stone; from its having been supposed to cure the disease so called. *Hook. Brit. Fl.*)

Calyx tubular, with 5 teeth, one of them generally shorter than the rest. Corolla tubular or somewhat funnel-form; limb

unequal, 5-cleft. Stamens 4, included, (sometimes only 2.)
Fruit composed of 2—4 nucules.

1. *V. hastata* Linn.: erect, tall; leaves lanceolate, acuminate, sharply or incisely serrate, lower ones lobed or subhastate; spikes filiform, erect, corymbose-paniculate, somewhat imbricate.

Low grounds. Can. to Geor. W. to Miss. July, Aug. ♀.—Stem 3—5 feet high, 4-sided, somewhat rough and hairy. Leaves large, rough.—Flowers small, purple, in numerous spikes forming a large terminal panicle.

Halbert-leaved Vervain.

2. *V. spuria* Linn.: stem decumbent, branched, divaricate; leaves lacinate, much divided; spikes filiform, loose; bracts longer than the calyx.

Sandy fields. N. Y. to Car. W. to Miss. Aug.—Oct. ①.—Stem 1—2 feet long, at length much branched. Flowers small, blue, in paniculate spikes, at length scattered.

Decumbent Vervain.

3. *V. urticæfolia* Linn.: erect, somewhat pubescent; leaves ovate or lance-ovate, acute, serrate, petiolate; spikes filiform, axillary and terminal; flowers distinct.

Road sides. N. Y. to Car. W. to Miss. July, Aug. ♀.—Stem 2—3 feet high, somewhat hairy. Flowers small, white tinged with purple, in filiform spikes forming panicles.

Common Vervain.

4. *V. angustifolia* Mich.: erect, mostly simple; leaves linear-lanceolate, attenuate at the base, remotely toothed, with elevated veins; spikes filiform, solitary, axillary and terminal. *V. rugosa* Willd.

Sandy fields. N. Y. and Penn. W. to Miss. June—Aug. ♀.—Stem a foot high, sometimes a little branched, hairy. Flowers blue, in terminal spikes.

Narrow-leaved Vervain.

2 ZAPANIA. Lam.—Zapania.

(In honor of Paul Anthony Zappa, an Italian botanist.)

Calyx compressed, 2-parted. Corolla tubular, with the limb unequally 5-lobed. Stamens 4, didynamous. Stigma peltately capitate, oblique. Nucules 2, at first covered by an evanescent pericarp.

Z. nodiflora Lam.: stem procumbent and rooting; leaves ovate-wedge-form and ovate-lanceolate, subsessile, serrate above; spikes solitary, on long filiform peduncles, forming conical heads. *Z. lanceolata* Pers. *Verbena nodiflora* Linn. *Lippia nodiflora* Mich.

Low grounds. Penn. to Car. W. to Miss. July. ♀.—Stem 6—8 inches long, branching. Flowers bluish-white, in heads which are on peduncles 2—4 inches long.

Node-flowered Zapania.

3. PHRYMA. Linn.—Lopseed.

(Etymology unknown.)

Calyx cylindric, 2-lipped; upper lip longer, trifold; lower 2-toothed. Corolla 2-lipped; upper lip emarginate; the lower much larger, flat, 3-lobed. Stamens 4, included. Pericarp thin and evanescent, with a single seed.

P. leptostachya Linn. : leaves ovate, acute, coarsely and unequally toothed, petioled; spikes terminal, slender.

Shady woods. Can. to Car. July. ♀.—*Stem* 2—3 feet high, with a few spreading branches above. *Leaves* large. *Spikes* on long slender peduncles. *Flowers* small, mostly opposite, purplish. *Calyx* reflected downwards when in fruit. Lopseed.

ORDER XCV. ACANTHACEÆ.—ACANTHADS.

Calyx 4 or 5-divided, usually 5-leaved, distinct or variously combined, persistent. *Corolla* mostly irregular, with the limb ringent or bilabiate, or occasionally 1-lipped, sometimes nearly equal, deciduous. *Stamens* mostly 2, both bearing anthers; sometimes 4, didynamous, the shorter ones being sometimes sterile. *Ovary* seated in the disk, 2-celled; *style* 1; *stigma* 2-lobed or entire. *Capsule* 2-celled, bursting elastically with 2 valves. *Seeds* roundish, hanging by processes of the placenta, without albumen.—Herbaceous plants or shrubs. *Leaves* opposite, without stipules.

1. JUSTICIA. Linn.—Justicia.

(In honor of *James Justice*, a Scotch horticulturalist.)

Calyx 5-parted, often with 2 bracts at the base. *Corolla* irregular, bilabiate; upper lip emarginate; lower 3-cleft. *Stamens* 2, each with a single or double anther. *Stigma* 1. *Capsule* attenuated, 2-celled, 2-valved; dissepiment growing from the centre of each valve.

J. pedunculosa Mich. : leaves linear-lanceolate; spikes axillary; peduncles elongated, mostly alternate; flowers crowded. *J. Americana* Vahl. *Dianthera Americana* Linn.

In water. Can. to Car. W. to Miss. July, Aug. ♀.—*Root* creeping. *Stem* 2 feet high, simple or sparingly branched above. *Leaves* nearly 6 inches long, narrow-lanceolate. *Flowers* on axillary peduncles which are nearly as long as the leaves, pale-purple. Water Willow.

2. RUELLIA. Linn.—Ruellia.

(In honor of *John Ruelle*, a French physician and botanist.)

Calyx 5-parted, often bi-bracteate. *Corolla* subcampanulate, border 5-lobed. *Stamens* approximating by pairs. *Capsule* attenuated at either extremity, bursting with elastic teeth. *Seeds* few.

R. strepens Linn. : erect, hairy; leaves on petioles, opposite, lanceolate-ovate, entire; peduncles 1—3-flowered; segments of the calyx linear-lanceolate, very acute, hispid, shorter than the tube of the corolla.

Shady woods. Penn. to Flor. W. to Miss. July. ♀.—*Stem* 8—12 inches high. *Flowers* axillary, blue. Whorled Ruellia.

ORDER XCVI. LENTIBULARIACEÆ.—BUTTERWORTS.

Calyx divided, persistent. Corolla irregular, bilabiate, with a spur. Stamens 2, included within the corolla and inserted into its base; anthers 1-celled. Ovary 1-celled; style 1; stigma bilabiate. Capsule 1-celled, many-seeded. Seeds minute, without albumen.—Herbaceous plants, growing in water or marshes. Leaves radical, undivided; or compound, resembling roots and bearing little vesicles.

1. PINGUIGULA. *Linn.*—Butterwort.

(From the Latin *pinguis*, fat; the leaves being thick and greasy to the touch.)

Calyx 4—5-cleft, unequal. Corolla ringent, spurred at the base beneath. Stamens 2, included; the filaments ascending. Anthers transversely 2-valved.

P. vulgaris *Linn.*: spur cylindric, acute, as long as the veinless petal; upper lip 2-lobed; lower one in three unequal obtuse segments. *P. acutifolia* *Mich.*?

Wet rocks. Rochester, N. Y. Mich. and Wisc. Arct. Amer. April. ♀.—Leaves all radical, spatulate-ovate, fleshy. Scape 4—6 inches high. Flowers solitary, nodding; tube of the corolla villous, purple. Common Butterwort.

2. UTRICULARIA. *Linn.*—Bladderwort.

(From the Latin *utriculus*, a little bladder; in allusion to the inflated appendages attached to the roots.)

Calyx 2-parted; lips undivided, nearly equal. Corolla personate, with the lower lip spurred at the base. Stamens 2, with the filaments incurved, bearing the anthers within the apex. Stigma 2-lipped. Capsule 1-celled.

1. *U. ceratophylla* *Mich.*: floating; upper leaves whorled, pinnatifid at the extremities and furnished with air bladders; scape 5—7-flowered; lower lip of the corolla deeply 3-lobed; spur short, obtuse, deeply emarginate. *U. inflata* *Wall.*

Ponds. N. Y. to Mexico; rare. July, Aug. ♀.—Root very long, finely divided and furnished with numerous compressed air vessels. Stem or scape about 8 inches high. Flowers large, yellow, subcorymbed.

Spongy-leaved Bladderwort.

2. *U. vulgaris* *Linn.*: floating; stems submerged, dichotomous; leaves many-parted, furnished with air bladders; scape 5—9-flowered, bracteate; upper lip of the corolla entire, broad-ovate; spur conical, incurved. *U. macrorhiza* *Le Conte.*

Pools and ponds of deep water. Can. to Car. W. to the Platte River. July, Aug. ♀.—Root much branched. Scape 8—10 inches high. Flowers large, racemed, yellow; spur entire and somewhat attenuated at the apex.

Common Bladderwort.

3. *U. minor* Linn.: floating; leaves dichotomously divided, the segments linear and setaceous, furnished with air bladders; scape about 2-flowered; upper lip emarginate, as long as the palate; spur very short, obtuse, keeled, deflexed. *U. gibba* Torr. Fl. not of Linn.

Ponds and swamps. N. Y. and Mass. June. ♀.—Leaves furnished with air bladders. Scape 2—4 inches high. Flowers small, dull-yellow.

Lesser Bladderwort.

4. *U. fornicata* Le Conte: floating; scape naked, 1—2-flowered; upper lip 3-lobed, the middle lobe arched over the palate; spur incurved, conoidal, obtuse, very entire, appressed to the lower lip of the corolla. *U. minor* Pursh. *U. gibba* Ell. not of Linn.

Swamps and ditches. N. Y. to Geor. Aug. ♀.—Root furnished with air bladders. Scape naked. Flowers few, small, yellow. Incurved Bladderwort.

5. *U. setacea* Mich.: scape filiform, rooting, with 2 or more flowers; upper lip of the corolla ovate; the lower deeply 3-lobed; spur subulate, as long as the lower lip of the corolla. *U. subulata* Pursh. *U. pumila* Walt.

Swamps. Can. to Flor. and Louis. June. ♀.—Scape very slender, 4—6 inches high, furnished with scales. Flowers many, small, yellow. Upper lip of the corolla half the size of the lower.

Setaceous Bladderwort.

6. *U. intermedia* Heyne: floating; leaves distichous, dichotomously many-parted, without air bladders; segments setaceous, spinulose-denticulate; scape 2—3-flowered, upper lip entire, twice as long as the palate; spur conical, acute; capsule erect. (D. C.)

Swamps. Mass. Green. Jefferson county, N. Y. Gray. Arct. Amer. Hook. June, July. ♀.—Leaves oblong, cut into numerous segments like those of yarrow. The air bladders grow in separate root-like branches. Scape 4—8 inches high. Flowers about half as large as in *U. vulgaris*, yellow.

Intermediate Bladderwort.

7. *U. resupinata* Greene: radical leaves resembling roots, somewhat whorled, capillary, furnished with air bladders; scape 1-flowered, erect, slender; lip cylindrical, obtuse, 4 times as long as the corolla. (D. C.)

Plymouth, Mass. Greene. ①?—Plant 3—6 inches long, slender. Flower solitary, yellow? The only description which I have seen of this species is that given in *De Candolle, Prod.* viii. 11, from a specimen furnished by Mr. Tuckermann.

Resupinate Bladderwort.

8. *U. cornuta* Mich.: scape rooting, erect, rigid; flowers 2—3, sessile; upper lip of the corolla obovate, entire; lower lip very broad, somewhat 3-lobed; spur very acute, projecting and dependent.

Wet rocks. Can. to Car. W. to Lake Superior. July, Aug. ♀.—Scape 10 inches high, with minute appressed scales. Flowers yellow, approximate, nearly sessile, as large as those of *U. vulgaris*.

Sharp-horned Bladderwort.

9. *U. striata* Le Conte: floating; scape 4—7-flowered; upper lip of the corolla ovate-roundish, subemarginate, margin wavy; lower lip 3-lobed, reflected at the sides; spur straight, obtuse, shorter than the lower lip. *U. fibrosa* Ell. not of Walt.

Swamps and shallow waters. Mass. to Flor. June, July. ♀.—Root sparingly furnished with air vessels. Scape nearly a foot high. Corolla large, yellow, striated with red; spur much shorter than the lower lip.

Striated Bladderwort.

10. *U. personata* Le Conte: scape rooting, many-flowered; upper lip of

the corolla emarginate, reclinate; lower small, entire; palate very large; spur linear-subulate, somewhat acute, as long as the corolla.

Bogs. N. Eng. to Flor. *Le Conte*. ①.—*Scape* 12—18 inches high, 4—10-flowered, furnished with scales. *Flowers* yellow, rather large. *Spur* more slender and acute than in *U. cornuta*. *Personate Bladderwort*.

11. *U. purpurea* Wall.: floating; leaves verticillately branched; the capillary segments furnished with air bladders; scape 1—3-flowered; upper lip of the corolla truncate; the lower 3-lobed; lateral lobes cucullate; spur conical, appressed to the corolla and half its length. *U. saccata* Ell.

Ponds. Mass. to Flor. N. W. Territory. *Houghton*. Aug. ①.—*Stems* 2—3 feet long. *Scapes* 2—4 inches long, axillary, solitary and in pairs. *Corolla* purple. *Purple Bladderwort*.

ORDER XCVII. PRIMULACEÆ.—PRIMWORTS.

Calyx 4—5-cleft, persistent. Corolla regular, the limb 4—5-cleft. Stamens inserted upon the corolla, equal in number, and opposite to its segments. Ovary 1-celled; style 1; stigma capitate. Capsule with a central placenta. Seeds numerous, peltate; embryo lying across the hilum in fleshy albumen.—Herbaceous plants, with the leaves usually radical; otherwise whorled and opposite or alternate.

1. PRIMULA. *Linn.*—Primrose.

(From the Latin *primus*, *first*; on account of the early appearance of the flowers of some species.)

Calyx tubular, 5-toothed. Corolla salver-form; tube cylindrical; orifice open. Stamens 5, not exerted. Stigma globose. Capsule opening with 10 teeth. Flowers in an involucrate umbel.

P. Mistassinica Mich.: leaves obovate-spatulate, sparingly toothed, obtuse or acute, smooth or pubescent beneath; scape slender, with a few-flowered umbel; segments of the corolla obcordate, slightly emarginate, about two-thirds as long as the tube. *D. pusilla* Hook.

Yates county, N. Y. *Dr. Sartwell*. Steuben county, N. Y. *D. Thomas*. N. to Arct. Amer. ②.—*Plant* usually smooth, but sometimes powdery. *Scape* 3—5 inches high. *Leaves* 6—10 lines long. *Flowers* about 3, in a terminal umbel, pale-purple. Mr. David Thomas informs me that this plant was found several years since near Hammondsport, Steuben county, N. Y. The two New York localities are the only known ones in the U. S.

Dwarf Canadian Primrose.

2. DODECANTHEON. *Linn.*—American Cowslip.

(From the Greek *δωδεκα*, *twelve*, and *θεος*, *divinity*; an old name renewed by Linnæus on account of its beauty.)

Calyx 5-parted, reflexed. Corolla rotate, 5-parted, the lobes reflexed. Stamens 5, inserted into the throat of the corolla;

filaments connate at base. Stigma exerted. Capsule oblong-ovoid, 5-valved, many-seeded.

1. *D. Meadia* Linn.: scape erect, simple, smooth; leaves oblong-ovate, repandly toothed; umbel many-flowered; flowers nodding; bracts numerous, oval.

Rocky places. Penn. to Ala. W. to the Rocky Mountains. May, June. 2.—Scape 8—12 inches high. Flowers large, purple.

Common American Cowslip.

2. *D. integrifolium* Mich.: leaves ovate or lanceolate, subspatulate, obtuse; umbel few-flowered; flowers nearly erect; bracts lanceolate or linear, acute.

Mountains. Penn. N. to Subarct. Amer. W. to the Miss. June. 2.—Flowers pale-blue, smaller than in the preceding. Pursh.

Entire-leaved American Cowslip.

3. TRIENTALIS. Linn.—Wintergreen.

(From the Latin *triens*, the *third part*; said to allude to this plant being the third of a foot high. Hook. Brit. Fl.)

Calyx deeply 6—8-parted. Corolla deeply 6—8-parted, rotate. Stamens 6—8. Style filiform. Capsule globose, somewhat fleshy, (berry,) opening at the sutures, and then 5-valved. Seeds few.

T. Americana Pursh: leaves narrow-lanceolate, serrulate, acuminate; lobes of the corolla acuminate. *T. Europæa* Mich. *T. Europæa* var. *angustifolia* Nutt.

Low woods. Can. to Virg. N. to Subarct. Amer. May, June. 2.—Stem 6 inches high. Leaves 6 or 7 in a terminal whorl, with two or three straggling ones on the stem. Flowers white, on terminal filiform peduncles.

Chickweed Wintergreen.

4. HOTTONIA. Linn.—Water Feather.

(In honor of *Pierre Hotton*, a professor of Leyden, who flourished in the seventeenth century.)

Calyx 5-parted. Corolla salver-form, 5-lobed. Stamens seated on the tube of the corolla. Stigma globose. Capsule globose, crowned with the persistent style, at length 5-valved. Seeds very numerous.

H. inflata Linn.: stem thick, generally submersed; scape jointed, with the internodes and lower part inflated; flowers verticillate, mostly in fours, pedicellate. *H. palustris* Pursh.

Stagnant waters. N. Y. and Mass. to Geor.; rare. July. 2.—Stem thick, spongy, generally submersed. Leaves long and pectinate. Flowers whorled, on pedicels, 2 or 3 lines long, small, white. Abundant near North Salem, Westchester county, N. Y. Dr. S. B. Mead.

American Water Feather.

5. GLAUX. *Linn.*—Black Saltwort.

(From the Greek γλαυκίον, given to a plant of a sea-green color, or because it grew near the sea.)

Calyx campanulate, 5-lobed, colored. Corolla none. Stamens 5, inserted into the bottom of the calyx and alternating with the segments. Stigma capitate. Capsule globose, 5-valved, few-seeded.

G. maritima *Linn.*

Marshes on the sea-coast. Can. and Mass.; rare. July. 2.—*Stem* sub-erect or procumbent, 4—5 inches high, very leafy. *Leaves* opposite, ovate or roundish, smooth, entire, fleshy. *Flowers* minute, sessile, solitary, axillary, reddish-white.
Black Saltwort.

6. LYSIMACHIA. *Linn.*—Loosestrife.

(Origin uncertain.)

Calyx 5—6-parted. Corolla somewhat rotate, 5—6-parted. Stamens 5, (rarely 6—7,) sometimes with intermediate teeth or short sterile filaments. Capsule globose, 5—10-valved, dehiscent at the summit.

1. *L. stricta* *Ait.*: stem erect, smooth; leaves opposite, lanceolate, tapering at base, subsessile, punctate; raceme terminal, very long, loose; pedicels long, slender. *L. racemosa* *Mich.*

Low grounds. Can. to Virg. July, Aug. 2.—*Stem* 12—18 inches high. *Leaves* few, often with bulbs or abortive branches in the axils. (*Torr.*) *Flowers* yellow, on capillary pedicels, arranged in a terminal raceme 4—8 inches long.
Upright Loosestrife.

2. *L. quadrifolia* *Linn.*: stem simple, a little hairy; leaves in whorls of fours or fives, ovate-lanceolate, nearly sessile, acuminate, punctate; peduncles mostly in fours, axillary, 1-flowered; lobes of the corolla oval, entire. *L. hirsuta* *Mich.* *L. punctata* *Walt.*

Low grounds. Can. to Car. June, July. 2.—*Stem* 12—18 inches high. *Leaves* varying from 3—8 in a whorl, though generally four. *Flowers* yellow, on long slender peduncles which are as numerous as the leaves.

Whorled Loosestrife.

3. *L. longifolia* *Pursh*: very smooth, 4-sided, branched above; leaves opposite, sessile, linear, revolute on the margin; peduncles 1-flowered, opposite or in fours, the upper ones longer; lobes of the corolla broad-ovate, acuminate, serrulate. *L. revoluta* *Nutt.*

Wet rocky woods. N. Y. to Car. W. to Mich. June. 2.—*Stem* 1—2 feet high. *Leaves* narrow, not dotted; floral ones appearing as if whorled. *Flowers* mostly at the extremities of the branches, at length nodding, yellow.

Revolute Loosestrife.

4. *L. ciliata* *Linn.*: stem nearly smooth; leaves opposite, on long petioles, subcordate-ovate, acuminate; petioles ciliate; peduncles mostly in pairs, 1-flowered; flowers drooping; lobes of the corolla rounded, crenate, mucronate. *L. quadrifolia* β. *ciliata* *Willd.*

Banks of streams. Can. to Car. W. to the Rocky Mountains. July. 2.—

Stem 2—3 feet high, square, sparingly branched. *Leaves* large, not punctate. *Flowers* large, yellow. *Ciliate Loosestrife.*

5. *L. hybrida* Mich.: stem smooth; leaves petioled, opposite, lanceolate, acute at each end; petioles ciliate; peduncles axillary, mostly in pairs, 1-flowered; flowers nodding; corolla scarcely longer than the calyx. *L. heterophylla* Nutt.

Moist grounds. N. Y. to Car. July. ♀.—Resembles the preceding species, but the leaves are narrower and never cordate at base, and the petioles are less ciliate. *Hybrid Loosestrife.*

6. *L. capitata* Pursh: nearly smooth; stem simple; leaves opposite, sessile, lanceolate, punctate; peduncles axillary, elongated; flowers in dense roundish heads, 5—7-parted. *L. thyrifolia* Mich. *Naumbergia thyrifolia* D. C.

Swamps. N. S. N. to Arct. Amer. June. ♀.—Stem 1—2 feet high. *Leaves* villous beneath. *Flowers* yellow, in roundish or ovate heads which are on axillary peduncles. *Capitate Loosestrife.*

7. ANAGALLIS. Linn.—Pimpernel.

(From the Greek *αναγλαω*, to laugh; on account of its supposed exhilarating virtues.)

Calyx 5-parted. Corolla rotate, deeply 5-parted. Stamens 5; filaments hairy. Capsule globose, opening hemispherically, many-seeded.

A. arvensis Linn.: stem procumbent, branched; leaves opposite, ovate, sessile, dotted beneath, very entire; margin of the corolla crenate and pilose-glandular.

Fields and road sides. N. Y. Mass. to Car. June—Oct. ①.—Stem 4—10 inches long. *Flowers* scarlet, sometimes with a purple centre, on solitary axillary peduncles which are longer than the leaves. *Scarlet Pimpernel.*

8. SAMOLUS. Linn.—Water Pimpernel.

(Supposed to have been named from the island of *Samos*.)

Calyx 5-cleft, the base adnate to the ovary. Corolla salverform, 5-parted, with 5 scales, (sterile filaments,) alternating with the lobes; tube short. Fertile stamens 5, inserted on the tube of the corolla. Capsule half inferior, 1-celled, many-seeded, opening with 5 valves.

S. Valerandi Linn.: stem erect; leaves obovate; racemes elongated, loose, many-flowered; pedicels with small bracts.

Wet grounds. Can. to Car. July—Sept. ♀.—Stem 8—12 inches high, smooth. *Leaves* obovate, subpetiolate, entire and somewhat fleshy. *Flowers* small, white. This plant is very generally distributed throughout the world. *Common Water Pimpernel.*

ORDER XCVIII. PLUMBAGINACEÆ.—LEADWORKS.

Calyx tubular, plaited, persistent. Corolla monopetalous or of 5 petals, regular. Stamens 5, hypogynous when the petals are combined, inserted into the base of the petals when distinct. Ovary free, 1-celled; styles 5, seldom 3 or 4; stigmas the same number. Fruit an utricle. Seed inverted, with rather a small quantity of mealy albumen.—Herbaceous plants or under shrubs. Leaves alternate or clustered, undivided, somewhat sheathing at base. Flowers either loosely paniced or contracted into heads.

STATICE. *Linn.*—Marsh Rosemary.

(From the Greek *στατιζω*, to stop; on account of its supposed power of checking diarrhæa.)

Calyx funnel-form, 5-toothed. Petals 5, united at base. Stamens 5, inserted on the claws of the petals. Styles 5. Fruit a membranaceous utricle.

1. *S. Limonium Linn.*: scape paniculate, terete; leaves oblong-lanceolate, petiolate, smooth, mucronate; calyx with deep acute plaited segments and intermediate teeth. *S. Caroliniana Walt.*

Salt marshes. N. Y. and Mass. to Car. Aug.—Oct. 2.—*Root* large, ligneous. *Scape* angular, longer than the leaves, with several lanceolate scales. *Flowers* sessile, blue, in a large corymbose panicle. A valuable astringent. *Big. Med. Bot.* ii. 51. *Common Marsh Rosemary.*

2. *S. Armeria Linn.*: scape simple, terete, bearing a round head of flowers; leaves linear, smooth; awns of the calyx short.

Rocks near the sea shore. Penn. to Virg. *Pursh.* N. to Arct. Amer. July, Aug. 2.—*Root* large, ligneous. *Scape* a foot high. *Heads of flowers* rose-colored, intermixed with scales and having also a 3-leaved general involucre. *Thrift.*

ORDER XCIX. PLANTAGINACEÆ.—RIBWORKS.

Calyx 4-parted, persistent. Corolla monopetalous, persistent, with a 4-parted limb. Stamens 4, inserted into the corolla, alternate with its segments; filaments long, filiform; anthers versatile. Ovary 2- very seldom 4-celled; style simple. Capsule membranous, opening transversely. Seeds sessile, peltate.—Herbaceous plants, usually stemless. Leaves flat and ribbed or taper and fleshy. Flowers in spikes, small.

PLANTAGO. *Linn.*—Plantain.

(Origin doubtful.)

Flowers perfect. Calyx 4- (rarely 3) -parted. Corolla 4-

cleft; border reflexed. Stamens 4, mostly very long. Capsule 2—4-celled, opening transversely.

* *Leaves broad.*

1. *P. cordata* Lam.: leaves on long petioles, broad-ovate, cordate, subdentate, smooth; spike very long; flowers subimbricate; the lower ones scattered; bracts ovate, obtuse; cells of the capsule 1-seeded. *P. Kentuckiensis* Mich.

Banks of streams. Can. N. Y. and Penn. W. to Tenn. June, July. 2.—Scape 12—18 inches high. Leaves 3—6 inches long, smooth, generally cordate at base. Flowers in a slender elongated spike. *Heart-leaved Plantain.*

2. *P. major* Linn.: leaves ovate, smoothish, subdentate, on longish petioles; scape rounded; spike cylindrical, very long; flowers closely imbricated; cells of the capsule many-seeded.

Fields, &c. Throughout Can. and the U. S. June—Aug. 2.—Scape 8—12 inches high, pubescent. Leaves spreading on the ground, coarsely toothed, 5—7-nerved. Spike 2—6 inches long, close. Flowers whitish. Introduced from Europe. *Common Plantain.*

3. *P. media* Linn.: leaves ovate, pubescent, sessile or tapering into short petioles; scape rounded; spike short, cylindrical; cells of the capsule 1-seeded.

Fields. N. Y. and Penn. July. 2.—Scape longer than the leaves. Leaves 2 inches long. Flowers in a closely imbricated spike which is shorter than in the preceding. *Pubescent Plantain.*

4. *P. Virginica* Linn.: hoary-pubescent; leaves lanceolate-ovate, sparingly toothed, 3—5-nerved, tapering at base; spike cylindrical, with the flowers rather remote; capsule 2-seeded.

Sandy soils. Throughout the U. S. May, June. 2.—Scape hairy, almost hispid, longer than the leaves, angular. Spikes 1—4 inches long, with the flowers at first crowded, but at length distant. Corolla yellowish. *Virginian Plantain.*

5. *P. lanceolata* Linn.: leaves lanceolate, acute at each end, 3—5-nerved, remotely toothed; scape slender, elongated, grooved; spike short, ovoid-cylindrical, compact; capsule 2-seeded.

Pastures. Can. to Car. W. to Miss. May—Sept. 2.—Scape 12—18 inches high, a little hairy. Flowers in a very dense spike. Bracts ovate, brownish, as long as the calyx. Corolla whitish. Introduced from Europe. *Ribwort.*

6. *P. cucullata* Lam.: leaves ovate, cucullate, subdenticulate, 9-nerved, pubescent beneath; scape rounded; spike cylindrical, imbricated. *P. maxima* Jacq.

Moist rocky situations. Can. and Maine. Pursh. July, Aug. 2.—*Hooded Plantain.*

** *Leaves linear.*

7. *P. maritima* Linn.: leaves linear, grooved, fleshy, hairy near the base, mostly entire; scape rounded; spike cylindrical, dense; cells of the capsule 1-seeded. *P. pauciflora* Pursh.

Salt marshes. Mass. N. Y. Aug., Sept. 2.—Scape 6—10 inches high. Leaves fleshy, channelled above. Spike cylindrical, short, the flowers at length somewhat remote. *Sea-side Plantain.*

8. *P. pusilla* Nutt.: minutely pubescent; leaves linear-subulate, flat, entire, acute; scape terete, slender, longer than the leaves; spike cylindrical, loose; lower flowers distant; bracts ovate, acute, as long as the calyx. *P. hybrida* Bart. *P. linearifolia* Muhl.

Rocky hills. N. Y. to Flor. W. to Miss. May, June. ①.—Scape 2—3 inches high, slender. Flowers in an interrupted spike. Dwarf Plantain.

SUBCLASS IV.—MONOCHLAMYDEALS.

Flowers with a simple perianth, or whose calyx and corolla form only one envelope.

ORDER C. AMARANTHACEÆ.—AMARANTHS.

Perianth 3—5-parted, scarious, persistent. Stamens hypogynous, either 5 or some multiple of that number, distinct or monadelphous; anthers 1—2-celled. Ovary single; style 1 or none. Fruit usually a membranous utricle. Seeds lenticular, pendulous; the embryo curved around mealy albumen.—Herbs or shrubs. Leaves simple, opposite or alternate. Flowers in heads or spikes, sometimes monœcious or diœcious.

AMARANTHUS. Linn.—Amaranth.

(From the Greek *a*, not, and *μαραινω*, to fade; or flowers which do not fade.)

Monœcious. Perianth deeply 3—5-parted. STERILE FL. Stamens 3—5. FERTILE FL. Styles 3. Utricle opening transversely all round, indehiscent.

1. *A. lividus* Linn.: stem erect; leaves elliptic, retuse; flowers clustered, triandrous, in rounded spikes.

Cultivated grounds. Penn. ? to Car. June—Aug. ①.—Stem 2—3 feet high, smooth. Livid Amaranth.

2. *A. hybridus* Linn.: stem sulcate, angled, roughish pubescent, sparingly branched; leaves ovate-lanceolate; flowers pentandrous, in dense compound axillary and terminal spikes.

Near gardens, &c. N. Y. to Car. June—Sept. ①.—Stem 2—3 feet high. Flowers small, green, in compound sessile crowded spikes. Introduced? Hybrid Amaranth.

3. *A. gracizans* Linn.: stem obtusely angled, smooth, erect, with horizontal branches; leaves obovate and spatulate, oblong, retuse, mucronate; flowers triandrous, in small axillary clusters. *A. Blitum* Big.

Cultivated grounds. Mass. to Virg. July—Sept. ①.—Stem 1—3 feet high. Flowers numerous, pale-green. Introduced? Bushy Amaranth.

4. *A. spinosus* Linn.: stem striate, smoothish, much branched; leaves ovate-lanceolate; axils spinose; flowers pentandrous, in compound terminal and axillary spikes.

Cultivated grounds near West Chester, Penn. Darlingt. Aug. ①.—Stem

18 inches to 2 or 3 feet high, generally much branched, often purple. *Flowers* small, in oblong erect terminal and subterminal spikes. A very troublesome weed. Introduced. *Spiny Amaranth.*

5. *A. retroflexus* Linn.: branches pubescent; leaves ovate, undulate; racemes erect, much compounded; flowers pentandrous.

Among rubbish, &c. Penn. to Virg. Aug. ①. *Pursh.*

Hairy Amaranth.

6. *A. pumilus* Raf.: stem diffuse, smooth; leaves ovate, obtuse, smooth and fleshy, often retuse; flowers pentandrous, in axillary clusters.

Sandy beaches. N. Y. to Car. Aug. ①.—*Stem* a foot high, somewhat decumbent, spreading. *Flowers* greenish and purple, in somewhat crowded clusters. *Dwarf Amaranth.*

ORDER CI. CHENOPODIACEÆ.—CHENOPODS.

Perianth deeply divided, sometimes tubular at the base, persistent. Stamens inserted into the base of the perianth, opposite its segments and equal to them in number or fewer. Ovary single, mostly superior. Style 2—4-divided, rarely simple; stigmas simple. Fruit an utricle, sometimes a berry. Seed erect, with the embryo usually curved around mealy albumen.—Herbaceous plants or under shrubs. Leaves alternate, without stipules, occasionally opposite. Flowers small, sometimes polygamous.

1. CHENOPODIUM. Linn.—Goosefoot.

(From the Greek $\chi\eta\nu$, $\chi\eta\nu\sigma$, a *goose*, and $\pi\upsilon\sigma$, $\pi\omicron\delta\omicron\varsigma$, a *foot*; in allusion to the shape of the leaves in some species.)

Flowers perfect. Perianth 5-parted, closing upon but not wholly enveloping the fruit. Stamens 5. Styles 2, united at base. Utricle thin, membranaceous. Seed lenticular.

* *Leaves ovate or rhomboid, often toothed or lobed.*

1. *C. Bonus Henricus* Linn.: leaves triangular-sagittate, very entire; spikes compound, peduncled, crowded, terminal and axillary, erect, leafless. *Blitum Bonus Henricus* Mey.

Oneida county, N. Y. Torr. June. ②.—*Stem* a foot high, striate, ascending. *Leaves* large, dark-green. *Flowers* green, in small roundish clusters, forming a terminal spike. Introduced from Europe. *Good King Henry.*

2. *C. rhombifolium* Muhl.: leaves triangular-rhombic, acute, repandly toothed; upper ones lanceolate, toothed, cuneate at base; racemes axillary, erect, leafless; bracts minute, incurved.

Penn. to Car. June, July. ①.—*Plant* yellowish-green. *Stem* 1—2 feet high, branched. *Flowers* small, in capitate axillary clusters. Introduced? *Rhombic-leaved Goosefoot.*

3. *C. rubrum* Linn.: leaves rhomboid-triangular, deeply toothed and

sinuate; racemes erect, compound, leafy; flowers crowded; fruit very small.

Waste places. Near Boston. Big. Aug. ①.—*Stem* 2 feet high, often reddish. *Racemes* very compound, intermixed with small leaves. Introduced from Europe. *Red Goosefoot.*

4. *C. hybridum* Linn.: leaves cordate, ovate, angularly toothed, acuminate; racemes much branched in a somewhat cymose manner, divaricate, leafless.

Waste places. Mass. to Virg. July, Aug. ①.—*Stem* 2—3 feet high, slender, with large and bright-green leaves. *Flowers* in compound clusters, remote from the leaves. Introduced from Europe. *Maple-leaved Goosefoot.*

5. *C. album* Linn.: leaves rhomboid-ovate, crose-dentate, entire at the base; upper ones oblong-lanceolate, entire; racemes branched, somewhat leafy; seed very smooth.

Waste grounds. Mass. to Virg. July, Aug. ①.—*Stem* 3—5 feet high. *Leaves* covered with a mealy substance. *Racemes* somewhat branched, conglomerate. When the leaves are greener and more entire, it constitutes the *C. viride* of Linnæus. Introduced from Europe. *Lamb's-quarters.*

6. *C. ambrosioides* Linn.: leaves lanceolate, remotely toothed; the upper ones linear-lanceolate, entire; racemes simple, axillary, leafy. *Ambrina ambrosioides* Spach.

Road sides. Mass. to Virg. Aug., Sept. ①.—*Stem* 18 inches high, much branched, somewhat pubescent. *Leaves* on short petioles. *Flowers* green, in erect spikes. *Sweet Pigweed.*

7. *C. Botrys* Linn.: leaves oblong, pinnatifid-sinuate; racemes axillary and terminal, paniculate, leafless; flowers distinct, on short pedicels. *Ambrina Botrys* Spach.

Waste places. N. S. July—Sept. ①.—*Stem* 1—2 feet high, branched, somewhat viscid. *Flowers* in numerous short axillary racemes covering the ends of the branches. The whole plant has a strong smell. Introduced. *Jerusalem Oak.*

8. *C. anthelminticum* Linn.: leaves oblong-lanceolate, nearly sessile, coarsely toothed; racemes axillary and terminal, spike-like, simple, elongated, leafless. *Ambrina anthelmintica* Spach.

Fields. N. S. Aug. ②.—*Stem* 1½—2 feet high, much branched. *Racemes* long and slender, axillary and terminal. *Worm-seed.*

9. *C. glaucum* Linn.: leaves oblong, toothed and sinuate on the margin, glaucous and mealy beneath; spikes compound, axillary and terminal, leafless.

In N. Y. Muhl. ①.—*Stem* diffuse, thick. *Glaucous Goosefoot.*

** *Leaves* linear, fleshy.

10. *C. maritimum* Linn.: leaves linear, subulate, fleshy, semi-cylindric; flowers in sessile axillary clusters; stamens shorter than the petals. *Salsola salsa* Mich. *Sueda maritima* Torr.

Salt meadows. Can. to Flor. Aug., Sept. ①.—*Stem* 2—3 feet high, branched, very leafy. *Flowers* in small axillary glomerules. According to Macnab, the *C. maritimum* of American authors is the *C. fruticosum* of Linnæus. *Edin. New Phil. Jour.* xix. 63. *Seaside Goosefoot.*

2. ATRIPLEX. *Linn.*—Orach.(From the Greek *a*, *not*, and *τραφείν*, *to nourish*.)

Flowers monœcious or diœcious, rarely perfect. STERILE FL. without bracts. Perianth 3—5-parted, without appendages. Stamens 3—5. FERTILE FL. with 2 bracts at base. Perianth none. Styles 2, united below. Utricle compressed, partly included in the bracts, 1-seeded.

1. *A. Halimus Linn.*: stem frutescent; leaves alternate or opposite, oblong-subrhomboid, entire, decurrent into the petiole.

N. J. to Virg. γ . *Muhl.* A doubtful species.

Shrubby Orach.

2. *A. patula Linn.*: stem herbaceous, much branched, procumbent; leaves triangular-hastate, acuminate, smooth above, irregularly toothed; the upper ones entire; perianth of the fruit submuricate on the sides. *A. laciniata Pursh.*

N. Y. to Car. Aug. ①.—*Stem* much branched; the branches 1—2 feet long, striate. *Leaves* on petioles which are nearly an inch long. *Flowers* clustered on axillary and terminal spikes.

Spreading Orach.

3. *A. arenaria Nutt.*: stem herbaceous, spreading; leaves oblong-ovate, subsessile, silvery-mealy beneath, very entire; upper ones acute or acuminate; perianth of the fruit muricate, dentate, retuse. *Obione arenaria Moq-Tand.*

Sea-coast. N. Y. to Car. Aug., Sept. ①.—*Stem* a foot high, angular, much branched. *Lower leaves* often cuneate. *Flowers* monœcious; the sterile ones in short glomerate spikes at the end of the branches; the fertile ones in axillary clusters.

Sea-beach Orach.

4. *A. hortensis Linn.*: stem erect, herbaceous; leaves triangular, dentate, green on both sides; perianth of the fruit ovate, reticulate, entire; flowers in terminal interrupted racemes or spikes.

Cultivated grounds. N. S.; rare. July. ①.—*Stem* 3—4 feet high. *Leaves* 2—3 inches long. Flowers green. Introduced.

Garden Orach.

3. ACNIDA. *Linn.*—Water Hemp.

(From the Greek *a*, *without*, and *κνίδη*, a *nettle*; because it resembles a nettle but does not sting.)

Flowers diœcious, without bracts. STERILE FL. Perianth 5-parted. Stamens 5, very short. FERTILE FL. Perianth 3-parted. Styles none. Stigmas 3—5, spreading. Capsule 1-seeded.

1. *A. cannabina Linn.*: leaves ovate-lanceolate; capsules smooth, acutely angled.

Marshes. Can. to Flor. July, Aug. ①.—*Stem* 3—6 feet high, slightly angled. *Leaves* alternate, ribbed, 2—5 inches long, petioled. *Flowers* small, green, in large axillary and terminal panicles.

Common Water Hemp.

2. *A. ruscocarpa Mich.*: leaves oval-lanceolate; capsules obtusely angled, rugose.

Marshes. Can. to Flor. Nutt. July. ①.—Resembles the preceding, except in its fruit. It may be only a variety. *Rough-fruited Water-hemp.*

4. SALICORNIA. Linn.—Glasswort.

(From the Latin *sal*, *salt*, and *cornu*, a *horn*; on account of the saline nature and horn-like branches of the plant.)

Perianth turbinate, fleshy, obscurely lobed. Stamens 1 or 2. Style 1, bifid. Utricle compressed, enclosed in the enlarged perianth.

1. *S. herbacea* Linn.: herbaceous, annual; stem erect or assurgent; joints compressed, somewhat thickened and notched at the summit; spikes peduncled, cylindric, slightly tapering at the extremity; perianth truncated. *S. Virginica* Linn.

Sea-coast and salt marshes. N. Y. to Flor. Sept. ①.—Plant destitute of leaves. Stem 6—10 inches high, branched. Flowers very minute, in threes at each joint. *Common Saltwort* or *Samphire.*

2. *S. ambigua* Mich.: perennial, procumbent, branching; joints crescent-shaped, small; spikes opposite and alternate; perianth truncate.

Salt meadows. N. Y. to Car. ② or ④.—Stem procumbent and ascending. Anthers purplish-yellow. Resembles *S. fruticosa* of Linnæus.

Perennial Saltwort.

3. *S. mucronata* Lag. ? herbaceous, annual, erect; the joints 4-angled at the base, with two acute ovate mucronate teeth at the summit; spikes very thick, obtuse. (*Torr. N. Y. Fl.*)

Salt marshes. Near Boston. Big. Long Island. Torr. Aug., Sept. ①.—Stem 4—8 inches high, sparingly branched, thick and succulent. Spikes 3 lines in diameter and an inch or more in length. *Dwarf Saltwort.*

5. SALSOLA. Linn.—Saltwort.

(From the Latin *sal*, *salt*; in allusion to the alkaline salt which many of the species afford.)

Flowers perfect. Perianth 5-cleft, persistent, enveloping the fruit with its base, and crowning it with its enlarged limb. Stamens 5. Styles 2.

S. Kali Linn.: herbaceous, decumbent; leaves subulate, spinose, rough; flowers axillary, solitary; fruit-bearing perianth with a scarious margin. *S. Caroliniana* Mich. *S. Kali* var. *Caroliniana* Nutt. *S. Tragus* Muhl. ?

Sea-coast. N. Y. to Car. Aug., Sept. ①.—Stem much branched, diffuse, angled. Flowers succulent, pale-greenish, sessile, with 2 or 3 bracts at the base of each. *Prickly Saltwort.*

6. BLITUM. Linn.—Strawberry Blite.

(Said to be derived from the Greek βλιτρον, *insipid*; in allusion to the fruit.)

Perianth 5-cleft, baccate in fruit. Stamens mostly solitary. Styles 2, united below. Utricle compressed, covered with the perianth. Seed somewhat globose.

1. *B. capitatum* Linn.: procumbent; leaves triangular-hastate; heads of flowers alternate, in a leafless terminal spike.

Fields and margins of swamps. Mass. to Virg. N. to Subarct. Amer. June, July. ①.—*Stem* a foot long, branched. *Heads* round, sessile, consisting of numerous minute flowers, becoming red and succulent; somewhat resembling strawberries. Abundant near Rome, N. Y. *Strawberry Blite.*

2. *B. virgatum* Linn.: leaves triangular-hastate; heads scattered, lateral.

Fields, &c. Penn. June. ①.—*Leaves* with large sinuate teeth. *Heads of flowers* axillary, always lateral, becoming red. Introduced.

Slender Strawberry Blite.

3. *B. maritimum* Nutt.: perianth membranaceous; clusters axillary, spiked, naked; leaves lanceolate, attenuated at each extremity, incisely toothed.

Salt marshes, near N. Y. Aug. ①.—*Stem* erect, 1—2 feet high, much branched. *Leaves* with a few large teeth, succulent. *Perianth* not becoming succulent. Resembles an *Atriplex*, and perhaps does not belong to this genus.

Seaside Blite.

ORDER CII. PHYTOLACCACEÆ.—POKEWEEDS.

Perianth of 4—5-petaloid leaves. Stamens either indefinite, or, if equal to the number of the divisions of the perianth, alternate with them. Ovary of 1 or several cells, each containing 1 ascending ovule. Fruit berried or dry, indehiscent. Seeds ascending, solitary, with a cylindric embryo curved round mealy albumen.—Under shrubs or herbaceous plants. Flowers racemose.

PHYTOLACCA. Linn.—Pokeweed.

(From the Greek *φύρον*, a *plant*, and *λαχων*, a *pot-herb*; in allusion to the use which is made of the young shoots.)

Perianth 5-leaved, petaloid. Stamens 7—30. Styles short, 5—12. Berry superior, globose-depressed, made up of 5—12 closely united carpels.

P. decandra Linn.: leaves ovate-lanceolate, acute at each end, alternate, petiolate; flowers in simple racemes, with 10 stamens and 10 styles.

Borders of fields. Can. to Car. W. to Ark. June—Oct. ②.—*Root* very large, fusiform. *Stem* 4—8 feet high, succulent, purplish. *Flowers* whitish, in long pedunculate racemes. *Berry* globose-depressed, purple when mature. The root is a violent emetic. *Big. Med. Bot.* i. 39. *Common Pokeweed.*

ORDER CIII. POLYGONACEÆ.—BUCKWHEATS.

Perianth free, often colored, imbricated in æstivation. Stamens usually definite, inserted in the bottom of the perianth. Ovary superior, with a single erect ovule; styles 2—4. Fruit a nut, usually triangular, naked or covered by the enlarged peri-

anth. Seed with farinaceous albumen and an inverted embryo.—Herbaceous plants, rarely shrubs, with alternate entire leaves and usually sheathing stipules (ochræ). Flowers often in racemes, occasionally dichinous.

1. POLYGONUM. *Linn.*—Knotweed.

(From the Greek *πολυς* many, and *γωνν*, a knee or joint; the stem having numerous joints.)

Perianth mostly 5-parted, petaloid, persistent. Stamens 3—9, mostly 8. Styles 2—3. Fruit a one-seeded compressed or triquetrous nut.

* *Flowers axillary.*

1. *P. aviculare Linn.*: stem mostly procumbent, herbaceous; leaves elliptic-lanceolate, rough on the margin; flowers axillary, 2—3 together; nerves of the stipules distant. *P. aviculare* var. *procumbens Torr.*

Waste places. Mass. to Car. N. to Subarct. Amer. W. to the Platte River. May—Sept. ①.—Stem much branched, nearly erect. Leaves variable in size and shape. Flowers greenish-white tinged with purple. *Knot Grass.*

2. *P. erectum Muhl.*: stem mostly erect; leaves broad-oval, rather obtuse, petiolate, smooth; flowers pentandrous, pedicellate. *P. aviculare* var. *latifolium Mich.* var. *erectum Torr.*

Near cultivated grounds. N. S. N. to Subarct. Amer. Aug. ④.—Stem 1—3 feet high. Flowers greenish. Dr. Darlington concurs in the opinion expressed by Muhlenberg, that this is a distinct species. *Fl. Cest. Upright Knotweed.*

3. *P. maritimum Linn.*: glaucous; stem prostrate, with very short internodes; leaves lanceolate, somewhat fleshy, often revolute on the margin; stipules half as long as the leaves, finally lacerate; flowers axillary, 2—3 together, on somewhat exerted pedicels. *P. glaucum Nutt.*

Sandy coast of Long Island. *Torr.* Aug. ① and ④?—Stem diffuse and spreading, woody towards the base. Flowers pale rose-color or white, twice as large as in *P. aviculare.* *Seaside Knotweed.*

4. *P. tenue Mich.*: stem slender, erect, branched, acutely angled; leaves lance-linear, erect, cuspidate; stipules tubular, lacerate at the summit, with the segments setaceously acuminate; flowers axillary, mostly solitary, subsessile, alternate. *P. linifolium Muhl.*

Dry hills and fields. Mass. to Virg. July, Aug. ①.—Stem 6—12 inches high, scabrous on the angles. Flowers small, white, solitary and in pairs. Nut acutely triangular, shining, almost black. *Slender Knotweed.*

** *Flowers in terminal solitary spikes.*

5. *P. viviparum Linn.*: stem simple; spike linear, solitary; leaves linear-lanceolate, revolute on the margin; the lower ones elliptic, petiolate.

Can. White Hills, N. H., Arct. Amer. and Rocky Mountains. Aug. ④.—Stem 4—8 inches high, slender. Spike generally bearing little red bulbs at the lower part. Flowers pale flesh-color, almost white.

Bulb-bearing Knotweed.

*** *Flowers in axillary or terminal spikes.*

6. *P. punctatum* Ell.: stem branched; leaves lanceolate, with pellucid punctures, scabrous on the margin and midrib; stipules slightly hairy, ciliate; spikes few-flowered, filiform, at first cernuous; perianth glandular-punctate; stamens 6—8; styles 2—3. *P. Hydropiper* Mich. *P. hydro-piperoides* Pursh.

Inundated grounds. Can. to Car. Aug., Sept. ①.—*Stem* 1—2 feet high, slender, sometimes decumbent. *Flowers* white, in one or two slender simple spikes. *Nut* lenticular or triquetrous. *Plant* very acrid. *Water Pepper.*

7. *P. mite* Pers.: stem erect or ascending; leaves narrow-lanceolate, acuminate, entire, somewhat hairy; stipules hairy, with long cilia; flowers octandrous, in crowded spikes; styles 3. *P. hydro-piperoides* Mich.

Ditches and ponds. Can. to Car. July—Sept. ①.—*Stem* 18 inches high. *Flowers* purplish, in somewhat crowded spikes. *Leaves* not acrid. *Nut* triquetrous, purplish-black. *Bearded Knotweed.*

8. *P. Virginianum* Linn.: stem simple; leaves ovate-lanceolate, acuminate; spike terminal, slender, very long; flowers remote, pentandrous; perianth unequally 4-parted; styles 2. *P. Bistorta* Walt.

Shady woods. Can. to Flor. W. to Miss. July, Aug. ②.—*Stem* 2—4 feet high, somewhat angular, hairy near the summit. *Leaves* large, with hairy stipules. *Flowers* white or purplish, in a very long naked and somewhat virgate spike. *Virginian Knotweed.*

9. *P. amphibium* Linn.: stem nearly erect; leaves petiolate, oblong-lanceolate, sometimes cordate at base; flowers in dense terminal spikes, pentandrous; styles 2. *P. coccineum* var. *terrestre* Pursh.

var. *aquaticum* Linn.: stem spreading on the surface of water; leaves ovate-lanceolate, cordate; spike cylindrical-oblong. *P. fruitans* Eaton. *P. coccineum* Big.

Borders of swamps and ponds. N. S. W. to Miss. July. ②.—*Stem* 8—12 inches long. *Flowers* large, reddish, in an ovate spike. The var. has the stems long and the leaves broad-cordate and floating; but it passes into the former. *Water Knotweed.*

10. *P. Pennsylvanicum* Linn.: stem erect, with tumid joints; leaves lanceolate, slightly hairy, petioled; stipules smooth and naked; spikes oblong, crowded, on glandular-hispid peduncles; flowers mostly octandrous; styles 2.

Margins of ponds and ditches. N. Y. to Car. W. to Miss. July, Sept. ①.—*Stem* 2—4 feet high, geniculate, branched above. *Flowers* large, reddish, in numerous crowded spikes. *Stamens* often 6. *Pennsylvanian Knotweed.*

11. *P. Persicaria* Linn.: stem erect; leaves lanceolate; stipules truncate, ciliate; spikes dense, ovate-oblong, erect, on smooth peduncles; flowers hexandrous; styles 2. *P. lapathifolium* Linn.

Waste places. Can. to Car. July, Aug. ①.—*Stem* 12—18 inches high, erect or decumbent, branched, smooth, often purplish. *Leaves* on short petioles, the upper surface usually marked with a dark-colored spot. *Flowers* reddish, in erect oblong terminal spikes. *Ladies' Thumb.*

12. *P. orientale* Linn.: stem erect, paniculately branched, hirsute; leaves very large, petioled, ovate, acuminate, minutely pubescent; stipules hairy, salverform; spikes terminal, dense, nodding, on hairy peduncles; flowers heptandrous; styles 2.

Old fields and road sides. July, Aug. ①.—*Stem* 4—5 feet high, loosely branched above, hairy. *Flowers* large, crimson, in numerous pendulous spikes. Naturalized throughout the whole U. States. *Prince's Feather.*

*** *Flowers in paniced spikes. Perianth 5-sepalled.*

13. *P. articulatum* Linn.: stem erect; leaves linear, obtuse; stipules short, truncate; spikes paniculate, filiform, erect; pedicels solitary, articulate near the base; flowers perfect, octandrous, trigynous, nodding.

Sandy plains. Mass. N. Y. and N. J. W. to Michigan. Sept. ①.—*Stem* 12 inches high, branched above, smooth. *Leaves* very small, linear. *Flowers* reddish-white, in spikes which are jointed by a succession of imbricate sheathing bracts. *Jointweed.*

**** *Flowers in racemose panicles. Leaves subcordate or sagittate.*

14. *P. sagittatum* Linn.: stem prostrate, square, the angles armed with reversed prickles; leaves sagittate, acute, nearly sessile; flowers in small peduncled heads, mostly octandrous.

Wet grounds. N. Y. to Flor. July, Aug. ①.—*Stem* 2—4 feet long, slender, procumbent or supported by other plants. *Flowers* white, axillary and terminal, in small compact heads which are supported on long peduncles.

Arrow-leaved Knotweed.

15. *P. arifolium* Linn.: stem prostrate, sulcate-angled, the angles with reversed prickles; leaves on long petioles, hastate, acuminate; flowers subracemose, distinct, hexandrous; styles 2.

Wet grounds. Can. to Car. Aug., Sept. ①.—*Stem* 3—6 feet long, flexuous, prostrate or climbing. *Flowers* pale-red, in loose slender racemose clusters.

Halbert-leaved Knotweed.

16. *P. Convolvulus* Linn.: stem climbing or prostrate, somewhat rough; leaves oblong, hastate-cordate, acuminate; flowers in loose axillary racemes, octandrous; segments of the perianth bluntly keeled, wingless.

Cultivated grounds. Can. to Car. W. to Miss. July—Sept. ①.—*Stem* 3—6 feet long, climbing. *Flowers* whitish or reddish, in terminal interrupted leafy racemes. Introduced? *Black Bindweed.*

17. *P. cilinode* Mich.: stem climbing or prostrate, retrorsely pubescent; leaves somewhat hastate-cordate, acuminate; stipules somewhat acute, ciliate at the base; flowers in axillary paniculate racemes, octandrous; segments of the perianth bluntly keeled, wingless; styles 3.

Rocky hills. Mass. and N. Y. July, Aug. ①.—*Stem* 4—8 feet long, purplish. *Flowers* greenish or pale rose-color, in slender nearly naked racemes. Distinct from the preceding. *Fringe-jointed Knotweed.*

18. *P. dumetorum* Linn.: stem climbing, smooth; leaves broad-cordate, acuminate; stipules truncate, naked; flowers rather large, in erect axillary racemes, octandrous; segments of the perianth winged. *L. scandens* Linn.

Shady woods. N. Y. to Car. W. to Miss. July, Aug. ①.—*Stem* 6—12 feet long, often purple. *Flowers* white or reddish, in axillary racemes.

Climbing Buckwheat.

19. *P. Fagopyrum* Linn.: stem erect, paniculately branched, smoothish; leaves cordate-sagittate, acute; racemes terminal and axillary; seeds equally triquetrous, nearly naked.

Fields, remaining as a weed where it has been cultivated. June. ①.—*Stem* 2—3 feet high, pubescent at the joints. *Flowers* white tinged with green and purple, in somewhat paniculate racemes. *Buckwheat.*

2. RUMEX. *Linn.*— Dock.

(Said to be derived from the Latin *rumex*, a *pike* or *spear*; in reference to the form of the leaves of some species.)

Perianth 6-leaved; the three inner leaves somewhat colored, larger, often with tubercles on the outside and closing in a valvate manner over the fruit. Stamens 6. Styles 3. Stigmas many-cleft. Nut triquetrous.

* *Flowers perfect. Inner leaves of the perianth or valves bearing tubercles.*

1. *R. aquaticus Linn.*: leaves lanceolate, acute, the lower ones on long petioles and cordate at base; valves ovate, entire, all of them bearing tubercles.

Ponds and ditches. N. S. July, Aug. 2.—*Root* large and very astringent. *Stem* 3—4 feet high. *Flowers* whorled, in a terminal leafy panicle. Introduced? *Water Dock.*

2. *R. crispus Linn.*: leaves lanceolate, acute, waved on the margin; upper whorls of flowers leafless; valves very large, cordate, entire, veined, one of them with a large tubercle.

Pastures and meadows. Can. to Car. June, July. 2.—*Root* large, fusiform, yellow: *Stem* 2—3 feet high, furrowed, paniculately branched above. *Flowers* in crowded whorls, on pedicels. One of the *valves* with a large orange-colored tubercle, the others with the midrib swollen at the base. Introduced from Europe. *Curled Dock.*

3. *R. sanguineus Linn.*: leaves lanceolate, somewhat cordate, petioled, smooth, mostly with red veins; whorls distant, on long generally leafless branches; valves small, oblong, entire, one at least with a tubercle.

Fields and road sides. Can. to Car. June, July. 2.—*Stem* 3 feet high. *Root* leaves large, with blood-red veins. *Flowers* in small distant whorls. Introduced from Europe. *Bloody Dock.*

4. *R. Britannica Linn.*: leaves broad-lanceolate, flat, smooth; sheaths obsolete; racemes in a large terminal panicle, nearly leafless; valves all entire and usually with tubercles.

Swamps. Can. to Car. June, July. 2.—*Root* fusiform, yellow internally. *Stem* 2—4 feet high. *Leaves* large, on petioles. *Flowers* in a compound terminal panicle. *Yellow-rooted Water Dock.*

5. *R. verticillatus Linn.*: leaves lanceolate, acute, flat; sheaths cylindrical; flowers whorled, in long leafless racemes; valves broad-cordate, entire, all bearing tubercles.

Swampy grounds. N. S. June, July. 2.—*Stem* 2 feet high, branching above. *Leaves* long, lanceolate, narrow. *Whorls* distant, on dichotomous racemes or spikes. *Pedicels* of the fruit half an inch or more in length. *Whorled Dock.*

6. *R. pallidus Big.*: leaves linear-lanceolate, acute; spikes slender; valves ovate, acute, entire, with large tubercles.

Salt marshes. Mass. June. 2.—*Stems* numerous, ascending, slightly furrowed. *Leaves* smooth, petioled, more or less waved on the margin. *Spikes* slender. *Pale Dock.*

7. *R. acutus Linn.*: leaves cordate-oblong, acuminate; whorls numerous, small, leafy; valves oblong, somewhat toothed, all with tubercles.

Moist grounds. N. S. June. 2.—*Stem* 2—3 feet high. Introduced from Europe. *Sharp-pointed Dock.*

8. *R. obtusifolius* Linn.: stem roughish; radical leaves cordate-oblong, obtuse; upper ones narrower; valves ovate, toothed, one of them with a tubercle.

Woods and fields. N. Y. to Virg. June, July. 2.—*Stem* 2—3 feet high, paniculately branched. *Leaves* very large. *Flowers* in long nearly leafless racemes. Introduced from Europe. *Obtuse-leaved Dock.*

** *Flowers* diœcious. *Valves* without tubercles.

9. *R. Acetosella* Linn.: leaves lanceolate-hastate; lobes acute, spreading; racemes paniculate; valves ovate, entire, without tubercles.

Fields, &c. Throughout the U. S. June, July. 2.—*Stem* 6—12 inches high. *Racemes* paniculate, at length becoming purple. *Fertile flowers* similar to the *sterile*, but less common. The plant has a pleasant acid taste, owing to the presence of binoxalate of potassa. *Sheep Sorrel.*

3. OXYRIA. Hill.—Oxyria.

(From the Greek οξύς, *acid*; in allusion to the qualities of its leaves.)

Perianth 4-leaved; two inner leaves larger. Stamens 6. Styles 2. Nut triquetrous, with a broad winged membranous margin.

O. reniformis Hook. *Rumex digynus* Linn.

Moist ravines. On the summit of the White Mountains, N. H. Oakes. July, Aug. 2.—*Stem* 8—10 inches high, often naked. *Radical leaves* numerous, all reniform, on long petioles. *Racemes* and *peduncles* branched, with minute bracts at the base of each ramification. *Flowers* erect, small. *Kidneyform-leaved Oxyria.*

ORDER CIV. LAURACEÆ.—LAURELS.

Perianth 4—6-cleft, imbricated. Stamens definite, opposite the segments of the perianth and usually twice as numerous; anthers adnate, 2—4-celled, bursting by a longitudinal valve. Glands usually present at the base of the inner filaments. Ovary superior, single; style simple; stigma obtuse. Fruit a berry or drupe, naked or covered. Seed without albumen; embryo inverted.—Trees or shrubs. Leaves without stipules, alternate. Flowers in panicles or umbels.

1. LAURUS. Linn.—Bay Tree.

(The ancient name for the Bay Tree.)

Diœcious. Perianth colored, 5—6-parted. Fertile stamens 9, arranged in three series, the six outer ones with simple distinct filaments; three inner ones with two glands at the base of each. Ovary superior. Drupe 1-seeded.

* *Leaves perennial.*

1. *L. Carolinensis Mich.*: leaves oval-lanceolate, coriaceous, glaucous beneath; peduncles simple, terminated with a few-flowered fascicle; outer segments of the perianth half as long as the inner.

In the Great Cypress Swamp, Sussex county, Delaware; its most northern boundary. *Nutt.* S. to Geor. June.—A large shrub or small tree. *Flowers* in small clusters, polygamous, pale-yellow. *Drupe* dark-blue.

Carolina Bay-tree.

** *Leaves deciduous. Flowers diœcious.*

2. *L. Benzoin Linn.*: leaves obovate-lanceolate, wedgeform at base, entire, whitish and subpubescent beneath; flowers in clustered umbels, appearing before the leaves; buds and pedicels smooth. *L. Pseudo-Benzoin Mich. Benzoin odoriferum Nees.*

Banks of streams. Can. to Geor. W. to Miss. April, May.—A shrub 6—10 feet high, with brittle virgate branches. *Flowers* pale-yellow. *Drupe* roundish, scarlet.

Benzoin. Spice-wood.

3. *L. Sassafras Linn.*: leaves entire and ovate, or 2—3-lobed; flowers in clustered corymbose racemes, appearing before the leaves; buds and pedicels silky-pubescent. *Sassafras officinale Nees.*

River banks. Can. to Geor. W. to Miss. April.—Varies in size from that of a large shrub to a large tree. *Leaves* of two forms, some ovate and entire, others dilated and 3-lobed at the summit, silky-pubescent when young, at length smooth. *Flowers* pale-yellow. *Drupe* ovate-oblong, dark-blue. This and the foregoing species possess medicinal properties. See *Big. Med. Bot.* ii. 142.

Sassafras.

ORDER CV. ELÆAGNACEÆ.—OLEASTERS.

Flowers mostly diœcious. STERILE FL. Stamens, 3, 4, or 8, sessile; anthers 2-celled. FERTILE FL. Perianth tubular, persistent; the limb entire or 2—5-toothed. Ovary free, 1-celled; stigma simple, subulate, glandular. Fruit crustaceous, enclosed within the perianth become succulent. Seed erect; embryo straight, surrounded by thin fleshy albumen.—Trees or shrubs, usually covered with leprous scales. Leaves alternate or opposite, without stipules.

SHEPHERDIA. *Nutt.*—Shepherdia.

(In honor of *John Shepherd*, late curator of the Liverpool Botanic Garden.)

Diœcious. STERILE FL. Perianth 4-parted. Stamens 8, included, alternating with 8 glands. FERTILE FL. Perianth 4-cleft, campanulate, superior. Stamens none. Style 1. Stigma oblique. Berry 1-seeded.

S. Canadensis Nutt.: leaves oblong-ovate, nearly smooth above, stellately hairy and scaly beneath; the scales ferruginous and deciduous. *Hippophaë Canadensis Willd.*

Rocky banks of streams. Can. and western part of N. Y. N. to Arct. Amer. May, June. \mathfrak{h} .—*Stem* 6—8 feet high, with numerous opposite branches. *Flowers* minute, in short axillary racemes. *Berry* scaly, sweetish.

Canadian Shepherdia.

ORDER CVI. THYMELACEÆ.—DAPHNADS.

Perianth inferior, tubular, colored; the limb 4- seldom 5-cleft. Stamens definite, usually 8, sometimes 4 or 2; anthers 2-celled. Ovary solitary; style 1; stigma undivided. Fruit a nut or drupe; albumen none, or thin and fleshy.—Shrubs with a tough bark. Leaves alternate or opposite, entire, without stipules.

DIRCA. *Linn.*—Leather Wood.

(From the Greek *δρυκα*, a *fountain*; in allusion to its usual place of growth.)

Perianth colored, tubular-campanulate; limb obsolete, loosely dentate. Stamens 8, inserted into the perianth, unequal. Style 1. Berry 1-seeded.

D. palustris Linn.

Woods. Can. to Geor. April. \mathfrak{h} .—*Stem* 2—4 feet high, with tough yellowish branches. *Leaves* alternate, ovate, sometimes subrhomboid, petioled, entire, obtuse, smooth above, pubescent and glaucous beneath. *Flowers* appearing before the leaves, usually in threes, on a short thick peduncle, pale-yellow. *Berry* oval, reddish when ripe. The bark has a sweetish taste, and when chewed excites a burning sensation in the fauces. *Leather Wood.*

ORDER CVII. SANTALACEÆ.—SANDALWORTS.

Perianth superior, 4- or 5-cleft, half colored, with valvate æstivation. Stamens 4 or 5, opposite the segments of the perianth and inserted into their bases. Ovary 1-celled, with from 1—4 ovules; style 1; stigma often lobed. Fruit a nut or drupe. Seed with fleshy albumen.—Trees, shrubs, or sometimes herbaceous plants, with alternate undivided leaves and small flowers.

1. NYSSA. *Linn.*—Gum Tree.

(Origin of the name uncertain.)

Diœciously polygamous. STERILE FL. Perianth 5-parted. Stamens 5—10. FERTILE FL. Perianth 5-parted. Stamens 5. Style 1. Drupe inferior, 1-seeded.

1. *N. multiflora Walt*: leaves oval and obovate, very entire, acute at each end, the petiole margin and midrib villous; fertile peduncles mostly 2—3 flowered. *N. villosa Willd. Mich.* *N. sylvatica Mich. f.*

Low woods. Can. to Car. June.—A tree 30—50 feet high. *Flowers* small, green; the *sterile* ones 2—6 in a cluster; the *fertile* mostly 2 on a peduncle.

Drupe nearly spherical, very dark blue. The wood of this tree, as of the next, (if indeed it is distinct,) is remarkable for its toughness; on which account it is much used for making naves for carriage-wheels, &c.

Sour Gum. Black Gum.

2. *N. biflora* Walt.: leaves ovate-oblong, very entire, acute at each end, smooth; fertile peduncles 2-flowered; drupe oval-compressed. *N. aquatica* Linn.

Swamps. N. S. ? S. to Car. June.—A tree 30—50 feet high. *Fertile flowers* almost invariably 2. *Drupe* dark blue. Probably not distinct from the preceding, at least as credited to the Northern States.

Tupelo-tree. Swamp Hornbeam.

2. HAMILTONIA. Muhl.—Oil Nut.

(Dedicated by Muhlenberg to Mr. Hamilton, an American patron of botany.)

Polygamous. PERFECT FL. Perianth turbinate-campanulate, 5-cleft. Germ immersed in the 5-toothed glandulous disk. Style 1. Stigmas 2—3, sublenticular. *Drupe* pyriform, 1-seeded, enclosed in the adhering base of the calyx. STERILE FL. resembling the perfect, except in wanting the pistil.

H. oleifera Muhl. *Pyrularia pubera* Mich.

Mountains. Penn to Geor.; rare. May, June. ½.—*Stem* 4—6 feet high, with a very deep root. *Leaves* oblong-obovate, entire, acuminate, 2—3 inches long, petiolate, pubescent when young. *Flowers* in a terminal raceme, small, greenish-yellow. Whole plant more or less oily. *Oil Nut.*

3. COMANDRA. Nutt.—Bastard Toad Flax.

(From the Greek *κομη*, hair, and *ανηρ*, a man, (a *stamen*;) in allusion to the tuft of hair which connects the anthers with the perianth.)

Perianth urceolate-campanulate; the limb 5-cleft, persistent. Stamens 5, rarely 4, the anthers adhering to the lobes of the perianth by a tuft of hair. Style single. Fruit somewhat drupaceous, dry, 1-seeded, crowned by the persistent perianth.

C. umbellata Nutt.: stem round and erect; leaves lance-ovate or oblong, subsessile, entire; cymes in a leafy terminal panicle. *Thesium umbellatum* Linn.

Rocky hills and woods. Subarct. Amer. to Geor. W. to Miss. May—Aug. ¼.—*Stem* 8—12 inches high, smoothish, branched at the top. *Flowers* white, numerous, on short pedicels. *Bastard Toad-flax.*

ORDER CVIII. ARISTOLOCHIACEÆ.—BIRTHWORTS.

Perianth superior, regular or very unequal; the limb valvate. Stamens 6—12, epigynous, distinct, or adhering to the style and stigmas. Ovary inferior, 3—6-celled; style simple; stigmas radiate. Fruit dry or succulent, 3—6-celled. Seeds with a very minute embryo, in the base of fleshy albumen.—Herbs or shrubs. Leaves alternate, simple, often with leafy stipules.

1. ARISTOLOCHIA. *Linn.*—Birthwort.

(From the Greek; in allusion to its supposed medicinal virtues.)

Perianth tubular, ventricose at base, dilated at the apex and ligulate. Anthers 6, subsessile, inserted on the style. Stigma 6-parted or lobed. Capsule 6-sided, 6-celled, many-seeded.

1. *A. Siphon L'Herit.*: stem twining; leaves cordate, acute; peduncles 1-flowered, furnished with an ovate bract; perianth ascending, the limb 3-cleft and equal.

Mountains. Penn. to Car. June. 12.—A vine climbing over trees of large size. *Leaves* very large, alternate, sprinkled with hairs. *Flowers* solitary, brown. *Dutchman's Pipe.*

2. *A. Serpentaria Linn.*: stem erect, flexuous; leaves cordate-oblong, acuminate; peduncles nearly radical; perianth sigmoid, the orifice 2-lipped.

Shady woods. N. Y. to Car. June. 24.—*Root* consisting of numerous coarse fibres. *Stem* 8—12 inches high, pubescent, geniculate and knotty at base. *Flowers* purplish-brown, large, at the base of the stem, on crooked scaly peduncles. It possesses valuable medicinal properties. See *Big. Med. Bot.* ii. 82. *Virginia Snakeroot.*

2. ASARUM. *Linn.*—Asarabacca.

(From the Greek *a*, not, and *αστρα*, a band or braid; because it was rejected from garlands by the ancients.)

Perianth campanulate, mostly 3-parted. Stamens 12, placed on an epigynous disk. Anthers adnate to the middle of the filaments. Ovary inferior; style short; stigma 6-parted or lobed. Capsule 6-celled, many-seeded.

1. *A. Canadense Linn.*: leaves a terminal pair, broad reniform; perianth woolly, cleft to the base; the segments sublanceolate, reflexed. *A. Carolinianum Walt.*

Woods. Can. to Car. W. to Miss. April. 24.—*Stem* none or very short. *Leaves* generally 2, with long and hairy petioles. *Flower* somewhat campanulate, solitary, on a short peduncle, sometimes nearly buried in the ground. The root has an agreeable and aromatic flavor.

Canadian Asarabacca. Wild Ginger.

2. *A. Virginicum Mich.*: leaves solitary, cordate, nearly round, coriaceous; flower nearly sessile; perianth externally smooth, short, campanulate.

Rocky woods. N. J. to Car. April. 24.—*Leaves* spotted or clouded, smooth. Segments of the perianth obtuse. Very similar in habit to the preceding.

Virginian Asarabacca.

ORDER CIX. EMPETRACEÆ.—CROWBERRIES.

Flowers diceious or polygamous. Perianth consisting of several persistent imbricate scales, the innermost of which are sometimes petaloid. Stamens as numerous as the inner scales.

Ovary free, 3—9-celled; style 1; stigma radiating. Fruit fleshy, seated in the persistent perianth, with 3—9 bony nucleules.—Small arid shrubs, with heath-like evergreen leaves and minute flowers in their axils.

1. EMPETRUM. *Linn.*—Crowberry.

(From the Greek *εμ, on*, and *πετρος*, a stone; in allusion to its place of growth.)

Diœcious. Perianth consisting of two rows of scales. STERILE FL. Stamens 3, upon long filaments. FERTILE FL. Stamens none. Style none, or very short. Stigma with 6—9 rays. Fruit globose, with 6—9 nucleules.

E. nigrum Mich.: procumbent; leaves linear-oblong, revolute on the margin.

White Hills, N. H. *Big.* Summits of the high mountains in Essex county, N. Y. *Torr.* Shores of Lake Superior. *Houghton.* N. to Arct. Amer. May, June.—A low shrub with small and dense evergreen foliage, like that of the heaths. *Leaves* imbricate, oblong, obtuse. *Flowers* axillary, very small, reddish. *Berry* roundish, black. *Common Crowberry.*

2. OAKESIA. *Tuckerm.*—Oakesia.

(In honor of *William Oakes*, Esq., of Ipswich, Mass., a well known botanist.)

Mostly diœcious. STAMINATE FL. Perianth of 5—6 leaflets, the 2 innermost ones somewhat petaloid and often united on one side. Stamens mostly 3, (sometimes 4 or 5,) exserted. Ovary wanting or mostly abortive. FERTILE FL. Perianth nearly as in the sterile. Disk none. Ovary 3—4-celled; style filiform, 3—4-cleft. Fruit dry and drupaceous, globose, minute.

O. Conradi Tuckerm.

Dry sandy woods. Long Island, N. Y. July, Aug.—A very branching shrub forming dense circular patches; the branches somewhat verticillate, with a grayish bark. *Leaves* coriaceous, narrow-linear, bright green, somewhat hispid when young, smooth when old, margin revolute. *Heads of flowers* furnished with several small concave bracts. *Perianth* purplish-brown, the leaflets oblong or obovate. *Fruit* about the size of a mustard-seed. (*Torr. N. Y. Fl.*)

Conrad's Oakesia.

ORDER CX. EUPHORBIACEÆ.—SPURGEWORTS.

Flowers monœcious or diœcious. Perianth inferior, with various glandular or scaly appendages, (sometimes wanting). STERILE FL. Stamens 1 or many; anthers 2-celled. FERTILE FL. Ovary free, sessile or stalked; styles 2—3; stigmas compound or single with several lobes. Fruit consisting of 2—3 dehiscent cells, separating with elasticity from their common axis,

sometimes indehiscent. Seeds often with an aril, the embryo enclosed in fleshy albumen.—Trees, shrubs or herbs, often abounding in acrid milk. Leaves simple, rarely compound, usually with stipules.

1. CROTONOPSIS. *Mich.*—Crotonopsis.

(So called from its resembling the *Croton*.)

Monœcious. STERILE FL. Perianth 5-parted, with 5 petaloid scales. Stamens 5. FERTILE FL. Perianth 5-parted. Stigmas 3, twice bifid. Capsule 1-seeded, not opening.

C. linearis Mich.: stem erect, dichotomously branched; leaves stellately pubescent above, hairy and covered with silvery scales beneath. *C. argentea Pursh.* *Friesia argentea Spreng.*

Swamps in sands. N. J. to Car. W. to Miss. June. ①.—Stem 12—18 inches high, covered like the leaves, with solitary scales. Leaves varying from linear-lanceolate to ovate, on short petioles. Flowers in terminal and axillary spikes, very minute.
Linear-leaved Crotonopsis.

2. PHYLLANTHUS. *Linn.*—Phyllanthus.

(From the Greek *φύλλον*, a leaf, and *ανθος*, a flower; the flowers being connected with the leaves.)

Monœcious. STERILE FL. Perianth 6-parted; segments spreading, colored, persistent. Stamens 3, very short, spreading, united at base; anthers didymous. FERTILE FL. Perianth as in the sterile. Styles 3, bifid. Capsule 3-celled.

P. Caroliniensis Walt.: herbaceous; stem erect; branches alternate and distichous; leaves alternate, simple, elliptic-obovate, obtuse, smooth, somewhat distichous, on short petioles; flowers few, (2—4,) axillary, on pedicels, nodding. *P. obovatus Willd.*

Banks of streams. Penn. to Geor. July. Aug. ①.—Stem 12 inches high, with distichous branches, sometimes dark-purple. Flowers on short pedicels, axillary, nodding, yellowish, with a purple tinge at base.

Carolinian Phyllanthus.

3. RICINUS. *Linn.*—Palma Christi.

(From the Latin *ricinus*, a tick; its seed resembling that insect.)

Monœcious. STERILE FL. Perianth 5-parted. Stamens numerous; filaments united, branching. FERTILE FL. Perianth 3-parted. Styles 3, 2-parted. Capsule mostly echinate, 3-celled, 3-seeded.

R. communis Linn.: stem herbaceous, glaucous-pruinose; leaves peltate-palmate; lobes lanceolate, serrate; capsule echinate.

Around plantations at the South. Aug., Sept. ①.—Introduced. Cultivated extensively in various parts of the U. S. for the purpose of obtaining oil from the seed.
Castor-oil Bean.

4. ACALYPHA. *Linn.*—Three-seeded Mercury.(A Greek name for the *nettle*, which this plant somewhat resembles.)

Monœcious. STERILE FL. Perianth 3—4-parted. Stamens 8—16, very short, united at base. FERTILE FL. Styles 3, 2-parted. Capsule 3-celled; cells 1-seeded.

1. *A. Virginica Linn.*: pubescent; leaves ovate or oblong-lanceolate, obtusely serrate, petiolate; bracts somewhat stipitate, roundish-cordate, incisely lobed; fertile flowers at the base of the sterile spike.

Road sides, &c. Can. to Car. June—Aug. ①.—Stem 12—18 inches high, erect, pubescent. *Sterile flowers* very small. *Capsule* hispid.
Common Three-seeded Mercury.

2. *A. Caroliniana Walt.*: leaves on long petioles, rhombic-ovate, acuminate, serrate, entire at base; bracts cordate, lobed; fertile flowers at the base of the sterile spike.

Fields. Penn. to Flor. July, Aug. ①.—Stem 9—18 inches high.
Carolinian Three-seeded Mercury.

5. EUPHORBIA. *Linn.*—Spurge.(Named after *Euphorbus*, an ancient Greek physician.)

Monœcious. Rarely furnished with a perianth. Involucre monophyllous, campanulate, 4—5-lobed; lobes usually alternating with peltate glands. STERILE FL. numerous, each consisting of an anther with its filament articulated in the middle. FERTILE FL. solitary, central, on a long peduncle. Styles 3, usually 2-cleft. Capsule 3-celled, 3-seeded.

* *Flowers solitary or somewhat corymbose.*

1. *E. dentata Mich.*: hairy; leaves opposite, oval, dentate; flowers crowded at the summit of the stem.

Shady rocks. Penn. to Tenn. July, Aug. ①.—The upper leaves spotted.
Toothed Spurge.

2. *E. hypericifolia Linn.*: stem erect, spreading, smoothish or hairy, with dichotomous branches; leaves on short petioles, oval-oblong, slightly falcate, serrate; peduncles solitary in the axils and corymbose at the extremity of the branches; glands of the involucre with small petaloid appendages.

Fields and road sides. Can. to Flor. W. to Miss. Aug., Sept. ①.—Stem 8—18 inches high, sometimes almost prostrate. *Leaves* often with purple blotches above. *Flowers* small, white or purplish.
Hypericum-leaved Spurge.

3. *E. maculata Linn.*: stem prostrate, much branched, hairy; leaves opposite, ovate-oblong, serrate, unequal at base; flowers axillary, solitary or somewhat clustered; glands 4, seated on small petaloid appendages, transversely elliptic.

Near cultivated grounds. N. Y. to Car. Aug.—Oct. ①.—*Stem* 6—12 inches long, much branched from the base. *Leaves* on short petioles, with purplish blotches above. *Flowers* crowded near the summit of the stem.

Spotted Spurge.

4. *E. polygonifolia* Linn.: procumbent, branching, very smooth, succulent; leaves oblong and linear-oblong, petiolate, obtuse, sometimes subcordate at base; flowers solitary in the forks of the stem; glands transversely oblong, stipitate. *E. maritima* Nutt.

Sandy sea-shores. N. Y. to Car. July—Sept. ②.—*Stem* diffuse, 4—10 inches long. *Stipules* subulate, simple or simply cloven. *Flowers* solitary, on peduncles which are longer than the petioles.

Seaside Spurge.

5. *E. Ipecacuanha* Linn.: procumbent or nearly erect, small, smooth; leaves opposite, varying from obovate to linear-lanceolate; peduncles axillary, 1-flowered, elongated; glands reniform.

Sandy soils. N. Y. to Car. June. ②.—*Root* very long and tapering. *Stem* short, the branches 6—12 inches long. *Leaves* sessile, often purplish. *Flowers* solitary, on peduncles which are about as long as the leaves. Emetic, and sometimes used as a substitute for the Ipecacuanha of the shops.

Wild Ipecac.

6. *E. portulacoides* Linn.: erect; leaves entire, oval, retuse; lower ones ternate, spatulate, obtuse, smooth; peduncles axillary, 1-flowered, as long as the leaves; glands of the involucre roundish.

Sandy soils. Penn. Muhl. June—Aug. ②.—It may be a variety of *E. corollata*.

Purselain-leaved Spurge.

** *Flowers somewhat umbelled, involucrate.*

7. *E. Peplus* Linn.: leaves membranaceous, broad-obovate, petioled, entire, smooth; umbel 3—4-cleft; glands of the involucre lunate, the horns very long; capsule somewhat winged.

Cultivated grounds. Penn. to Virg. W. to Miss. July, Aug. ②.—*Involucels* or floral leaves large. *Flowers* conspicuous. Introduced from Europe.

Petty Spurge.

8. *E. mercurialina* Mich.: stem weak and slender; leaves opposite or ternate, subsessile, oval, entire; umbel simply 3-cleft, the rays 1-flowered.

Shady rocky situations. Penn. and Ken. Pursh. July, Aug. ②.—Resembles *Mercurialis annua*.

Mercurialis-like Spurge.

9. *E. Lathyris* Linn.: stem erect; leaves submembranaceous, oblong-lanceolate, entire, sessile, 4-farious; umbel 3—4-cleft; glands of the involucre bluntly lunate; capsule smooth.

Near gardens and cultivated grounds. Penn. July, Aug. ② or ③.—*Stem* 2—3 feet high, stout, smooth. *Leaves* opposite and decussate. *Flowers* on dichotomous branches at the summit of the stem. Introduced from Europe.

Caper Spurge.

10. *E. corollata* Linn.: stem simple, erect; leaves varying from ovate-oblong to linear and spatulate-oblong, obtuse; umbel mostly 5-cleft, the rays 2—6-forked; glands of the involucre with a large obovate petaloid appendage; capsule smooth.

Dry fields. Can. to Car. W. to Miss. July—Aug. ②.—*Stem* 1—3 feet high, slender, rarely branched, nearly smooth. *Leaves* varying in form, alternate on the stem, whorled near the flowers, often somewhat revolute. *Flowers* on slender peduncles, in a terminal umbel, conspicuous.

Large-flowered Spurge.

11. *E. memoralis* Darl. : stem erect; leaves alternate, lance-oblong, rather acute, narrowed at the base, subsessile, entire, hairy beneath; umbel 5--8-cleft, the rays 1--2-forked; petaloid segments of the involucre dilated, subreniform. *E. pilosa* Pursh not of Linn.

Moist woods. Penn. May, June. 2.—Stem 2--3 feet high, simple or with a slender peduncle-like branch from the axils of the leaves. Flowers in a terminal umbel and on slender axillary branches. Wood Spurge.

12. *E. helioscopia* Linn. : smooth; stem erect, branched above; leaves alternate, broadly obovate-wedgeform, obtuse, serrulate, the bracteal ones broader; umbel 3--5-cleft, the rays 2--3-times forked; involucre oblong-turbinate, terminal and in the forks of the umbel, nearly sessile. *E. obtusata* Pursh.

Sandy fields. N. Y. to Car. July--Sept. ①.—Stem 8--18 inches high, umbellately branched at the top. Leaves membranaceous, sometimes retuse. Sterile flowers rather numerous. Wartwort Spurge.

13. *E. platyphylla* Linn. : stem erect, smooth; leaves elliptic or oblanceolate, mostly acute, finely serrulate, hairy beneath; floral ones cordate; umbel 3--5-cleft, the rays 2--3-times forked; glands of the involucre oval; capsule warted.

Near Portland Harbor, Lake Erie. Dr. Kneishern. On the islands of Lake Champlain. Oakes. Can. Hook. ①.—Stem about a foot high. Leaves membranaceous, tapering to the base, sessile. Glands large. Introduced? Broad-leaved Spurge.

ORDER CXI. URTICACEÆ.—NETTLES.

Flowers monœcious or diœcious, scattered or clustered. Perianth membranous, lobed, persistent. Stamens definite, distinct, inserted into the base of the calyx and opposite its lobes. Ovary superior, simple; stigma simple. Fruit a simple indehiscent nut, surrounded either by the membranous or fleshy perianth. Embryo straight, with fleshy albumen.—Trees, shrubs or herbs. Leaves alternate, often covered with pungent hairs. Flowers inconspicuous.

1. URTICA. Linn.—Nettle.

(From the Latin *uro*, to burn; in allusion to its stinging property.)

Monœcious, rarely diœcious. STERILE FL. Perianth single, of 4 roundish-obtuse leaves, containing the cup-shaped rudiment of a germ. Stamens 4. FERTILE FL. Perianth mostly of 2 persistent leaves. Stigma 1. Nut orbicular-ovate, compressed, shining.

* *Leaves opposite.*

1. *U. urens* Linn. : leaves elliptic or roundish-ovate, somewhat 5-nerved, acutely serrate; flowers in simple axillary clusters, which are shorter than the leaves.

Cultivated grounds. Can. to Geor. June, July. ①.—*Stem* 10—15 inches high, stinging. *Flowers* in short dense clusters. Introduced from Europc.

Small Stinging Nettle.

2. *U. dioica* Linn.: stem and leaves hispid; leaves ovate, acuminate, cordate at base, coarsely serrate; flowers mostly diœcious, in much-branched clusters.

Waste places Can. to Car. June—Aug. ♀.—*Stem* 2—3 feet high, erect, simple or branched, clothed with stinging hairs. *Flowers* small, green, in axillary spikes which are in pairs. The root boiled with alum dyes yarn of a yellow color. *Hook.* Introduced from Europe. *Large Stinging Nettle.*

3. *U. procera* Muhl.: leaves opposite, ovate-lanceolate, serrate; petioles fringed; flowers diœcious; spikes branching, clustered by pairs, longer than the petioles.

Low grounds. Can. to Car. July, Aug. ♀.—*Stem* 3—4 feet high, obtusely 4-angled. *Flowers* in compact approximate clusters. According to Mr. Elliott, the leaves of this species are never cordate, and the spikes are uniformly longer than the petioles, in which points it differs from the *U. procera* of Pursh, which would seem to be a distinct species, probably the next. *Tall Nettle.*

4. *U. gracilis* Linn.: stem hispid; leaves opposite, ovate-lanceolate, serrate, cordate at base; flowers diœcious; peduncles hispid; clusters in pairs, somewhat branched, about as long as the petioles. *U. procera* Pursh.?

Rocky places. Can. to Penn. Pursh. Muhl. N. to Arct. Amer. July—Aug. ♀.—*Stem* 2—3 feet high. *Slender-stalked Nettle.*

** *Leaves alternate.*

5. *U. capitata* Linn.: stem naked; leaves cordate-ovate, acuminate, serrate, 3-nerved, twice as long as the petiole; clusters spiked; spikes solitary, shorter than the leaves, leafy at the summit.

Shady woods. Can. to Car. June, July. ♀.—*Stem* 4—5 feet high, scabrous, furrowed. *Leaves* scabrous, those on the stem generally opposite. *Clusters* lateral and axillary. Resembles *U. dioica*. *Headed Nettle.*

6. *U. Canadensis* Linn.: hispid and stinging; leaves ovate, acuminate, serrate; panicles axillary, mostly in pairs, loosely and divaricately branched; the lower sterile, the upper fertile. *U. divaricata* Pursh.

Moist shady grounds. Can. to Car. July, Aug. ♀.—*Stem* 5—6 feet high, stout, erect, branched. *Leaves* large, ovate, sometimes cordate. This species has the fibres very tough and strong, and it was formerly proposed by Mr. Whitlow as a substitute for hemp. *Canadian Nettle.*

2. ADIKE. Raf.—Richweed.

(An ancient Greek name of some nettles.)

Flowers diœcious or somewhat monœcious. Perianth 3-(sometimes 4-) leaved; leaves nearly equal, oblong or lanceolate.

STERILE FL. STAMENS 3. FERTILE FL. Perianth with a petaloid cucullate scale at the base of each of the leaves inside, membranaceous in fruit. Stigma 1, minute, capitate, sessile. Nut minutely papillose, straight.

A. pumila Raf. *Urtica pumila* Linn.

Wet grounds. Can. to Car. June, July. ①.—*Stem* 6—18 inches high, sim-

ple or branched from the base, succulent and almost transparent. *Leaves* opposite, broad-ovate or ovate-lanceolate, acuminate, crenate-serrate, shining, on petioles which are 1—2 inches long. *Flowers* very small, greenish, in axillary branching clusters or paniculate corymbs, which are shorter than the petioles. Very properly separated from the genus *Urtica*. *Richweed. Coolweed.*

3. BŒHMERIA. *Jacq.*—False Nettle.

(Named after *George Rudolph Bœhmer*, a German Botanist.)

Flowers monœcious or diœcious, minute. STERILE FL. Perianth 4-parted. Stamens 4. FERTILE FL. Perianth none, but a cluster of ovate acuminate scales, with a compressed ovary within each scale. Nut ovate, pointed with the subulate style.

B. cylindrica Willd.: herbaceous; leaves opposite, ovate-oblong, acuminate, toothed, 3-nerved, on long petioles, smoothish; sterile spikes interrupted; fertile ones mostly continuous, cylindrical. *B. lateriflora Muhl.*
Urtica cylindrica Linn.

Wet grounds. Can. to Flor. June—Aug. ♀.—*Stem* 2—3 feet high, smoothish, usually simple, obtusely 4-angled. *Flowers* minute, greenish, often diœcious, in slender mostly leafy spikes. *False Nettle.*

4. PARIETARIA. *Linn.*—Pellitory.

(From the Latin *paries*, a wall; the species often growing on old walls.)

Flowers polygamous, surrounded by a many-cleft involucre. PERFECT FL. Perianth 4-parted, persistent. Stamens 4; filaments at first incurved, then expanding with an elastic force. Ovary 1. Style 1. Nut enclosed by the enlarged perianth.

P. Pennsylvanica Muhl.: leaves alternate, oblong-lanceolate, veiny, with opaque dots; involucre longer than the flowers.

Moist rocks. N. Y. to Geor. June. ♂.—*Stem* 6—12 inches high, simple. *Flowers* mostly perfect, in compact axillary clusters, whitish, at length brown. *Pennsylvanian Pellitory.*

ORDER CXII. CANNABINACEÆ.—HEMPWORTS.

Flowers diœcious. STERILE FL. in racemes or panicles. Perianth 5-parted, herbaceous, scaly, imbricated. Stamens few. FERTILE FL. in spikes or cones. Perianth single, inwrapping the ovary. Stigmas 2, subulate, sessile. Fruit indehiscent, with a single seed. Embryo curved, without albumen.—Herbaceous rough-stemmed watery plants, with alternate lobed stipulate leaves, and small inconspicuous flowers.

1. CANNABIS. *Linn.*—Hemp.

(An ancient Greek name, the etymology of which is obscure.)

Diœcious. STERILE FL. Perianth 5-parted. Stamens 5.

FERTILE FL. Perianth oblong, acuminate, convolute, the base ventricose and including the ovary. Stigmas 2, long, subulate. Nut 2-valved.

C. sativa Linn.

Fields and waste places. Can. to Virg. June. ①.—*Stem* 5—10 feet high, angular and sulcate, often branched. *Leaves* petiolate, digitate; leaflets 5—7, lanceolate, serrate. *Sterile flowers* in loose axillary clusters, which form a large panicle. *Fertile flowers* axillary, mostly in pairs, greenish. Everywhere cultivated for the sake of its tough fibre. Introduced. *Common Hemp.*

2. HUMULUS. Linn.—Hop.

(From the Latin *humus*, moist earth; because it prefers moist soils.)

Dioecious. STERILE FL. Perianth 5-parted. Stamens 5. FERTILE FL. in aments; the scales large, membranous, imbricate in several rows, 2-flowered. Stigmas 2, long, spreading. Achenia invested with the enlarged perianth and forming a membranaceous strobile.

H. Lupulus Linn.

Hedges, &c. Throughout the U. S. Aug. 21.—*Stem* twining, scabrous. *Leaves* opposite, rough, cordate at base, 3—5-lobed; the lobes acuminate and serrate. *Flowers* greenish, the sterile in oblong panicles terminating the axillary branches, the fertile in oblong aments. It is used in medicine as an anodyne. *Big. Med. Bot.* iii. 163. *Common Hop.*

ORDER CXIII. MORACEÆ.—MULBERRIES.

Flowers monœcious, in heads, spikes or aments. STERILE FL. Perianth none, or 3—4-parted, imbricated. Stamens 3—4. FERTILE FL. Perianth 3—5-parted, sometimes in two rows. Ovary 1- rarely 2-celled; style terminal, bifid. Fruit small nuts or utracles, 1-seeded, enclosed by a succulent receptacle or collected in a fleshy head formed by the succulent perianth. Seeds albuminous.—Trees or shrubs, with a milky juice. Leaves of various forms. Flowers very inconspicuous.

MORUS. Linn.—Mulberry.

(From the Greek *μωρα*, the mulberry.)

Flowers in spikes, usually monœcious sometimes dioecious. STERILE FL. in loose spikes. Perianth 4-parted. Stamens 4. FERTILE FL. in dense spikes. Perianth 4-parted, becoming baccate. Styles 2. Nut ovate, compressed, covered by the succulent perianth.

1. *M. rubra* Linn.: leaves cordate-ovate or palmately lobed, acuminate, equally serrate, scabrous above, pubescent beneath; flowers mostly dioecious; fruit dark-purple.

Woods. N. Y. to Car. W. to Miss. May.—A tree 15—25 feet high, with spreading branches. *Leaves* often variously lobed. *Flowers* greenish, small, in numerous axillary pedunculate spikes. *Fruit* oblong, of an agreeable sweetish taste. The wood is remarkable for its durability. *Red Mulberry.*

2. *M. alba* Linn.: leaves cordate, ovate, unequal at base, somewhat lobed, acute, serrate, smoothish, shining; flowers monœcious; fruit usually whitish.

Near old fields, &c. May.—A tree 20—30 feet high, much branched. *Leaves* sometimes a little lobed. *Fruit* shorter than in the preceding, sweetish but nauseous. Originally introduced as food for the silk-worm. *White Mulberry.*

ORDER CXIV. SAURURACEÆ.—SAURURADS.

Flowers naked, seated upon a scale. Stamens definite, clavate, persistent; anthers continuous with the slender filaments. Ovaries 3 or 4, more or less distinct. Fruit consisting of 3 or 4 fleshy indehiscent nuts, or a 3- or 4-celled capsule. Embryo minute, in a fleshy sac, on the outside of hard mealy albumen.—Herbaceous plants, growing in marshy places. Leaves alternate, with stipules. Flowers in spikes.

SAURURUS. Linn.—Lizard's Tail.

(From the Greek *σαυρα*, a lizard and *ουρα*, a tail; in allusion to its spike of flowers.)

Flowers in a solitary spike. Scales 1-flowered. Stamens 6—8; filaments free, elongated. Fruit 3- or 4-celled; the carpels easily separating at maturity, 1- rarely 2-seeded, not opening.

S. cernuus Linn.

Swamps. Can. to Car. Aug. ♀.—*Stem* 1—2 feet high, leafy, forked above, angular and sulcate. *Leaves* sagittate-cordate, acuminate, nerved beneath. *Flowers* very small, greenish-white, in a long slender spike, which is at first cernuus at the apex, but in fruit erect. *Lizard's Tail. Swamp Lily.*

ORDER CXV. SALICACEÆ.—WILLOWS.

Flowers diœcious, naked, or with a membranous scale or bract, amentaceous. STERILE FL. Stamens 2—12 or more, sometimes monadelphous. FERTILE FL. Ovary superior, 1-celled; style 1 or none; stigmas 2, often 2-cleft or 2-parted. Fruit leathery, 1-celled, 2-valved, many-seeded. Seeds covered with long silky hairs. Albumen none.—Trees or shrubs. Leaves alternate, simple, serrate or entire, furnished with stipules. The bark is usually bitter, and contains more or less of the peculiar principle called *Salicine*.

1. SALIX. *Linn.*—Willow.

(From the Celtic *sal*, *near*, and *lis*, *water*; a tree that grows near water.)

Dioecious. Ament cylindric. Perianth none. STERILE FL.—Stamens mostly 2, but often 3—5. FERTILE FL. Ovary with a gland at the base. Stigmas 2, often cleft.

* *Leaves entire or obscurely serrate.*

1. *S. viminalis Linn.*: leaves linear-lanceolate, very long-acuminate, nearly entire, somewhat undulate, white-silky beneath; stipules very small, sublanceolate; aments appearing before the leaves; scales roundish, very hairy; ovary sessile, ovoid; style filiform; stigmas linear, acute, undivided.

Banks of streams. N. S. April, May—A middle-sized tree. Branches slender and flexible. Filaments yellow. Anthers orange. Introduced from Europe. Osier. Basket-willow.

2. *S. candida Willd.*: leaves lanceolate or linear-lanceolate, acute, obscurely toothed at the point, pubescent above, white-tomentose beneath, with the margin revolute; stipules lunate, small; aments appearing before the leaves, cylindric; scales obovate, obtuse, brown, clothed with long hairs. *S. incana Mich.*

Shady woods. N. Y. and Penn. N. to Arct. Amer. April, May. $\frac{1}{2}$.—Stem 5 or 6 feet high, with reddish twigs. Aments about an inch long, on short peduncles. White-leaved Willow.

3. *S. Muhlenbergiana Barratt*: leaves obovate-lanceolate, entire or remotely toothed, mostly acute, even, smoothish above, grayish-tomentose beneath; stipules semiovate or lunate; aments ovoid-cylindric, densely flowered; ovary lanceolate, with a long beak; stigma 2-cleft. *S. conifera Willd.* and *S. recurvata Pursh.*

Dry woods. Can. to Car. April. $\frac{1}{2}$.—Stem 4—8 feet high, with brittle grayish twigs. Leaves distinctly veined, the margin sometimes a little waved. Aments about an inch long. Filaments white. Anthers yellow. Muhlenberg's Willow.

4. *S. tristis Ait.*: leaves narrow-cuneate, oblanceolate, acute at each end, nearly entire, revolute, smoothish above, rugosely veined and tomentose beneath; stipules none or caducous; aments globose-ovoid, appearing before the leaves; scales roundish-obovate; stigmas 2-cleft; capsules with a long beak. *S. longirostris Mich.*

Sandy woods. N. Y. to Car. March, April. $\frac{1}{2}$.—Stem 2 or 3 feet high, sometimes procumbent. Aments numerous, 4—6-lines long. Anthers at length yellow. The most dwarfish of our lowland species. Dwarf Downy Willow.

5. *S. pedicellaris Pursh*: branches smooth; leaves obovate-lanceolate, rather acute, very entire, smooth and of the same color on both sides; stipules none; aments appearing with the leaves, pedunculate, very smooth; scales oblong, half the length of the pedicel, scarcely hairy; stamens 2; ovary ovoid-oblong; style short; stigmas 2-cleft.

Sphagnous swamps. Catskill mountains, N. Y. *Pursh.* Near Oriskany, Oneida county. Lodi, Seneca county, N. Y. *Torr.* New Eng. *Tuckermann.* May. $\frac{1}{2}$.—Stem ascending, virgate, 1—3 feet high, the bark smooth and brown.

ish. *Aments* at the ends of the leafy branches, about 8 lines long. *Capsule* reddish. *Long-stalked Willow.*

6. *S. rosmarinifolia* Linn.: leaves straight, linear-lanceolate, acute at each end, very entire or with a few glandular teeth, pubescent above, silky beneath; stipules lanceolate, erect; aments appearing before the leaves; scales short, villous; ovary pedicellate, lanceolate, acuminate, silky; stigmas subsessile, bifid.

Wet meadows and mountain swamps. Penn. to Car. March. $\frac{1}{2}$.—*Stem* 2—3 feet high; the branches silky-pubescent. *Leaves* $1\frac{1}{2}$ inches long, becoming smooth when old. Whole plant, when dry, turning almost black.

Rosemary-leaved Willow.

** *Leaves remotely and obtusely serrate.*

7. *S. myricoides* Muhl.: leaves oblong-lanceolate, acute or acuminate, biglandular at base, obtusely serrate, smooth, glaucous beneath; stipules lunate, ovate, glandular-serrate; aments villous, leafy at the base; scales lanceolate, obtuse, villous, black; ovaries on long pedicels, lanceolate, smooth; style distinct; stigmas bifid.

Swamps and wet grounds. N. Eng. to Virg. April. $\frac{1}{2}$.—*Stem* 6—9 feet high, with tough green and purple branches. *Aments* flowering first above. *Anthers* yellow. *Gale-leaved Willow.*

8. *S. prinoides* Pursh.: leaves oval-oblong, acute, remotely undulate-serrate, glabrous, glaucous beneath; stipules semicordate, incisely toothed; aments appearing before the leaves, villous; ovary pedicellate, ovoid, acuminate, silky; style long; stigmas bifid.

On the banks of rivers. Penn. to Virg. March, April.—A shrub 6—8 feet high. *Prinos-like Willow.*

9. *S. discolor* Willd.: leaves oblong or obovate-oblong, somewhat obtuse or shortly acuminate, smoothish, remotely serrate, very entire at the point, glaucous beneath; stipules lunate, serrate, deciduous; aments appearing with the leaves, diandrous, oblong, tomentose; scales oblong, acute, hairy, black; ovary subsessile, tomentose; stigmas deeply 2-parted. *S. prinoides* Pursh.

Swamps and low grounds. N. Eng. to Car. April.—A shrub or small tree, with tough brownish or greenish branches. *Aments* an inch long, thick and compact. *Filaments* white. *Anthers* red, yellow when burst.

Glaucous Willow.

10. *S. longifolia* Muhl.: leaves linear-lanceolate, very long, acute at each end, remotely toothed, green on both sides and at length nearly smooth; stipules small, lanceolate, toothed; aments appearing with the leaves, peduncled, tomentose; scales flat, retuse; stamens 2, longer than the scales; stigmas large, 2-parted. *S. angustata* Pursh.

Banks of streams. N. Y. Penn. W. to the Rocky Mountains. May—July. $\frac{1}{2}$.—*Stem* 2—10 or 12 feet high, with brown branches and white branchlets, sometimes prostrate and rooting. *Aments* an inch to an inch and a half long.

Long-leaved Willow.

11. *S. Cutleri* Tuckermann: depressed; leaves elliptic and acute, or obovate and obtuse, glandular-denticulate, smooth and somewhat shining above, glaucous beneath; aments appearing with the leaves, compact, oblong-cylindric; scales obovate, silky, blackish; stigmas 2-cleft. (*Torr. N. Y. Fl.*) *S. Uva ursi* Pursh.

White Mountains, N. H. High mountains in Essex county, N. Y. June. $\frac{1}{2}$.—*Stem* depressed, much branched, smooth. *Leaves* from half an inch to an inch long. *Aments* about half an inch long. *Cutler's Willow*.

*** *Leaves closely and acutely serrate.*

12. *S. Purshiana* Spreng.: leaves very long, linear-lanceolate, gradually attenuate above, subfalcate, acute at base, finely toothed-serrate, smooth on both sides, silky when young; stipules lunate, toothed, reflexed; ovaries smooth, pedicellate; style short. *S. falcata* Pursh. *S. nigra* var. *falcata* Torr. N. Y. Fl.

Banks of streams. N. Y. to Virg.—A small tree, 6—10 feet high, with smooth and slender branches. *Aments* 1—2 inches long. *Capsules* brownish. *Pursh's Willow*.

13. *S. nigra* Marsh.: leaves lanceolate, acute at each end, serrulate, smoothish and green on both sides; petiole and upper side of the midrib tomentose; stipules small, lunate, caducous; aments appearing with the leaves; scales oblong, very villous; filaments 3—6, bearded at base; ovary pedicelled, ovoid, smooth; style very short; stigmas bifid. *S. Caroliniana* Mich.

Banks of streams. N. Y. to Car. April, May.—A tree 15—20 feet high, with dark rough bark, generally branching from the base; branches very brittle at base. *Sterile aments* 2 inches long. *Stamens* usually 5. *Black Willow*.

14. *S. lucida* Muhl.: leaves ovate-oblong, cuspidate-acuminate, rounded at base, glandular-serrate, smooth and shining on both sides; stipules roundish or oblong, serrate; aments appearing with the leaves; scales lanceolate, obtuse, hairy at the base, smooth and serrate at the apex; ovary lanceolate-subulate, smooth; style short; stigmas bifid.

Banks of streams. N. Y. to Virg. May. $\frac{1}{2}$.—*Stem* 8—12 feet high, with yellowish-brown bark. *Sterile aments* an inch and a half long, with yellow scales. *Stamens* usually 5. Closely allied to *S. pentandra* of Europe. *Glossy-leaved Willow*.

15. *S. rigida* Muhl.: leaves oblong-lanceolate, acuminate, cordate at base, rigid, coarsely serrate, smooth, paler beneath; petioles villous; stipules large, cordate, obtuse, serrate; aments appearing with the leaves; scales lanceolate, woolly, black; ovaries on long pedicels, lanceolate, smooth; style very short; stigmas 2-parted. *S. cordata* Mich.

Swamps. N. Eng. to Virg. April, May. $\frac{1}{2}$.—*Stem* 6—12 feet high; branches green, red towards the end, the younger ones pubescent. *Aments* 1—2 inches long, on short leafy peduncles. *Stamens* usually 2. It is tough, and much used by basket makers. *Rigid Heart-leaved Willow*.

16. *S. rostrata* Richardson: leaves oblong or obovate-lanceolate, acute, entire, toothed or waved on the margin, glaucous and hoary-pubescent beneath, smoothish above; stipules lunate or ovate, toothed; sterile aments densely flowered, the fertile at length much elongated; capsules with a long slender beak; stigmas subsessile, 2-cleft.

Margins of swamps. Western N. Y. N. to Arct. Amer. April. $\frac{1}{2}$.—*Stem* 4—15 feet high, with numerous reddish-brown branchlets. *Aments* on leafy peduncles; the sterile ones about an inch, the fertile ones nearly 2 inches long. *Ochre-flowered Willow*.

17. *S. cordata* Muhl.: leaves oblong-lanceolate, acuminate, cordate at base, acutely serrate, smooth, paler beneath; stipules large, roundish-

ovate, serrate; aments appearing with the leaves; scales ovate-lanceolate, woolly, black; ovaries pedicellate, lanceolate, smooth; style very short; stigmas 2-cleft.

Banks of streams. N. Y. to Virg. N. to Arct. Amer. April. 12.—*Stem* 4—8 feet high, with yellowish-green branches. *Leaves* large and broad. *Aments* an inch to an inch and a half long. *Anthers* yellow.

Heart-leaved Willow.

18. *S. petiolaris* Smith: leaves lanceolate, serrate, smoothish above, glaucous and silky-pubescent beneath; stipules lunate, toothed; aments appearing before the leaves, loose; scales obovate, obtuse, black at the tip; ovaries on long pedicels, ovoid, silky; stigmas nearly sessile, 2-lobed. *S. grisea* Willd. *S. sericea* Muhl.

Banks of streams. N. Y. to Virg.—*Stem* 4—10 feet high; twigs green or purple, tough but brittle at base. *Aments* scarcely an inch long; the fertile ones often recurved. *Anthers* at first reddish, then yellow, and finally brown.

Dark Long-leaved Willow.

19. *S. vitellina* Linn.: leaves lanceolate, acuminate, with glandular serratures, smoothish above, paler and somewhat silky beneath; stipules minute or caducous; aments appearing with the leaves, cylindrical; scales ovoid-lanceolate, externally pubescent; ovaries sessile, ovate-lanceolate, smooth; style short; stigmas 2-lobed. *S. alba* Linn.

Road sides and about farms. May.—A tree 20—40 feet high, with numerous somewhat erect branches; twigs yellowish and shining. *Fertile aments* about 2 inches long. Introduced from Europe and naturalized in many places. According to Dr. Darlington *S. Russeliana* is naturalized along the Brandywine in Pennsylvania. It is closely allied to, if not identical with, *S. decipiens* of Hoffman; which is said to be a native of Arctic America. *Yellow Willow.*

2. POPULUS. Linn.—Poplar.

(From the Latin *populus*, the *people*; on account of its having been used to shade public walks.)

Dioecious. Ament cylindrical; scales lacerately fringed at the summit. STERILE FL. Anthers 8—30, arising from a turbinate oblique entire single perianth. FERTILE FL. Perianth turbinate, entire. Stigmas 4. Capsule superior, 2-celled, 2-valved, many-seeded. Seeds comose.

1. *P. balsamifera* Linn.: leaves ovate, acuminate, appressed-serrate, smooth on both sides, white and reticular-veined beneath; stamens very numerous; buds resinous.

Can. Ver. Northern and Western N. Y. N. to the Arctic Sea. March.—A tree from 40—80 feet high. *Sterile aments* 2—3 inches, fertile ones at length 4—6 inches, long. *Anthers* purple. According to Mr. Douglass, on the Northwest Coast this tree sometimes attains the height of 140 feet. The young buds are covered with an odoriferous balsam. *Balsam Poplar. Tacamahac.*

2. *P. candicans* Ait.: leaves cordate, ovate, acuminate, obtusely and unequally serrate, whitish and reticular-veined beneath; petioles hairy; buds resinous.

Woods. N. H. Ver. and N. Y. March.—A tree from 40—50 feet high, with smooth and greenish bark. *Leaves* large, the petiole somewhat compressed above. *Fertile aments* 6 inches long. The young buds, as in the preceding, are covered with an odoriferous balsam. *Balm of Gilead.*

3. *P. tremuloides* Mich.: leaves cordate-orbicular, abruptly acuminate, dentate-serrate, pubescent on the margin, green and smooth on both sides.

Woods. Subarct. Amer. to Penn. April.—A tree from 20—30 feet high, with smooth bark. *Leaves* small, light, roundish and slightly cordate. *Aments* 3—4 inches long, pendulous. *American Aspen.*

4. *P. monilifera* Ait.: leaves subcordate-deltoid, acuminate, smooth, with cartilaginous hooked serratures, nearly entire at the base; petioles compressed above.

Banks of the Hudson, near Troy, N. Y. and in the western part of that state. W. to Ark. April.—A tree 50—80 feet high, with the younger branches slightly angled. *Fertile aments* very long. It seems not to have been found in N. America by either the elder or younger Michaux. *Virginian Poplar.*

5. *P. nigra* var. *betulifolia* Torr.: leaves deltoid-rhomboid, conspicuously acuminate, finely crenate-serrate, smooth on both sides. *P. Hudsonica* Mich. f. *P. nigra* Mich. *P. betulifolia* Pursh.

Banks of the Hudson, above Albany. *Michaux.* March.—A tree 30—50 feet high, with spreading branches, the younger of which are pubescent. It is probably not a native. According to Loudon, Michaux believed it to be a mere variety of *P. nigra.* *American Black Poplar.*

6. *P. grandidentata* Mich.: leaves roundish-ovate, acute, unequally and sinuately toothed, smooth; white tomentose when young; petioles compressed near the summit. *P. trepida* Willd.

var. *pendula* Nutt.: branches pendulous.

Woods. Can. to Car. April.—A tree 40—50 feet high, covered with smooth greenish bark. *Leaves* when young covered with a thick down, which disappears as they become older. The large and unequal indentations on the margins of the leaves sufficiently characterize this species. The variety is found on the Alleghany mountains, Penn. *American Large Aspen.*

7. *P. lævigata* Ait.: younger branches angled; leaves roundish or deltoid-ovate, acuminate, subcordate, unequally serrate, smooth, glandular at base; petioles compressed. *P. Canadensis* Mich.

Rocky grounds. Can. to Virg. W. to the Rocky Mountains. March.—A tree from 70—80 feet high; branches angular, the angles forming whitish lines. *Leaves* large, deltoid, somewhat cordate; *petioles* with two glands at the base. This species has been confounded with *P. angulata*, but according to the younger Michaux, it is distinct. *Cotton Wood.*

8. *P. heterophylla* Linn.: leaves roundish-ovate, obtuse, often auriculate-cordate at base with the sinus small, uncinately toothed, very tomentose when young. *P. argentea* Mich. f.

Swamps. N. Y. to Car. W. to Miss. May.—A tree 40—60 feet high, with terete branches. *Leaves* with lobes or auricles that often conceal the insertion of the petiole. *Fertile aments* about 6 inches in length.

Various-leaved Poplar.

ORDER CXVI. MYRICACEÆ.—GALEWORTS.

Flowers monœcious or diœcious, amentaceous, naked. STERILE FL. Stamens 2—8, generally in the axil of a scale-like bract. FERTILE FL. Ovary 1-celled, surrounded by several hypogynous scales; stigmas 2, subulate or dilated and petaloid. Fruit drupaceous, often covered with waxy secretions. Seed

without albumen.—Shrubs or small trees, with alternate leaves which are covered with resinous glands and dots.

1. MYRICA. *Linn.*—Candleberry Myrtle.

(From the Greek *μυρικη*, synonymous with the *Tamarix*. *Hook. Brit. Fl.*)

Diœcious. STERILE FL. Ament cylindric; scales concave. Stamens 4—6. FERTILE FL. Ament closely imbricate, small, ovoid. Styles 2. Drupe 1-celled, 1-seeded.

1. *M. gale Linn.*: leaves cuneate-lanceolate, serrate at the apex, obtuse; sterile aments imbricate; scales acuminate, ciliate; fruit in imbricate heads.

Bogs and mountain lakes. Can. to Penn. April, May. $\frac{1}{2}$.—*Stem* 4—5 feet high, branching. *Leaves* alternate, somewhat coriaceous. *Fruit* with a strong penetrating spicy scent. The *leaves* have a bitter taste and are sometimes employed as a substitute for hops. *Hook.* *Sweet Gale.* *Dutch Myrtle.*

2. *M. cerifera Linn.*: leaves cuneate-lanceolate, with a few serratures near the summit, acute; sterile aments loose; scales acute; fruit globular, naked. *M. Caroliniensis* and *Pennsylvanica Pursh.*

Shady woods. N. Eng. to Flor. May, June. $\frac{1}{2}$.—*Stem* 2—8, but sometimes, (especially at the South,) 10—18, feet high, diffusely spreading. *Leaves* varying in width, sometimes entire, somewhat pubescent. *Fruit* small, dry and juiceless, but by boiling, a wax of very pleasant flavor is extracted from it, which is used for making candles, &c. *Big. Med. Bot.* iii.

Bayberry. *Wax Myrtle.*

2. COMPTONIA. *Gært.*—Sweet Fern.

(In honor of *Henry Compton*, a Bishop of London of the last century, who was a patron of botany.)

Monœcious. STERILE FL. Ament cylindric, imbricate; scales reniform-cordate, acuminate, 1-flowered. Perianth of 2 minute scarious leaves. Stamens 3—5. FERTILE FL. Ament globose; scales 1-flowered. Styles 2. Nut ovoid-oblong, smooth.

C. asplenifolia Ait. *Liquidambar asplenifolium Linn.*

Woods. Can. to Geor. April, May. $\frac{1}{2}$.—*Stem* 2—4 feet high, much branched. *Leaves* linear-lanceolate, cut almost to the midrib into numerous roundish lobes. *Flowers* in oval sessile aments. *Nuts* forming a round burr. The whole plant, when rubbed, has a strong and somewhat fragrant scent. It is a popular remedy in dysentery. *Sweet Fern.*

ORDER CXVII. BETULACEÆ.—BIRCHES.

Flowers monœcious, in aments, with small scales which are sometimes arranged in a whorl. STERILE FL. Stamens 4, distinct, opposite the scales; anthers 2-celled. FERTILE FL. Ovary free; styles single or none; stigmas 2. Fruit thin, indehiscent, 1-celled, combined with the scales into a sort of

cone. Seeds without albumen.—Trees or shrubs, with alternate simple leaves and deciduous stipules.

1. BETULA. *Tourn.*—Birch.

(Said to be derived from *Betu*, the Celtic name for the birch.)

STERILE FL. Ament imbricate, cylindric; scales ternate, the middle one bearing the stamens. FERTILE FL. Ament ovoid-oblong; scales trifid, 3-flowered. Nuts compressed, winged on each side.

1. *B. populifolia* Ait.: leaves deltoid, long-acuminate, unequally serrate, very smooth; petioles smooth; fertile aments cylindric, pendulous; scales with roundish lateral lobes.

Rocky woods. Can. Mass. N. Y. W. to Ark. May.—A tree from 20—30 feet high, with white bark, not easily separable into layers. *Leaves* tapering to a long point. *Aments* pedunculate. *White Birch.*

2. *B. excelsa* Ait.: leaves ovate, acute, serrate, smooth on both sides; petioles pubescent, shorter than the peduncles; fertile aments ovate, erect; scales with rounded lateral lobes. *B. lutea* Mich. f.

Low grounds. N. Eng. and N. Y. May, June.—A tree from 40—60 feet high, with a yellowish bark which is slightly fragrant. *Fertile aments* about an inch long. Used for fuel and for cabinet work. The bark is valuable for tanning. *Yellow Birch.*

3. *B. nigra* Linn.: leaves rhombic-ovate, doubly serrate, acute, pubescent beneath, entire at base; fertile aments ovate; scales villous, with the segments linear and equal. *B. rubra* Mich. f.

Banks of streams. N. Y. to Car. April, May.—A tree 40—60 feet high, with a smooth bark. *Leaves* on short petioles. *Fertile aments* three-fourths of an inch long. The wood is of little consequence. *Red Birch.*

4. *B. papyracea* Ait.: leaves ovate, acuminate, doubly serrate, hairy on the veins beneath; petioles smooth; fertile aments pedunculate, nodding; scales with short and rounded lateral lobes. *B. papyrifera* Mich.

Can. N. Eng. N. Y. N. to Hudson's Bay. May, June.—A tree 40—70 feet high; the bark white externally, easily separable into thin layers which have a reddish color. *Fertile aments* about an inch long. The bark is used by the Indians for constructing their canoes; and the wood is sometimes employed for cabinet work. *Canoe Birch.*

5. *B. lenta* Linn.: leaves cordate-ovate, sharply serrate, acuminate; nerves beneath and petioles hairy; fertile aments elliptic-ovoid, erect; scales roughish-pubescent; lobes nearly equal, obtuse, with elevated veins. *B. carpinifolia* Mich.

Woods. Can. to Geor. April, May.—A tree 30—60 feet high, with numerous slender branches which are spotted with white. *Leaves* cordate and somewhat unequal at base, long-acuminate. The wood has a close grain and is susceptible of a fine polish. The bark and young twigs are fragrant and aromatic. *Sweet Birch. Cherry Birch.*

6. *B. pumila* Linn.: young branches pubescent or smoothish; leaves roundish-obovate, serrate, smooth, subsessile; petioles densely pubescent beneath; fertile aments oblong. *B. glandulosa* Mich.

Mountain bogs. Can. N. Y. and Penn. *Pursh.* W. to Ohio. May, June. ϱ .—*Stem* 2—3 feet high. *Leaves* on short petioles, somewhat pubescent beneath. Dr. Torrey states that he has seen no specimens collected in New York.
Low Birch.

7. *B. nana* Linn.: very smooth; leaves orbicular, crenate, reticular-veined beneath; fertile aments oblong, on short peduncles; scales deeply 3-parted; lobes oblong-obovate, nearly equal.

White Mountains, N. H. High mountains of Essex county, N. Y. N. to Hudson's Bay. April, May. ϱ .—*Stem* 1—2 feet high, branched. *Leaves* small. *Fertile aments* half an inch long. *Fruit* ovate, with a winged margin.

Dwarf Birch.

2. ALNUS. Willd.—Alder.

(From the Celtic *al*, *near*, and *lan*, the river bank.)

Monœcious. STERILE FL. Ament long, cylindrical; scales 3-lobed, 3-flowered. Perianth 4-parted. Stamens 4. FERTILE FL. Ament ovoid; scales subtrifid, 2-flowered. Perianth none. Styles 2. Nut compressed.

1 *A. serrulata* Willd.: leaves obovate, somewhat coriaceous, doubly serrulate, acuminate, veins and their axils hairy beneath; stipules oval, obtuse.

Swamps and banks of rivers. Can. to Car. March. ϱ .—*Stem* 6—10 feet high, with alternate leaves. *Sterile flowers* in a long pendulous ament; *fertile* ones about half an inch long, thick and rigid, purplish-brown, persistent, often somewhat clustered.

Common Alder.

2. *A. incana* Willd.: leaves thin, ovate or oblong, rather acute, obtuse or somewhat cordate at base, slightly lobed, acutely serrate, glaucous and pubescent beneath, naked in the axils of the veins; stipules oblong-lanceolate. (*Torr. N. Y. Fl.*) *A. crispa* Pursh, (in part.) *A. glauca* Mich. f.

Banks of mountain streams. Can. N. Eng. N. Y. ϱ .—*Stem* 8—20 feet high, with smooth brown bark. *Fertile aments* oval, usually 4—5 in a paniculate raceme.

Black Alder.

3. *A. viridis* D. C.: leaves oval or ovate, obtuse or acute, somewhat obtuse at the base, doubly serrate, glutinous and pubescent beneath, or only the veins and axils pubescent; stipules broad-ovate; fruit with a broad winged margin. (*Torr. N. Y. Fl.*) *A. undulata* Willd. *Betula crispa* Ait.

Banks of mountain streams. Ver. N. H. and N. Y. N. to Hudson's Bay. W. to the N. W. coast. ϱ .—*Stem* 4—8 feet high, much branched; the branches warty. *Fertile aments* ovoid, obtuse, three-fourths of an inch long, on long pedicels. *Fruit* winged, like that of a *Betula*.

Mountain Alder.

ORDER CXVIII. CUPULIFERÆ.—NUTS.

Flowers usually monœcious. STERILE FL. in aments. Stamens 5—20, inserted into the base of scale-like or regular perianth. FERTILE FL. solitary, 2—3 together or clustered. Ovary crowned by the rudiments of an adherent perianth, seated within a coriaceous involucre which is usually echinate or scaly externally, and encloses the fruit at maturity or forms a cup at its

base. Fruit a bony or coriaceous 1-celled nut. Albumen none.—Trees or shrubs. Leaves alternate, simple, often feather-veined, with stipules.

1. CARPINUS. *Linn.*—Hornbeam.

(From the Celtic *car*, wood, and *pin*, the head; being used in making yokes for cattle.)

Monœcious. STERILE FL. Ament long-cylindric; scales ovate, acute, ciliate at base. Stamens 8—14, somewhat bearded at the top. FERTILE FL. Ament oblong, loosely imbricated; scales in pairs, enlarging and becoming leafy; each pair 2-flowered. Styles 2. Nut bony, ovoid, acute, sulcate.

C. Americana Mich.: leaves oblong-ovate, acuminate, unequally serrate; scales of the fertile ament 3-parted; the middle segment much the largest, oblique, ovate-lanceolate, unequally toothed on one side. *C. Virginiana Mich. f.*

Woods. Can. to Flor. May.—A tree 10—20 feet high, much branched. Leaves alternate, on short petioles, often cordate at base. Fertile aments 2—3 inches long, loosely imbricated, with large foliaceous scales.

Hornbeam. Water-Beech.

2. OSTRYA. *Mich.*—Hop Hornbeam.

(From the Greek *οστρεον*, a shell; in allusion to the fruit.)

Monœcious. STERILE FL. Ament cylindric; scales orbicular-ovate, acuminate, ciliate. Stamens 8—10 or more; filaments branched. FERTILE FL. Ament loosely imbricated, bracteate, with the flowers in pairs; scales none, but a membranous sac or involucre enclosing each flower. Stigmas 2, filiform. Nut oblong, included in the bladderly involucre.

O. Virginica Willd.: leaves ovate-oblong, somewhat cordate at base, acuminate, unequally serrate; strobile oblong-ovoid, erect; buds acute. *Carpinus Ostrya Mich.*

Woods. Can. to Car. W. to the Rocky Mountains. May.—A tree 20—40 feet high, with brownish bark. Leaves alternate, on hairy petioles. Fertile aments at length enlarged into a sort of oblong somewhat pendulous cone resembling the common hop. The wood is exceedingly hard and heavy. In some parts of the country it is called *lever wood*, from the use to which it is sometimes applied.

Iron Wood. Hop Hornbeam.

3. QUERCUS. *Linn.*—Oak.

(From the Celtic *quer*, beautiful, and *cuez*, a tree. *Hook.*)

Monœcious. STERILE FL. Ament long, slender and pendulous. Perianth 6—8-parted, the segments unequal. Stamens 6—10. FERTILE FL. Several together on erect axillary pedun-

cles or sessile on a rachis. Involucre 1-flowered, consisting of many imbricate scales, which in fruit become an indurated cup (cupule), surrounding the base of the ovoid or roundish 1-seeded nut or acorn.

* *Fruit biennial, subsessile.*

† *Leaves entire.*

1. *Q. Phellos* Linn.: leaves deciduous, linear-lanceolate, tapering at each end, very entire, smooth, mucronate; acorn nearly round.

Low swampy forests. Suffolk county, N. Y. Torr. S. to Flor. W. to Ark. April, May.—A tree 30 to 60 feet high, generally straight and slender. *Leaves* when young of a light-green color and dentate. *Acorn* small, nearly round. The timber is of little use. *Willow Oak.*

2. *Q. imbricaria* Mich.: leaves deciduous, oblong, acute at each end, mucronate, very entire, shining, pubescent beneath; cup shallow; scales broad-ovate; acorn subglobose.

Banks of rivers in mountainous regions. Penn. to Flor. W. to Miss. June.—A tree 40—50 feet high, with numerous irregular branches. *Acorn* small, nearly spherical, in a flat nearly sessile cup. The wood splits easily, and is used in the Western States for shingles. *Shingle Oak.*

†† *Leaves toothed or lobed.*

3. *Q. heterophylla* Mich.: leaves on long petioles, ovate-lanceolate or oblong, entire or coarsely toothed; cup hemispheric; acorn subglobose.

Banks of the Delaware. Penn. May. 12.—According to Pursh there is only one individual of this species known, which grows near Philadelphia. He suggests that it may be a hybrid. It is figured and described by Michaux in his *Sylva Americana*. *Various-leaved Oak.*

4. *Q. aquatica* Walt.: leaves obovate-wedgeform, smooth, very entire, obscurely 3-lobed at the end, with the middle lobe largest; cup hemispheric; acorn subglobose. *Q. nigra* Linn.

Swamps. Md. to Flor. W. to Ark. May.—A tree 30—40 feet high. *Leaves* very variable. *Cup* shallow. *Acorn* rather small, roundish. It resembles *Q. laurifolia*. Its timber is of no value. *Water Oak.*

5. *Q. triloba* Linn.: leaves oblong-wedgeform, acute at the base, somewhat 3-lobed at the end; lobes equal, mucronate, tomentose beneath, middle one longer; cup flat; acorn depressed-globose.

Pine barrens. N. J. to Geor. May.—A tree 20—40 feet high, of rapid growth. *Downy Black Oak.*

6. *Q. nigra* Willd.: leaves coriaceous, wedgeform, subcordate at base, dilated and retusely 3-lobed above, the lobes mucronate when young, rusty-pulverulent beneath; cup turbinate, with the scales obtuse and scarious; acorn short, ovoid. *Q. ferruginea* Mich. f.

Sandy woods. Long Island. Torr. S. to Flor. May.—A tree 10—30 feet high, irregular in its growth, and covered with a thick rough black bark. The wood is much esteemed for fuel; but is seldom of sufficient size to be of any value as timber. *Barren Oak. Black Jack Oak.*

7. *Q. tinctoria* Bartram: leaves obovate-oblong, somewhat sinuate-

lobed, pubescent beneath; lobes oblong, obtuse, obscurely toothed, mucronate; cup flat, tapering at base; acorn ovoid-globose.

Woods. Can. to Geor. W. to Miss. May.—One of the largest species of oak, sometimes attaining the height of 70 or 80 feet, covered with a rough blackish bark, from whence it has derived its common name. It is highly valued on account of its timber, as well as its bark. *Black Oak. Quercitron.*

8. *Q. discolor* Ait.: leaves oblong, pinnatifid-sinate, pubescent beneath; lobes oblong, toothed, setaceously mucronate; cup turbinate; acorn ovoid. *Q. tinctoria sinuosa* Mich. f.

Forests. Penn. to Car. May.—A large tree, resembling the preceding, and also *Q. coccinea*, but differs in having the young leaves covered with down. It is still, however, doubtful whether it is really distinct. *Two-colored Oak.*

†† *Leaves deeply sinuate and lobed.*

9. *Q. coccinea* Wang.: leaves on long petioles, oblong, deeply sinuate-lobed, smooth; lobes divaricate, toothed, acute, setaceously-mucronate; cup turbinate, scaly; acorn roundish-ovoid.

Fertile woods. N. Eng. to Geor. W. to the Ark. May.—A tree 60—80 feet high. Distinguished by the brilliant red color of its leaves towards the close of autumn. Its wood is used for staves and fuel, but it is not very durable. The bark is valuable for tanning. *Scarlet Oak.*

10. *Q. rubra* Linn.: leaves on long petioles, oblong, smooth, obtusely sinuate-lobed; lobes spreading, rather acute, toothed, setaceously mucronate; cup flat, nearly smooth; acorn oblong-ovoid.

Forests. Can. to Geor. May.—A tree 70—80 feet high. *Leaves* bright-green, slightly pubescent in the axils of the nerves beneath. Resembles the former, but its leaves are larger, and in autumn they change to a dull red, and finally become yellow. The acorn also is larger, has a flat base and shallow cup. It is valuable both for its wood and bark; the wood however is not very durable. *Red Oak.*

11. *Q. Catesbæi* Mich.: leaves on short petioles, wedgeform at base, oblong, deeply sinuate, smooth; lobes 3—5, divaricate, toothed, acute, setaceously mucronate; cup turbinate, broad; scales obtuse, those of the margin bent inwards; acorn subglobose.

Pine barrens. Md. to Flor. May.—A shrub or small tree 10—20 feet high, with an irregular stem and branches. *Leaves* coriaceous and glossy. *Cup* large and remarkable for its obtuse scales. The wood makes excellent fuel, and its bark is used by the tanner. *Shrubby Oak.*

12. *Q. falcata* Mich.: leaves on long petioles, obtuse at base, tomentose beneath, 3-lobed or sinuate; lobes somewhat falcate, setaceously mucronate, the terminal one long; cup shallow, somewhat turbinate; acorn globose. *Q. elongata* Linn. *Q. rubra* Walt.

Sandy soils. N. J. to Geor. W. to Ark. May.—A tree 70—80 feet high. *Leaves* with 3—5 lobes, glossy on the upper surface. The wood is used for staves, fencing and fuel. The bark is highly esteemed by tanners. *Spanish Oak. Downy Red Oak.*

13. *Q. palustris* Mich.: leaves on long petioles, oblong, smooth, deeply sinuate-lobed, with broad sinuses; lobes dentate, toothed, acute, setaceously mucronate; cup flat, smooth; acorn subglobose.

Swampy woods. N. Y. N. Eng. and Penn. W. to Ill. and Ark. May.—A tree 40—60 feet high, with numerous spreading branches. *Leaves* bright-green

and shining. *Acorns* numerous, small, on short peduncles. The wood is firm and much used by mechanics. *Water Oak. Pin Oak.*

14. *Q. Banisteri Mich.*: leaves on rather short petioles, obovate-wedge-form, 3—5-lobed, entire on the margin, grayish tomentose beneath; lobes setaceous mucronate; cup subturbinate; acorn roundish-ovoid. *Q. ilicifolia Willd.*

Dry hills and barrens. Can. to Geor. May. 12.—*Stem* 4—6 feet high, crooked and much branched. *Acorns* in numerous clusters on the branches, small. Covers large tracts, called oak barrens, in various parts of New York and of other states. *Bear Oak. Barren Scrub Oak.*

** *Fructification annual. Fruit mostly pedunculate.*

† *Leaves sinuate-lobed; lobes not mucronate.*

15. *Q. obtusiloba Mich.*: leaves oblong, deeply-sinuate-lobed, wedgeform at base, pubescent beneath; lobes obtuse, the upper one dilated and retuse; cup hemispheric; acorn oval. *Q. stellata Linn.*

—Sterile grounds. Can. to Flor. W. to Miss. and Ark. May.—A tree 30—50 feet high, with straggling irregular branches. *Leaves* mostly 5-lobed, smooth and shining above, rusty pubescent beneath. *Fruit* sessile or 2—3 together on a short common peduncle. *Cup* hemispheric, enclosing nearly half of the acorn. The timber is much esteemed in ship building, and is supposed in durability and strength to surpass that of any other species of oak except the *Live Oak. Post Oak.*

16. *Q. macrocarpa Mich.*: leaves deeply and lyrate sinuate-lobed, tomentose beneath; lobes obtuse, repand, upper ones dilated; cup deep, fringed around the margin; acorn ovoid, turgid, more than half immersed in the cup.

Woods. Near Schenectady, N. Y. On the islands in Lake Champlain. Penn., and throughout the Western and Southwestern states. May.—A tree 40—60 feet high, the branches with a corky bark. *Acorns* pedunculate, larger than in any other American species. The wood is said to be of an excellent quality. *Over-cup White Oak.*

17. *Q. olivæformis Mich.*: leaves oblong, smooth, glaucous beneath, deeply and unequally sinuate-pinnatifid; cup very deep, crenate above; acorn elliptic-oval, three-fourths enclosed in the cup.

Hills. N. Y. to Virg. May.—A tree somewhat resembling the preceding. Michaux credits it to the banks of the Hudson near Albany, but I believe no other botanist has found it there. It has, however, been observed by the late Dr. W. Horton, in Orange county, N. Y. *Mossy-cup Oak.*

18. *Q. alba Linn.*: leaves oblong, pinnatifid-sinuate, paler beneath; segments oblong, obtuse, entire; fruit pedunculate; cup deep, tuberculate; acorn ovoid or oblong.

Fertile forests. Throughout the U. S. May.—One of the largest and most valuable of the American forest trees, often 80—100 feet high, and 3—7 feet in diameter. *Bark* whitish. *Leaves* pubescent beneath when young. Timber firm and durable, and of great use in ship building and in many other arts. *White Oak.*

†† *Leaves coarsely serrate or toothed, not lobed.*

19. *Q. Prinus Linn.*: leaves on long petioles, obovate, acute, pubescent beneath, coarsely toothed; teeth unequal, dilated, callous at the point; cup deep, attenuate at base; acorn ovoid or oval. *Q. Prinus palustris Mich.*

Shady woods. N. Y. ? to Flor. May.—A tree 60—80 feet high. *Leaves* large, on petioles about an inch long. *Cup* hemispheric, enclosing about one third of the acorn, on a short peduncle. *Acorn* large. Timber inferior to that of the preceding, but often employed indiscriminately with it.

Swamp Chestnut Oak.

20. *Q. bicolor Willd.*: leaves on short petioles, oblong-obovate, whitish tomentose beneath, coarsely toothed, cuneate and entire at base; teeth unequal, dilated, rather acute, callous at the summit; fruit mostly in pairs, on long peduncles; cup hemispheric; acorn oblong-ovoid. *Q. Prinus discolor Mich. f.*

Low woods and swamps. N. Y. to Car. May.—A tree 40—60 feet high, with the bark separating into large flat scales or plates. *Leaves* varying from broad-ovate to oblong. *Acorn* large, in a small thin and roughish cup. Its timber is in less repute than that of many other species. *Swamp White Oak.*

21. *Q. montana Willd.*: leaves on petioles, broad-obovate, oblong, pubescent and somewhat glaucous beneath, coarsely and nearly equally toothed; teeth short, broad and obtuse, slightly mucronate; fruit mostly in pairs, on short peduncles; cup hemispheric; acorn elliptic-oblong. *Q. Prinus monticola Mich.*

In rocky situations. N. H. to Car. W. to Ark. May.—A tree of less size than either of the two preceding. Its wood resembles the white oak in strength, and its bark is highly esteemed by tanners. For fuel it is scarcely exceeded in value by any of our trees. *Rock Chestnut Oak.*

22. *Q. Castanea Willd.*: leaves on long petioles, oblong-lanceolate, obtuse at base, acuminate, pubescent and grayish beneath, nearly equally toothed; teeth acute, callous at the point; cup hemispheric; acorn roundish-ovoid. *Q. Prinus acuminata Mich. f.*

Mountains. N. Y. to Geor. May.—A tree 60—70 feet high. *Leaves* on long petioles and narrower than those of the former. *Fruit* middle-sized, sessile or on a short peduncle. In name and use it is often confounded with *Q. Prinus*. *Chestnut Oak. Yellow Oak.*

23. *Q. Chinquapin Pursh*: leaves on short petioles, obovate, and lance-oblong, coarsely and often obsoletely sinuate-toothed, acute at base, pubescent and glaucous beneath; teeth nearly equal, callous at the point; cup hemispheric, sessile; acorn ovoid. *Q. prinoides Willd.*

Sandy woods. N. Y. to Geor. W. to Ark. May. $\frac{1}{2}$.—*Stem* 3—6 feet high. *Acorns* small, numerous. It occurs in tracts or patches intermingled with *Q. Banisteri*. *Chinquapin Oak. Dwarf Chestnut Oak.*

4. CASTANEA. *Tourn.*—Chestnut.

(From *Castanea*, a city of Thessaly, noted for its chestnuts.)

Polygamous. STERILE FL. Aments numerous, interruptedly clustered, very long, cylindrical. Perianth deeply 5—6-parted. Stamens 8—15. FERTILE FL. 2—3, within an ovoid scaly or muricate involucre. Perianth urceolate, 5—6-cleft, having the rudiments of 10—12 abortive stamens. Ovary crowned with the perianth. Nuts 1—3, included in the enlarged echinate 4-lobed involucre.

1. *C. vesca* var. *Americana* Mich.: leaves oblong-lanceolate, acuminate, mucronate-serrate, smooth on both sides. *C. vesca* Willd.

Dry woods. N. Y. to Car. W. to Ill. May, June.—A large tree, and one of the most useful. *Leaves* 6 inches long, pubescent beneath when young. *Sterile aments* or spikes as long as the leaves. *Flowers* yellowish, in dense bracteate clusters, giving out an unpleasant odor. *Nuts* generally 3, much smaller than in the European chestnut. The wood is extremely durable and is highly esteemed for posts and rails to construct fences. *American Chestnut.*

2. *C. pumila* Mich.: leaves oblong, acute, mucronate-serrate, white-tomentose beneath. *Fagus pumila* Linn.

Sandy fields and woods. N. Y. to Geor. May.—A shrub or small tree, at the North being seldom more than 10 or 12 feet high. *Leaves* smaller than in the preceding and white beneath. *Nut* ovoid, acute, very sweet, half as large as that of the preceding. The wood is durable, but too small to be converted to much use. *Chinquapin.*

5. CORYLUS. Linn.—Hazel Nut.

(From the Greek *κορυς*, a helmet or cup; in allusion to the involucre fruit.)

Monœcious. STERILE FL. Ament cylindric; scales 3-cleft, the middle lobe covering the two lateral ones. Perianth none. Stamens 8. Anthers 1-celled. FERTILE FL. numerous, in terminal capitate scaly clusters. Perianth obsolete. Stigmas 2. Nut bony, roundish-ovoid, obtuse, surrounded by the enlarged coriaceous and lacerately toothed involucre.

1. *C. Americana* Walt.: leaves roundish-cordate, acuminate; involucre roundish-campanulate, larger than the subglobose nut; border dilated, many-cleft.

Shady woods. Can. to Flor. W. to Miss. and Ark. March, April. $\frac{1}{2}$.—*Stem* 4—8 feet high, with virgate branches, pubescent when young. *Nut* about half an inch long and often a little compressed; the kernel of a fine flavor.

American Hazel Nut. Wild Filbert.

2. *C. rostrata* Ait.: leaves oblong-ovate, acuminate, doubly serrate; stipules linear-lanceolate; involucre tubular-campanulate, longer than the nut, 2-parted, with incised segments.

Mountain woods. Can. to Car. May. $\frac{1}{2}$.—*Stem* 3—4 feet high. *Leaves* on short petioles, slightly cordate. *Involucre* terminating in a tube about 2 inches long, the lower part enveloping the nut and densely hairy. Easily distinguished from the preceding, by its narrow leaves and long beaked involucre.

Beaked Hazel Nut.

6. FAGUS. Linn.—Beech.

(From the Greek *φαγω*, to eat; in allusion to the esculent fruit.)

Monœcious. STERILE FL. Ament globose, pedunculate. Perianth campanulate, 6-cleft. Stamens 8—12. FERTILE FL. 2 within a 4-lobed prickly involucre. Perianth with 4—5 minute lobes. Ovaries triquetrous, 3-celled, 2 abortive. Styles 3. Nuts usually 2, invested by the enlarged coriaceous muricate 4-cleft involucre.

F. sylvatica, var. *Americana* Nutt: leaves elliptic-ovate, acuminate, more or less toothed, ciliate on the margin; nut sharply 3-angled, acute or somewhat obtuse. *F. sylvestris* Mich. *F. ferruginea* Ait.? Torr. N. Y. Fl.

Woods. Can. to Geor. May.—A beautiful tree, often attaining the height of 50 or 60 feet, and coated with a thick smooth grayish bark. *Leaves* 2—5 inches long, often a little cordate at base, bright-green and shining above, silky beneath when young. *Nuts* 1—2 in each involucre, mostly acute but sometimes rather obtuse, mucronate with a sharp point, pale reddish-brown. There is probably only one species of beech in the Northern States, but whether this is distinct from the foreign *F. sylvatica*, or a mere variety, is still somewhat doubtful. The difference in the color of the wood, (red and white,) is caused by the more or less rapid growth of the tree. *Beech.*

ORDER CXIX. PLATANACEÆ.—PLANES.

Flowers monœcious, in globose pedunculate aments, destitute of floral envelopes. STERILE FL. Stamens numerous, mixed with small scales and appendages. FERTILE FL. Ovaries numerous, mixed with scales; styles subulate; stigma small. Fruit a small coriaceous 1-seeded nut. Seeds albuminous.—Large trees, with alternate palmate or toothed leaves.

PLATANUS. Linn.—Plane Tree.

(From the Greek *πλατυς*, *broad*; in allusion to its wide spreading branches and foliage.)

Character same as that of the order.

P. occidentalis Linn.: leaves angularly lobed or obscurely palmate, sinuate-toothed, pubescent beneath; branches whitish; fertile heads solitary.

Banks of streams. Can. to Flor. W. to Miss. May.—One of the largest trees in the United States, attaining in favorable situations the height of 80 feet or more. *Leaves* alternate, on long petioles. *Aments* axillary, globose; the *fertile* ones at length forming a compact ball of about an inch in diameter, which hangs on a slender peduncle 2 or 3 inches in length.

Button Wood. Sycamore.

ORDER CXX. ALTINGIACEÆ.—SWEET GUMS.

Flowers monœcious, destitute of floral envelopes, in aments which are furnished with a deciduous 4-leaved involucre. STERILE FL. in conical aments. Anthers numerous, nearly sessile, with a few minute scales. FERTILE FL. in globose aments. Ovaries numerous, each surrounded by a few scales; styles 2, long. Fruit a cone composed of hard connected scales, in the cavities of which lie obconic, 2-lobed, 2-celled capsules. Seeds mostly abortive; albumen fleshy.—Trees, with alternate simple or lobed leaves and deciduous stipules.

LIQUIDAMBAR. *Linn.*—Sweet Gum.

(From the Latin *liquidum*, *fluid*, and *ambar*, *amber*; in allusion to the liquid which exudes from the tree.)

Character same as that of the order.

L. styraciflua Linn.: leaves palmately lobed; lobes acuminate, serrate; axils of the primary veins villous.

Low woods. N. Y. to Flor. W. to Miss. May.—A tree sometimes attaining the height of 60 or 70 feet. *Leaves* fragrant when bruised. *Fertile aments* when in fruit about an inch in diameter, forming a brownish woody and prickly strobile. At the South, the tree yields an aromatic liquid.

Common Sweet Gum. Bilsted.

ORDER CXXI. ULMACEÆ.—ELMS.

Flowers perfect or polygamous by abortion. Perianth campanulate, imbricate, irregular. Stamens 5—10, inserted on the perianth. Ovary 2-celled; stigmas 2, distinct. Fruit a samara, an indehiscent capsule or a drupe. Seed solitary, without albumen.—Trees or shrubs, with rough alternate simple deciduous leaves and stipules.

1. ULMUS. *Linn.*—Elm.

(An ancient Latin name, the origin of which is doubtful.)

Flowers perfect. Perianth campanulate, 5—8-cleft. Stamens 5—8. Styles 2. Fruit (a samara) flat, with a broad membranaceous border.

1. *U. Americana Linn.*: branches smooth; leaves smooth above, pubescent beneath, somewhat doubly serrate, unequal at the base; serratures uncinately acuminate; flowers pedicellate, in loose lateral fascicles; samara oval, densely villose, ciliate on the margin.

Low grounds. N. Y. to Car. W. to Miss. April, May.—A tree 60—80 feet or more in height, with long recurved branches. *Flowers* purplish, in small fascicles, generally appearing before the leaves. *Stamens* 4—8. In favorable situations the most magnificent tree on the continent. The wood is less compact than that of the two next species. *American Elm. White Elm.*

2. *U. fulva Mich.*: branches scabrous, white; leaves ovate-oblong, much acuminate, very scabrous above and somewhat roughly pubescent beneath; buds tomentose, with a thick tawny wool; flowers in dense nearly sessile fascicles; samara orbicular, nearly naked on the margin. *U. rubra Mich. f.*

Mountains. N. Y. to Car. May.—A tree 20, 30, or 40 feet high. *Leaves* much larger than in the preceding and very rough. *Stamens* 7—9. The inner bark contains a great portion of mucilage, and is largely employed for medicinal purposes. *Slippery Elm.*

3. *U. nemoralis Ait.*: leaves oblong, somewhat glabrous, equally serrate, nearly equal at base; flowers sessile.

Banks of streams. N. Eng. to Virg.; rare. April, May. γ_2 .—*Pursh.* A doubtful species. *River Elm.*

4. *U. racemosa* Thomas: young branchlets pubescent; leaves smooth above, slightly and softly pubescent beneath, acuminate, doubly and uncinately serrate; flowers in compound racemes, pedicellate; samara elliptic-oval, the margin densely fringed.

Banks of streams. Ver. N. Y. and in the Western States. April.—A large tree; the branches having irregular corky excrescences. *Leaves* obovate, oblong, often auriculate on one side. *Racemes* compound, 1—2½ inches long; pedicels solitary, or 2—4 together. *Perianth* 7—8 cleft. *Stamens* 7—10. Described and figured by David Thomas, Esq., in *Silliman's Journal*, xix. 170.

Thomas's Elm. *White Elm.*

2. CELTIS. *Linn.*—Nettle Tree.

(An ancient name of the *Lotus*, applied to this tree.)

Polygamous. STERILE FL. *Perianth* 5—6-parted. *Stamens* 5—6. PERFECT FL. *Perianth* deeply 5-parted. *Stigmas* 2, elongated, spreading. *Drupe* globose, 1-seeded.

1. *C. occidentalis* *Linn.*: leaves ovate, acuminate, equally serrate, unequal at base, scabrous above, hairy beneath; flowers small, subsolitary.

Woods. Can. to Car. W. to Miss. May.—A tree 20—60 or 70 feet high. *Leaves* 2—5 inches long, at length coriaceous. *Flowers* small, greenish-white, solitary or in pairs. *Drupe* nearly globose. *Sugar Berry.* *Beaver Wood.*

2. *C. crassifolia* *Lam.*: leaves lance-ovate, acuminate, unequally serrate, rough and hairy on both sides, unequal and subcordate at the base; peduncles mostly 2-flowered.

Low grounds. Penn. W. to Tenn. May?—A tree 30—50 feet high. *Leaves* 3—6 inches long. *Flowers* often in pairs on a common peduncle. *Drupe* round, about as large as a pea, black when ripe. *Mich. Darlingt.*

Hoop Ash. *Hack Berry.*

ORDER CXXII. JUGLANDACEÆ.—WALNUTS.

Flowers monœcious, imperfect. STERILE FL. in aments. *Perianth* adherent to a scale-like bract, unequally 2—6-parted. *Stamens* 3, or numerous. FERTILE FL. few, clustered or in loose racemes. *Perianth* adherent to the ovary; the limb minute, 3—5-parted; rarely double, the inner of 3—5 minute leaves. *Ovary* 2—4-celled below, 1-celled above; styles 1—2, very short; stigmas 2—4, unequal. *Fruit* drupaceous, the pericarp fibrous-fleshy or coriaceous; nut opening or separating from a 2-valved or valveless stone, which is 2—4-celled at base, and 1-celled at the apex. *Seed* without albumen, 2- or 4-lobed; cotyledons fleshy and oily.—Trees, with alternate pinnate leaves destitute of stipules.

1. JUGLANS. *Linn.*—Walnut.

(From the Latin *Jovis glans*, the nut of Jupiter; on account of its excellence.)

Monœcious. STERILE FL. Ament imbricate; scales mostly 5-parted, sometimes bracteate. Perianth 5- or 6-parted. Stamens 8—40. FERTILE FL. Perianth double; the outer one short, 4-toothed; the inner one 4-parted. Styles 2, very short. Stigmas 2, somewhat clavate. Drupe fibrous-fleshy, indehiscent. Nut rugose and irregularly furrowed.

1. *J. nigra Linn.*: leaves pinnate; leaflets numerous, ovate-lanceolate, serrate, subcordate, tapering to the summit, the under surface and petioles slightly pubescent; fruit globose, roughly dotted, spongy; nut nearly globose, corrugated.

Fertile woods. N. Y. to Flor. W. to Miss. April, May.—A tree, 30—60 feet high, with a large spreading top. *Leaves* pinnate, with from 15—21 leaflets. *Sterile aments* axillary, cylindric, pendulous. Timber compact, fine grained, heavy and dark colored when exposed to the air. *Black Walnut.*

2. *J. cinerea Linn.*: leaves pinnate; leaflets numerous, oblong-lanceolate, serrate, rounded at the base, softly pubescent beneath; petioles villous; fruit ovoid-oblong, coriaceous, hairy and viscid; nut elliptic-oblong, acuminate, conspicuously sculptured. *J. cathartica Mich. f.*

Woods. Can. to Geor. W. to Miss. April, May.—A large tree. *Leaves* pinnate, with 15—17 pubescent leaflets. Habit and fructification very similar to the preceding, but the *fruit* is oblong, with a tapering protuberance at the summit, and the *nut* much more deeply and irregularly sculptured. The inner bark yields a laxative extract. *Butternut. White Walnut.*

2. CARYA. *Nutt.*—Hickory.

(From the Greek *καρύα*, an ancient name of the *Walnut*.)

Monœcious. STERILE FL. Aments mostly in threes, slender, imbricate; scales 3-parted. Stamens 3—8. Anthers sessile, hairy. FERTILE FL. Perianth single, 4-cleft. Drupe coriaceous or somewhat fleshy, 4-valved. Nut oval, somewhat 4-sided, smooth.

1. *C. sulcata Nutt.*: leaflets generally 9, obovate-lanceolate, acuminate, serrate, pubescent beneath, terminal one subsessile and attenuate at base; fruit roundish, 4-angled; nut oblong, slightly compressed, conspicuously mucronate. *Juglans sulcata Willd. J. mucronata Mich. and J. laciniosa Mich. f.*

Fertile soils. N. Y. to Car. April, May.—A large tree. *Leaves* pinnate, with 7—9 leaflets. *Sterile aments* 3-parted, very long, peduncled. *Nut* large, oblong, with a very thick 4-parted pericarp. This, like most of the species, is valuable for fuel. *Thick Shell-bark Hickory.*

2. *C. alba Nutt.*: leaflets 5—7, on long petioles, obovate and oblong-lanceolate, acuminate, sharply serrate, villous beneath, the terminal one ses-

sile; aments filiform, smooth; fruit depressed-globose; nut compressed, oblique. *Juglans alba* Mich. *J. compressa* Willd. *J. squamosa* Mich. f.

Fertile woods. Can. to Car. and W. to Miss. April, May.—A tree 50 to 80 feet high, with the bark separating in large flat scales or plates. Nut with a thinner shell than that of most other species and of a fine flavor; pericarp globose, depressed at the summit. Timber much prized, in consequence of the fineness of the grain and the elasticity of the fibre.

Shell-bark or Shag-bark Hickory.

3. *C. microcarpa* Nutt.: leaflets 5—7, oblong-lanceolate, conspicuously acuminate, serrate, smooth, glandular beneath; aments smooth; fruit roundish-ovoid; pericarp thin; nut slightly 4-sided. *Juglans compressa*, var. *microcarpa* Muhl.

Moist woods. Penn. May.—A tree 60—80 feet high, with an even bark. Aments long, slender, smooth. Fruit three-fourths of an inch in diameter; pericarp thin; nut with a thin shell. Intermediate between *C. alba* and one of the varieties of *C. porcina*, but Dr. Darlington is inclined to think it a good species. *Small-fruited Carya.*

4. *C. tomentosa* Nutt.: leaflets 7—9, oblong and obovate-lanceolate, acuminate, smooth, slightly serrate, pubescent and scabrous beneath, terminal one nearly sessile; aments filiform, very long, tomentose; fruit subglobose; smooth; pericarp very thick; nut somewhat 6-angled, the shell very thick and hard. *Juglans tomentosa* Mich. *J. alba* Willd.

Fertile woods. Can. to Geor. April, May.—A tree, 50—80 feet high, with the bark rough but not scaly. Leaflets sometimes nearly entire (var. *integrifolia* Torr.) Fruit very variable in size, but usually from 1½—2 inches in length; nut light brown, shell very thick and hard, kernel sweet. The wood is very valuable for fuel. *White-heart Hickory. Mockernut.*

5. *C. amara* Nutt.: leaflets 7—9, ovate-oblong, acuminate, sharply serrate, smooth on both sides; fruit subglobose; nut smooth, mucronate, with the shell fragile. *Juglans amara* Mich. *Hicorius amara* Raf.

Dry fertile woods. Can. to Car. May.—A large tree. Leaflets mostly 7, sometimes only 5, sessile, with the nerves and midrib pubescent. Nut small, almost orbiculate, with a very thin shell, and a bitter and astringent kernel. Often confounded with the next species. *Bitternut. Swamp Hickory.*

6. *C. porcina* Nutt.: leaflets generally 7, lanceolate, acuminate, serrate, acute at the base, smooth on both sides; fruit oblong-globose or pyriform; nut compressed, smooth, very hard. *Juglans porcina* Mich. *J. orbicdata* and *glabra* Willd.

Fertile woods. N. Y. to Geor. May.—A very large tree. Leaflets 5—7. Fruit small, variable, with a bitter and astringent kernel. Wood very tough; used for making splint brooms. *Pignut. Broom Hickory.*

ORDER CXXIII. CONIFERÆ.—PINES.

Flowers monœcious or diœcious, naked. STERILE FL. consisting of one or more (often monadelphous) stamens, arranged on a rachis so as to form a loose ament. FERTILE FL. in cones. Ovary spread open, and having the appearance of a flat scale destitute of style or stigma, and arising from the axil of a membranous bract. Fruit a cone. Seed with a hard crustaceous

integument; embryo in oily albumen.—Trees or shrubs, with a branched trunk abounding in resin. Wood marked with circular disks. Leaves usually rigid and needle-shaped, entire.

1. JUNIPERUS. *Linn.*—Juniper.

(From the Celtic *jeneprus, rude, rough*, characteristic of the plant.)

Dicœcious, rarely monœcious. STERILE FL. Ament ovoid-oblong, very small; scales verticillate, peltate. Anther-cells 3—6. FERTILE FL. Ament ovoid; scales few, concave, united at base, becoming a fleshy tuberculate berry and enclosing 1—3 crustaceous seeds.

1. *J. communis Linn.*: leaves in threes, subulate, spreading, mucronate, longer than the ovoid berry.

Dry hills and woods. Can. to Virg. W. to the Rocky Mountains. May.—A shrub with prostrate and spreading branches, forming large beds. *Leaves* sharply mucronate, glaucous above, shining below. *Berry* purple. Medicinal. *Big. Med. Bot.* iii. 45. *Common Juniper.*

2. *J. Virginiana Linn.*: trunk arboreous; leaves in four rows, shorter than the berry; those of the older branches subulate, cuspidate, and somewhat spreading.

Woods. Can. to Geor. W. to the Rocky Mountains. May.—A middle-sized tree, with horizontal branches. *Berry* covered with a blue powder. Wood light and very durable. The leaves resemble *Savin* in their medicinal properties. *Red Cedar.*

3. *J. prostrata Mich.*: stem prostrate, creeping; leaves imbricate in four rows, ovate, submucronate, glandular in the middle, appressed; berry large and conspicuously tubercular. *J. repens Nutt. J. Virginiana, var. prostrata Torr.*

Sandy soils. Can. to Penn. W. to Miss. May.—A low shrub with creeping branches 2 yards long. Dr. Torrey considers this as a variety of the preceding; but it seems to differ in its habit and in its fruit.

Trailing Juniper.

2. THUYA. *Linn.*—Arbor Vitæ.

(From the Greek *θυων, sacrifice*; because its wood or resin was used as a perfume in sacrifices.)

Monœcious. STERILE FL. Aments terminal, very small, ovoid. Perianth none. Anther-cells 4, opening longitudinally. FERTILE FL. Cone with the scales 2-flowered. Seeds more or less winged.

T. occidentalis Linn.: branches ancipitous; leaves imbricate in 4 rows, ovate-rhomboidal, appressed, tuberculate; cones nodding, obovoid; inner scales truncate, gibbous at the summit; seeds winged all round.

River banks and hill sides. Can. to Car. W. to Miss. May.—A tree 20—30 feet high, with very tough branches. *Leaves* resembling scales. *Cones* about half an inch long, yellowish-brown. The wood is light and soft, but very durable. *American Arbor Vitæ.*

3. CUPRESSUS. *Linn.*—Cypress.

(From the Island of *Cyprus*, where one species of the tree is abundant.)

Monœcious. STERILE FL. Ament solitary. Anthers 2—4 celled. FERTILE FL. Cone globose; the scales protuberant or mucronate in the centre, and finally spreading. Seeds angular, compressed.

1. *C. disticha Linn.*: leaves distichous, flat, deciduous; sterile flowers leafless, paniculate.

Swamps. N. J. to Flor. W. to Miss. May.—One of the largest trees of the forest, occurring in extensive swamps, especially at the South. *Leaves* small, linear and acute. *Cone* with an irregular surface. Timber very durable.

American Cypress.

2. *C. thuyoides Linn.*: branches compressed; leaves imbricate in four rows, ovate, tuberculate at base.

Swamps. N. Y. to Car. May.—A middle-sized tree, composing the *Cedar swamps* of the middle and southern states. Wood light, soft and durable, used as is the preceding, for shingles, cedar-ware, rails, &c.

White Cedar.

4. PINUS. *Linn.*—Pine.

(Said to be derived from the Celtic *pin* or *pen*, a *crag* or *stony mountain*; often its place of growth.)

Monœcious. Aments racemosely clustered; scales peltate. Stamens numerous, with short filaments. FERTILE FL. Aments more or less conic or cylindrical; scales closely imbricate, 2-flowered, enlarging and becoming woody, forming a cone. Seeds winged at the summit, covered by the scales of the cone.

* *Leaves* 2—5, *sheathing* at base. *Scales* of the cone thickened at the summit. PINUS.

1. *P. inops Ait*: leaves short, mostly in pairs; cones oblong-ovoid, as long as the leaves, somewhat recurved; spines of the scales subulate, straight.

Sterile soils. N. J. to Car. W. to the Rocky Mountains. May.—A tree 15—40 feet high, with straggling branches and full of resin. *Leaves* about 2 inches long. *Cones* 2—3 inches long, ovoid, tapering and a little curved.

Pitch or *Scrub Pine.*

2. *P. resinosa Ait.*: leaves elongated, in pairs; sheaths elongated; cones ovoid-conic, rounded at base, subsolitary, half the length of the leaves; scales dilated in the middle, unarmed. *P. rubra Mich.*

Mountain woods. Can. N. Eng. N. Y. W. to the N. W. Coast. May.—A tree 60 or 70 feet high. *Leaves* 4—6 inches long. *Cones* 2—3 inches long, abruptly pointed. Found on the Helderburg mountains near Albany, N. Y.

Red Pine. Norway Pine.

3. *P. Banksiana Lamb.*: leaves short, in pairs, rigid, divaricate, oblique; cones recurved, tortuous; scales unarmed. *P. rupestris Mich. f.*

Rocky grounds. Subarct. Amer. to Maine. April, May.—A small tree, with long spreading flexible branches. *Banks' Scrub Pine.*

4. *P. variabilis* Lamb: leaves elongated, in pairs and threes, channelled, the sheaths long; cones ovoid-conic, mostly solitary; spines of the scales very slender, pointing outward. *P. mitis* Mich.

Forests. N. Eng. N. Y. ? to Geor. May.—A tree 40—60 feet high, with a pyramidal head. *Leaves* 3—5 inches long, dark-green. *Cone* solitary, 2—3 inches long. Timber fine grained and durable. Abundant in New Jersey. *Yellow Pine.*

5. *P. rigida* Linn.: leaves in threes; sheaths short; sterile aments erect-incumbent; cones ovoid, often in clusters; spines of the scales rigid, reflexed.

Sandy soils. Maine to Virg. May.—A tree 30—50 feet high, with numerous branches and a rough fissured bark. *Leaves* 4—6 inches long. *Cones* usually clustered in threes or fours, 2—4 inches long. The wood abounds in turpentine and is chiefly used as fuel. *Pitch Pine.*

6. *P. serotina* Mich.: leaves elongated, in threes; sterile aments incumbent, nearly erect; cones ovoid; spines of the scales straight, slender.

Margins of swamps. N. J. to Car. May.—A small tree. *Leaves* 6—8 inches long. *Cones* larger and more globular than in the preceding. *Pond Pine.*

7. *P. Strobus* Linn.: leaves in fives, slender; sheaths very short; cones cylindrical-oblong, pendulous, much longer than the leaves; scales loose, flattish, without spines.

Fertile soils. Can. to Virg. May.—A very large and valuable tree, sometimes attaining the height of 200 feet or more. *Leaves* 4 inches long, sharply triangular and more slender than in any of our species. *Cone* solitary, very long. Timber soft, fine grained and light. *White or Weymouth Pine.*

** *Leaves fasciculate, deciduous.* LARIX.

8. *P. pendula* Ait.: leaves fasciculate, deciduous, short; cones ovoid-roundish, consisting of a few nearly orbicular thin scales; bracts broad-ovate, with the point attenuated. *P. microcarpa* Lamb. *Larix Americana* Mich.

Swamps. Can. N. Eng. and N. Y. N. to Arct. Amer. April, May.—A tree from 30—70 feet high, which differs from the preceding by its leaves growing in tufts or fascicles, and in their being deciduous. *Cones* about half an inch long, covered with soft scales. The wood is strong and durable. *Hackmatack. Tamarack.*

*** *Leaves solitary, distinct at base. Scales of the cone even and attenuated.* ABIES.

9. *P. Balsamea* Linn.: leaves solitary, flat, emarginate or entire, glaucous beneath, somewhat pectinate at the summit, nearly erect, below recurved-spreading; cone cylindrical, erect; bracts short, obovate, conspicuously mucronate, somewhat serrulate. *Abies balsamifera* Mich.

Mountains. Subarct. Amer. to Car. W. to the Rocky Mountains. May.—A tree 40—50 feet high. *Leaves* 6—10 lines long. *Cone* solitary, erect. It yields a kind of turpentine known by the name of *Canada balsam*, which is used medicinally and for optical purposes. *American Silver Fir. Balsam Fir.*

10. *P. Fraseri* Pursh.: leaves solitary, flat, short, emarginate, glau-

cous beneath, subsecund, erect above; cones ovoid-oblong, erect; bracts elongated, reflexed, oblong-cuneate, emarginate, shortly mucronate, incisely toothed. *P. Balsamea*, var. *Fraseri* Nutt.

Mountains. Ver. N. Y. ? and Penn. May.—Resembles the former, but differs in being a smaller tree, the leaves shorter and more erect, and the cones not one-fourth the size. *Double Balsam Fir*.

11. *P. Canadensis* Linn.: leaves somewhat distichous, solitary, flat, minutely denticulate, obtuse; cones elliptic-ovoid, terminal, scarcely longer than the leaves. *Abies Canadensis* Mich.

Mountains. Can. to Car. W. to the Rocky Mountains. May.—A tree sometimes attaining the height of 60 or 70 feet, with spreading and often somewhat pendulous branches. *Leaves* 6—8 lines long. *Cones* very small. The wood, though soft and coarse grained, is much used for various purposes. The bark contains a great quantity of tannin. *Hemlock Spruce*.

12. *P. nigra* Ait.: leaves solitary, scattered all around the branches, somewhat 4-sided, erect, short, entire; cones ovoid; scales elliptic, undulate on the margin, crenulate or toothed at the apex. *Abies nigra* Mich. f.

Swamps. Subarct. Amer. to Car. W. to the Rocky Mountains. May.—A tree usually from 30—60 feet high, with a pyramidal summit. *Leaves* half an inch long, dark-green. *Cones* 1—2 inches in length. *Black or Double Spruce*.

13. *P. rubra* Lamb.: leaves solitary, subulate; cones oblong, obtuse; scales rounded, somewhat 2-lobed, entire on the margin.

Hudson's Bay. *Pursh*. Maine. *Torr*. May. ♀. *Red Spruce*.

14. *P. alba* Ait.: leaves solitary, scattered around the branches, erect, 4-sided, somewhat glaucous, entire; cones oblong-cylindric, loose; scales obovate, very entire.

Swamps. Arct. Amer. to Car. May.—A small tree, seldom more than 40 or 50 feet high. *Leaves* 5—8 lines long, more slender and less crowded than in the preceding. *Cones* slender, 2 inches long. *White or Single Spruce*.

5. TAXUS. Linn.—Yew.

(Supposed to be derived from the Greek *ταξον*, a *bow*; on account of the use made of the wood.)

Flowers diceious. STERILE FL. consisting of peltate anthers in an ament; anther-cells 3—6 or more, inserted in the lobes of the connective, opening beneath. FERTILE FL. solitary, with imbricate scales at the base. Seed nut-like, seated in the disk which becomes a succulent cup.

T. Canadensis Willd.: leaves linear, distichous, crowded, revolute on the margin; sterile aments solitary, globose. *T. baccata*, var. *minor* Mich.

Moist rocky places. Can. to Virg. W. to St. Louis River. March. April. ♀.—*Stem* 4—8 feet high. *Leaves* resembling those of *Pinus Canadensis*, but larger. *Fruit* having the appearance of a berry, open at the top, bright-red, the seed or nut oval, compressed. *American Yew*. *Ground Hemlock*.

CLASS II. ENDOGENOUS OR MONOCOTYLEDONOUS PLANTS.

Stem, with no perceptible distinction of bark, wood and pith, increasing in diameter by the addition of new matter to the centre. Leaves mostly alternate, with no evident articulation, commonly sheathing at base and entire, mostly with parallel veins. Embryo with but one cotyledon; or if two, one is smaller and alternate with the other.

SUBCLASS I.—PETALOIDEALS.

Stamens and pistils naked or covered by verticillate floral envelopes.

ORDER CXXIV. HYDROCHARIDACEÆ.—FROG'S BITS.

Flowers in a spathe, mostly diœcious. Perianth regular, 3—6-parted; the inner segments petaloid. Stamens 3—12. Ovary 1—9-celled; stigmas 3—6. Fruit dry or succulent, indehiscent. Seeds numerous, without albumen.—Floating or water plants. Leaves mostly radical, sometimes opposite or verticillate.

1. UDORA. *Nutt.*—Udora.

(From the Greek *ὕδωρ*, *water*; in allusion to its place of growth.)

Polygamous. Spathe bifid, 1-flowered. Perianth 6-parted, petaloid. STERILE FL. Stamens 9, 3 of them interior. PERFECT FL. Tube of the perianth very long and slender. Stamens 3—6; filaments short, subulate. Style long and filiform. Stigmas 3, large and spreading, 2-lobed. Fruit coriaceous, few seeded. Seeds elliptic, smooth.

U. Canadensis Nutt.: leaves verticillate in threes and fours, lanceolate, oblong or linear, finely serrulate; tube of the perianth filiform. *Elodea Canadensis Mich.* *Serpicula verticillata Muhl.*

Still waters. Can. to Virg. W. to Miss. Aug. ?—*Stem* submersed, diffusely dichotomous. *Flowers* axillary, very small, whitish. The plant without flowers resembles an aquatic moss. *Little Water Snakeweed.*

2. VALLISNERIA. *Linn.*—Tapweed.

(In honor of *Antonio Vallisneri*, an Italian botanist.)

Diœcious. STERILE FL. Spathe ovate, 2—4-parted. Spadix covered with minute flowers. Perianth 3-parted. Stamens

2. FERTILE FL. Scape very long, flexuous or spiral. Spathe tubular, bifid, 1-flowered. Perianth elongated, 6-parted; the alternate segments linear. Style none. Stigmas 3, ovate, bifid. Capsule elongated, cylindric, 3-toothed, 1-celled, many-seeded; the seeds attached to the sides.

V. spiralis Linn.: leaves linear, obtuse, minutely and aculeately serrulate; sterile peduncles very short; fertile ones flexuous. *V. Americana* Mich.

Still water. Can. to Flor. W. to Ill. Aug. ♀.—Leaves all radical, 1—2 feet or more long, 2—4 lines wide, linear and grass-like, obscurely 3-nerved, smooth and deep-green. Perianth reddish-white. The roots are supposed to be the favorite food of the canvas-back duck. *Tape Grass. Eel Grass.*

ORDER CXXV. ORCHIDACEÆ.—ORCHIDS.

Flowers irregular. Perianth of 6 segments, in two rows, the outer (*calyx*) usually colored and petaloid like the inner, the lowest one (*lip*) different from the others and often spurred. Stamens 3, united with the style and thus forming the *column*, the central one only perfect or the central abortive and the two lateral perfect. Pollen powdery or cohering in waxy masses. Ovary adherent, 1-celled, with 3 parietal placentæ; style mostly forming part of the column; stigma a viscid concave spot in front of the column. Seeds very numerous and minute, with a loose netted coat.—Herbs, with tuberous or fibrous roots and usually handsome. Flowers in spikes or racemes.

I. MALAXEÆ. *Pollen cohering in waxy masses, without a caudicle or separable stigmatic gland. Anther terminal.*

1. LIPARIS. Rich.—Liparis.

(From the Greek λιπαρος, *fat*; the leaves having an unctuous feel.)

Perianth with the segments distinct, linear, spreading. Lip flat, dilated, entire, turned various ways. Column winged. Pollen-masses 4, without pedicels or glands.

1. *L. liliifolia* Rich.: leaves 2, ovate, much shorter than the scape; inner segments of the perianth filiform, deflected; lip very large, obovate, mucronate. *Malaxis liliifolia* Willd.

Wet woods. Can. to Car. June, July. ♀.—Scape 6—8 inches high, 5-angled, with an ovoid bulb at the base. Flowers rather large, in a short terminal raceme, the perianth pale-yellow, the lip purplish. *Common Liparis.*

2. *L. Læselii* Rich.: leaves 2, ovate-lanceolate, plaited, erect, much shorter than the scape; segments of the perianth linear, unequal; lip obovate, entire. *L. Correana* Spreng. *Malaxis Correana* Bart.

Wet woods. Can. to Virg.; rare. June, July. ♀.—*Scape* 5—8 inches high, 3—5-angled, with a bulb at the base. *Flowers* yellowish-green, in a terminal raceme, smaller but more numerous than in the preceding.

Smaller Liparis.

2. MICROSTYLIS. Nutt.—Adder's Mouth.

(From the Greek μικρος, *little*, and στυλος, a *column*.)

Perianth with the segments distinct; the two inner lateral ones filiform or linear. Lip widely spreading, concave, sagittate or auriculate at the base. Column very small. Pollen-masses 4, loose.

1. *M. ophioglossoides* Nutt.: scape or stem with one ovate, clasping leaf near the middle; flowers in an obtuse raceme, much shorter than the pedicels. *Malaxis ophioglossoides* Willd.

Wet grounds, near roots of trees. Can. to Virg. July. ♀.—*Stem or scape* 6—10 inches high, 1-leaved, with ovoid bulb at the base. *Leaf* about 2 inches long. *Flowers* numerous, minute, greenish-white, in a short terminal raceme, many abortive. *Common Adder's-mouth.*

2. *M. monophyllos* Lind.: scape or stem with a single ovate-elliptic leaf near the base; flowers in a slender elongated raceme, about as long as the pedicels. *Malaxis monophyllos* Willd.

Shady swamps. Herkimer and Oneida counties, N. Y. July. ♀.—*Stem or scape* 2—8 inches high, triangular, somewhat winged, with an ovoid bulb at the base. *Leaf* solitary, (rarely 2,) about 2 inches long, petiolate. *Flowers* numerous, in an elongated raceme, several abortive. *Smaller Adder's-mouth.*

3. CALYPSO. Salisb.—Calypso.

(A poetical name.)

Segments of the perianth ascending, secund. Lip ventricose, spurred beneath near the end. Column petaloid, dilated. Pollen-masses 2, each 2-parted, sessile.

C. borealis Salisb. *C. Americana* Brown. *Limodorum boreale* Willd.

Sphagnous swamps, near Brownville, Jefferson county, and Lowville, Lewis county, N. Y. *W. A. Wood* and *F. B. Hough*. Ver. Montreal, and various parts of British America. Near the outlet of Lake Michigan and W. to the Columbia River. *Scape* 6—8 inches high, sheathed, with a fleshy bulb at base. *Leaf* solitary, radical, 1—2 inches long, roundish-ovate, petiolate, plaited. *Flower* solitary, terminal, about an inch long, purplish. A rare and beautiful plant, resembling a *Cypripedium*. *Calypso.*

4. CORALLORHIZA. Brown.—Coral-Root.

(From the Greek κοραλλιον, *coral*, and ριζα, a *root*; the root being coral-like.)

Perianth with the segments nearly equal and connivent. Lip produced at the base underneath; the spur short and adnate to the ovary. Column free. Pollen-masses 4, oblique, not parallel.

1. *C. innata* Brown: scape few-flowered; lip oblong, bi-dentate at the base, the apex recurved and ovate; spur obsolete, adnate; capsule elliptic-obovoid. *C. verna* Nutt. *Cymbidium Corallorhizon* Willd.

Moist woods. Can. to Virg. May, June. 2.—*Root* coraloid or branching, with tooth-like processes. *Scape* 6—8 inches high, with 3 or 4 membranous leafless sheaths, having a purplish color. *Flowers* 5—12 in a short spike, small, distant, dull-purple. *Lip* nearly white, mostly without spots. *Spur* nearly wanting. According to Sir W. Hooker and Dr. Torrey, our plant is identical with the foreign *C. innata*. *Vernal Coral-root.*

2. *C. odorhiza* Nutt.: *scape* few-flowered; *lip* oval or obovate, crenulate and waved; *spur* obsolete, adnate; *capsule* nearly globose. *Cymbidium odorhizon* Willd. *Ophrys Corallorhiza* Mich.

Roots of trees. Ver. to Car. Aug., Sept. 2.—*Root* coraloid. *Scape* 8—10 inches high, a little enlarged at the base, with 2—3 sheaths. *Flowers* 10—12 in a terminal pendulous raceme, purplish and tawney. *Lip* dilated, obovate, white spotted with purple. *Spur* entirely wanting. *Small Late Coral-root.*

3. *C. multiflora* Nutt.: *scape* many-flowered; *lip* wedgeform-oval, spotted, 3-lobed, the middle lobe broad recurved; *spur* conspicuous, adnate; *capsule* elliptic-obovoid. *C. innata* Nutt. *Gen.*

Roots of trees. Can. to Car. July—Sept. 2.—*Root* coraloid, much branched. *Scape* a foot high, with 3—4 sheaths, purplish. *Flowers* 10—30, in a terminal raceme, larger than in either of the preceding, purplish-brown. *Lip* whitish spotted with purple. *Spur* distinct, brownish. *Large Coral-root.*

5. APLECTRUM. Nutt.—Putty-Root.

(From the Greek *a*, without, and *πλεκτρον*, a spur.)

Perianth with the segments distinct, nearly equal. *Lip* unguiculate, not produced at the base. *Column* free. *Anther* situated a little below the summit of the column. *Pollen-masses* 4, oblique, lenticular.

A. hyemale Nutt. *Cymbidium hyemale* Willd.

Shady woods. Can. to Flor. W. to Ark. May, June. 2.—*Root* with 2—4 subglobose tubers. *Scape* about a foot high, with 3 loose sheaths, purplish. *Leaf* solitary, 4—6 inches long, elliptic, acute at each end, nerved, on a petiole 2—3 inches long, which is inserted on the summit of the tuber. *Flowers* brownish, in a terminal bracteate raceme. *Lip* 3-lobed, obtuse, the middle lobe crenulate on the margin. *Adam and Eve. Putty-root.*

II. VANDEÆ. *Pollen cohering in waxy masses, with a distinct caudicle united to a stigmatic gland. Anther terminal, rarely dorsal.*

6. TIPULARIA. Nutt.—Tipularia.

(From a fancied resemblance in the flower to insects of the genus *Tipula*.)

Segments of the perianth spatulate, spreading. *Lip* oblong, sessile, 3-lobed; the intermediate lobe elongated, with a filiform spur at the base. *Column* wingless, free. *Anther* operculate, persistent. *Pollen-masses* 4, parallel.

T. discolor Nutt. *Orchis discolor* Pursh. *Limodorum unifolium* Muhl.

Pine woods. Martha's Vineyard, (Torr.) to Car. July. 2.—*Scape* 10—15 inches high, slender, with a bulb at the base. *Leaf* solitary, ovate, petiolate, strongly nerved, smooth. *Flowers* in a terminal raceme, nodding, minute, greenish with a tinge of purple. *Spur* slender, nearly twice as long as the ovary. *One-leaved Tipularia.*

III. OPHREÆ. *Pollen powdery, granular or sectile. Anther terminal, erect.*

7. ORCHIS. *Linn.*—Orchis.

(An ancient Greek name.)

Perianth ringent. Lip with a spur on the under side at base. Pollen masses pedicellate; glands of the pedicels contained in one common little pouch.

O. spectabilis Linn.: leaves 2, radical, elliptic-obovate, obtuse; scape angular, naked, few-flowered, scarcely longer than the leaves; bracts longer than the flowers; spur clavate, shorter than the ovary. *O. humilis Mich. Habenaria spectabilis Spreng.*

Shady woods. Can. to Car. W. to Miss. June. ♀.—*Scape* 4—6 inches high, 5-angled, smooth. *Leaves* mostly 2, nearly as long as the scape. *Flowers* 4—6, in a terminal spike, large, purplish and white. *Showy Orchis.*

8. GYMNADENIA. *Brown.*—Gymnadenia.

(From the Greek *γυμνος*, *naked*, and *ἀδην*, a *gland*.)

Lip with a spur at the base. Glands of the stalks of the pollen-masses naked, approximated.

G. tridentata Lind.: lower leaf oblong, rather acute, upper leaves much smaller; flowers few, in an oblong terminal spike; lip cuneate-oblong, 3-toothed at the apex; segments of the perianth connivent, oblong-ovate, obtuse; spur clavate, incurved, longer than the ovary. *Habenaria tridentata Hook. Orchis tridentata Willd.*

Swamps. Can. to Virg. June, July. ♀.—*Stem* 8—18 inches high, slender, *Flowers* pale-yellowish-green, small, 6—12 in a compact terminal spike. *Lip* with 3 short equal teeth at the apex. *Three-toothed Gymnadenia.*

9. PLATANTHERA. *Rich.*—Platanthera.

(From the Greek *πλατυς*, *broad*, and *ανθερα*, an *anther*.)

Lip entire, with a spur at the base. Cells of the anther widely separated. Glands of the pollen-masses pedicellate; the glands naked.

* *Lip undivided.*

† *Scape nearly naked.*

1. *P. obtusata Lind.*: upper segment of the perianth very broad; inner segments triangular, truncate at the apex; lip linear, with two minute tubercles at the base; spur subulate-conic, curved, as long as the lip. *Orchis obtusata Pursh.*

Woods on the sides of mountains in Essex county, N. Y. *Torr.* White Mountains, N. H. *Boott.* Hudson's Bay. *Pursh.* Aug. ♀.—*Stem* 5—8 inches high, slender. *Leaf* solitary, radical, oblong-obovate. *Flowers* 5—8, greenish, erect, in a rather loose terminal spike. *Obtuse-leaved Platanthera.*

2. *P. orbiculata Lind.*; upper segment of the perianth orbicular, the

lateral ones ovate; lip linear-spatulate, one-half longer than the segments; spur linear-clavate, curved, nearly twice as long as the ovary. *Orchis orbiculata* Pursh. *Habenaria macrophylla* Goldie.

Shady woods. Can. to Virg. W. to Ark. July. 2.—*Scape* 1—2 feet high, with several small appressed scales. *Leaves* 2, radical, nearly orbicular, large, fleshy, spreading on the ground. *Flowers* greenish-white, in a loose terminal raceme which is sometimes 5 or 6 inches long. *Long-leaved Orchis.*

3. *P. Hookeri* Lind.: outer segments of the perianth ovate-lanceolate, acute or acutish; inner ones linear, dilated at base, shorter than the outer; lip lanceolate, acuminate, rather shorter than the ovary. *Habenaria Hookeri* Torr. & Gr. in *Lyc. Ann.*

Fertile woods. Can. to Virg.? July. 2.—*Scape* 8—12 inches high, sometimes with a small lanceolate leaf. *Radical leaves* 2, nearly orbicular or oval, large, spreading. *Flowers* 10—20, yellowish-green, in an erect spike. Differs from the preceding, for which it has probably been often mistaken, by its closer spike, projecting spur, and narrow upper perianth-segment. *Hooker's Orchis.*

†† *Stem leafy.*

4. *P. flava* Gray: lower leaves oblong, acute, the upper lanceolate; bracts acuminate, longer than the flowers; lip oblong, 2-toothed toward the base, and a single tubercle in the middle, about half as long as the clavate spur. *Orchis flava* Linn. *O. fuscescens* Pursh. *Habenaria herbicola* Brown. *H. virescens* Spreng. (according to Gray, *Sill. Jour.* xxxviii.)

Wet banks of streams. Can to Car. 2.—*Stem* 12—18 inches high, with 3—5 long clasping leaves. *Flowers* numerous, in a loose spike; outer segments greenish; the inner ones greenish-yellow. *Small Pale-yellow Platanthera.*

5. *P. hyperborea* Lind.: leaves lanceolate, erect; outer segments of the perianth ovate, the upper one shorter and broader; inner segments and lip lanceolate, somewhat equal; spur thick and obtuse, about half the length of the ovary. *B. dilatata* Beck *Bot. 1st. Ed.* *Habenaria hyperborea* Brown and *H. Huronensis* Spreng. *Orchis hyperborea* Pursh. (Gray, l. c.)

Sphagnous swamps. Can. as far N. as Hudson's Bay. N. H. N. Y. W. to Ark. June, July. 2.—*Stem* 8—20 inches high. *Leaves* 3—8 inches long. *Flowers* numerous, in a loose or close spike, greenish-yellow.

Northern Platanthera.

6. *P. dilatata* Lind.: leaves lanceolate; bracts linear-lanceolate, the lower ones about as long as the flowers; outer segments of the perianth ovate, obtuse; lip lanceolate-linear, entire, dilated at the base, about as long as the thick obtuse spur. *Orchis dilatata* Pursh.

Sphagnous swamps. N. Y. Torr. June, July. 2.—*Stem* 1—2 feet high, angled. *Leaves* 4—6 inches long. *Flowers* white, in a long cylindric spike.

Small White-flowered Orchis.

** *Lip incised.*

7. *P. blephariglottis* Lind.: leaves lanceolate, acute; outer segments of the perianth roundish-oblong, the lateral ones reflexed; inner segments spatulate, slightly incised at the apex; lip oblong, flat, fimbriate; spur filiform, incurved, much longer than the ovary. *Habenaria blephariglottis* Hook. *Orchis blephariglottis* Willd.

Swamps. Can. to Car. June, July. 2.—*Stem* 1½—2 feet high. *Lower leaves* 6—8 inches long, the upper gradually smaller. *Flowers* pure white, in a

dense oblong spike. *Spur* nearly an inch long. The inner segments of the perianth are sometimes entire, when it constitutes the var. *holopetala* of Torrey.
Fringed White Orchis.

8. *P. ciliaris* Lind: leaves lanceolate, acute; outer segments of the perianth roundish-ovate, the lateral ones reflexed; inner segments linear, incised; lip oblong, deeply and finely cut and fringed, twice as long as the segments; spur longer than the ovary. *Habenaria ciliaris* Brown. *Orchis ciliaris* Linn.

Swamps. Can to Car. June, July. ♀.—*Stem* 12—18 inches high. *Flowers* bright orange-yellow, in a dense terminal spike. *Lip* larger and more pinnately ciliate than in the preceding. I have seen hundreds of specimens of this beautiful plant in a sandy swamp about two miles west of Albany, N. Y.

Fringed Yellow Orchis.

9. *P. psycodes* Gray: leaves oblong; outer segments of the perianth ovate, obtuse, the lateral ones deflexed; inner segments fimbriate-toothed, cuneate, oblong, obtuse, incised; lip clawed, roundish, 3-parted, the segments cuneate and incisely toothed, the intermediate one larger; spur incurved, about twice as long as the lip. *Habenaria psycodes* Spreng. *H. fimbriata* Brown. *H. incisa* and *fissa* Spreng. *H. grandiflora* Torr. *Comp. Beck Bot. 1st. Ed. (Gray, l. c.)*

Swamps and wet meadows. Can. to Car. July, Aug. ♀.—*Stem* 1—2 (sometimes 3) feet high, stout, angular. *Leaves* long. *Flowers* bright-purple, in a spike which is 2—6 inches long. Var. *grandiflora* of Gray has the flowers larger than the common form, and the segments of the lip fimbriate.—Gray, in *Sill. Jour.* xxxviii.

Purple Swamp Orchis.

10. *P. lacera* Gray: outer segments of the perianth ovate; inner ones oblong-linear, obtuse, entire; lip clawed, slender, 3-parted, the lobes cut into capillary segments; spur filiform, clavate, ascending, somewhat longer than the ovary. *Habenaria psycodes* Spreng. *Orchis lacera* Mich.

Wet meadows. Can. to Virg. June, July. ♀.—*Stem* 18 inches to 2 feet high, somewhat slender, angular. *Leaves* 3—8 inches long, mostly acute. *Flowers* pale greenish-yellow, in a long somewhat loose terminal spike.

Ragged Yellow Orchis.

11. *P. bracteata* Torr.: bracts spreading, much longer than the flowers; inner segments of the perianth linear-lanceolate, erect; lip oblong-linear, obscurely 3-toothed at the apex; spur obtuse, very short, somewhat inflated and didymous. *Habenaria bracteata* Brown.

Shady woods. Can. to Virg. July. ♀.—*Stem* 6—12 inches high, smooth, leafy at base. *Leaves* about 3, an inch and a half to near 3 inches long, elliptic-lanceolate, acute, the lower one sometimes spatulate-obovate and obtuse. *Flowers* green, small, in a terminal bracteate spike which is 2—3 inches long.

Green-flowered Orchis.

12. *P. integra* Gray: bracts as long as the flowers; lip oblong or ovate, entire, partly crenulate, longer than the inner segments of the perianth; spur subulate, scarcely longer than the ovary. *Habenaria integra* Spreng. and *H. Elliottii* Beck. *Orchis integra* and *flava* Nutt. *O. flava* Ell.?

Swamps. N. J. to Geor. July. ♀.—*Stem* 1½—2 feet high. *Flowers* small, bright orange-yellow, in a short crowded spike. I follow Dr. Gray in uniting *Habenaria Elliottii* with this species, although I am still doubtful of their identity.

Small Orange-flowered Orchis.

13. *P. cristata* Lind: segments of the perianth roundish; the two lateral

ones toothed; lip oblong, pinnately ciliate; spur shorter than the ovary.
Habenaria cristata Brown. *Orchis cristata* Mich.

Swamps. Penn. to Car. June, July. ♀.—Stem 1—2 feet high. Flowers yellow, in a somewhat crowded terminal spike. Distinguished from the former by its smaller flowers and more dense spike.
Cristate Platanthera.

IV. ARETHUSEÆ. *Pollen powdery, granular or sectile. Anther terminal, opercular.*

10. POGONIA. Brown.—Pogonia.

(From the Greek *πωγων*, a beard; in allusion to the bearded lip of the flower.)

Perianth with the segments distinct and nearly equal. Lip sessile or unguiculate, cucullate, mostly with a beard-like crest on the inner or upper side. Column wingless. Pollen powdery.

1. *P. ophioglossoides* Brown.: scape mostly 1-flowered, with an oval-lanceolate leaf near the middle and a foliaceous bract near the flower; lip spatulate-oblong, crested and fimbriate. *Arethusa ophioglossoides* Linn.

Sphagnous swamps. Can. to Car. and Ala. June, July.—Root fasciculate. Scape 9—12 inches high. Flower mostly solitary, large, pale-purple, somewhat nodding.
Single-leaved Pogonia.

2. *P. verticillata* Nutt.: scape with a whorl of 5 elliptic-obovate leaves at the summit, 1—2-flowered; segments of the perianth unequal, the 3 outer ones very long and nearly linear; the 2 inner small, lanceolate, obtuse; lip 3-lobed, the middle lobe dilated and undulate. *Arethusa verticillata* Willd.

Swamps. N. Y. to Geor. June, July. ♀.—Root fasciculate. Scape about a foot high. Leaves 5 in a whorl at the top of the stem. Flower mostly solitary; outer segments brown, 2 inches long; inner ones short, paler and obtuse.
Whorled Pogonia.

11. TRIPHORA. Nutt.—Triphora.

(Abbreviated from the Greek *τρια, ανθος*, and *φερω*, literally, bearing three flowers.)

Perianth with the segments distinct equal and connivent. Lip unguiculate, not crested. Column spatulate, flat, without wings. Pollen powdery.

T. pendula Nutt. *Arethusa pendula* Willd. *Pogonia pendula* Lind.

Fertile woods, about roots of trees. N. Y. to Flor. and Ala. Sept. ♀.—Root bearing tubers. Stems 6—8 inches high, angular, often in clusters, mostly purplish. Leaves 3—7, remote, very short, ovate and rather acute. Flowers 1—4, pale-purple, on axillary pedicels, pendulous. Lip about as long as the segments of the perianth, a little rough but not crested.
Pendulous Triphora.

12. ARETHUSA. Linn.—Arethusa.

(From *Arethusa*, a nymph of Diana.)

Perianth somewhat ringent; the segments cohering at base, connivent and cucullate above. Lip united at the base with

the column, deflected at the apex, bearded inside. Pollen angular.

A. bulbosa Linn.

Sphagnous swamps. Can. to Car. May, June. ♀.—*Scape* 6—10 inches high, with a globose tuber at the base, the lower part bearing 3—4 loosely sheathing scales, from the upper of which there is often a linear-lanceolate nerved leaf. *Flowers* mostly solitary, (rarely 2,) terminal, large, bright-purple. *Lip* curled, crenulate on the margin, yellow and white, bearded in the middle.

Bulbous Arethusa.

13. CALOPOGON. *Brown.*—Calopogon.

(From the Greek *καλος*, beautiful, and *πωγων*, a beard; in allusion to the beard of the flower.)

Flowers resupinate. Perianth with the segments distinct and spreading. Lip on the upper side of the flower, erect, unguiculate, bearded in front. Column free. Pollen angular.

C. pulchellus *Brown.* *Cymbidium pulchellum* Willd.

Swamps. Can. to Flor. W. to Lake Superior. June, July. ♀.—*Root* tuberous. *Scape* 12—18 inches high, slender. *Leaf* generally solitary, 8—10 inches long, sheathing the base of the stem. *Flowers* 3—4, in a terminal bracteate spike, large, bright-purple.

Calopogon.

V. ΝΕΟΤΤΕÆ. *Pollen powdery, granular or sectile. Anther dorsal.*

14. LISTERA. *Brown.*—Twayblade.

(In honor of *Martin Lister*, an eminent British naturalist.)

Perianth irregular. Lip 2-lobed or 2-cleft, without callous processes. Column wingless, (minute.) Anther fixed by its base. Pollen powdery.

1. *L. cordata* *Brown*: stem with only 2 opposite roundish cordate leaves; raceme loose; column without any appendage behind; lip elongated, 2-toothed at base, deeply bifid, the segments divaricate and acute. *Ophrys cordata* Mich.

Sphagnous swamps. Can. to N. J. May. ♀.—*Stem* 4—8 inches high. *Leaves* roundish, cordate, veined, smooth, mucronate. *Raceme* 7—15-flowered. *Flowers* distant, minute, green and purple. *Heart-leaved Twayblade.*

2. *L. convallarioides* *Nutt.*: stem with only 2 opposite oval-roundish leaves, pubescent above; raceme few-flowered, (4—6); column prorected; lip oblong, dilated and obtusely 2-lobed at the extremity. *Epipactis convallarioides* Pursh.

Swamps. N. Y. to Car. May. ♀.—*Stem* 6 inches high and very slender. *Flowers* dark-brown and green, larger than in the preceding.

Large-flowered Twayblade.

15. SPIRANTHES. *Rich.*—Ladies' Tresses.

(From the Greek *σπειρα*, a cord, and *ανθος*, a flower; the flowers being spiral like the strands of a rope.)

Spike spiral; inner segments of the perianth connivent. Lip unguiculate, parallel with the column, with 2 callous processes

at the base. Column curved. Stigma ovate, mostly rostrate. Ovary oblique. Pollen powdery.

1. *S. tortilis* Rich.: radical leaves lance-linear; scape sheathed; flowers spirally secund; lip trifid; the middle lobe larger and crenulate. *Neottia tortilis* Pursh. *Ophrys æstivalis* Mich.

Low meadows. N. Y. to Flor. June, July. ♀.—*Scape* about a foot high. *Flowers* white, spirally twisted in a terminal spike which is 2—4 inches long. Perhaps not distinct from the next. *Three-lobed Ladies' Tresses.*

2. *S. gracilis* Big.: radical leaves ovate; scape sheathing; flowers in a spiral row; lip obovate, curled.

Dry woods. N. Y. and Mass. July. ♀.—*Scape* 8—12 inches high, erect, with a few sheathing scales or leaflets. *Leaves* on short petioles, sometimes falling off before the plant flowers. *Flowers* white, in a twisted spike.

Slender Ladies' Tresses.

3. *S. cernua* Rich.: leaves nearly radical, lance-linear; scape sheathed, the lower sheaths bearing short leaves; flowers in a dense spike, obliquely recurved and cernuous; lip oblong, obtuse, crisped and crenate. *Neottia cernua* Willd.

Moist grounds. Can. to Flor. July, Aug. ♀.—*Scape* 6—18 inches high, (rarely 2—3 feet.) *Leaves* radical or near the base of the scape, 3—10 inches long. *Flowers* greenish-white, sometimes a little yellowish, larger than in the preceding. It is liable to considerable variation in the number, and somewhat in the form of the leaves. *Nodding Ladies' Tresses.*

4. *S. plantaginea* Torr.: entirely smooth; leaves mostly radical, oblong-lanceolate, 3—7-nerved; scape somewhat succulent, with 2—3 nearly leafless sheaths; spike loosely spiral; flowers slender and recurved-cernuous; lip oblong, obtuse, crenulate on the margin, about 5-nerved. *S. æstivalis* Oakes, not of Rich. *Neottia plantaginea* Raf.

Moist woods. Ver. and N. Y. Torr. June. ♀.—*Root* consisting of oblong fasciated tubers. *Scape* 5—10 inches high, with 2 or 3 sheaths which are produced into short linear leaves. *Flowers* white, the lip pale-yellow, in a spike which is about 2 inches long. *Ladies' Tresses.*

16. GOODYERA. Brown.—Goodyera.

(In honor of John Goodyer, an old English botanist.)

Perianth ringent; the outer segments herbaceous, the upper one vaulted, the 2 lateral ones placed beneath the saccate entire lip. Column free. Pollen angular. Stigma roundish or rostrate.

1. *G. pubescens* Brown: radical leaves ovate, petiolate, reticulate; scape with the flowers and sheathing scales pubescent; outer lateral segments of the perianth ovate; lip roundish-ovate, acuminate. *Neottia pubescens* Willd.

Shady woods. Can. to Flor. July, Aug. ♀.—*Scape* 6—10 inches high. *Leaves* radical, dark-green, veined with white. *Flowers* greenish-white, in an oblong spike. *Rattlesnake Plantain.*

2. *G. repens* Brown: radical leaves ovate-lanceolate, petiolate, somewhat reticulate; flowers unilateral and with the scales slightly pubescent; outer segments of the perianth and lip lanceolate. *Neottia repens* Willd.

Shady woods. Can. to Virg. July, Aug. ♀.—*Rhizoma* creeping. *Scape* 6—8 inches high. *Leaves* less distinctly veined than in the preceding. *Flowers* greenish-white. *Smaller Goodyera.*

VI. CYPRIPEDEÆ. *Anthers* 2, with a large dilated lobe or abortive *stamen* between them.

17. CYPRIPEDIUM. *Linn.*—Ladies' Slipper.

(From the Greek *Κυπρις*, *Venus*, and *ποδων*, a *shoe*.)

Perianth with the two outer lateral (or lower) segments mostly united nearly to the apex. Lip large and inflated. Column short, cernuous, 3-lobed; the middle lobe (sterile stamen) dilated and petaloid.

1. *C. candidum Willd.*: stem leafy; leaves oblong-lanceolate; lip compressed, shorter than the lanceolate segments of the perianth; sterile stamen lanceolate, rather obtuse.

Penn. *Muhl.* May. ♀.—Resembles *C. Calceolus*; but the flowers are white and not half the size; the form of the leaves and of the sterile stamen distinguish it sufficiently. *Pursh.* A doubtful species. *White Ladies' Slipper.*

2. *C. parviflorum Willd.*: outer segments of the perianth ovate-oblong, acuminate; inner ones lance-linear, contorted; lip shorter than the perianth; sterile stamen triangular, acute. *C. Calceolus Mich.*

Woods and swamps. Can. to Car. W. to Miss. May, June. ♀.—*Stem* 12—18 inches high. *Leaves* ovate, clasping at base, pubescent. *Flowers* solitary or in pairs. Outer segments of the *perianth* green with purple stains; *lip* yellow, spotted, an inch and a half long, inflated. *Yellow Ladies' Slipper.*

3. *C. pubescens Swartz*: stem leafy; outer segments of the perianth lanceolate, acuminate; inner ones very long, linear and contorted; lip laterally compressed, shorter than the inner segments; sterile stamen triangular, obtuse, (acute, *Hook.*)

Woods. Subarct. Amer. to Car. W. to Miss. May. ♀.—*Stem* 1—2 feet high. *Leaves* large, ovate-lanceolate, pubescent. *Flowers* solitary or in pairs. Segments of the *perianth* greenish-yellow, spotted with purple; *lip* yellow, 1—1½ inches long, much inflated. Closely resembles the preceding, but probably distinct. *Large Yellow Ladies' Slipper.*

4. *C. spectabile Swartz*: stem leafy; outer segments of the perianth ovate, obtuse, longer than the flat lanceolate inner ones; lip longer than the inner segments; sterile stamen cordate-ovate, obtuse. *C. Canadense Mich.*

Swamps and bogs. Can. to Car. June, July. ♀.—*Stem* 1—2 feet high. *Leaves* ovate-lanceolate, plaited, resembling those of *Veratrum viride*. *Flowers* 2—3, very large. Segments of the *perianth* white; *lip* variegated with stripes of purple and white, an inch or more long, much inflated.

Shady Ladies' Slipper.

5. *C. acaule Ait.*: scape leafless, 1-flowered; radical leaves 2, oblong, obtuse; outer segments of the perianth ovate-lanceolate; lip cleft in front; sterile stamen roundish-rhomboid, acuminate, deflected. *C. humile Salisb.*

Shady woods. Subarct. Amer. to Car. May, June. ♀.—*Scape* 6—10 inches high, with two oval or elliptic-lanceolate leaves near the base. *Flower* solitary,

large, terminal. Segments of the *perianth* yellowish-green, spotted with purple lip purple, veined. *Stemless Ladies' Slipper.*

6. *C. arietinum* Brown: stem leafy; upper segment of the *perianth* ovate-lanceolate, the rest linear; lip as long as the segments, acute, conic below; sterile stamen orbicular-spatulate. *Cryosanthus borealis* Raf. *Arietinum Americanum* Beck Bot. 1st. Ed.

Sphagnous swamps. Montreal, Can. Hallowell, Maine. Fairhaven, Ver. Oneida and Montgomery counties, N. Y.; rare. ♀.—*Stem* 6—8 inches high, with a few alternate lanceolate leaves. *Flower* solitary, much smaller than in any of the preceding species. Segments of the *perianth* greenish-brown; lip small, red and white, reticulated, the lower part ending in a conical point or short obtuse spur. *Ram's Head.*

ORDER CXXVI. IRIDACEÆ.—IRIDS.

Perianth with the limb 6-parted, in a double series, sometimes irregular, the 3 inner segments being occasionally very short. Stamens 3, from the base of the sepals; filaments distinct or connate. Ovary 3-celled; style single; stigmas 3, often dilated and petaloid. Capsule 3-celled, 3-valved, loculicidal. Seeds with hard albumen.—Mostly herbaceous plants, with tuberous or fibrous roots. Leaves equitant. Flowers spathaceous, usually large and showy.

1. IRIS. Linn.—Iris. Flower de Luce.

(So named from the varied hues of the flowers.)

Perianth 6-cleft; 3 of the segments larger and reflexed, the others erect. Stamens distinct. Style short or none. Stigmas 3, petaloid, covering the stamens.

1. *I. versicolor* Linn.: stem terete or slightly compressed, more or less flexuous; leaves ensiform; *perianth* beardless; ovary obtusely triangular, with the sides flat; capsule oblong, turgid, with rounded angles. *I. Virginica* Pursh, not of Linn.

Margins of ponds. Can. to Car. W. to Miss. May, June. ♀.—*Root* large, fleshy, creeping. *Stem* 2—3 feet high, rarely branched. *Flowers* 2—6 at the summit of the stem, blue variegated with green and yellow. *Blue Flag.*

2. *I. Virginica* Linn.: stem round, slender, smooth; leaves narrow-linear, long; *perianth* beardless; ovary 3-sided, each side twice grooved; capsule triangular, acute at each end. (Torr.) *I. prismatica* Pursh. *I. gracilis* Big.

Wet meadows. N. Y. to Virg. June ♀.—*Root* tuberous, creeping. *Stem* 1—2 feet high, a little flexuous, round. *Flowers* 2—6 at the summit of the stem, blue and yellow, more delicate than in the preceding. Very common in the vicinity of New Brunswick. N. J. *Slender Blue Flag.*

3. *I. lacustris* Nutt.: leaves ensiform, shorter than the 1-flowered scape; *perianth* without a bearded crest; segments nearly equal, attenuated on the tube; capsule turbinate, 3-sided, margined.

Gravelly shores of Lake Huron. *Nutt.* June. ♀.—*Root* tuberous, creeping. *Scape* compressed, scarcely an inch long. *Leaves* 3—5 inches long and 1-4 of an inch broad. *Torr. Comp.* *Lake Iris.*

2. *SISYRINCHIUM*. *Linn.*—Blue-eyed Grass.

(From the Greek *συσ*, a hog, and *ρυχος*, a snout; hogs being supposed to be fond of rooting it up.)

Spathe 2-leaved, bract-like. Perianth colored; limb flat, 6-cleft; the lobes equal; tube short. Stamens 3, the filaments mostly united below. Style short. Stigmas 3. Capsule pedicellate, roundish-triangular.

1. *S. mucronatum Mich.*: scape simple, narrowly winged; valves of the spathe unequal, colored; the outer one longer than the peduncles, tapering to a rigid point. *S. Bermudiana* var. *Torr.*

Wet meadows. N. Y. to Virg. W. to the Platte River. May, June. ♀.—*Scape* 6—10 inches high, slender. *Leaves* narrow-linear, grass-like. *Flowers* 3—4 from each spathe, blue. *Mucronate Blue-eyed Grass.*

2. *S. anceps Linn.*: scape simple, broadly winged; valves of the spathe nearly equal, shorter than the peduncles. *S. gramineum Lam.* *S. Bermudiana* var. *Torr.*

Pastures, &c. Can. to Flor. July. ♀.—*Scape* 12—18 inches high, somewhat branching above. *Spathe* with the valves nearly equal, not colored. *Flowers* 2—5 from each spathe, blue. *Common Blue-eyed Grass.*

ORDER CXXVII. AMARYLLIDACEÆ.—AMARYLLIDS.

Perianth petaloid, regular, 6-cleft; the outer segments overlapping the inner. Stamens 6, sometimes cohering below. Ovary 3-celled; style 1; stigma 3-lobed. Fruit a 3-celled 3-valved capsule, or a 1—3-seeded berry. Seeds with fleshy or corneous albumen.—Mostly bulbous, sometimes fibrous rooted, plants. Leaves ensiform, with parallel veins. Flowers usually spathaceous.

1. *AMARYLLIS*. *Linn.*—Amaryllis.

(From the nymph *Amaryllis*, mentioned in Virgil. *Eat. Man.*)

Perianth 6-parted, petaloid, unequal. Stamens 6, arising from the orifice of the tube, declined or straight, unequal. Style 1. Stigma 3-lobed. Capsule 3-celled, 3-valved.

A. Atamasco Linn.: spathe bifid, acute; flower pedicellate; perianth subcampanulate, subequal, erect, short and tubular at the base; stamens declined, equal.

Shady woods. Penn. *Muhl.* S. to Geor. June. ♀.—*Scape* 6 inches high. *Leaves* a foot long, linear, concave, smooth. *Flower* solitary, large, white and pink. *Atamasco Lily.*

2. AGAVE. *Linn.*—Agave.

(From the Greek *αγαυος*, *admirable*; in allusion to its beautiful appearance.)

Perianth tubular, 6-cleft. Stamens 6, exerted. Anthers versatile. Capsule ovate, attenuate at each end, obtusely triangular, 3-celled, many-seeded.

A. Virginica Linn.: scape simple; leaves with cartilaginous serratures; flowers sessile.

Rocky Banks. Penn. ? to Car. Sept. 24.—Scape 6 feet high. Flowers greenish-yellow, very fragrant. *Virginian Agave* or *False Aloe*.

ORDER CXXVIII. HYPOXIDACEÆ.—STAR GRASSES.

Perianth petaloid, regular, 6-parted. Stamens 6. Ovary adherent, 3-celled; style single; stigmas 3, or united. Fruit indehiscent, dry or berried, 1—3-celled. Seeds numerous, roundish, with a lateral hilum; embryo straight in the axis of fleshy albumen.—Herbaceous plants, with tuberous or fibrous roots. Leaves usually radical, plaited.

HYPOXIS. *Linn.*—Star Grass.

(From the Greek *ὑπο*, *beneath*, and *οξυς*, *sharp*; in allusion to the acute base of the capsule.)

Perianth superior, 6-parted, persistent. Capsule elongated, narrowed at the base, 3-celled, many-seeded. Seeds roundish, naked.

H. erecta Linn.: hairy; leaves all radical, linear and grass-like; scape 3—4-flowered, somewhat umbelled, mostly shorter than the leaves. *H. erecta* and *graminea Pursh.* *H. Caroliniensis Mich.*

Meadows and woods. Can. to Car. W. to Miss. April—June. 24.—Root bulbous. Scape 4—6 inches high, with the leaves narrow and often double the length. Flowers usually 4, yellow within, greenish and hairy outside.

Common Star-grass.

ORDER CXXIX. DIOSCOREACEÆ.—YAMS.

Flowers diœcious. Perianth 6-parted, equal. Stamens 6. Ovary adherent, 3-celled; styles 3, united below or distinct. Fruit a capsule, often 3-winged, with two of its cells sometimes abortive. Seeds compressed, sometimes winged; embryo small, lying in a cavity of the cartilaginous albumen.—Twining herbs or under shrubs. Leaves with reticulated veins. Flowers small, spiked.

DIOSCOREA. *Linn.*—Yam.(In honor of the celebrated Greek naturalist, *Dioscorides*.)

Diœcious. Perianth 6-parted. STERILE FL. Stamens 6, 3 sometimes barren. Filaments subulate. FERTILE FL. Styles distinct nearly to the base. Capsule 3-celled, triangular; the angles winged. Seeds membranaceously winged.

1. *D. villosa* *Linn.*: leaves alternate, opposite and verticillate, cordate, acuminate, pubescent beneath, 9—11-nerved; lateral nerves simple. *D. paniculata* *Mich.*

Woods. Can. to Car. May, June. ♀.—*Stem* climbing, sometimes 10 or 12 feet long. *Leaves* mostly alternate, sometimes subopposite, rarely in whorls of 4. *Flowers* minute, pale greenish-yellow; the *sterile* ones in pendulous panicles; *fertile* ones in pendulous simple racemes. *Hairy Yam.*

2. *D. quaternata* *Walt.*: leaves verticillate in fours, or alternate, cordate, acuminate, smooth on both sides, 7-nerved; lateral nerves bifid. *D. glauca* *Muhl.*

Old fields. Penn. to Car. July. ♀.—*Stem* climbing.³ *Leaves* more tapering at the summit than in the preceding, of which, however, it may be only a variety. *Smooth Yam.*

ORDER CXXX. SMILACEÆ.—SARSAPARILLAS.

Flowers perfect or diœcious. Perianth petaloid, 6- (rarely 4-) parted or 6-leaved in a double series. Stamens 6, (rarely 4,) inserted into the perianth, rarely hypogynous. Ovary 3-celled; styles 3, distinct or united. Fruit a roundish berry. Seeds with horny albumen.—Herbaceous plants or under shrubs, usually climbing. Leaves simple, mostly entire, reticulated.

1. SMILAX. *Linn.*—Green Brier.

(Greek *σμιλαξ*, from *σμιλη*, a *knife* or *scraper*; most of the species being armed with prickles.)

Diœcious. Perianth campanulate, spreading, of 6 leaves in a double series, somewhat petaloid. STERILE FL. Stamens mostly 6. Filaments short. FERTILE FL. Style very short. Stigmas 3, thick. Berry 3- (or by abortion 1—2-) celled. Seeds 1—3, globose.

* *Stem shrubby.*

1. *S. quadrangularis* *Willd.*: prickly; stem 4-angled, unarmed above; leaves unarmed, ovate, subcordate, acute, 5-nerved.

Dry woods. Penn. to Car. June, July. ♀.—*Berry* black. *Pursh.*
Square-stalked Greenbrier.

2. *S. spinulosa* *Smith*: stem terete, very prickly, with slightly recurved

and rigid but rather slender prickles; leaves ovate-lanceolate, (on young plants often somewhat panduriform,) smooth on both sides, glaucous beneath, 3—5 nerved. (*Torr. N. Y. Fl.*) *S. Sarsaparilla* Linn. (in part.)?

Sandy woods. N. Y. and N. J. *Torr.* η .—*Stem* 3—6 feet long, trailing or climbing. *Leaves* 2—3 inches long, often dilated at base, cuspidate.

Spinulose Greenbrier.

3. *S. rotundifolia* Linn.: stem prickly, nearly round; leaves unarmed, roundish-ovate, acuminate, slightly cordate, 5-nerved; common peduncles scarcely longer than the petioles.

Moist woods. Can. to Car. June. η .—*Stem* climbing upon trees and bushes, with strong tendrils. *Flowers* yellowish-green, in small globose axillary umbels. *Berry* bluish-black, spherical.

Common Greenbrier.

4. *S. hispida* Muhl.: stem round, the lower part very hispid; branchlets angular; leaves ovate, acute, mostly cordate at the base, 5-nerved, smooth and green on both sides, margins crenulate; peduncles twice as long as the petioles. (*Torr. N. Y. Fl.*)

Woods. N. Y. Penn. and Mich. June. η .—*Stem* climbing. *Flowers* 4—6 in an umbel. *Berry* black.

Hispid Greenbrier.

5. *S. caduca* Linn.: stem prickly; leaves ovate, mucronate, 5-nerved; common peduncles longer than the petioles.

Moist woods. Can. to Car. June. η .—*Stem* 8—10 feet long, flexuous, leaning or climbing, somewhat angled. *Flowers* yellowish-green, in small axillary umbels. *Berry* bluish-black.

Caducous Greenbrier.

6. *S. laurifolia* Linn.: stem prickly; branches unarmed; leaves coriaceous, oval-lanceolate, slightly acuminate, 3-nerved; umbels on very short peduncles.

Boggy woods. N. J. to Geor. June—Aug. η .—*Stem* climbing to a great height. *Leaves* somewhat crowded, coriaceous and perennial. *Peduncles* scarcely as long as the pedicels.

Laurel-leaved Greenbrier.

7. *S. pandurata* Pursh: stem prickly; leaves ovate-panduriform, acuminate, 3-nerved; common peduncles twice as long as the petioles. *S. tamnoides* Ell. not of Linn.?

Sandy woods. N. J. to Car. July. η .—*Stem* twining, round. *Leaves* smooth and shining on both sides. *Berry* black.

Panduriform-leaved Greenbrier.

** *Stem herbaceous, unarmed.*

8. *S. herbacea* Linn.: stem erect or climbing, nearly simple, angular; leaves ovate or oblong, cordate, acuminate, (sometimes obtuse;) peduncles very long, compressed. *S. peduncularis* Muhl.

Meadows and woods. Can. to Car. May, June. η .—*Stem* 3—5 feet long, climbing or leaning on other plants. *Flowers* yellowish-green, fetid, numerous, in globose axillary umbels of about an inch in diameter. *Berry* bluish-black.

Carrion Flower.

2. SMILACINA. Desf.—Smilacina.

(The diminutive of $\sigma\mu\lambda\alpha\zeta$, to which this genus, however, has little resemblance.)

Perianth 6- (rarely 4-) parted, spreading. Stamens as many as the segments of the perianth and inserted at their base.

Style thick, short. Stigma obscurely 2—3-lobed. Berry globose, pulpy, 1—3-seeded.

* *Segments of the perianth and stamens 6.*

1. *S. stellata* Desf.: leaves numerous, alternate, oval-lanceolate, acute, somewhat clasping; raceme simple, terminal, few-flowered. *Convallaria stellata* Linn.

River banks. Can. to Penn. May, June. ♀.—Stem a foot high. Leaves 7—9, ciliate on the margin, roughish on the nerves beneath. Flowers 4—9, in an erect terminal raceme, small, white. *Star-flowered Smilacina.*

2. *S. trifolia* Desf.: stem smooth, angular, pubescent, about 3-leaved; leaves alternate, oval-lanceolate, acute, contracted at the base and somewhat clasping; raceme simple, terminal, few-flowered. *Convallaria trifolia* Linn.

Swamps. Can. to Penn. May, June. ♀.—Stem 6 inches high. Leaves 2 or 3, smooth on the margin. Flowers small, white, 4—6 in a terminal raceme, with the segments spreading. *Three-leaved Smilacina.*

3. *S. racemosa* Desf.: stem a little flexuous; leaves numerous, alternate, sessile, oblong-oval, acuminate, nerved, pubescent; flowers in a terminal racemose panicle, very small. *Convallaria racemosa* Linn.

Woods. Can. to Car. W. to Miss. May, June. ♀.—Root thick and fleshy. Stem 18 inches to 2 feet high. Flowers very small, greenish-white, in a compound terminal panicle or raceme. *Wild Spikenard.*

** *Segments of the perianth and stamens 4.*

4. *S. bifolia* Schultes: stem mostly 2-leaved; leaves cordate-oblong, nearly sessile or petiolate, smooth on both sides; raceme simple, terminal. *S. Canadensis* Pursh. *Convallaria bifolia* Linn. *Styrandra bifolia* Raf.

Shady woods. Can. to Virg. W. to Mich. May. ♀.—Stem 4—6 inches high, with 2 or sometimes 3 leaves near the summit, and often a larger radical leaf on a long petiole. Flowers white, small, sweet-scented, in an oblong raceme. *Two-leaved Smilacina.*

3. CLINTONIA. Raf.—Clintonia.

(In honor of the late Governor *De Witt Clinton*.)

Perianth 6-parted, campanulate. Stamens 6, inserted at the base. Style compressed. Stigma 2-lobed, compressed. Berry 2-celled; cells many-seeded.

1. *C. borealis* Raf.: leaves oblong or obovate, with the margin ciliate; umbel 2—5-flowered; pedicels nodding, without bracts. *Dracana borealis* Ait. *Smilacina borealis* Pursh.

Wet woods. Can. to Penn. May, June. ♀.—Scape 6—8 inches high. Leaves radical or nearly so, 6 inches or more in length. Flowers yellowish-green, large, campanulate. Berry globose-oblong, blue. *Large-flowered Clintonia.*

2. *C. umbellata* Torr.: leaves oblong-lanceolate, the margin and keel ciliate; umbel many-flowered; cells of the berry 2-seeded. *C. parviflora*, *odorata*, &c. Raf. *Smilacina umbellata* Desf. *Convallaria umbellata* Mich.

Swamps. Jamestown, Chatauque county, N. Y. *Torr.* Can. to Car. ? May, June. ʒ.—*Leaves* 2—5, radical or nearly so, 6—9 inches long. *Scape* usually longer than the leaves. *Flowers* 15—30, in an umbel or a corymb, white, odorous, much smaller than in the preceding species.

Small-flowered Clintonia.

4. POLYGONATUM. *Desf.*—Solomon's Seal.

(From the Greek πολλός, *many*, and γόνα, a *knee* ; in allusion to its many-jointed rhizoma.)

Perianth tubular, 6-cleft. Stamens 6, inserted near the summit of the tube. Ovary superior. Berry subglobose, 3-celled ; cells 2-seeded.

P. multiflorum All. : stem nearly terete ; leaves ovate-elliptic or elliptic-lanceolate, clasping ; peduncles 1—6-flowered ; filaments smooth or slightly pubescent ; ovules 3—6 in each cell of the ovary. (*Torr. N. Y. Fl.*) *P. biflorum Ell.* *P. pubescens, canaliculatum, latifolium, hirsutum* and *multiflorum Pursh.*

Rocky woods, banks of streams, &c. Can. to Car. June, July. ʒ.—*Rhizoma* thick and fleshy. *Stem* 1—3 feet high, simple, slightly curved, round or a little angular and channelled. *Leaves* variable in size and form. *Flowers* greenish-white, usually 2—4, sometimes 5—6, rarely 1, on recurved peduncles. I adopt the views of Darlington and Torrey in regard to the identity of several supposed distinct species of this genus. *Common Solomon's Seal.*

ORDER CXXXI. TRILLIACEÆ.—PARIDS.

Perianth 6-parted ; 3 inner segments larger, colored or herbaceous. Stamens 6—10 ; filaments subulate ; anthers linear. Ovary free, 3—5-celled ; styles as many, distinct ; stigmas inconspicuous. Fruit succulent, 3—5-celled. Seeds numerous, with fleshy albumen.—Herbaceous plants, with simple stems, verticillate leaves and large terminal solitary flowers.

1. MEDEOLA. *Linn.*—Indian Cucumber.

(From Μηδεια, the name of a sorceress ; on account of the reputed virtues of the plant.)

Perianth petaloid, 6-parted, revolute. Stamens 6, inserted at the base of the perianth. Styles 3, filiform, elongated, divaricate. Berry 3-celled ; cells 1—3-seeded.

M. Virginica Linn. *Gyromia Virginica Nutt.*

Moist woods. Can. to Geor. May, June. ʒ.—*Stem* 12—18 inches high, erect. *Leaves* in 2 whorls ; one about the middle of the stem, of 6—8 oblong-lanceolate acuminate leaves ; the other near the top, of 2—3 smaller ovate ones. *Flowers* 3—6, on pedicels arising from the upper whorl, greenish-yellow, reflexed. *Cucumber Root.*

2. TRILLIUM. *Linn.*—Trillium.

(From the Latin *trilix*, triple; several parts of the plant being in threes.)

Perianth deeply 6-parted; 3 outer segments (sepals) spreading; 3 inner petaloid, (petals.) Stamens 6, inserted at the base of the segments, nearly equal. Anthers linear. Styles 3, distinct or united at base, stigmatose on the inside. Berry ovoid, 3-celled; cells many-seeded.

* *Flowers sessile.*

1. *T. sessile* *Linn.*: leaves sessile, broad-ovate, acute; flower closely sessile, erect; petals lanceolate, erect, twice as long as the calyx.

Fertile hills. Penn. to Car. *Pursh.* April, May. ♀.—*Stem* 8 inches high, smooth. *Petals* dark-purple. *Common Sessile Trillium.*

2. *T. recurvatum* *Beck*: leaves ovate or obovate, subpetiolate, nerved; flower closely sessile; petals lanceolate-ovate, very acute, attenuate at base, erect, as long as the recurved calyx.

Shady woods. Miss. May.—*Stem* 8—10 inches high, smooth. *Leaves* smooth, clouded with dark-green. *Petals* purple. *Filaments* very short. I have been led to introduce this and the next species, described some years since, (*Sill. Jour.* xi. 178,) from the fact that under the name *T. sessile*, several distinct species have heretofore been included. *Recurved Sessile Trillium.*

3. *T. viride* *Beck*: leaves ovate, acute, closely sessile, 3—5-nerved; flower erect, closely sessile; petals fleshy, narrow, somewhat spatulate, a little longer than the lanceolate or ovate obtuse erect calyx.

Shady woods. Miss. April. ♀.—*Stem* 8—12 inches high. *Leaves* with whitish spots on the upper surface. *Petals* dark-green. *Sepals* variable. *Green Sessile Trillium.*

** *Flowers pedunculate.*

4. *T. erythrocarpum* *Mich.*: leaves ovate, acuminate, rounded at the base, abruptly contracted into a short petiole; peduncle somewhat erect; petals from ovate to ovate-lanceolate, acute, recurved, nearly twice as long as the sepals. *T. pictum* *Pursh.* *T. undulatum* *Willd.*

Shady woods. Can. to Car. May, June. ♀.—*Stem* 6—10 inches high. *Flower* on a peduncle about an inch long. *Petals* white with purple veins near the base. *Berry* scarlet. *Red-berried Trillium.*

5. *T. pusillum* *Mich.*: leaves oval, oblong, obtuse, sessile; peduncle erect; petals scarcely longer than the sepals. *T. pumilum* *Pursh.*

Woods. Penn. to Car. *Muhl.* May. ♀.—*Plant* small. *Petals* flesh-colored. *Dwarf Trillium.*

6. *T. cernuum* *Linn.*: leaves dilated-rhomboid, abruptly acuminate, on short petioles; peduncle short, recurved; petals ovate, acuminate, flat, as long as the ovate-lanceolate sepals.

Shady woods. N. Y. to Car. May. ♀.—*Stem* 12—18 inches high. *Flower* small, on a recurved peduncle, partly concealed by the leaves. *Petals* white. *Berry* large, ovoid, dark-purple. *Nodding Trillium.*

7. *T. erectum* *Linn.*: leaves broad-rhomboid, acuminate, sessile; pe-

duncle inclined, the flower a little nodding; petals ovate, acute or acuminate, flat, spreading, a little longer than the ovate-lanceolate sepals. *T. rhomboideum* var. *atropurpureum* and *album* Mich.

Moist woods. Can. to Car. W. to Miss. May. 2.—Stem 12—15 inches high. Flower on a peduncle 1—3 inches long. Petals dark-purple or white.
Erect *Trillium*. False Wake-robin.

8. *T. pendulum* Willd.: leaves roundish-rhomboid, acuminate, nearly sessile; peduncle inclined, the flower pendulous; petals ovate, acuminate, rather larger than the sepals.

Moist woods. Penn. to Car. May. 2.—Stem about a foot high. Flower on a peduncle recurved between the leaves. Petals white with pink veins. Berry roundish, dark purple. Pendulous *Trillium*.

9. *T. grandiflorum* Salisb.: leaves broadly rhomboid-ovate, sessile, abruptly acuminate; peduncle a little inclined, with the flower nearly erect; petals spatulate-lanceolate, much longer than the sepals. *T. rhomboideum* var. *grandiflorum* Mich.

Woods and banks of streams. Can. to Car.; rare. May. 2.—Stem about a foot high. Flower on a slightly inclined peduncle which is 2—3 inches long. Petals large, white. Large-flowered *Trillium*.

ORDER CXXXII. LILIACEÆ.—LILIES.

Perianth 6-parted or 6-leaved, regular or nearly so, sometimes cohering in a tube. Stamens 6, inserted into the perianth; anthers opening inwards. Ovary free, 3-celled; style 1; stigma simple or 3-lobed. Fruit succulent or dry and capsular, 3-celled. Seeds in one or two rows; embryo in fleshy albumen.—Herbaceous plants shrubs or trees, with bulbs, tubers, rhizomes or fibrous roots. Leaves with parallel veins, usually narrow. Flowers large and showy.

I. TULIPÆ.

1. LILIUM. Linn.—Lily.

(Supposed to be derived from the Celtic *li*, white; in allusion to the color of one of the species.)

Perianth campanulate, deeply 6-parted; segments straight or reflexed, with a longitudinal furrow at the base. Stamens 6, adhering to the base of the perianth. Style elongated. Stigma thick, slightly 3-lobed. Capsule oblong, 3-celled, with numerous seeds.

1. *L. Catesbæi* Walt.: leaves scattered, linear-lanceolate, very acute; stem 1-flowered; perianth erect; segments with long claws, undulate on the margin, reflexed at the summit.

Sandy meadows. Penn. to Car. W. to Miss. June—Aug. 2.—Stem 18 inches high. Flower large, scarlet, spotted with yellow and brown.

Catesby's Lily.

2. *L. Philadelphicum* Linn.: leaves whorled, linear-lanceolate; stem 1—3-flowered; perianth erect, campanulate, spreading, the segments with claws.

Woods and meadows. Can. to Car. July, Aug. ♀.—Stem 2—3 feet high, terete, smooth. Flowers large, dark orange, spotted at base, on a peduncle 1—3 inches long. Red Lily.

3. *L. Canadense* Linn.: leaves mostly whorled, lanceolate, distinctly nerved, the nerves hairy beneath; peduncles 2—3, terminal, elongated; perianth nodding, campanulate, the segments lanceolate and slightly revolute.

Wet meadows. Can. to Car. W. to Miss. July, Aug. ♀.—Stem 2—3 feet high. Flowers mostly about 3, (sometimes solitary,) yellow, spotted on the inside. Common Yellow Lily.

4. *L. superbum* Linn.: leaves whorled below, linear-lanceolate, 3-nerved, smooth, the upper ones scattered; flowers in a pyramidal raceme; perianth campanulate, nodding, the segments revolute.

Wet meadows. Can. to Car. July. ♀.—Stem 4—6 feet high. Flowers 3—20 or more in a large pyramidal raceme, orange, with dark spots. The characters of this plant seem to be constant, and both Torrey and Darlington consider it distinct. Superb Lily.

2. ERYTHRONIUM. Linn.—Dog-tooth Violet.

(From the Greek *ερυθρος*, red; supposed to be in allusion to the purple spots on the leaves.)

Perianth campanulate, 6-parted; segments reflexed; the 3 inner ones with a callous tooth on each side near the base, and a nectariferous pore. Stamens 6. Style elongated. Stigma triangular. Capsule narrowed at base, or substipitate, 3-celled. Seeds ovoid.

1. *E. Americanum* Smith: leaves elliptic-lanceolate, punctate; segments of the perianth oblong-lanceolate, obtuse at the point; inner ones bidentate near the base; style clavate; stigma entire. *E. lanceolatum* Pursh. *E. Dens-canis* Mich.

Wet meadows. Can. to Geor. April, May. ♀.—Scape 6—8 inches high. Leaves 2, radical, spotted with purple. Flower solitary, terminal, yellow, spotted near the base. American Dog-tooth Violet.

2. *E. albidum* Nutt.: leaves elliptic-lanceolate, not punctate; segments of the perianth linear-lanceolate, obtuse; inner ones without dentures, subunguiculate; style clavate; stigma 3-cleft.

Wet meadows. Can. and N. Y. W. to Miss. April, May. ♀.—Scape 6—8 inches high. Flower white, segments thick and somewhat obtuse. Very abundant near Albany, N. Y., and also found near the Clyde river, Wayne county, N. Y., and in Canada, by D. Thomas, Esq. I have observed a plant at New Brunswick, N. J., which agrees with this in the absence of dentures and in the trifid stigma, but the perianth is yellow. It is probably the same which is alluded to by Mr. Nuttall, (*Gen. Pl.* i. 223,) and may prove distinct. White Dog-tooth Violet.

3. *E. bracteatum* Big.: leaves lanceolate, unequal; scape bracted.

High mountains, Ver. Boott. June. ♀.—Leaves very unequal, one being two or three times as large as the other. Scape shorter than the leaves, with a narrow lanceolate bract 1—2 inches below the flower, which is yellow, half as large as in *E. Americanum*, and has the segments gibbous at base.

Bracted Dog-tooth Violet.

II. HEMEROCALLEÆ.

3. HEMEROCALLIS. Linn.—Day Lily.

(From the Greek *ἡμερα*, a day, and *καλλος*, beauty; its flower lasting but a day.)

Perianth tubular, 6-parted; tube cylindric; limb campanulate, marcescent. Stamens 6, declined. Ovary superior. Capsule 3-sided, 3-celled, 3-valved. Seeds numerous, roundish.

H. fulva Linn.: leaves linear, keeled; inner segments of the perianth obtuse, undulate.

Wet meadows. Penn. July. ♀.—Root fasciculate. Scape 3—4 feet high. Leaves about 2 feet long and an inch wide, acute, smooth. Flowers large, tawny or reddish-yellow. A foreigner beginning to be naturalized in various parts of Chester county, Penn. *Darlington.* *Copper-colored Day Lily.*

III. SCILLEÆ.

4. ALLIUM. Linn.—Garlic. Onion.

(From the Celtic *All*, signifying *acid* or *burning*.)

Flowers umbellate, arising from a 2-leaved spathe. Perianth inferior, petaloid, 6-leaved or deeply 6-parted, spreading. Stamens 6; the filaments sometimes tricuspidate. Capsule 3-celled, 3-valved, few-seeded. Seeds black and rough.

1. *A. vineale* Linn.: stem slender, somewhat leafy; leaves terete, fistulous, channelled above; umbel often bulbiferous; filaments alternately cuspidate, the middle cusp bearing an anther.

Meadows and pastures. N. S. June, July. ♀.—Bulb ovoid, small. Stem about 2 feet high. Flowers rose-colored. A pernicious weed, introduced from Europe. *Field or Crow Garlic.*

2. *A. triflorum* Pursh: scape naked, terete, shorter than the leaves; leaves lanceolate, nerved; umbel few-flowered.

Shady woods on the high mountains of Penn. May, June. ♀. *Pursh.*
Mountain Leeks.

3. *A. cernuum* Roth: scape elongated, angular; leaves linear, acutely keeled; umbel nodding, many-flowered; leaflets of the perianth oblong-ovate, acute; filaments simple.

Meadows. N. Y. Penn. July. ♀.—Bulb ovoid, large. Scape 1—2 feet high, marked with lines giving it an angular appearance. Flowers rose-colored, about 20 in an umbel. *Wild Onion.*

4. *A. Canadense* Linn.: stem terete, leafy at the base; leaves linear, flat, smooth; umbel few-flowered, bulbiferous; filaments simple, about as long as the perianth.

Wet meadows. Can. to Car. May, June. ♀.—*Bulb* ovoid, small. *Stem* 12—18 inches high. *Leaves* very long and narrow. *Flowers* rose-colored.
Canadian Garlic.

5. *A. tricoccum* Ait. : leaves lance-oblong, flat, smooth; umbel somewhat crowded; leaflets of the perianth oblong, obtuse, about as long as the stamens; filaments simple, dilated downwards.

Moist woods. N. Y. to Virg. June, July. ♀.—*Bulb* oblong-ovoid, rather large. *Scape* about a foot high. *Flowers* white, in a globose umbel. *Capsule* with the cells 1-seeded.
Three-seeded Garlic.

5. ORNITHOGALUM. Linn.—Star of Bethlehem.

(From the Greek *ορνις*, *ορνιθος*, a bird, and *γαλα*, milk; application unknown.)

Perianth deeply 6-parted, spreading above. Stamens 6, hypogynous; the filaments dilated at base. Ovary superior. Capsule roundish-angular, 3-celled. Seeds few, roundish or angular, black and rough.

C. umbellatum Linn. : corymb few-flowered; peduncles longer than the bracts; filaments subulate.

Wet meadows. N. Y. and Penn. May, June. ♀.—*Bulb* small, ovoid. *Scape* 6—10 inches high, smooth. *Leaves* radical, linear, smooth. *Flowers* white inside, green with a white margin outside. Introduced from Europe.
Common Star of Bethlehem.

IV. WACHENDORFEEÆ.

6. LOPHIOLA. Ker.—Lophiola.

(From the Greek *λοφια*, a crest; in allusion to its woolly perianth.)

Perianth 6-parted, woolly, bearded within. Stamens 6. Filaments naked. Anthers erect. Stigma simple. Capsule opening at the summit.

L. aurea Ker. *Conostylis Americana* Pursh.

Sandy swamps. N. J. to Car. July. ♀.—*Root* creeping. *Leaves* radical, grass-like, ensiform, shorter than the erect *scape* which has 1 or 2 short leaves. *Flowers* yellow, in a crowded corymb.
Golden-crested Lophiola.

V. ASPARAGEÆ.

7. ASPARAGUS. Linn.—Asparagus.

(From the Greek *ασπαργος*, an esculent vegetable.)

Perianth 6-parted, subcampanulate, the segments spreading at the apex. Stamens 6. Anthers peltate. Style very short. Berry 3-celled; cells 2-seeded.

A. officinalis Linn. : unarmed; stem herbaceous, erect, rounded, much branched; leaves setaceous, fasciculate and flexible; peduncles jointed in the middle.

Gravelly shores, near salt water, N. Y. June. ♀.—*Stem* 1—3 feet high.

Flowers small, greenish-white, subaxillary, solitary, drooping. Berry globose, red. Introduced and naturalized in some places on Long Island and near the city of New York. *Common Asparagus.*

ORDER CXXXIII. MELANTHACEÆ.—MELANTHS.

Flowers often polygamous or dicœious. Perianth petaloid, 6-leaved or deeply 6-parted. Stamens 6; anthers turned outwards. Ovary 3-celled; styles 3, distinct, (sometimes 1, nearly entire or 3-cleft.) Fruit a capsule, generally divisible into three pieces, or a 3-celled berry. Seeds with a membranous integument and dense fleshy albumen.—Bulbous tuberous or fibrous-rooted plants, with sessile more or less clasping or sheathing leaves.

I. VERATREÆ.

1. ZYGADENUS. *Mich.*—Zygadenus.

(From the Greek ζυγος, a yoke, and αδην, a gland; the glands of the perianth being in pairs.)

Flowers perfect or rarely polygamous. Perianth deeply 6-parted; segments spreading, without claws, with two glands at the base of each. Stamens 6. Filaments dilated at base. Anthers cordate. Style 3-parted. Stigmas somewhat capitate. Capsule ovoid-conic, 3-celled; cells 6—10-seeded.

Z. glaucus Nutt.: bulb tunicated; leaves very smooth, shorter than the stem; bracts lanceolate, shorter than the pedicels; segments of the perianth oval or obovate, obtuse; glands obcordate. (*Nutt. Jour. Ph. Acad.* vii. 56.)
Melanthium glaucum Nutt. *Gen.*

Gravelly banks of the St. Lawrence. Shores of Lake Erie. Can. W. to Miss. July, Aug. 4.—Stem 1—2 feet high, slender. Leaves mostly radical, 2—4 lines wide. Flowers greenish-white, in a panicle or a nearly simple raceme, sometimes polygamous. Torr. *Smooth-leaved Zygadenus.*

2. MELANTHIUM. *Linn.*—Melanthium.

(From the Greek μελας, black, and ανθος, a flower; the flowers becoming of a dark color.)

Polygamous. Perianth petaloid, rotate, deeply 6-parted; segments unguiculate, with two glands at the base. Stamens 6, on the claws of the perianth. Styles short, subulate. Stigmas simple, minute. Capsule ovoid-conic, 3-celled. Seeds numerous.

1. *M. Virginicum* Linn.: leaves linear-lanceolate, long; panicle very large, pyramidal, with simple racemose branches; segments of the perianth ovate, somewhat hastate or auriculate; glands approximated.

Rocky woods. Staten Island and Orange county, N. Y. Torr. and Dr. W. Horton. S. to Car. July. 4.—Stem 3—4 feet high, leafy. Leaves 9—15 inches

long, somewhat clasping at base. *Flowers* greenish-white, in a panicle which is a foot or more in length, perfect and sterile ones mixed.

Virginian Melanthium.

2. *M. hybridum* Walt.: leaves long-linear, nearly smooth, clasping the stem; panicle long, composed of simple racemes; segments of the perianth orbicular, plaited, with long claws; glands united. *M. racemosum* Mich.

Wet meadows. N. J. to Car. W. to Miss. June, July. ♀.—*Stem* 2 feet high, leafy. *Flowers* in a long panicle which is composed of simple racemes.

Hybrid Melanthium.

3. TOFIELDIA. Huds.—Tofieldia.

(In honor of Mr. Tofield, an English botanist.)

Perianth 6-parted, with a small 3-parted involucre. Stamens 6, smooth. Capsule 3—6-celled; cells united at base, many-seeded.

T. pubescens Pursh.: leaves subradical, narrow-ensiform, smooth; rachis and pedicels rough; flowers in an oblong interrupted spike; capsule globose, scarcely longer than the involucre. *Nartheceium pubens* Mich.

Swamps. Del. to Car. July. ♀.—*Scape* 18 inches high. *Leaves* a foot long. *Flowers* greenish-white, in a racemed spike. *Downy Tofieldia.*

4. XEROPHYLLUM. Mich.—Xerophyllum.

(From the Greek ξηρος, *dry*, and φύλλον, a *leaf*; its leaves appearing as if withered.)

Perianth subrotate, deeply 6-parted. Stamens 6, contiguous at base. Stigmas 3, revolute, partly united below. Capsule subglobose, 3-celled; cells 2-seeded, opening at the summit.

X. setifolium Mich.: leaves subulate-setaceous; flowers in a crowded oblong raceme; filaments dilated at the base, as long as the perianth. *Helonias asphodeloides* Linn.

Sandy plains. N. J. to Car. June. ♀.—*Scape* 3—5 feet high. *Radical leaves* forming large tufts, a foot long and very narrow. *Flowers* white, in a large terminal raceme. *Grass-leaved Xerophyllum.*

5. HELONIAS. Linn.—Helonias.

(From the Greek ἕλος, a *marsh*; in allusion to its place of growth.)

Flowers sometimes dicecious. Perianth corolla-like, 6-parted, spreading; segments sessile and without glands. Stamens 6, hypogynous and at length exceeding the perianth. Styles 3, distinct. Capsule 3-celled, 3-horned; cells mostly few-seeded.

1. *H. latifolia* Mich.: scape leafless; spike ovate, crowded; bracts linear-lanceolate; leaves lanceolate, mucronate, nerved. *H. bullata* Linn.

Sandy swamps. N. J. to Virg. Pursh. May. ♀.—*Flowers* pale-purple. *Anthers* blue. *Broad-leaved Helonias.*

2. *H. erythrosperma* Mich.: stem simple, leafy; leaves linear, very long; raceme oblong; bracts short; capsule shortened, with divaricate horns; seeds ovoid, with a purple fleshy coat. *Melanthium latum* Ait.

Shady woods. Penn. to Car. June, July. 2.—*Stem* 2 feet high, obtusely angular. *Leaves* slightly channelled above. *Flowers* greenish-white, in a simple terminal raceme which is sometimes 9 inches long, but mostly shorter. The root is said to be poisonous. *Purple-seeded Helonias.*

3. *H. dioica Pursh.*: stem leafy; leaves lanceolate; racemes diœcious, the sterile nodding at first, the fertile mostly erect; segments of the perianth linear; stamens exerted. *H. lutea Ait. Veratrum luteum Linn.*

Damp grounds. N. Y. and Conn. to Geor. W. to Miss. June. 2.—Sterile plant 1—2 feet, the fertile one often 3 feet high. *Leaves* becoming broader near the root, and often spatulate and somewhat obtuse. *Flowers* white, in a spike-like raceme which is 6—12 inches long. The root is a popular tonic. *Unicorn Plant.*

6. VERATRUM. *Linn.*—Veratrum.

(From the Latin *vere atrum*, truly black; in allusion to the color of the root.)

Polygamous. Perianth calyx-like, deeply 6-parted, spreading, persistent; segments sessile and without glands. Stamens 6, inserted upon the receptacle. Styles 3, short, subulate. Capsule ovoid, membranaceous, 3-lobed; the carpels distinct at the summit. Seeds numerous, with a broad membranaceous margin.

V. viride Ait.: leaves broad-ovate, plaited; panicle pyramidal, with compound racemose branches; bracts of the branches oblong-lanceolate; partial bracts longer than the pedicels. *V. album Mich.*

Meadows and swamps. Can. to Car. May, June. 2.—*Stem* 3—4 feet high. *Leaves* large, sheathing the stem at base. *Flowers* yellowish-green, in a large terminal panicle. Medicinal and poisonous.

Poke Root. American Hellebore.

II. UVULARIÆ.

7. UVULARIA. *Linn.*—Bellwort.

(From the Latin diminutive of *uva*, a cluster, or *uvula*, the appendage to the palate; perhaps in allusion to the inflorescence.)

Perianth inferior, deeply 6-parted, erect; segments with a nectariferous cavity at base. Stamens 6. Filaments very short, growing to the anthers. Stigmas 3, reflexed. Capsule 3-angled, 3-celled. Seeds nearly globose, arillate at the hilum.

1. *U. perfoliata Linn.*: leaves perfoliate, elliptic-lanceolate, mostly acute; perianth subcampanulate, tuberculate, rough within; anthers awned. *U. perfoliata*, var. *minor Mich.*

Moist woods. Can. to Car. W. to Miss. May, June. 2.—*Stem* 8—12 inches high, forked near the top. *Flowers* pale-yellow, mostly solitary, from one of the forks of the stem. *Perfoliate Bellwort.*

2. *U. flava Smith.*: leaves perfoliate, elliptic-oblong, obtuse, undulate at base; perianth tapering at base, rough within; anthers awned.

Sandy soils. N. J. to Car. May, June. 2.—*Flowers* larger and of a deeper yellow than in the preceding. *Pursh.* Perhaps only a variety.

Yellow Bellwort.

3. *U. grandiflora* Smith: leaves perfoliate, elliptic or ovate-elliptic, acute; perianth smooth within; anthers without awns. *U. perfoliata*, var. *major* Mich. *U. lanceolata* Willd.

Woods and hill sides. Can. to Car. W. to Miss. May, June. 2.—*Stem* 12—15 inches high, with one or two forks near the summit. *Flowers* much larger than in either of the preceding and of a brighter yellow.

Large-flowered Bellwort.

4. *U. sessilifolia* Linn.: leaves sessile, ovate-lanceolate, somewhat glaucous beneath; segments of the perianth flat, smooth inside; anthers obtuse.

Shady woods. Can. to Car. May. 2.—*Stem* 8—12 inches high, forked near the summit. *Flowers* 1—2 on a slender axillary peduncle, pale-yellow.

Sessile-leaved Bellwort.

8. PROSARTES. Don.—Prosartes.

(From the Greek *προσάρτω*, to hang upon; in allusion to the suspended ovules.)

Perianth 6-leaved, campanulate-spreading; the leaflets with a nectariferous pit, or saccate at base. Stamens 6; the filaments inserted at the base of the perianth. Ovary 3-celled, with 2 ovules suspended from the summit of each cell. Style single. Stigmas 3, short, recurved. Berry ovoid, 3-celled.

P. lanuginosa Don.: leaves ovate-oblong, acuminate, clasping, ciliate, minutely pubescent beneath; pedicels in pairs; leaflets of the perianth linear-lanceolate; style smooth. *Streptopus lanuginosus* Mich. *Uvularia lanuginosa* Pers.

Woods. Western N. Y. to Car. May. 2.—*Stem* 12—18 inches high, with 2—3 forks near the summit. *Flowers* yellowish-green, on pubescent pedicels.

Pale-flowered Prosartes.

9. STREPTOPUS. Mich.—Twisted Stalk.

(From the Greek *στρεπτος*, twisted, and *πῶς*, foot; in allusion to a twist in the pedicels.)

Perianth 6-leaved, campanulate at base; the three inner leaves carinate. Stamens 6, inserted at the base of the leaves. Anthers sagittate, longer than the filaments. Style single, tapering. Stigmas simple, obtuse. Berry globose, 3-celled.

1. *S. roseus* Mich.: leaves ovate-oblong, clasping, serrulate-ciliate on the margin, green on both sides; pedicels scarcely twice as long as the flower, slightly geniculate near the middle; anthers 2-cleft at the summit. *Uvularia rosea* Pers.

Woods and swamps, on mountains. Can. to Car. W. to Mich. May, June. 2.—*Stem* 12—18 inches high, di- or tri-chotomous at the upper part. *Flowers* rose-colored, 1—2 on filiform nodding axillary pedicels. *Rose Twisted Stalk.*

2. *S. amplexifolius* D. C.: leaves oblong-ovate, closely clasping, glaucous beneath, the margin naked; pedicels elongated, distorted and geniculate above the middle; anthers acuminate, entire. *S. distortus* Mich. *Uvularia amplexifolia* Linn.

Shady woods and swamps. Can. to Penn. May, June. 2.—*Stem* about 2

feet high, forked. *Flowers* greenish-white, on filiform axillary pedicels which are longer than in the preceding. *Smooth Twisted Stalk.*

ORDER CXXXIV. PONTEDERACEÆ.—PONTEDERADS.

Perianth tubular, colored, 6-parted, more or less irregular; aestivation circinate. Stamens 3—6, unequal, perigynous. Ovary free, more or less completely 3-celled; style 1; stigma 3—6-cleft. Capsule 3-celled, 3-valved, loculicidal. Seeds numerous, with somewhat mealy albumen.—Aquatic or marsh plants. Leaves sheathing at the base, with parallel veins.

1. PONTEDERIA. *Linn.*—Pickerel Weed.

(In honor of *Julius Pontedera*, professor of botany at Padua.)

Perianth tubular, 6-cleft, 2-lipped; under side of the tube perforated with 3 longitudinal foramina; the lower part persistent, calycine. Stamens 6, unequally inserted, 3 near the base and 3 near the summit of the tube. Utricle muricate, 1-seeded.

1. *P. cordata* *Linn.*: leaves subradical, oblong-cordate; flowers in crowded spikes; segments of the perianth oblong.

Ponds. Can. to Car. W. to Ark. Aug. ♀.—*Stem* 1—2 feet long, bearing a single leaf with the base of the petiole sheathing. *Flowers* aggregated by twos and threes, sessile, bright-blue. *Common Pickerel Weed.*

2. *P. angustifolia* *Pursh.*: leaves elongated-triangular, truncate and subcordate at the base; segments of the perianth linear-lanceolate. *P. cordata*, var. *angustifolia* *Torr.* *P. mucronata* *Raf.*

Beach pond, Westchester county, N. Y. *Dr. S. B. Mead.* Mountain lakes. N. Y. to Car. *Pursh.* July. ♀.—*Flowers* blue, smaller than in the preceding species, of which, however, it may be only a variety.

Narrow-leaved Pickerel Weed.

2. HETERANTHERA. *R. & P.*—Heteranthera.

(From the Greek *ἕτερος*, *different*, and *ανθη*, *anther*; the anthers in the same flower being dissimilar.)

Flowers in a spathe. Perianth with a long and slender tube; border 6-parted, equal. Stamens 3. Anthers of 2 forms. Capsule 3-celled, many-seeded, opening at the angles; dissepiment contrary.

H. reniformis *R. & P.*: leaves orbicular-reniform; spathe oblong, acuminate, 3—5-flowered. *H. acuta* *Pursh.* *Leptanthus reniformis* *Mich.*

Overflowed banks. N. Y. to Virg. July, Aug. ♀.—*Stem* prostrate and rooting in the mud, partly floating, 6—18 inches long. *Leaves* semicircularly nerved, on petioles 2—3 inches long. *Flowers* white, 3—5 in a spathe.

Mud Plantain.

3. SCHOLLERA. *Schreb.*—Schollera.(Dedicated to *Frederick Adam Scholler*, a German botanist.)

Spatha 1-flowered. Perianth with a long slender tube; limb deeply 6-parted. Stamens nearly equal. Anthers similar, oblong-sagittate. Stigma 3-lobed. Capsule 1-celled.

S. graminea Vahl. *Leptanthus gramineus* Mich. *Heteranthera graminea* Pursh.

In flowing streams. N. S. July, Aug. ♀.—*Stem* slender, much branched, rooting at the lower joints. *Leaves* sessile, narrow-linear. *Flowers* small, pale-yellow, solitary. *Stamens* usually 3, but sometimes 4, unequal.

Grass-leaved Schollera.

ORDER CXXXV. ERIOCAULACEÆ.—PIPEWORTS.

Flowers bracteate, monœcious or diœcious. Perianth 2—6 parted, in two rows; the outer glumaceous; inner somewhat petaloid. Stamens 3—6. Ovary superior, 2—3-celled; style very short; stigmas as many as the cells of the ovary. Capsule 2—3-celled, loculicidal. Seeds solitary, coated with wings or rows of hairs.—Perennial marsh plants, with linear cellular spongy leaves, and minute flowers which are collected into a head at the summit of the scape.

ERIOCAULON. *Linn.*—Pipewort.

(From the Greek *εριον*, wool, and *καυλος*, a stem; in allusion to the woolly scapes of the species first described.)

Flowers monœcious, rarely diœcious, collected into a compact scaly head. STERILE FL. in the disk. Perianth 4—6-cleft, the inner segments united nearly to their summit. Stamens 3—6. FERTILE FL. in the margin. Perianth deeply 4-parted. Capsule 2—3-celled.

1. *E. septangulare* With.: scape slender, 6—7-furrowed, smooth; leaves subulate-ensiform, cellular and transversely reticulated; head small, hemispheric; scales of the involucre obovate, and with the flowers hairy at the summit. *E. pellucidum* Mich.

Ponds and swamps. Can. to Penn. Aug. ♀.—*Scape* varying in length from 2 or 3 inches to 6 feet, (*Torr.*) and like the leaves pellucid and cellular. *Flowers* minute, in a compact head, 4-cleft. *Perianth* with the outer segments purplish, the inner ones white. *Stamens* 4. *Jointed Pipewort.*

2. *E. decangulare* Mich.: scape 10-furrowed; leaves ensiform, smooth; head large, depressed-globose; scales of the involucre oval, acute, of the receptacle mucronate.

Ponds. N. J. to Car. Aug. ♀.—*Scape* 2—3 feet high. *Flowers* very white. *Ten-angled Pipewort.*

ORDER CXXXVI. XYRIDACEÆ.—XYRIDS.

Perianth 6-parted, in 2 rows; outer glumaceous; inner petaloid, unguiculate. Stamens 6, 3 fertile, inserted upon the claws of the inner segments of the perianth. Ovary single; style trifid. Capsule 1-celled, 3-valved, many-seeded, with parietal placentæ.—Herbaceous rush-like plants, with fibrous roots, ensiform or filiform radical leaves and flowers in terminal imbricate scaly heads.

XYRIS. *Linn.*—Yellow-eyed Grass,

(From the Greek *ξυρος*, *sharp*, in allusion to the pointed leaves.)

Perianth in 2 rows; outer row glumaceous, 2 of the segments somewhat boat-shaped; inner row petaloid; the segments with long nearly distinct claws and dilated laminae. Stamens 6; 3 fertile, the rest abortive. Capsule 1-celled.

1. *X. Caroliniana* *Walt.*: scape somewhat 2-edged; leaves linear, grass-like, much shorter than the scape; head roundish-ovoid; bracts orbicular-obovate. *X. Jupacai* *Mich.* *X. flexuosa* *Ell.*

Wet meadows. N. Y. to Flor. July. ♀.—*Stem* a foot high, somewhat bulbous at the base, often spirally twisted. *Leaves* sheathing at base, flat or twisted. *Flowers* yellow, in a head 3—4 lines long. *Common Yellow-eyed Grass.*

2. *X. brevifolia* *Mich.*: leaves subulate, ensiform, short; head globose; inner segments of the perianth shorter than the outer one, slightly notched.

Wet meadows. Penn. to Geor. July. ♀.—*Scape* 12—18 inches high, compressed near the summit. *Leaves* much twisted. *Flowers* yellow, in a globose head. *Short-leaved Yellow-eyed Grass.*

3. *X. fimbriata* *Ell.*: leaves long, ensiform; heads loosely imbricate, oblong; segments of the perianth fimbriate.

Meadows. N. J. to Geor. June. ♀.—*Stem* 2 feet high. *Flowers* yellow. Found in New Jersey by Dr. Darlington. *Fl. Cest.*
Fimbriate Yellow-eyed Grass.

ORDER CXXXVII. JUNCACEÆ.—RUSHES.

Flowers mostly perfect. Perianth 6-leaved, in a double row, more or less glumaceous. Stamens 6, rarely 3, inserted into the base of the segments. Ovary 1- or 3-celled; stigmas generally 3. Fruit capsular, with 3 valves. Seeds with a thin skin and firm albumen.—Mostly grass-like plants. Flowers small, generally brown or green, in cymes or heads.

1. LUZULA. D. C.—Wood Rush.

(Said to be derived from the Italian *luciolà*, a glow-worm; because its flowers, when moistened with dew, sparkle by moonlight.)

Perianth spreading, glumaceous. Stamens 6. Filaments smooth. Stigmas 3. Capsule 1-celled, 3-valved. Seeds 3, sometimes with an appendage at one end.

1. *L. pilosa* Willd.: leaves broad-linear, hairy; peduncles in an umbel-like corymb, 1-flowered, at length bent downward; leaflets of the perianth acuminate, shorter than the obtuse capsule; seeds with a curved appendage at the top. *Juncus pilosus* Linn.

Woods. Can. to Penn. April, May. ♀.—Stem 6—12 inches high, caespitose. Flowers dark-brown, 8—12 in an umbel, on filiform peduncles 6—8 lines in length. *Hairy Wood Rush.*

2. *L. campestris* D. C.: leaves hairy; spikes sessile and peduncled; leaflets of the perianth acuminate, awned, longer than the obtuse capsule; seeds with an appendage at the base. *Juncus campestris* Linn.

Meadows. Can. to Car. April, May. ♀.—Stem 6—12 inches high, caespitose at base. Flowers reddish-brown, in ovoid or oblong nearly erect spikes forming a sort of umbel. *Common Wood Rush.*

3. *L. parviflora* Desv.: smooth; stem elongated; leaves broad-linear; flowers in a decomposed loose corymb, the peduncles elongated and capillary; pedicels 1-flowered; leaflets of the perianth ovate, acute, about the length of the oval obtuse apiculate capsule; seeds without an appendage. *L. melanocarpa* Desv. *Juncus melanocarpus* Mich.

Mountains. Northern N. Y. Torr. White Mountains, N. H. Big. Can. Mich. July. ♀.—Stem 12—18 inches high, slender. Flowers in a loose corymbose panicle, nodding. Seeds brown. *Small-flowered Wood Rush.*

4. *L. spicata* D. C.: leaves narrow, channelled, hairy at the throat; spike solitary, drooping, compound; spikelets shorter than the diaphanous mucronate bracts; leaflets of the perianth acuminate-mucronate, about as long as the rounded capsule. *Juncus spicatus* Willd.

White Mountains, N. H. Big. Aug. ♀.—Stem 6—8 inches high, slender. Spike dark-colored, interrupted near the base, drooping. *Spike-flowered Wood Rush.*

2. JUNCUS. Linn.—Rush.

(From the Latin *jungo*, to join; the leaves and stems having been used as cordage.)

Perianth spreading, glumaceous. Stamens 6, or sometimes 3. Filaments smooth. Stigmas 3, subsessile. Capsule 3-celled, many-seeded.

* *Leaves none.*

1. *J. acutus* Linn.: barren scapes and outer bracts pungent; panicle very compound, mostly compact; leaflets of the perianth equal; inner ones with a broad membranaceous margin at the apex, shorter than the broad-ovate abruptly acuminate capsule.

Sandy sea-coasts. N. J. to Car. July. ♀.—*Scape* 2—3 feet high. *Panicle* 2—3 inches long, appearing as if lateral, though really terminal.

Great Sharp Sea Rush.

2. *J. effusus* Linn.: scape not rigid, finely striate; panicle loose, very much branched, spreading; leaflets of the perianth lanceolate, spreading, very acute, as long as the obovoid obtuse capsule; stamens 3.

Wet grounds. Can. to Car. June, July. ♀.—*Scape* 2—3 feet high, erect, terminating in a long tapering point. *Panicle* bursting from a fissure in the side of the scape above the middle, sessile. *Flowers* greenish. Sometimes used for making mats.

Soft Rush.

3. *J. filiformis* Linn.: scape filiform, smooth; panicle few-flowered; leaflets of the perianth lanceolate, acuminate, nearly equal, larger than the obovoid apiculate capsule; stamens 6.

Borders of ponds. Northern and Western N. Y. Torr. White Mountains, N. H. Big. July. ♀.—*Scape* 18 inches to 2 feet high, very slender. *Panicle* bursting from the side of the scape above the middle. *Flowers* greenish.

Slender Rush.

4. *J. Balticus* Willd.: scape obscurely striate; panicle erect, branched; leaflets of the perianth nearly equal, very acute, as long as the elliptic mucronate capsule; stamens 6; style conspicuous.

Gravelly shores of the St. Lawrence and of Lake Ontario. Torr. July. ♀.—*Scape* 2—4 feet high, often flexuous or twisted. *Panicle* with the branches slender and flexuous. *Flowers* dark brown.

Baltic Rush.

** *Stem leafy. Leaves terete, nodose.*

5. *J. nodosus* Linn.: stem nearly round; leaves distinctly nodose, terete; inflorescence terminal; heads few, globose, many-flowered; leaflets of the perianth linear-lanceolate, with a long subulate point; stamens 3; capsule triquetrous, attenuated at the summit, about as long as the perianth; seeds oblong.

Sandy banks of streams. Can. to Car. July. ♀.—*Stem* 8 inches to 2 feet high. *Heads* in a loose more or less compound panicle, or in a dense cluster. *Flowers* brownish or greenish. *Stamens* 3—6. A very variable plant; which, however, according to Dr. Torrey, can always be distinguished from *J. polycephalus*, by its attenuated capsule, and by its oblong (not tailed) seeds.

Knotty Rush.

6. *J. polycephalus* Mich.: stem erect; leaves compressed, nodose; panicle terminal, compound; heads many-flowered, globose; leaflets of the perianth lanceolate, somewhat awned; stamens 3; capsule oblong-triangular, abruptly acuminate, scarcely longer than the perianth; seeds tailed at each end. *J. echinatus* Muhl.

Boggy meadows. Can. to Geor. July, Aug. ♀.—*Stem* 1—3 feet high. *Panicle* more or less compound. *Flowers* greenish. *Seeds* with a subulate appendage or tail at each end. (Torr.) A variable species.

Many-headed Rush.

7. *J. subverticillatus* Willd.: stem compressed; leaves few, subulate, nodose; panicle corymbose; heads about 5-flowered, fasciculate-verticillate; leaflets of the perianth linear-lanceolate, striate, as long as the obtuse capsule. *J. verticillatus* Pursh.

Swamps. Can. N. Y. and Penn. July, Aug. ♀.—*Stem* 1½—2 feet high,

slender, about 2-leaved. *Panicle* 4—8 inches long, the branches subverticillate and diverging. *Flowers* greenish, in somewhat hemispherical heads.

Whorled Rush.

8. *J. acuminatus Mich.*: stem erect; leaves somewhat compressed, nodose; panicle terminal, compound; heads 3—6-flowered, pedunculate and sessile; leaflets of the perianth linear-lanceolate, mucronate, shorter than the acutely triangular capsule; stamens 3; seeds tailed at each end. *J. sylvaticus Muhl.*

Boggy meadows. Can. to Car. July. ♀.—*Stem* 12—15 inches high. *Leaves* distantly jointed. *Panicle* more or less compound, rather erect, spreading. *Flowers* pale-green or purplish, mostly 3 in a head. *Sharp-fruited Rush.*

9. *J. pelocarpus Meyer*: stem erect, bearing a single leaf, compressed; leaves setaceous, compressed, obscurely nodose; panicle pyramidal, spreading; heads about 2-flowered; leaflets of the perianth oblong, obtuse, the inner ones a little longer, shorter than the triquetrous ovate capsule. (*Torr. N. Y. Fl.*)

Ver. and N. Y.? ♀.—*Stem* 15—18 inches high. *Panicle* loose and elongated. *Heads* 3—6-flowered. *Stamens* 6. *Brownish Rush.*

10. *J. Conradi Tuckerman*: stem erect, leafy; leaves erect, compressed, slightly nodose; inflorescence terminal, decomposed, divaricate; flowers solitary; leaflets of the perianth lanceolate-acute, shorter than the oblong acuminate-rostrate capsule. (*Torr. N. Y. Fl.*) *J. viviparus Conrad.*

Borders of ponds in sandy soils. N. H. Mass. N. Y. and N. J. July, Aug. ①.—*Stem* cespitose, 6—10 inches high; slender. *Leaves* few. *Inflorescence* spreading, with the branches slender. *Flowers* often viviparous or abortive, reddish-brown. *Stamens* 6. *Torr. Conrad's Rush.*

*** *Leaves flat or channelled on the upper side.*

11. *J. tenuis Willd.*: stems cespitose, slender, leafy at the base, erect, somewhat compressed; leaves setaceous-linear, channelled; panicle terminal, more or less compound; flowers solitary, unilateral; leaflets of the perianth lanceolate, a little longer than the obtuse capsule. *J. bicornis Mich.*

Low grounds. N. Y. to Car. June, July. ♀.—*Stems* cespitose, 10 or 12 inches high. *Panicle* cymose; the peduncles unequal. *Flowers* solitary, greenish, somewhat racemose or unilateral on the branchlets. *Slender Rush.*

12. *J. Greenei Tuckerm. & Oakes*: stem erect, leafy at the base, terete, rigid; leaves setaceous-linear, channelled above, rounded on the back; panicle terminal, compound, cymose; flowers solitary, erect, unilateral; leaflets of the perianth shorter than the ovoid-oblong rather obtuse capsule.

Sandy borders of salt marshes. Mass. and N. Y. July. ♀.—*Stems* cespitose, 12—18 inches high, striate. *Panicle* consisting of several much contracted cymes. *Flowers* unilateral, greenish. *Greene's Rush.*

13. *J. Gerardi Loisel.*: stem simple, leafy, compressed; leaves linear-setaceous, channelled; panicle terminal, compound, cymose, longer than the bracteal leaves; leaflets of the perianth oblong, somewhat obtuse, mostly shorter than the obovoid obtuse triangular capsule; stamens 6; seeds oblong-ovoid, strongly ribbed. *J. bulbosus Pursh.*

Borders of salt marshes. N. Y. to Car. Aug. ♀.—*Stem* 8—12 inches high, slender. *Panicle* rather crowded, the branches unequal. *Flowers* and *capsules* dark-brown. *Black Grass.*

14. *J. bufonius* Linn.: stem diffuse, leafy, dichotomous above; leaves filiform-setaceous, channelled; panicle loose; flowers subsolitary, remote, unilateral; leaflets of the perianth lanceolate, very acuminate, much longer than the oblong obtuse capsule.

Moist places. Can. to Car. July, Aug. ①.—Stems cespitose, 3—6 inches high, divided towards the top. Panicle loose, spreading, few-flowered, pale-green. Toad Rush.

15. *J. marginatus* Rostk.: stem leafy, jointed; leaves flat and grass-like; panicle corymbose, compound; leaflets of the perianth about as long as the obtuse capsule, the outer ones and the bracts subaristate; stamens 3. *J. aristulatus* Mich.

Low grounds. N. Y. to Car. Aug. ②.—Stem 1—3 feet high, tuberous at base. Panicle often very compound and proliferous. Flowers 3—6 in a head. Grass-leaved Rush.

16. *J. stygius* Linn.: stem filiform, erect, rigid, leafy; leaves setaceous, slightly flattened; flowers about 3, in a terminal head; leaflets of the perianth shorter than the oblong-elliptic acute capsule; stamens 3; seeds with an appendage at each end.

Sphagnous swamps, on Perch Lake, Jefferson county, N. Y. Dr. Gray. ④.—Stem 6—12 inches high, simple. Flowers larger than in any of the preceding species, with 2—3 bracts at the base of the heads. Large-fruited Rush.

17. *J. trifidus* Linn.: leaf mostly solitary, near the summit of the stem, linear-setaceous; sheaths ciliate; heads about 3-flowered, terminal; bracts foliaceous, very long, grooved.

White Mountains, N. H. Big. Summit of Mount Marcy, Essex county, N. Y. July, Aug. ④.—Stem 6—10 inches high, rather rigid. Flowers mostly in a single head, supported by 2 long setaceous bracts or terminal leaves. Trifid Rush.

18. *J. militaris* Big.: leaf solitary, jointed, longer than the stem; panicle terminal, proliferous, with sheathing lanceolate bracts at base; heads about 5-flowered.

Ponds, near Boston, Mass. Big. Stem 2—3 feet high, with a long sheath or two at base and commonly another above the leaf. Panicle terminal, erect, with proliferous branches. Bayonet Rush.

3. NARTHECIUM. Linn.—Narthecium.

(From the Greek *ναρθος*, a rod; probably from the elongated straight raceme of flowers.)

Perianth petaloid, of 6 linear-lanceolate spreading pieces. Stamens 6. Filaments hairy. Capsule 3-celled, 3-valved. Seeds with an appendage at each extremity.

N. Americanum Ker: raceme sometimes interruptedly spiked, lax; pedicels with a setaceous bract below the flower, and another embracing its base; filaments with very short hair. *Phalangium ossifragum* Muhl.

Sandy swamps. N. J. to Ala. June, July. ④.—Scape a foot high. Leaves narrow-ensiform. Flowers yellow, in a terminal spike. Closely resembles *N. ossifragum* of Europe. American Narthecium.

ORDER CXXXVIII. HÆMODORACEÆ.—BLOOD ROOTS.

Perianth petaloid, 6-cleft, usually more or less woolly. Stamens inserted on the perianth, either 3 and opposite the inner segments, or 6; anthers bursting inwardly. Stigma undivided. Fruit capsular, somewhat nucamentaceous.—Herbaceous plants, with fibrous perennial roots and permanent ensiform equitant leaves.

1. LACHNANTHES. *Ell.*—Lachnanthes.

Perianth superior, 6-cleft; segments unequal. Stamens 3. Style declining. Stigma minutely 3-lobed. Capsule 3-celled, truncate, many-seeded.

L. tinctoria *Ell.* *Dilatris tinctoria* *Pursh.*

Sandy swamps. N. J. to Flor. July. 2l.—*Stem* erect, 2 feet high, hairy at the top. *Leaves* ensiform, shorter than the stem. *Flowers* in a corymbose panicle, woolly, yellow within. The root yields a red color, which is used for dyeing.
Red Root.

2. ? ALETRIS. *Linn.*—Star Grass.

(From the Greek *αλειαρ*, *meal*; in allusion to the mealy appearance of the flowers.)

Perianth tubular or tubular-campanulate, rugose, 6-cleft. Stamens 6, inserted at the orifice of the tube. Style triquetrous, finally 3-parted. Capsule 3-celled, many-seeded, opening at the summit.

1. *A. farinosa* *Linn.*: leaves radical, lanceolate, acuminate, smooth; flowers pedicellate, oblong-tubular; perianth rugose-muricate. *A. alba* *Mich.*

Sandy woods. Can. to Car. July. 2l.—*Scape* 2 feet high, with several bract-like leaves. *Flowers* white, in a terminal raceme which is sometimes a foot in length. *Perianth* appearing as if covered with a rough powder. The root is intensely bitter.
Star-grass. Colic Root.

2. *A. aurea* *Walt.*: leaves radical, lanceolate, acuminate; flowers subsessile, short; perianth rugose and very rough.

Pine Barrens. N. J. to Car. July, Aug. 2l.—*Scape* 2—3 feet high. *Flowers* yellow, in a terminal raceme, less numerous than in the preceding.
Yellow Star-grass.

ORDER CXXXIX. COMMELYNACEÆ.—SPIDERWORTS.

Perianth in 2 rows; outer row herbaceous, 3-leaved; inner petaloid, 3-leaved or 3-cleft. Stamens 6 or fewer, some of them deformed or abortive. Ovary 3-celled; stigma 1. Cap-

sule 2—3-celled. Seeds often twin; albumen fleshy.—Herbaceous plants, with flat narrow mostly sheathing leaves.

1. COMMELYNA. *Linn.*—Day Flower.

(In honor of two Dutch botanists, *John and Gaspar Commelyn.*)

Perianth in 2 rows; outer one 3-leaved, calycine; inner 3-leaved, petaloid. Stamens 6, 3—4 sterile and furnished with cruciform glands. Capsule 3-celled, 3-valved; one of the valves often abortive.

1. *C. angustifolia Mich.*: assurgent, slender, weak, somewhat smooth; leaves linear-lanceolate, very acute, flat, smooth; sheaths subciliate; inner segments of the perianth unequal, one very minute; bracts peduncled, broad-cordate. *C. erecta Willd.*

Borders of swamps. N. Y. to Car. June. ♀.—*Stem* a foot high, somewhat branching from the base. *Flowers* blue. *Fertile stamens* 2.

Narrow-leaved Day-flower.

2. *C. Virginica Linn.*: stem stiffly erect, pubescent; leaves long-lanceolate, somewhat petiolate, the sheaths bearded at the throat; inner segments of the perianth nearly equal; bracts subsessile. *C. longifolia Mich.*

Woods. Penn. Muhl. S. to Car. July. ♀.—*Stem* 2 feet high. *Flowers* blue, clustered at the top of the stem. *Fertile stamens* 3.

Broad-leaved Day-flower.

2. TRADESCANTIA. *Linn.*—Spiderwort.

(In honor of *John Tradescant*, gardener to Charles I. *Torr.*)

Perianth in 2 rows; the outer one 3-leaved, calycine; inner one 3-leaved, petaloid. Stamens 6, all fertile. Filaments villous. Stigma obtuse. Capsule 2—3-celled, 3-valved, few-seeded.

1. *T. Virginica Linn.*: stem erect, sometimes branching, smooth; leaves long, lanceolate, smooth; flowers in an imperfect umbel, sessile; calyx pubescent. *T. cristata Walt.*

Shady woods. N. Y. to Geor. W. to Miss. May. ♀.—*Stems* about a foot high, often several from the same root. *Flowers* purple, in a terminal cluster or umbel, with a large 2-leaved involucre at base. *Virginian Spiderwort.*

2. *T. rosea Mich.*: erect, simple; leaves linear, long, smooth; peduncles elongated; calyx smooth. *T. Virginica Walt.*

Moist woods. Penn. to Geor. May. ♀.—*Stem* 8—12 inches high. *Flowers* smaller than in the preceding, with the inner segments rose-colored, and three times as long as the outer ones. *Rose-colored Spiderwort.*

ORDER CXL. ALISMACEÆ.—ALISMADS.

Perianth 6-leaved, in two rows; outer row herbaceous, inner petaloid. Stamens definite or indefinite. Ovaries several, 1-celled; styles and stigmas as many as the ovaries. Fruit not

opening, 1 or 2-seeded. Seeds without albumen; embryo shaped like a horse-shoe.—Floating or swamp plants, with fasciculate roots. Leaves with parallel veins.

1. SAGITTARIA. Linn.—Arrowhead.

(From the Latin *sagitta*, an arrow; in allusion to the general form of the leaves.)

Monœcious. Perianth 6-leaved; 3 outer leaves persistent, calycine; 3 inner colored, petaloid. STERILE FL. Stamens numerous. FERTILE FL. Ovaries numerous, collected into a head. Carpels compressed, 1-seeded, crowned with the persistent style.

1. *S. sagittifolia* Willd.: scape simple; leaves sagittate or sometimes entire.

var. 1. *vulgaris* Hook.: leaves ovate, acute; the lobes ovate-lanceolate, straight, acuminate. *S. sagittifolia* Mich.

var. 2. *latifolia* Torr.: leaves very large and broad, more or less obtuse; the lobes ovate-lanceolate, spreading. *S. latifolia* Pursh.

var. 3. *hastata* Torr.: leaves oblong-lanceolate, acute; the lobes divaricate, lanceolate, elongated; flowers mostly diœcious. *S. hastata* Pursh.

var. 4. *gracilis* Torr.: leaves lance-linear; the lobes much divaricate, linear, very long and acute, sometimes wanting. *S. gracilis* and *heterophylla* Pursh.

var. 5. *pubescens* Torr.: leaves and stem pubescent; bracts and outer leaves of the perianth very pubescent. *S. pubescens* Pursh.

var. 6. *simplex* Hook.: leaves with the lamina linear-lanceolate and without lobes. *S. simplex*, *graminea* and *acutifolia* Pursh.

var. 7. *rigida* Torr.: leaves narrow-lanceolate, very acute at each end, carinate below. *S. rigida* Pursh.

Ditches, ponds, and moist grounds. Can. to Flor. W. to the Platte River. July, Aug. ♀.—Scape 6 inches to 2 feet high. Leaves very variable. Flowers white. I follow Dr. Torrey (N. Y. Fl.) in reducing all the above forms to one species. There seems to be more doubt concerning *S. rigida*, than any of the rest. But they all pass into each other by almost imperceptible gradations. Perhaps the following will hereafter also be found to be mere varieties of this polymorphous plant. According to Nuttall it exudes a milky sap which hardens into a white and hyaline gum. Common Arrowhead.

2. *S. obtusa* Willd.: leaves sagittate, dilated-ovate, rounded at the extremity, mucronate; lobes approximate, oblong, obliquely acuminate, straight; flowers diœcious; sterile scape branched at base.

Ditches and ponds. Penn. to Virg. July. ♀.—Leaves about as large as those of *Calla palustris*. Flowers white. Obtuse-leaved Arrowhead.

3. *S. pusilla* Nutt.: leaves linear, obtuse and short, the summits foliaceous; scape simple, mostly shorter than the leaves; flowers monœcious, few, the fertile one usually solitary. *Alisma subulata* Pursh.

Muddy Banks. N. Y. to Geor. Aug. ♀. ?—Scape 2–4 inches high. Leaves rarely ever subulate, scarcely a line wide and obtuse. Flowers 3–6, only one of them usually fertile. Dwarf Arrowhead.

4. *S. natans* Mich.: leaves floating, elliptic-lanceolate, obtuse, 3-nerved, attenuate at base; lower ones subcordate; scape simple, few-flowered; lower peduncles elongated.

In water. Penn. Muhl. S. to Car. July, Aug. ♀.—Scape mostly erect, 3—6 inches long. Leaves generally floating, 1—2 inches long. Flowers few, small, the upper sterile. Ell. *Floating Arrowhead.*

2. ALISMA. Linn.—Water Plantain.

(From the Celtic *alis*, water; in allusion to its place of growth.)

Perianth 6-leaved; 3 outer leaves persistent, calycine; 3 inner colored, petaloid, deciduous. Stamens 6. Ovaries and styles numerous. Carpels numerous, distinct, 1-seeded, crowned with the persistent style.

A. Plantago Linn.: stemless; leaves ovate-cordate, acute, nerved; flowers in a compound verticillate panicle; fruit obtusely triangular. *A. trivialis* and *parviflora* Pursh.

Wet grounds. Can. to Flor. W. to the Platte River. July, Aug. ♀.—Scape 1—2 feet high, triangular. Leaves all radical, on long petioles, mostly 9-nerved. Panicle much decomposed in a verticillate manner. Flowers white, tinged with purple. Fruit consisting of numerous carpels verticillately arranged. *Common Water Plantain.*

ORDER CXLI. JUNCAGINACEÆ.—ARROW GRASSES.

Perianth 6-leaved; the 3 inner leaves narrower. Stamens 6. Carpels 3—6, free, united or distinct. Fruit dry, 1 or 2-seeded. Seeds without albumen; embryo with a lateral cleft.—Herbaceous aquatic or marsh plants, with ensiform leaves and the flowers in spikes or racemes.

1. TRIGLOCHIN. Linn.—Arrow Grass.

(From the Greek *τρεις*, three, and *γλωχίς*, a point; in allusion to the three points of the capsules.)

Perianth somewhat colored, deciduous; leaves concave. Stamens 6; anthers sessile. Capsules 3—6, united by a longitudinal receptacle from which they usually separate at the base, 1-seeded.

1. *T. palustre* Linn.: fruit of 3 united carpels, nearly linear, subulate at the base.

Marshes. Salina and elsewhere in Western N. Y. N. to Arct. Amer. July. ♀.—Scape about a foot high, very slender. Leaves very numerous, all radical or nearly so, linear, fleshy, slightly grooved on the upper side, nearly as long as the scape. Flowers small, greenish, in a terminal lax spike or raceme. The leaves, when bruised, give out a very fetid odor. *Marsh Arrow Grass.*

2. *T. maritimum* Linn.: fruit ovoid, of 6 united oblong carpels. *T. elatum* Nutt.

Salt marshes. Can. to Penn. W. to Mich. July. ♀.—Scape 18 inches

high and stouter than in the preceding. *Leaves* all radical, narrow, sheathing at base, shorter than the scape. *Flowers* very small, greenish, in a long terminal spike. *Sea-side Arrow Grass.*

2. SCHEUCHZERIA. *Linn.*—Scheuchzeria.

(In honor of the three *Scheuchzers*, Swiss botanists.)

Perianth of 6 somewhat petaloid persistent leaves; the 3 inner ones narrower. Stamens 6. Anthers on slender filaments. Capsules 3, inflated, united at base, 1—2 seeded.

S. palustris Linn.

Sphagnous swamps. Can. to Virg.; rare. July. ♀.—*Stem* 8—12 inches high, angular. *Leaves* linear, roundish, sheathing at base. *Flowers* greenish-yellow, in a small terminal raceme. *Marsh Scheuchzeria.*

ORDER CXLII. TYPHACEÆ.—CAT TAILS.

Flowers monœcious, arranged upon a naked spadix. Perianth consisting of 3 or more scales or bristles. STERILE FL. Stamens numerous; the filaments distinct or united below; anthers erect, 2-celled. FERTILE FL. Ovary single, 1-celled; style short; stigmas 1—2, linear. Fruit dry, indehiscent. Seed 1; albumen mealy.—Aquatic or marsh plants. Stem without nodes. Leaves rigid, ensiform, with parallel veins.

1. SPARGANIUM. *Linn.*—Bur Reed.

(From the Greek *σπαργανον*, a little band; in allusion to its long and narrow leaves.)

Monœcious. Flowers in dense spherical heads, the sterile ones above. STERILE FL. Stamens numerous, intermixed with membranous scales. FERTILE FL. Pistils numerous, sessile, each surrounded with 3—6 scales. Style short. Fruit sessile.

1. *S. ramosum Smith*: leaves triangular at base, their sides concave; common peduncle branched; stigma linear. *S. erectum Linn.*

Stagnant waters. Can. to Virg. July, Aug. ♀.—*Stem* 2 feet high, round, flexuous, with 2 or 3 short axillary branches at the top. *Lower leaves* very long, linear-ensiform. *Heads* distantly placed; the sterile above more numerous and smaller than the fertile. *Branching Bur-reed.*

2. *S. simplex Huds.*: stem nearly simple; leaves triangular at base, the sides flat; stigma linear. *S. Americanum Nutt.*

Ponds and lakes. Can. to Car. July, Aug. ♀.—Smaller than the last. *Stem* simple or rarely a little branched. *Fertile heads* 2—3, mostly sessile. *Flowers* pale-yellow. *Smaller Bur-reed.*

3. *S. natans Smith*: stem simple; leaves floating, very narrow, flat; stigma linear, short; heads of sterile flowers subsolitary. *S. angustifolium Mich.*

Lakes, &c. Can. and N. Y. Aug. 21.—*Stem* long and slender. *Leaves* very long, linear, pellucid. It may be only a variety of the preceding.
Floating Bur-reed.

2. TYPHA. *Linn.*—Cat-Tail.

(From the Greek *τιφος*, a *marsh*; on account of its place of growth.)

Flowers collected into a long dense cylindric spike. STERILE FL. above. Stamens numerous, intermixed with simple hairs inserted directly on the axis. Filaments slender, 2—4 forked. FERTILE FL. below the sterile on the same axis. Ovaries numerous, surrounded at base with numerous clavate bristles. Fruit oblong, very small, stipitate.

1. *T. latifolia Linn.*: leaves linear, nearly flat; sterile and fertile spikes close together or almost continuous.

Borders of swamps and ponds. Can. to Car. July, Aug. 21.—*Stems* clustered, 4—5 feet high, simple, round, leafy at base. *Leaves* very long. *Flowers* in a cylindric spike, the sterile yellowish, the fertile brownish.
Broad-leaved Cat-tail. Reed-mace.

2. *T. angustifolia Linn.*: leaves linear, channelled near the base; sterile and fertile spikes a little distant from each other.

Borders of swamps and ponds. N. Y. to Virg. July, Aug. 21.—*Stems* and *spikes* more slender, and the *leaves* narrower, than in the preceding.
Narrow-leaved Cat-tail.

ORDER CXLIII. ARACEÆ.—ARUMS.

Flowers mostly monœcious, arranged on a spadix within a spathe. STERILE FL. Stamens very short; anthers turned outwards. FERTILE FL. at the base of the spadix. Ovary free, 1—3- or more-celled; stigma sessile. Fruit succulent. Seeds pulpy.—Herbaceous plants frequently with a fleshy cormus, or shrubs. Leaves sheathing at the base, sometimes compound.

1. ARISÆMA. *Mart. Torr.*—Dragon Arum.

(Origin of the name unknown.)

Spathe convolute below, the limb arched or flattish. Spadix naked above, the lower part covered with flowers, of which the upper are sterile and the lower fertile, or in some plants all sterile. Anthers somewhat verticillate and distinct. Filaments very short. Ovaries 1-celled, numerous. Stigma capitate-peltate, almost sessile. Berry 1- several-seeded.

1. *A. triphyllum Torr.*: leaves ternate; leaflets elliptic-ovate, sessile, acuminate, entire; spadix clavate, obtuse, shorter than the spathe. *A. atrorubens Blume.* *Arum triphyllum Linn.* *A. atrorubens Ait.*

Wet woods. Can. to Car. W. to Miss. April, May, ♀.—*Scape* 6—12 inches or more high, with a fleshy corrus at the base. *Leaves* 1 or 2, on long petioles; the leaflets variable in breadth. *Spathe* ovate; the upper portion arched over at the top, greenish, dark purple, or variegated. *Berries* forming a dense ovoid head. The recent tuber is very acrid, and almost caustic, but it becomes mild by boiling or drying. *Big. Med. Bot.*, i. 52. *Indian Turnip.*

2. *A. Dracontium* Schott: leaf mostly solitary, pedate; the leaflets lance-oblong, acuminate, entire; spadix subulate, much longer than the oblong acuminate convolute spathe. (*Torr. N. Y. Fl.*) *Arum Dracontium* Linn.

Banks of streams. N. Y. to Flor. June, July. ♀.—*Scape* about a foot long, with roundish corms, often clustered. *Leaf* on a petiole 8—15 inches long. *Spadix* greenish; the upper part tapering into a slender point, which rises 2—4 inches above the top of the spathe. *Berries* reddish-orange when ripe, forming an ovoid cluster. *Darlington.* *Green Dragon.*

2. PELTANDRA. Raf.—Arrow Arum.

(From the Greek *πλῆρη*, a shield; and *αρνη*, a stamen; in allusion to the form of the sterile organs.)

Spathe elongated, convolute, undulate on the margin, curved at the apex. *Spadix* covered with flowers. *Perianth* none. *Anthers* sessile, covering the upper part of the spadix in a tessellated manner. *Ovaries* 1-celled, on the lower part of the spadix. *Berries* ovoid, forming a dense cluster.

P. Virginica Raf. *Arum Virginicum* Linn. *Calla Virginica* Mich. *Lecontia Virginica* Torr. *Comp.* *Rensselaeria Virginica* Beck *Bot. 1st. Ed.*

Swamps. N. Y. to Car. June, July. ♀.—*Scapes*, several from one root, 12—18 inches long. *Leaves* all radical, and with the petiole about as long as the scape, oblong, hastate-sagittate, acuminate, the lobes spreading and usually obtuse. *Spathe* 3—5 inches long, narrow and somewhat fleshy. *Spadix* nearly as long as the spathe. *Berries* 1—3-seeded, green when ripe.

Arrow-leaved Arum.

3. CALLA. Linn.—Water Arum.

(An ancient name of some plant allied to Arum.)

Spathe ovate, somewhat flattened. *Spadix* covered with flowers, which are destitute of a perianth, and consist of pistils surrounded by stamens. *Anthers* with slender filaments. *Berries* distinct, depressed, few-seeded.

C. palustris Linn.

Sphagnous swamps. Can. to the southern part of N. Y. July, Aug. ♀.—*Rhizoma* thick, jointed. *Scape* 6—8 inches high. *Leaves* on long petioles, cordate, abruptly acuminate, with an involute point. *Spathe* oval, green on the outside, white within. *Spadix* oblong, covered with crowded flowers. The root is acrid, but the pungency disappears in drying. Linnæus states that the Laplanders use it for bread. *Common Water Arum.*

4. SYMPLOCARPUS. *Salisb.*—Skunk Cabbage.

(From the Greek *σμπλοκη*, *connection*, and *καρπος*, *fruit*; the berries being united.)

Spathe ventricose-ovate, acuminate. Spadix roundish, covered with perfect flowers. Perianth deeply 4-parted, persistent; segments cucullate, truncate, becoming thick and spongy. Stamens 4. Style pyramidal, 4-sided. Stigma simple, minute. Berries numerous, globular, imbedded in the spadix.

S. fatidus Salisb.: leaves cordate-ovate; spadix oval, much shorter than the spathe. *Ictodes fatidus Big.* *Pothos fatida Mich.*

Wet meadows. Can. to Car. Feb.—April. ♀.—*Rhizoma* large, with numerous thick fibres. *Leaves* appearing after the spathe, very large, petiolate, cordate-ovate, smooth. *Spathe* ovate-convolute, purple, spotted with green and yellow, bent over at the summit. *Spadix* about an inch long, peduncled, densely covered with purplish flowers. Whole plant very fetid. Medicinal. *Big. Med. Bot.* ii. 41. *Common Skunk Cabbage.*

5. ACORUS. *Linn.*—Sweet Flag.

(From the Greek *α*, *without*, and *κορη*, the *pupil of the eye*; a supposed remedy for sore eyes.)

Spathe leaf-like, continuous with the scape. Spadix cylindrical, covered with flowers. Perianth glumaceous, 6-leaved. Stamens 6. Ovary 1. Stigma minute, sessile. Fruit baccate or capsular.

A. Calamus Linn.: scape ancipital, with an ensiform point rising above the spadix.

Swamps. Can. to Car. June. ♀.—*Rhizoma* horizontal, creeping, aromatic. *Leaves* 2—3 feet long, and 6—10 lines wide. *Scape* similar to the leaves, somewhat triangular below the spadix. *Spadix* sessile on the side of the scape, 2—3 inches long, terete, covered with minute greenish flowers.

Common Sweet Flag.

6. ORONTIUM. *Linn.*—Orontium.

(An ancient name, supposed to refer to the river *Orontes*.)

Spathe none. Spadix cylindrical, covered with flowers. Perianth of 4—6 truncate concave sepals. Stamens 4—6. Ovary superior. Stigma sessile, subumbilicate. Utricle 1-seeded.

O. aquaticum Linn.

Ponds and marshes. Can. to Flor. May. ♀.—*Scape* 8—18 inches long, clavate. *Leaves* on long petioles, floating, the lamina varying from oblong-lanceolate to elliptic-lanceolate, deep-green above, paler beneath. *Spadix* 1—2 inches long, yellow, somewhat tapering; the *flowers* crowded and sessile.

Water Orontium. Golden Club.

ORDER CXLIV. PISTIACEÆ.—DUCKWEEDS.

Flowers 2—3, appearing from the margin of a flat frond, enclosed in a spathe but without a spadix, monœcious; the sterile consisting of 1—2 stamens; the fertile of a 1-celled ovary, a short style and a simple stigma. Fruit membranous or capsular, not opening.—Floating or land plants, with very cellular, lenticular or lobed fronds, destitute of proper stems and leaves.

LEMNA. *Linn.*—Duckweed.

(From the Greek *λεμνα*, bark or scale; in allusion to the form of the fronds.)

Spathe membranous, urceolate, with 2 sterile flowers. Stamens 2, rarely wanting. Filaments longer than the style, curved. Style usually elongated. Stigma flat. Fruit an utricle.

1. *L. trisulca* *Linn.*: fronds thin, elliptic-lanceolate, cordate at one extremity, at the other serrate; root solitary.

Ditches and ponds. N. Y. to Virg.; rarely in flower. July. ①.—*Fronds* half an inch or more in length, thin, margin pellucid; young fronds produced from lateral clefts, of the same shape as the parent plant, and again proliferous before they are detached. *Flowers* very minute. *Root* a single fibre.

Star Duckweed.

2. *L. minor* *Linn.*: fronds nearly ovate, compressed; root solitary.

Stagnant waters. N. Y. to Car. June, July. ①.—*Fronds* a line and a half long, slightly convex beneath, somewhat fleshy, increasing rapidly by *gemmæ* (young fronds) so as often completely to cover the surface of stagnant water.

Lesser Duckweed.

3. *L. gibba* *Linn.*: fronds obovate, almost flat above, hemispheric and pale beneath; root subsolitary.

Stagnant waters, near Liverpool, Onondaga county, N. Y. *Pursh.* Braddock's Bay, Lake Ontario. *Torr.* June, July. ①.—Distinguished from the former by its being pale and hemispheric beneath, and appearing reticulated.

Gibbous Duckweed.

4. *L. perpusilla* *Torr.*: fronds obovate, thin; root solitary; seed erect.

Ponds on Staten Island, N. Y. Aug. ①. ?—*Fronds* a line and a half long, bright-green on both sides. *Flowers* bursting from a cleft in the side of the frond. *Spathe* cyathiform. *Seed* oblong, erect.

Smallest Duckweed.

5. *L. polyrhiza* *Linn.*: fronds roundish-obovate, compressed; roots numerous, fascicled.

Stagnant waters. N. Y. to Car. June, July. ①.—*Fronds* 3—4 lines long, succulent, of a firm texture, distinctly nerved above and often dark purple beneath. *Root* a bundle of 8 or 10 simple fibres in the middle of the frond. The largest of all the species. It is said never to have been seen in flower either in North America or in Great Britain.

Larger Duckweed.

ORDER CXLV. NAIADACEÆ.—PONDWEEDS.

Flowers mostly diclinous. Perianth of 2 or 4 pieces, rarely wanting. Stamens definite. Ovaries 1 or more, superior. Stigma

simple. Fruit a little nut or indehiscent capsule. Seed without albumen.—Water plants, with simple cellular leaves and membranous stipules. Flowers inconspicuous, often in terminal spikes.

1. ZOSTERA. *Linn.*—Grasswrack.

(From the Greek ζώνη, a *girdle* or *ribbon*, which the leaves sometimes resemble.)

Stamens and pistils separated, seated in 2 rows upon one side of a flat spadix. Anthers ovate, sessile. Pistils alternating with the anthers, ovate. Style subulate. Stigmas 2. Utricle with 1 seed, bursting irregularly.

Z. marina Linn.: stem roundish; leaves entire, somewhat 3-nerved.

Muddy shores. Mass. and N. Y. to Car. Aug. 24.—*Stem* terete, flexuous, throwing out roots from the joints. *Leaves* very long and narrow. *Spadix* linear, arising from a sheathing portion of the leaf. *Flowers* green; *pistils* and *anthers* alternate. This plant is used in Europe for packing glass and earthenware. Beds are also sometimes made of it. *Common Grasswrack.*

2. CAULINIA. *Willd.*—Caulinia.

(In honor of *F. Cavolini*; a Neapolitan botanist.)

Monœcious. Perianth none. STERILE FL. Anther nearly sessile. FERTILE FL. Style filiform. Stigmas 2. Fruit capsular, 1-seeded.

1. *C. fragilis Willd.*: leaves ternate or opposite, linear-subulate, recurved, aculeate-dentate, rigid.

In water. Penn. Aug. ①.—*Stem* long, submerged. *Flowers* small. *Brittle Caulinia.*

2. *C. flexilis Willd.*: leaves whorled in sixes, linear, denticulate near the apex, spreading. *Najas Canadensis Mich.*

Ponds and ditches. Can. to Car. July, Aug. ①.—*Stem* 6—18 inches long, submerged, dichotomously branched, jointed. *Flower* solitary, axillary, sessile. *Bending Caulinia.*

3. ZANNICHELLIA. *Linn.*—Horned Pondweed.

(In honor of *John Jerome Zannichelli*; a Venetian apothecary and botanist.)

Monœcious. STERILE FL. Perianth none. Stamen 1. Filament slender. FERTILE FL. Perianth cup-shaped. Pistils 2—4, tapering into a short style. Stigma large and peltate. Fruit on a short stipe, coriaceous.

Z. palustris Linn. *Z. intermedia Torr. Comp.*

Ditches and stagnant waters. Can. to Virg. July, Aug. ①.—*Stem* long, filiform, much branched. *Leaves* opposite, linear, entire. *Flowers* axillary, from a membranaceous cup-shaped perianth or involucre, small. *Stamen* longer than the *pistils*. *Anther* large, 4-celled, (*Hook.*) 2-celled, (*Torr.*) *Stigma* entire. *Fruit* a little incurved, sometimes toothed on the back.

Horn Pondweed.

4. RUPPIA. Linn.—Ruppia.

(In honor of *Henry Bernard Ruppia*; a German botanist.)

Flowers 2, perfect, naked, on a spadix arising from the sheathing base of the leaves. Stamens 2 or 4, sessile. Anthers large, peltate. Ovaries mostly 4. Stigmas sessile, peltate. Fruit drupaceous, pedicellate.

R. maritima Linn.

Salt marshes. Can. to Geor. July. ♀.—*Stem* long, filiform, branched, floating. *Leaves* linear, setaceous, with inflated sheaths. *Spadix* with 2 naked green flowers, at first very short, but gradually increasing to the length of 5 or 6 inches. *Anthers* large, sessile, bursting horizontally. *Drapes* olive-green, smooth, crowned with a short oblique beak. *Sea Ruppia*.

5. POTAMOGETON. Linn.—Pondweed.

(From the Greek *ποταμος*, a river, and *γειτων*, a neighbor; in reference to its place of growth.)

Flowers perfect, on a spadix arising from a spathe. Perianth single, 4-leaved. Anthers 4, nearly sessile, alternating with the divisions of the perianth. Ovaries 4, becoming 4 compressed and somewhat cochleate nuts.

* *Upper leaves floating.*

1. *P. natans* Linn.: upper leaves floating, coriaceous, on long petioles, oblong-ovate; lower membranous, linear-lanceolate, gradually tapering into a petiole. *P. natans* β. Mich.

Ponds and lakes. Mass. to Virg. W. to the Platte river. July, Aug. ♀.—*Stem* varying in length. *Leaves* sometimes cordate. *Spadix* 1—2 inches long, rising above the water. *Broad-leaved Pondweed*.

2. *P. fluitans* Linn.: upper leaves floating, subcoriaceous, ovate-lanceolate, obtuse, tapering into a rather short petiole; lower very long, lanceolate, membranous and sessile. *P. natans* var. *fluitans* Torr.

Ponds and streams. Can. to Car. W. to the Platte river. July, Aug. ♀.—*Stem* varying in length. *Leaves* reddish, less coriaceous than in the preceding. *Spadix* an inch long, almost submersed. *Floating Pondweed*.

3. *P. heterophyllum* Schreb.: upper leaves floating, coriaceous, elliptic, petiolate; lower membranous, linear-lanceolate, sessile. *P. hybridum* Mich.

Stagnant water. Can. to Car. Aug. ♀.—Smaller than the former. In flowing water the leaves are very long and narrow.

Various-leaved Pondweed.

4. *P. diversifolium* Bart.: upper leaves floating, elliptic, petiolate, 5-nerved; lower filiform; spadix axillary, almost sessile, few-flowered. *P. setaceum* Pursh. *P. hybridum* Torr.

Ponds and small streams. Can. to Virg. June. ♀.—*Stems* numerous, branched, filiform. *Upper leaves* scarcely an inch long. *Spadix* 4—6-flowered. *Small Floating Pondweed*.

** *Leaves all submersed.*

5. *P. perfoliatum* Linn. : leaves oblong-ovate, obtuse, somewhat cordate at the base, sessile and clasping. *P. densum* Schw. not of Linn. *P. crispum* Pursh.

Lakes, &c. Can. to Penn. Aug. ♀.—*Stem* slender, dichotomously branched. *Leaves* an inch or more in length, appearing perfoliate, slightly waved on the margin, subpellucid. *Spadix* few-flowered, on a peduncle of about an inch in length. *Perfoliate Pondweed.*

6. *P. lucens* Linn. : leaves elliptic and elliptic-lanceolate; upper sometimes petiolate, coarsely reticulate and mucronate.

Rivers and lakes. Can. to Car. W. to Miss. Aug. ♀.—*Stem* long, branched. *Leaves* large, very pellucid and finely veined. *Spadix* cylindrical, many-flowered, on a thick peduncle which is sometimes shorter and at others much longer than the leaves. A very variable species. *Shining Pondweed.*

7. *P. zosterifolium* Schumacher. : leaves all linear and grass-like, pellucid, with three primary and many smaller nerves, acuminate; spadix cylindrical, on longish thick peduncles. *P. compressum* Torr. Fl.

In water. Can. to Virg. July, Aug. ♀.—*Stem* 2—4 feet long, much compressed, almost winged. *Leaves* 3—6 inches long, very narrow. *Spadix* 6—9 lines long, on short peduncles. *Grass-leaved Pondweed.*

8. *P. pusillum* Linn. : leaves narrow-linear, 3—5-nerved, rather obtuse, pellucid; spadix oblong, few-flowered, somewhat interrupted, much shorter than the peduncles.

Crooked Lake, N. Y. Dr. Sartwell. Aug. ♀.—*Stem* branching, slender, flexuous. *Leaves* 1—2 inches long, very narrow, mostly 5-nerved. *Spadix* about 6-flowered, on a thick peduncle which is about an inch in length. *Small Pondweed.*

9. *P. pauciflorum* Pursh. : leaves sessile, narrow-linear, flat; lower alternate; uppermost subverticillate; spadix capitate, 4—6-flowered. *P. gramineum* Mich.

Ponds and rivers. N. Y. to Car. W. to Miss. July, Aug. ♀.—*Stem* almost filiform, much branched, compressed. *Leaves* 2—3 inches long, not more than half a line broad. *Spadix* small, on a clavate peduncle about half an inch long. *Few-flowered Pondweed.*

10. *P. pectinatum* Linn. : leaves distichous, setaceous, alternate, sheathing; stipules scarcely any; spadix few-flowered, interrupted. *P. marinum* Mich.

Ponds. Can. to Virg. June. ♀.—*Stem* filiform, much branched. *Leaves* very numerous, giving to the plant a pectinated appearance. *Spadix* interrupted, on an elongated peduncle. *Fennel-leaved Pondweed.*

SUBCLASS II.—GLUMACEALS.

Flowers destitute of a true perianth, but consisting of imbricate colorless or herbaceous scales.

ORDER CXLVI. CYPERACEÆ.—SEDGES.

Flowers often monœcious or diœcious, consisting of imbricated solitary bracts, (scales,) rarely enclosing other opposite

bracts at right angles with the first, and called *glumes*. Perianth none, or consisting of hypogynous bristles. Stamens 1—12, but mostly 3. Style single, 2—3-cleft. Fruit an achenium or crustaceous nut. Embryo lenticular, within the base of the albumen.—Grass-like herbs, growing in tufts. Culms solid, seldom with joints, often 3-cornered. Leaves with their sheaths entire.

I. CYPERÆ. *Flowers perfect. Spikelets imbricate in two rows. Perigynium none or setaceous.*

1. DULICHIMUM. *Rich.*—Dulichium.

(From the Greek *δυο*, *two*, and *λείχνη*, a *scab* or *scale*; in allusion to the two-rowed scales. *Eat. Man.*)

Spikelets elongated, compressed, many-flowered. Scales 2-ranked. Bristles 6—9, rigid, retrorsely hispid. Stamens 3. Style very long, 2-cleft, persistent. Achenium compressed, linear-oblong.

D. spathaceum Pers. Schœnus spathaceus Linn. Cyperus spathaceus Muhl.

Swamps and margins of ponds. Throughout the U. S. July, Aug. ♀.—*Culm* about 18 inches high, round below, obscurely triangular above. *Leaves* linear, flat, spreading almost horizontally in three directions. *Spikelets* 6—10-flowered, on a flexuous rachis. *Scales* rusty-yellow, lanceolate, acute.

Dulichium.

2. CYPERUS. *Linn.*—Galingale.

(From the Greek *κυπερος*; a name supposed to have been given to one of this genus.)

Spikelets 2-ranked, many-flowered. Scales mostly all fertile, equal. Stamens 2 or 3, rarely solitary, deciduous. Style 2—3-cleft, deciduous. Achenium compressed or triangular.

* *Style 2-cleft. Achenium compressed-lenticular.*

1. *C. flavescens Linn.*: umbel of 2—4 short rays; involucre 3-leaved; spikelets linear, 14—20-flowered, at the end of the rays, rather obtuse; scales obtuse, 1-nerved.

Wet grounds. N. Y. to Flor. W. to Ken. Aug., Sept. ♀.—*Culm* 4—10 inches high. *Leaves* narrow, as long as the culm. *Spikelets* in fascicles of 3—4 on the rachis, 5—8 lines long, yellowish, sometimes 30-flowered.

Yellowish Dwarf Galingale.

2. *C. Nuttallii Torr.*: rays few, short or nearly sessile, loose; involucre 4-leaved, 2 of the leaves very long; spikelets linear-lanceolate, much compressed, acute; stamens 2; style 2-cleft. *C. cæspitosus Spreng. C. tenuis Muhl.*

Salt marshes. N. Y. to Car. and Louis. Aug., Sept. ♀.—*Culms* 5—12 inches high, cespitose, triangular. *Leaves* nearly as tall as the culm. *Spikelets* very acute, sometimes compound, green and brown. *Nuttall's Galingale*.

3. *C. diandrus* Torr.: umbel of 2—5 short rays; involucre 3-leaved, two of the leaves much longer than the umbel; spikelets lance-oblong, much-compressed, 14—24-flowered; scales oblong, rather obtuse, 1-nerved; stamens 2; style 2-cleft, much exserted.

var. *castaneus* Torr.: scales oblong-lanceolate; style scarcely exserted. *C. castaneus* Big.

Wet grounds. N. Y. to Del. W. to Ohio. Aug. ♀.—*Culms* 6—12 inches high, often weak and somewhat decumbent, cespitose, obtusely triangular. *Umbel* sometimes without rays. *Scales* with a light-brown margin, the sides yellowish and the keel green; in the var. of a dark chestnut-color and firmer texture. *Stamens* sometimes 3 in the upper flowers. *Diandrous Galingale*.

** *Style* 3-cleft. *Achenium* triangular. *Inner scales* adnate to the rachis.

† *Culm* subterete, nodose.

4. *C. tenellus* Linn.: culm and leaves setaceous; spikelet solitary, lance-linear, 10—12-flowered; involucre mostly 1-leaved. *C. minimus* Nutt.?

N. J. and Penn., near Philadelphia. *Dr. Cleaver*. *Culm* about 4 inches high, bristle-like, triangular. *Spikelet* half an inch long and a line broad, much compressed. It may be a distinct species. *Delicate Galingale*.

†† *Culm* triangular. *Umbel* simple or compound.

5. *C. Michauxianus* Schultes: culm acutely triangular; umbel compound, the rays short; involucre 5—6-leaved, much longer than the umbel; spikelets linear, somewhat terete, 6—8-flowered; scales ovate, rather obtuse. *C. erythrorhizus* Torr. Fl.

Borders of marshes. N. Y. to Geor. and Louis. Aug., Sept. ①?—*Culm* about a foot high, reddish near the root. *Leaves* mostly shorter than the culm. *Spikelets* much crowded, the lower ones compound. *Michaux's Galingale*.

6. *C. strigosus* Linn.: umbel simple or compound; rays numerous, elongated; involucre 5—9-leaved, very long; spikelets 8—10-flowered, linear-lanceolate, flattened, much crowded, spreading horizontally; scales oblong-lanceolate, nerved, rather acute.

Wet grounds. Can. to Car. and Louis. W. to Ohio. Aug., Sept. ♀.—*Culm* 2—3 feet high, somewhat tumid at the base. *Spikes* 1—2 inches long, consisting of 20—80 spikelets. *Scales* loosely imbricate, yellowish on the sides. In sterile soils it is much smaller. *Tall Galingale*.

7. *C. repens* Ell.: rhizoma creeping, tuberiferous; umbel simple, 4—6-rayed; involucre 3—9-leaved, much longer than the rays; spikelets linear, compressed, somewhat spreading, 12—20-flowered; scales oblong, rather acute, scarios on the margin. *C. phymatodes* Muhl. *C. tuberosus* Pursh.

Moist grounds. Can. to Flor. and Louis. W. to Miss. Aug. ♀.—*Rhizoma* creeping extensively, with roundish tubers at the ends of the branches. *Culm* 12—18 inches high. *Leaves* radical, broad, yellowish-green. *Scales* yellowish, at length spreading. *Creeping Galingale*.

8. *C. filiculmis* Vahl: culm triangular, often inclined; umbel simple, of 1—2 divaricate rays or wanting; spikelets collected into globose heads,

linear-lanceolate, 6—10-flowered; scales loose, ovate, obtuse or emarginate. *C. mariscoides* Ell.

Dry soils. N. Y. to Flor. W. to Miss. and Texas. Aug. ♀.—*Culms* about a foot high, cespitose, often diverging, tuberous at base. *Leaves* linear, dull-green. *Spikelets* acute. *Scales* yellowish-green, with a scarious margin.

Slender-stalked Galingale.

9. *C. Grayi* Torr.: culm filiform; umbel 4—6-rayed, somewhat erect; heads composed of 5—10 spikelets, loose; spikelets linear-lanceolate, compressed, 5—7-flowered; scales ovate, rather obtuse when old, loosely imbricate.

Sandy soils. N. Y. R. I. Mass. N. J. Aug. ♀.—*Culms* 8—12 inches high, cespitose, tough and rigid. *Leaves* all radical, setaceous, scarcely half a line wide. *Involucre* setaceous. *Spikelets* chestnut-colored, slightly convex. Differs from the preceding in its very slender culm and leaves, and in its many-rayed umbel.

Gray's Galingale.

10. *C. dentatus* Torr.: rhizoma creeping, tuberiferous; umbel compound, of 4—7 somewhat erect rays; involucre 3-leaved, longer than the umbel; spikelets 3—6 on each partial ray, oblong or ovate-lanceolate, much compressed, 6—30-flowered; scales very acute or mucronate, keeled. *C. parviflorus* Muhl.

Swamps and marshes. N. Y. to Flor. Aug. ♀.—*Rhizoma* extensively creeping. *Culm* 6—12 inches high. *Leaves* somewhat rigid, pale yellowish-green. *Scales* with the sides reddish brown, the keel green.

Toothed Galingale.

11. *C. inflexus* Muhl.: umbel contracted, 1—3-rayed; involucre 3-leaved, very long; spikelets collected into ovoid heads, oblong-linear, about 8-flowered; scales cuspidate, squarrose at the tip: stamen 1. *C. uncinatus* Pursh.

Banks of streams. Throughout the U. S. N. to lat. 52°. Aug., Sept. ②? —*Culms* 2—3 inches high, densely cespitose. *Leaves* linear, as long as the culm. *Umbel* often sessile. *Spikelets* yellowish, in heads of 8—16 or more. It has a strong and durable odor like that of *Trifolium cœruleum*.

Dwarf Odorous Galingale.

12. *C. Schweinitzii* Torr.: culm triquetrous, with rough angles; umbel simple, the rays elongated; spikelets 6—8, lanceolate, alternate, approximate, 6—8-flowered, with a setaceous bract at the base of each; scales ovate, acuminate, mucronate, keeled.

Dry sandy shore of Lake Ontario, near Braddock's Bay. W. to St. Peters River and Ark. Aug.—*Culm* 8—18 inches high, slender, the upper part rough on the angles. *Leaves* very narrow, shorter than the culm. *Spikelets* irregularly arranged, forming a loose oblong head. *Scales* rather rigid, yellowish.

Schweinitz's Galingale.

*** *Inner scales herbaceous, free.*

13. *C. erythrorhizos* Muhl.: umbel compound, many-rayed; involucre 4—5-leaved, very long; spikes cylindric-oblong, nearly sessile; spikelets very numerous, spreading horizontally, terete-compressed, many-flowered; scales lanceolate, mucronate. *C. tenuiflorus* Ell.

Wet places. Penn. to Geor. and Louis. ①.—*Culm* 2—3 feet high, obtusely triangular, smooth. *Leaves* shorter than the culm. *Spikelets* linear, 10—18-flowered. *Scales* chestnut colored, shining.

Red-rooted Galingale.

3. MARISCUS. *Vahl.*—Mariscus.

(From the Celtic *mar*, a *marsh*; in allusion to the place of growth of some species.)

Spikelets few-flowered, clustered in heads. Scales somewhat imbricate in two rows; the lower ones short and empty. Stamens sometimes 2. Style trifid. Achenium triquetrous.

1. *M. ovularis Vahl*: umbel simple, of 1—6 short rays; involucre 3—4-leaved; heads globose, compact; spikelets terete, 2—4 flowered, radiated; scales ovate, rather obtuse. *Scirpus ovularis Linn.* *Kyllingia ovularis Mich.* *Cyperus ovularis Torr.*

Sandy soils. N. Y. to Flor. W. to Ark. July, Aug. ♀.—*Rhizoma* short and tuberos. *Culm* 6—18 inches high, triangular, nearly naked. *Leaves* keeled, nearly smooth. *Spikelets* very numerous, 2—4-flowered, usually only one or two fertile, short and thick. *Egg-shaped Mariscus.*

2. *M. retrofractus Vahl*: umbel simple, of numerous elongated rays; involucre 3-leaved; heads obovate, retrorsely imbricate; spikelets nearly terete, subulate, 1-flowered; two lowest scales very short, the uppermost one very narrow and involute. *Scirpus retrofractus Linn.* *Cyperus retrofractus Torr.*

Wet grounds. N. Y. to Flor. W. to Ark. July, Aug. ♀.—*Culm* 2—3 feet high, obtusely triangular. *Leaves* mostly radical, half as long as the culm. *Spikelets* very numerous, slender, the uppermost ones spreading horizontally, the rest bent backwards against the peduncle. *Bent-flowered Mariscus.*

4. KYLLINGIA. *Linn.*—Kyllingia.

(Named in honor of *Peter Kylling*, a Danish botanist.)

Spikelets distinct, disposed in a roundish sessile subimbricate spike. Scales 2-valved, 1-flowered. Paleæ 2, longer than the scales.

K. monoccephala Linn.: stem filiform, triangular; involucre 3-leaved; one of the leaves erect, the others horizontal; head globose, compact; spikelets 1-flowered, ovoid, acuminate; scales ciliate, nerved.

Moist grounds. N. J. to Geor. June. ♀.—*Root* creeping, stoloniferous. *Culm* about a foot high. *Leaves* narrow, shorter than the culm. *Head* always single, mostly inclining to one side. Supposed to be distinct from the foreign plant. *One-headed Kyllingia.*

II. SCIRPEÆ. *Flowers perfect. Scales mostly imbricate on all sides. Perigynium composed of bristles hairs or scales, sometimes wanting.*

5. ELEOCHARIS. *Brown.*—Spike Rush.

(From the Greek *ελος, ελεος*, a *marsh*; and *χαίρω*, to *delight in*; in allusion to the place of growth.)

Scales imbricate on all sides, or imperfectly bifarious. Bristles 3—12, (rarely wanting,) rigid and persistent, usually rough

or hispid. Style 2—3-cleft, bulbous at the base. Achenium lenticular or obtusely triangular.

* *Spike cylindric. Scales rigid, spirally arranged. Style 3-cleft.*

1. *E. equisetoides* Torr.: culm terete, remotely nodose, papillose; scales suborbicular-ovate, very obtuse or slightly pointed; bristles 6, as long as the obovate biconvex achenium; tubercle conic-rostrate, acute. *Scirpus equisetoides* Ell.

Bogs and in water. Near Lewiston, Del. S. to Geor. July. ♀.—*Culm* 18—24 inches high, slightly roughened with minute papillæ. *Spike* about an inch long, rather acute. *Scales* with a narrow scarious margin.

Equisetum-like Spike Rush.

2. *E. quadrangulata* Brown: culm acutely and unequally quadrangular, three of the sides concave, the other wider and flat; scales broad-ovate, very obtuse; bristles 6, as long as the obovate striate achenium; tubercle conic, compressed. *Scirpus quadrangulatus* Mich.

Swamps and margins of rivers. Penn. to Car. and Louis. June. ♀.—*Rhizoma* creeping. *Culm* 2—4 feet high, with purple sheaths at base. *Spike* 12—16 lines in length. *Scales* with a scarious margin, dotted with purple.

Square-stalked Spike Rush.

** *Spike ovoid or oblong. Scales membranaceous, very numerous, irregularly imbricated. Style mostly 2-cleft.*

3. *E. palustris* Brown: culm terete, striate, spongy; spike oblong-lanceolate; scales somewhat obtuse, the two lowest large and empty; bristles 3—6, hispid, longer than the lenticular smooth achenium. *Scirpus palustris* Linn.

Marshes and low meadows. Arct. Amer. to Flor. W. to the Pacific Ocean. July, Aug. ♀.—*Rhizoma* creeping. *Culm* 1—2 feet high, erect, with three sheaths at base. *Spike* 3—5 lines long, many-flowered. *Scales* fuscous in the middle.

Common Spike Rush.

4. *E. olivacea* Torr.: culm filiform, compressed, sulcate, soft; spike ovoid, mostly somewhat obtuse, many-flowered; scales ovate, obtuse, membranaceous; bristles 6—8, retrorsely hispid, nearly twice as long as the obovoid lenticular achenium. *Scirpus intermedius* Gray.

Wet sandy places. Mass. N. Y. and N. J. Aug. ♀.—*Culms* 6—8 inches long, cespitose, erect or decumbent, often dwarfish and slender. *Spikes* 3 lines long, 20—30-flowered. *Achenium* smooth, dark olive when ripe.

Olive-fruited Spike Rush.

5. *E. rostellata* Torr.: culm compressed, sulcate; spike ovoid-lanceolate, acute; scales ovate, obtuse, loose, with a scarious margin; bristles 4—6, longer than the biconvex shining achenium; tubercle conic-rostrate. (Torr. N. Y. Fl.) *Scirpus rostellatus* Torr. Cyp.

Penn-Yan, Yates County, N. Y. Torr. ♀.—*Culm* 12—18 inches high, firm and tough, compressed, sulcate. *Spike* 12—15-flowered. *Scales* light brown. *Bristles* hispid downward.

Beaked Spike Rush.

6. *E. intermedia* Schultes: culm setaceous, diffuse, compressed, angular and sulcate; spike ovoid-lanceolate, acute; scales somewhat acute; bristles 6, longer than the obovoid compressed achenium; style 3-cleft; tubercle distinct. *Scirpus intermedius* Muhl.

Marshes and swamps. N. Y. and Mass. to Geor. July. ♀.—*Culms* very numerous, slender, diffuse or recurved, prostrate. *Scales* membranaceous, reddish-brown on the sides. *Achenium* light brown. *Intermediate Spike Rush*.

7. *E. obtusa* Schultes: culm terete or slightly compressed, spongy; spike globose-ovoid, many-flowered; scales very obtuse; bristles 6, longer than the obovate lenticular achenium; tubercle dilated at base. *Scirpus capitatus* Linn.

Bogs and low meadows. Can. to Flor. W. to Ohio. June, July. ♀.—*Culms* 8—15 inches high, cespitose, erect. *Spike* thick and obtuse, 50—80-flowered. *Scales* with a green midrib. *Obtuse Spike Rush*.

*** *Spike ovoid. Scales coriaceous. Bristles 6, rigid. Style 3-cleft. Tubercle nearly as large as the achenium.*

8. *E. tuberculosa* Brown: culm terete, filiform, striate; spike globose-ovoid, somewhat acute; scales broad-ovate, very obtuse, loosely appressed; bristles 6, longer than the oblong and striate achenium; tubercle large, ovoid, obtuse. *Scirpus tuberculosus* Mich.

Sandy swamps. N. Y. and Mass. to Flor. and Louis. Aug. ♀.—*Culm* 8—12 inches high, clothed at base with 1 or 2 sheaths. *Spike* 12—16-flowered. *Scales* pale green, or whitish mixed with brown. *Large-tubercled Spike Rush*.

**** *Spike ovoid or elongated. Scales membranaceous. Bristles 1—4, slender, rarely none. Achenium roundish or triangular.*

9. *E. acicularis* Brown: culm setaceous, angular; spike ovoid, acute, few-flowered; scales oblong, rather obtuse; bristles 4, slender, shorter than the obovate achenium; tubercle minute. *Scirpus acicularis* Linn. *S. capillaceus* Mich.

Margins of ponds. Hudson's Bay to Flor. June, July. ♀?—*Culm* 2—8 inches long, cespitose, slender. *Spike* 3—8-flowered. *Scales* greenish with a purple stripe. *Capillary Spike Rush*.

10. *E. tenuis* Schultes: culm filiform, angular, the sides concave; spike elliptic, acute at each end; scales ovate, obtuse; bristles 2, 3, or none; achenium obovoid-triangular, rugose; tubercle minute, triangular. *Scirpus tenuis* Willd.

Swamps and wet meadows. Can. to Car. W. to Ark. July. ♀.—*Culm* 8—12 inches long, very slender, with one or two purple sheaths at base. *Spike* when young somewhat obtuse. *Scales* dark chestnut color, with the margins white. *Slender Spike Rush*.

11. *E. melanocarpa* Torr.: culm compressed, sulcate; spike oblong or cylindrical-oblong; scales ovate, obtuse, membranaceous; bristles 3—4, slender, mostly as long as the somewhat turbinate and obtusely triangular achenium; tubercle broad, triangular, short-acuminate.

Borders of swamps. N. Y. to Geor. May, June. ♀.—*Culm* 12—18 inches high, tough, sulcate. *Spikes* 4—6-lines long, thick, many-flowered. *Bristles* sometimes very short. *Black-fruited Spike Rush*.

**** *Spike compressed, often somewhat distichous. Scales membranaceous. Bristles slender. Style 3-cleft. Achenium triangular.*

12. *E. pigmaea* Torr.: culm setaceous or acicular, much compressed and sulcate; spike ovate-compressed, few-flowered; scales ovate; bristles 6,

slender, mostly longer than the ovoid acutely triangular achenium; tubercle very minute or almost wanting. *Scirpus pusillus Pursh*, not of *Vahl*.

Salt marshes. N. Y. and N. J. July, Aug. ♀.—*Culm* 1—2 inches high, often destitute of spikes. *Spikes* 3—8-flowered, only 1 or 2 flowers perfect. *Bristles* sometimes wanting. *Dwarf Spike Rush*.

13. *E. microcarpa*, var. *filiculmis Torr.*: culms cespitose, capillary or filiform, quadrangular, wiry; spikes oblong; bristles nearly as long as the obovate-oblong achenium; tubercle very minute, closely sessile.

Wet places in the Pine Barrens of N. J. ♀.—*Culms* 3—4 inches high, not thicker than a hair. *Spike* about 2 lines long. *Scales* dark chestnut color. *Wiry-stalked Spike Rush*.

6. SCIRPUS. *Linn.*—Club Rush.

(An ancient Latin name for the *Bulrush*, which belongs to this genus.)

Spikes many-flowered, the scales imbricate on all sides. Bristles 3—6, rigid, persistent. Style 2—3-cleft, simple at base, deciduous. Achenium biconvex or triangular.

* *Spike solitary, terminal.*

1. *S. cespitosus Linn.*: culms cespitose, filiform, terete; the sheaths with rudiments of leaves; spike ovoid, few-flowered; the two lowest scales bract-like, as long as the spike; bristles smooth; style 3-cleft; achenium obtusely triangular.

Wet places. White Hills, N. H. *Big*. High mountains of Essex county, N. Y. *Torr.* N. to Arct. Amer. W. to the Rocky Mountains. July. ♀.—*Culm* 2—10 inches high, rather rigid, finely striate, with imbricate sheaths at base. *Spike* 4—5-flowered, a little compressed. *Scales* yellowish-brown. *Scaly-stalked Club Rush*.

2. *S. planifolius Muhl.*: culm triangular; leaves linear, flat, about as long as the culm; spike oblong, compressed; scales carinate, cuspidate, the lowest one longer than the spike; achenium triangular.

Wet grounds. N. Y. and Mass. to Del. June. ♀.—*Culms* 6—12 inches long, cespitose, rough on the angles. *Leaves* subradical, grass-like, rough on the margin. *Scales* yellowish, with a green keel. *Bristles* 4—6, nearly as long as the achenium. *Flat-leaved Club Rush*.

3. *S. subterminalis Torr.*: culm floating, sulcate, leafy at the base; spike oblong-lanceolate, shorter than the bract at the base; scales ovate-lanceolate; style 3-cleft; achenium triangular.

Slow flowing streams. N. Y. Mass. and N. J. W. to the Rocky Mountains. Aug. ♀.—*Culm* 3 feet long, growing under water. *Leaves* long, filiform, channelled. *Spike* emersed, with a narrow bract at base. *Bristles* 6, rigid, nearly as long as the achenium. *Floating Club Rush*.

** *Culm many-spiked.*

† *Spikes lateral.*

4. *S. debilis Pursh.*: culm terete, with a few subulate leaves at base, striate; spikes 3—5, ovoid, closely sessile, below the top of the culm; scales broad-ovate, obtuse, mucronulate; style 2—3-cleft; achenium plano-convex, broad-obovate.

Along streams and in ponds. N. Y. to Car. July, Aug. ♀.—*Culms* 9—13 inches high, growing in tufts. *Spikelets* 1—6, bursting in a cluster from the side of the culm two or three inches from the top. *Scales* pale green. *Bristles* 4—6, retrorsely hispid. *Weak-stalked Club Rush.*

5. *S. triqueter* Linn.: culm nearly naked, triangular or slightly winged, two of the sides concave; spikes 1—6, ovoid, aggregated and sessile; scales round-ovate, mucronate; achenium doubly convex, acuminate. *S. Americanus* Pursh. *S. mucronatus* Pursh.

Ponds and marshes. Throughout N. Amer. to the Arctic regions. July, Aug. ♀.—*Culm* 3—5 feet high, slender, mucronate, very acutely triangular, sometimes winged. *Spikes* in a dense cluster usually near the top. *Scales* rusty colored. *Bristles* 3—5, slender, retrorsely hispid. Used for the bottoms of chairs. *Chairmaker's Rush.*

6. *S. mucronatus* Linn.: culm leafy at base, triangular, the sides concave; spikes 2—4, oblong-lanceolate, sessile; scales ovate, mucronate, smooth; anthers acute, (not fringed); achenium angular-convex externally, mucronate.

Margins of ponds. Boston, Mass. West Point, N. Y. W. to Mich.; rare. Torr. July. ♀.—*Culm* about 2 feet high, with one or two leaves at base which are sometimes more than a foot long. *Spikes* clustered, more elongated and of a lighter color than in the preceding. *Bristles* 6, rather slender, longer than the achenium. *Mucronate Club Rush.*

7. *S. lacustris* Linn.: culm terete, attenuate above, leafless; panicle growing from the side of the culm near the top; spikes ovoid, mostly pedunculate; scales ovate, mucronulate, ciliate; achenium obovate, convex on the back. *S. acutus* Muhl. *S. validus* Pursh.

Ponds and swamps. Subarct. Amer. to Flor. W. to the Pacific Ocean. June, July. ♀.—*Culm* 3—8 feet high, round and tapering upwards, terminating in a cusp, which projects 1—2 inches above the panicle. *Spikes* in an unequal subdivided cymose panicle or umbel. *Scales* brown, minutely pubescent. *Bristles* 4—6, stout, hispid. *Tall Club Rush. Bulrush.*

†† *Spikes terminal.*

8. *S. maritimus* Linn.: culm triangular, leafy; corymb clustered, shorter than the 3-leaved involucre; spikes ovoid-oblong, rather obtuse; scales ovate, 3-cleft or 3-toothed, the middle segment subulate and reflexed; style 3-cleft; achenium broad-obovate, lenticular. *S. robustus* Pursh. *S. macrostachyos* Muhl. (in part.)

Salt marshes and ditches. Subarct. Amer. to Flor. July, Aug. ♀.—*Culm* 1—4 feet high, thick, smooth, leafy below. *Spikes* usually forming somewhat compound corymbs. *Scales* chestnut-colored, membranaceous. *Bristles* 3—4, very slender, hispid. A variety of this species occurs in fresh-water marshes, and is common in Western N. Y. It has the *corymb* somewhat compound, the *spikes* ovoid and acute, and the *involucre* 3—5-lobed. Torr. *Marsh Club Rush.*

9. *S. atrovirens* Muhl.: culm triangular, leafy; cyme compound, profliferous; involucre 3-leaved; spikes ovoid, acute, densely glomerated in heads of 10—20; scales ovate, mucronate, pubescent; style 3-cleft; achenium compressed-triangular, sharply acuminate.

Wet meadows and swamps. Mass. to Penn. W. to Ken. June, July. ♀.—*Culm* about 2 feet high, leafy nearly to the top, smooth. *Spikes* many-flowered, in an unequal cyme or umbel. *Scales* dark green, at length becoming brownish. *Bristles* 6, slender, hispid downwards. *Dark-green Club Rush.*

10. *S. brunneus* Muhl. : culm obtusely triangular, leafy ; cyme decom- pound ; involucre 3—4-leaved ; spikes round-ovoid, clustered in heads of 3 to 6 or 8 ; scales ovate, obtuse, slightly mucronate ; style 3-cleft ; achenium minute, plano-convex, short-acuminate.

Swamps and margins of ponds. N. Y. to Car. ; rare. July, Aug. ♀.—*Culm* 2—3 feet high, obtusely triangular below. *Leaves* broad, as tall as the cyme. *Spikes* longer than in the preceding. *Scales* at first yellowish-green, at length reddish-brown. *Bristles* 4—6, slender, pubescent. *Brown Club Rush.*

11. *S. Eriophorum* Mich. : culm leafy, obtusely triangular above, nearly terete below ; panicle decom- pound, large, loose, somewhat nodding ; involucre many-leaved, very long ; scales lanceolate ; bristles 6, much exserted, capillary, tortuous. *Trichophorum Cyperinum* Pers. *Eriophorum Cyperi- num* Linn.

Wet grounds. Hudson's Bay to Flor. W. to Ohio and Ken. July, Aug. ♀.—*Culm* 2—5 feet high, leafy nearly to the top. *Leaves* 1—2 feet long, flat above, rough on the margin. *Panicle* usually very large, the *spikes* distinct and pedunculate, or in small clusters at the ends of the rays. *Scales* with the sides brown and the keel green. *Bristles* at length so much extended as to give the whole panicle a woolly appearance. *Brown Wool-grass.*

12. *S. lineatus* Mich. : culm triangular ; panicles terminal and lateral, at length nodding ; involucre 1—2-leaved ; spikes oblong, pedunculate ; scales ovate, acuminate, somewhat carinate. *Trichophorum lineatum* Pers.

Boggy places. N. Y. to Geor. W. to Miss. and Texas. Aug. ♀.—*Culm* 1—3 feet high, very leafy, distinctly triangular. *Leaves* rough on the margin. *Panicles* somewhat umbellate, the terminal one largest, the lateral ones some- times wanting. *Scales* rusty colored. *Bristles* crisped, somewhat exserted. A smaller plant than the preceding. *Loose-flowered Wool-grass.*

7. ERIOPHORUM. Linn.—Cotton-Grass.

(From the Greek *εριον*, wool, and *φειω*, to bear ; the fruit being covered with wool-like hairs.)

Scales of the spike imbricate on all sides. Achenium densely invested with long soft woolly or cottony hairs. Stamens 3. Style 3-cleft.

* *Spike solitary.*

1. *E. alpinum* Linn. : culm triangular, somewhat rough, with short sub- ulate leaves at the base ; spike oblong ; scales keeled ; hairs 6, crisped. *E. Hudsonianum* Mich. *Trichophorum alpinum* Pursh.

Sphagnous swamps, often on mountains. N. H. Ver. Mass. and N. Y. W. to Mich. June. ♀.—*Culm* 8—10 inches high, with a few short leaves and sheaths at base. *Spike* somewhat compressed. *Scales* yellowish-brown. *Hairs* white, very long. *Alpine Cotton-grass.*

2. *E. vaginatum* Linn. : culm terete below, obtusely triangular above, somewhat rigid ; sheaths inflated ; spike oblong-ovoid ; scales scarious ; hairs straight, dense. *E. cespitosum* Pursh.

Swamps, especially on mountains. Arct. Amer. to Virg. July. ♀.—*Culms* about a foot high, cespitose. *Leaves* longer than the culm, very narrow. *Scales* dark-colored when in fruit. *Hairs* very numerous, white, 2—3 times the length of the scale. *Hare's-tail Cotton-grass.*

** *Spikes numerous.*

3. *E. polystachyum* Linn.: culm nearly terete; leaves flat, triangular at the extremity; involucre about 2-leaved; spikes on scabrous peduncles, nodding; scales ovate, acute. *E. polystachium* β. Mich. *E. vulgare* Pers.

Bogs and marshes. Can. to Geor. W. to the Rocky Mountains. June. ♀.
—Culm 1—2 feet high, smooth. Spikes 4—12, on long filiform peduncles. Scales green, at length brown. Hairs very numerous, long, white with a reddish tinge. *Broad-leaved Cotton-grass.*

4. *E. Virginicum* Linn.: culm nearly terete below, obtusely triangular above; leaves flat, very long; involucre 2—3-leaved; spikes clustered, erect, nearly sessile.

Swamps and wet meadows. Hudson's Bay to Flor. W. to Miss. July, Aug. ♀.—Culm 2—4 feet high, leafy. Peduncles somewhat umbellate. Scales with pale sides and a green keel. Hairs very numerous, tawny. *Rusty Cotton-grass.*

5. *E. angustifolium* Roth.: culm somewhat triangular, roughish above; leaves triangular, channelled; involucre mostly 1-leaved; peduncles smooth, nodding; scales broad-ovate, obtuse. *E. tenellum* Nutt.

Wet meadows. Arct. Amer. to Del. June. ♀.—Culm 12—18 inches high, leafy. Spikes 4—10, ovoid; 1 or 2 nearly sessile, the others on peduncles. Hairs very numerous, long, white and cottony. *Narrow-leaved Cotton-grass.*

8. FIMBRISTYLIS. Vahl.—Fimbristylis.

(From the Latin *fimbria*, a fringe, and *stylus*, a style.)

Scales imbricate on all sides. Bristles none. Style compressed, 2-cleft, more or less bulbous at the base, wholly deciduous, mostly ciliate on the margin.

1. *F. spadicca* Vahl: culm compressed, nearly naked; leaves semi-terete, filiform, channelled; involucre rigid, 2-leaved; umbel of few rays, simple or compound; spikes ovoid-oblong; scales rigid, broad-ovate, obtuse. *Scirpus spadicens* Linn.

Salt marshes. N. Y. to Flor. W. to Texas. Aug., Sept. ♀.—Culm 1—2 feet high, compressed above, rigid, smooth. Leaves nearly radical, rough on the margin. Scales chestnut colored when old. *Tall brown Fimbristylis.*

2. *F. Baldwiniana* Torr.: culm somewhat compressed, deeply striate, leafy at base; leaves narrow-linear, striate, serrulate; involucre subulate; umbel subcompound; spikes ovoid-lanceolate, acute; scales smoothish, ovate, mucronate. *Scirpus Baldwinianus* Schultes.

Moist places. Penn. to the Gulf of Mexico. W. to Miss. July. ♀?—Culm 4—12 inches high. Leaves about as long as the culm. Umbel small, some of the rays divided. Scales with the keel greenish and the sides chestnut brown. *Baldwin's Fimbristylis.*

3. *F. cylindrica* Vahl: involucre about 1-leaved, rigid, as long as the simple umbel; spikes cylindric, very obtuse.

Quaker's Bridge, N. J. Schweinitz. ♀.—An obscure species.

Cylindrical Fimbristylis.

9. ISOLEPIS. *Brown.*—*Isolepis*.(From the Greek *ισος*, *equal*, and *λεπτις*, a *scale*.)

Scales imbricate on all sides. Bristles none. Style 3-cleft, simple at the base, or with a minute bulb from which it separates. Achenium triangular, often crowned with the base of the style.

I. capillaris R. & S.: culm capillary, angular and sulcate, nearly naked; leaves setaceous, much shorter than the culm; spikes umbelled, usually 4, terminal, on short rays, ovoid-oblong; scales somewhat 4-rowed, oblong, obtuse. *Scirpus capillaris* Linn.

Sandy fields. N. Y. and Mass. to Car. W. to Ohio. Aug., Sept. ①.—*Culms* 4—8 inches high, densely cespitose. *Leaves* mostly radical, setaceous. *Spikes* umbelled, somewhat quadrangular. *Scales* rusty brown with a green keel. *Hair-like Isolepis*.

10. TRICHELOSTYLIS. *Lestib.*—*Trichelostylis*.(From the Greek *τριχων*, *hairy*, and *στυλος*, a *style*; the style being often hairy. *Torr. N. Y. Fl.*)

Scales mostly 4—8-ranked, keeled. Bristles none. Style 3-cleft, more or less bulbous at the base, deciduous below the bulb. Achenium triangular.

T. mucronulata Torr.: culm compressed, ancipital; involucre 2—3-leaved, shorter than the compound spreading umbel; spikes oblong, acute; scales about 4-rowed, ovate-lanceolate, mucronate, with the points somewhat spreading. *Scirpus autumnalis* Pursh. *S. mucronulatus* Mich.

Low grounds. N. Y. and Mass. to Flor. W. to Miss. July, Aug. ②.—*Culms* 8—12 inches high, cespitose, often spreading or decumbent. *Leaves* very acute. *Spikes* solitary or 2—3 at the extremity of the rays. *Scales* rusty colored, keeled. *Common Trichelostylis*.

III. FUIRENEÆ. *Spikelets perfect. Scales imbricate on all sides. Achenium with three scales or leaflets often alternating with three bristles. Stamens 3. Style 3-cleft.*

11. FUIRENA. *Rottb.*—*Fuirena*.(Named in honor of *G. Fuiren*; a Danish botanist.)

Character same as that above given.

F. squarrosa Mich.: culm obtusely triangular, sulcate; leaves ciliate; sheaths hairy; spikes 3—12, clustered, ovoid; bristles none; scales cordate or ovate, unguiculate. *F. squarrosa* and *Torreyana* Beck *Bot. 1st Ed.* *F. pumila* Spreng.

Sandy swamps and bogs. N. Y. and Mass. to Geor. and Louis. Aug. ②.—*Culm* varying in height from 2—18 inches. *Leaves* smoothish or somewhat hairy. *Spikes* 4—12 inches long, forming an irregular terminal umbel. *Scales* hairy, with a long slender recurved bristle. *Squarrose Fuirena*.

IV. HYPOLYTREÆ. *Flowers perfect. Scales of the spikes imbricate on all sides, each 1-flowered; the flowers with a 1—4-valved (not bristle-form) perygynium.*

12. HEMICARPHA. *Nees.*—Hemicarpha.

(From the Greek *ἡμισυς*, *half*, and *καρπός*, *straw*; the flowers having a valve only on one side.)

Spikes ovoid. Scales very numerous, deciduous. Flowers with a single valve, which is opposite the scale. Stamen 1. Style 2-cleft. Achenium oblong.

H. subsquarrosa *Nees*: culm setaceous, compressed, sulcate; involucre 2-leaved, long, unequal; spikes 2—3, ovoid, sessile, lateral; scales rhombic-obovate, with a short mucronate recurved point; achenium obovate-oblong, somewhat compressed. (*Torr. N. Y. Fl.*) *Scirpus subsquarrosus* *Muhl.*

Sandy shores. N. Y. to Geor. July. ①.—*Culms* about 2 inches high, in dense tufts, leafy at base. *Leaves* setaceous. *Spikes* sometimes solitary. *Scales* very numerous. *Dwarf Hemicarpha.*

V. CLADEÆ. *Flowers perfect, rarely declinous. Spikelets 1—3-flowered. Scales imbricate in a somewhat three or four-rowed order; the lowest empty. Perigynium none. Stamens 2—12. Styles 2—3-cleft. Achenium smooth or irregularly wrinkled.*

13. CLADIUM. *Browne.*—Twig Rush.

(From the Greek *κλάδος*, a *twig*; but the application is not understood.)

Spikelets 1—2-flowered. Scales few, imbricate in a somewhat trifarious manner; the lowest empty. Bristles none. Stamens mostly 2. Style 2—3-cleft. Achenium globose-ovoid.

C. mariscoides *Torr.*: culm obscurely triangular; cymes compound, 2—4-rayed, nearly naked, the rays elongated; spikelets in heads of 3—8 together; style 3-cleft. *Schœnus mariscoides* *Muhl.*

Bogs and ponds. Can. to Del. July. ②.—*Culm* 2 feet high, nearly smooth. *Leaves* channelled, with a long compressed point, nearly smooth on the margin. *Scales* about 6, brown; 4 lower ones usually empty. *Smooth Twig Rush.*

VI. RHYNCHOSPOREÆ. *Flowers perfect or polygamous. Spikelets mostly few-flowered. Scales irregularly imbricate, obscurely two- or three-rowed. Perigynium of several rough or plumose bristles, rarely wanting. Achenium beaked.*

14. RHYNCHOSPORA. *Vahl.*—Beak Rush.

(From the Greek *ρυγχος*, a *beak*, and *σπορα*, a *seed*.)

Spikelets few-flowered. Scales loosely imbricate; the lower ones smaller and empty. Bristles 6, rarely 10—12. Stamens

3, rarely 2, 6 or 12. Style 2-cleft. Achenium crustaceous, crowned with the persistent base of the style.

* *Achenium smooth, mostly lenticular.*

1. *R. alba Vahl*: culm triangular above; spikelets in corymbose fascicles; bristles usually 10, retrorsely hispid, longer than the ovoid-lenticular achenium. *Schœnus albus Linn.*

Swamps and bogs. Can. to Car. W. to Ohio. July, Aug. ♀.—*Culm* 12—18 inches high, smooth. *Leaves* setaceous, shorter than the culm. *Spikelets* about 2-flowered. *Scales* lanceolate, whitish, when old brownish.

White Beak Rush.

2. *R. gracilentia Gray*: culm and leaves very slender; clusters of spikelets 2—4, small, somewhat crowded, the terminal one nearly sessile; bristles 6, longer than the smooth ovoid-lenticular achenium; tubercle long, subulate.

Sandy grounds. N. Y. and N. J. to N. Car. *Culm* 1—2 feet high, almost capillary. *Leaves* linear, setaceous. *Spikelets* few-flowered, ovoid. *Scales* ovate, fuscous.

Tall Slender Beak Rush.

3. *R. Kneiskernii Carey*: culm triangular, slender; spikes numerous, in 4—6 distant clusters; bristles 5, retrorsely hispid, about as long as the obovate somewhat stiped achenium; tubercle triangular, compressed, broad at the base. (*Carey, Sill. Jour. July, 1847.*)

Pine Barrens, N. J. *Dr. Kneiskern.* *Culm* 12—18 inches high, branching from the base. *Leaves* short and narrow. *Spikes* small, setaceous bracteate, forming small distant clusters throughout the whole length of the culm. It resembles the preceding, but differs in its achenium and bristles.

Kneiskern's Beak Rush.

4. *R. glomerata Vahl*: culm obtusely triangular; spikelets ovoid-oblong, in corymbose clusters, distant, mostly in pairs; bristles 6, hispid, as long as the obovoid-lenticular achenium; tubercle lanceolate. *Schœnus glomeratus Linn.*

Swamps and bogs. Can. to Flor. July, Aug. ♀.—*Culm* 12—18 inches high, smooth. *Leaves* flat, shorter than the culm. *Scales* lanceolate, brownish.

Clustered Beak Rush.

5. *R. capillacea Torr.*: culm triangular, slender; spikelets 3—6, nearly terminal; bristles 6, about twice as long as the oblong-ovate compressed achenium; tubercle lanceolate, rostrate. *Schœnus setaceus Muhl.*

Swamps. Can. to Penn. July. ♀.—*Culm* 6—12 inches high. *Leaves* setaceous; radical ones short. *Spikelets* about 1—3-flowered. *Scales* light brown, oblong, mucronate.

Capillary Beak Rush.

6. *R. fusca R. & S.*: culm obscurely triangular; clusters of spikelets 1—3, somewhat capitate; bristles 6, slender, minutely hispid, about twice the length of the obovate achenium; tubercles slender, acute. *Schœnus fuscus Linn.*

Swamps. Mass. N. Y. and N. J. July, Aug. ♀.—*Culm* 8—12 inches high, very slender. *Leaves* almost filiform; radical ones elongated. *Scales* dark-brown and shining.

Brown Beak Rush.

7. *R. cephalantha Gray*: heads somewhat globose, dense, many-flowered,

axillary and terminal, often in pairs; spikelets oblong-lanceolate; bristles hispid, twice as long as the orbicular-obovate margined achenium.

Sandy swamps. N. Y. to Flor. and Louis. Aug. ♀.—*Culm* obtusely triangular, stout. *Leaves* narrow-linear, flat. *Scales* dark brown, oblong, acute or acuminate. Resembles the preceding, but has the heads larger and compact.

Round-headed Beak Rush.

8. *R. macrostachya* Torr.: culm triangular; axillary corymbs simple, terminal ones compound; upper spikelets densely fasciated; bristles 6, hispid upward, twice as long—and the persistent style four times as long—as the obovate achenium.

Ponds. Mass. *Culm* 2—3 feet high, smooth. *Leaves* 1—2 feet long, smooth; the upper scabrous on the margin. *Corymbs* about 4. *Scales* fuscous, acute. Subsequently referred by Dr. Torrey, with some doubt, to the genus *Ceratoschænus* Nees.—Torr. *Cyp.*

Long-headed Beak Rush.

9. *R. corniculata* Gray: culm triangular; corymbs decomposed, diffuse; spikelets loosely fasciculate, subulate; bristles mostly 6; achenium obovate, pointed with the long persistent style. *R. longirostris* Ell. *Schænus corniculatus* Lam.

Wet places. Del. to Flor. W. to Ohio. July. ♀.—*Culm* 3—6 feet high. *Leaves* 1—2 feet long, smooth, rough on the margin. *Corymbs* subumbellate, axillary and terminal. *Scales* fuscous. Referred by Dr. Torrey to the genus *Ceratoschænus* Nees.

Long-styled Beak Rush.

** *Achenium transversely rugose.*

10. *R. cymosa* Nutt.: culm acutely triangular; corymbs somewhat cymose, terminal and axillary; spikelets clustered, ovoid; bristles 6, shorter than the obovate subcompressed achenium; tubercle depressed-conic. *Schænus cymosus* Willd.

Moist grounds. N. J. to Flor. and Louis. July. ♀.—*Culm* 12—18 inches high, slender. *Leaves* linear, smooth. *Spikelets* in clusters of 3—5 at the end of the peduncle. *Scales* fuscous, ovate; the lower ones orbiculate, mucronate.

Tufted Beak Rush.

11. *R. Torreyana* Gray: culm slender, somewhat terete; panicle corymbose, rather loose; spikelets ovoid, mostly pedicellate; bristles 6, a little more than half the length of the oblong-ovate compressed achenium; tubercle compressed-conic.

Wet grounds. N. J. Torr. July, Aug. ♀.—*Culms* 1—3 feet high, cespitose. *Radical leaves* long and rigid; those of the culm shorter. *Scales* ovate, fuscous.

Torrey's Beak Rush.

15. PSILOCARYA. Torr.—Psilocarya.

(From the Greek ψιλος, *naked*, and καρνα, a *nut*; the achenium being destitute of bristles.)

Scales imbricate on all sides, membranaceous or chartaceous, all fertile. Perigynium none. Stamens 2. Filaments long and persistent. Style 2-cleft, compressed, dilated at base. Achenium biconvex, crowned with the broad persistent tubercle or rostrate with the persistent style.

P. scirpoides Torr.: spikes oblong-ovate, many-flowered; scales lance-

ovate, acute, membranaceous; style long, rostrate, persistent, much dilated at the base, and decurrent at the edges of the tumid rugose achenium. (*Torr. Cyp.*)

Borders of a pond near North Providence, R. I. Near Boston and New Bedford, Mass. *T. A. Greene* and *Dr. H. Little*. *Culm* obtusely triangular, smooth, leafy. *Leaves* 6—8 inches long, grassy. *Cymes* pedunculate, one terminal and one from the sheath of each leaf, spreading. *Spikes* 3—4 lines long, 20—30-flowered. *Bristles* entirely wanting. *Scirpus-like Psilocarpa.*

VII. SCLEREÆ. *Flowers* declinous. *Fertile spikelets* 1- or rarely 2-flowered. *Scales fasciculate*; the lower ones empty, often seated in a cup or torus. *Perigynium* of 3 scales, often wanting. *Achenium* nut-like.

16. SCLERIA. *Linn.*—Nut Rush.

(From the Greek *σκληρος*, *hard*; in allusion to the hard bone-like achenium.)

Monœcious. *Fertile spikelets* 1-flowered; the sterile several-flowered. *Scales* 2—6. *Disk* shallow, saucer-like or lobed. *Perigynium* coriaceous or crustaceous, sometimes wanting. *Achenium* globose or ovoid.

* *With a perigynium.*

1. *S. reticularis Mich.*: *culm* erect, rough on the angles below; fascicles lateral and terminal, remote, loose; achenium globose, reticulated and deeply pitted between the lines; perigynium 3-lobed.

Sandy swamps. Long Island, N. Y. *Torr.* S. to Flor. Aug. ♀.—*Culm* 12—15 inches high, triangular. *Leaves* smooth, flat. *Spikelets* in pairs. *Scales* smooth; the sterile lanceolate; the fertile ovate mucronate.

Reticulated Nut Rush.

2. *S. laxa Torr.*: *culm* weak, somewhat diffuse, nearly smooth; fascicles lateral and terminal, remote, on long slender peduncles, loosely flowered; scales and bracts smooth; achenium globose, pitted and marked in a somewhat spiral manner with transverse hairy wrinkles; perigynium 3-lobed. *S. reticularis Muhl.*

Sandy swamps. N. Y. to Flor. Aug. ♀.—*Culm* 12—18 inches high, acutely triangular. *Leaves* flat, smooth. *Spikelets* in pairs, distant.

Loose-flowered Nut Rush.

3. *S. triglomerata Mich.*: *culm* acutely triangular, rough; leaves broad-linear, somewhat hairy; fascicles lateral and terminal, triglomerate; bracts ciliate; scales cuspidate; achenium ovoid-globose, smooth and polished; perigynium annular.

Swamps and moist grounds. Ver. to Flor. W. to Ark. June, July. ♀.—*Culm* 3—4 feet high, leafy. *Leaves* 2—3 lines wide, rough on the margin, hairy beneath. *Scales* purplish. *Achenium* large and white.

Three-clustered Nut Rush.

4. *S. pauciflora Muhl.*: *culm* triangular, slender, smoothish; leaves narrow-linear, with pubescent sheaths; fascicles lateral and terminal, few-flowered, the lateral on long peduncles; bracts ciliate; scales smoothish; achenium globose-ovoid, warty; perigynium of 6 tooth-like processes.

Low meadows. N. H. to Car. W. to Ohio. June. ♀.—Culm 9—18 inches high, roughish above. Fascicles 2—3; 2 lateral ones on long slender peduncles. Achenium white, rough with elevated points. Few-flowered Nut Rush.

** *Perigynium none.*

5. *S. verticillata* Muhl.: culm filiform, triangular and with the leaves smooth; fascicles 4—6, alternate, sessile, distant; bracts minute, setaceous; scales smooth; achenium globose, mucronate, rugose-verrucose. *Hypoporum verticillatum* Nees.

Wet grounds. N. Y. to Car. Aug. ♀.—Culm 6—12 inches high, very slender. Leaves very narrow, shorter than the culm. Fascicles appearing as if whorled. Scales purple. Whorled Nut Rush.

VIII. CARICEÆ. Flowers declinous. Scales of the spikes imbricate on all sides. Achenium entirely enclosed in an urceolate perigynium, which is often 2-toothed or 2-lobed at the orifice.

17. CAREX. Linn.—Sedge.

(Supposed to be derived from the Greek *καίρω*, to shear or cut; in allusion to its sharp leaves and stems.)

Spikes one or several, androgynous, monœcious or rarely diœcious. STERILE FL. Stamens 3, rarely 2 or 1. FERFILE FL. Perigynium membranaceous or somewhat coriaceous, 2-toothed, emarginate or truncate at the apex. Style single, included. Stigmas 2—3, elongated, exserted. Achenium lenticular, plano-convex or triangular, crowned with the lower portion of the style. (Torr.)

A. Spike single.

* Monœcious. Stigmas 2.

1. *C. capitata* Linn.: spike capitate or nearly globose, staminate at the summit; perigynium roundish-ovoid, close, compressed, convex-concave, smooth, longer than the ovate and somewhat obtuse scale.

Alpine regions of the White Mountains, N. H. Dr. Robbins.—Culm triangular. Leaves filiform. Capitate Sedge.

** Diœcious.

† Stigmas 2.

2. *C. dioica* Linn.: spike simple, oblong; perigynium somewhat erect or spreading, oblong-ovoid, nerved, hispid toward the summit on the margin. *C. Davalliana* Dew.

Swamps. Yates county, N. Y. Dr. Sartwell. ♀.—Culm 6—8 inches high, filiform. Leaves setaceous. Scales ovate. Diœcious Sedge.

† Stigmas 3.

3. *C. scirpoides* Mich.: spike oblong-cylindric, somewhat acute; perigynium ovoid or oval, subrostrate, pubescent, longer than the ovate somewhat acute scarious scale.

White Mountains, N. H. Oakes.—Culm 4—10 inches high, erect. Leaves flat and long. *Scirpus-like Sedge.*

*** *Spike androgynous.*

† *Stigmas 2.*

4. *C. exilis Dew.*: fertile spike staminate below, ovoid, rather densely flowered; perigynium ovate-lanceolate, convex on both sides, finally spreading or recurved, a little longer than the ovate acute scale.

Lakes and meadows. Mass. N. Y. and N. J. June. ♀.—Culm 12—20 inches high, very slender. Leaves setaceous. Spike from half an inch to an inch long. *Slender Sedge.*

†† *Stigmas 3.*

5. *C. pauciflora Lightf.*: spike simple, about 4-flowered; staminate flower subsolitary, terminal; perigynium lanceolate, terete, reflexed; scales caducous. *C. leucoglochin Linn.*

Sphagnum swamps. Mass. and N. Y. May, June. ♀.—Culm 3—8 inches high. Perigynium large, pale yellow, caducous. *Few-flowered Sedge.*

6. *C. Fraseri Sims*: spike simple, ovoid; perigynium ovoid-subglobose, entire at the point, striate, longer than the oblong scale. *C. lagopus Muhl.*

Mountains. Penn. to N. Car. April. ♀.—Culm about a foot high, sheathed at base. Leaves radical, broad, undulate. *Fraser's Sedge.*

7. *C. polytrichoides Muhl.*: spike simple, oblong-linear, few-flowered; perigynium oblong-lanceolate, compressed, triquetrous, obtuse, emarginate, twice as long as the ovate scale.

Wet grounds. Can. to Penn.; common. May. ♀.—Culm a foot high, very slender. Leaves subradical, very narrow. Fertile flowers 3—8. *Brittle-stalked Sedge.*

8. *C. Willdenovii Schk.*: spike simple; sterile and fertile flowers about 6; perigynium ovoid-oblong, acuminate-rostrate; scales ovate, acuminate, the inferior ones foliaceous and often longer than the spike.

Shady woods. N. Y. to Car. W. to Ohio. May, June. ♀.—Culm 8—12 inches high, slender. Leaves flat, longer than the culm. *Willdenow's Sedge.*

9. *C. Backii Boott*: spike simple; sterile flowers above, about 3, the fertile 2—4; fertile scales foliaceous, the lower one much longer than the spike; perigynium globose-ovoid, acuminate, with a conical smooth beak, entire at the point. (*Torr. N. Y. Fl.*) *C. Willdenovii Gray.*

Arct. Amer. to N. Y.—Culms cespitose. Leaves grass-like, longer than the culms. Achenium globose-pyriform, nearly smooth. *Back's Sedge.*

B. *Spikelets aggregated, androgynous, sessile. Stigmas 2.*

* *Spikelets sterile at the summit.*

10. *C. disperma Dew.*: spikelets about 3, rather remote, mostly 2-flowered, somewhat erect, the lowest one bracteate; perigynium ovate, rather obtuse, nerved, plano-convex, smooth, with a scabrous margin, entire at the point, twice as long as the ovate obtuse submucronate scale.

Swamps; often on mountains. N. Eng. and N. Y. W. to Mich. May, June. ♀.—Culm 6—12 inches high. Leaves narrow and linear. Spikelets 2—4. *Two-seeded Sedge.*

11. *C. chordorhiza* Linn.: spikelets 3—5, in an ovoid head; perigynium ovate, acuminate, subrostrate, convex above, equalling the broad-ovate acute scale.

Sphagnum swamps. N. Y. to Mich. May. ♀.—*Culm* branching at the base, and rooting at the joints. *Leaves* of the culm short, of the sterile shoots longer. *Rooting Sedge*.

12. *C. cephalophora* Muhl.: spikelets collected into an oval head; perigynium ovate, scabrous on the margin above, about equal to the ovate subaristate scale.

Fields and woods. Can to Car.; common. May. ♀.—*Culm* 1—2 feet high, wiry, leafy at base. Whole plant green. *Oval-headed Sedge*.

13. *C. Muhlenbergii* Schk.: spikelets 5—7, crowded at the summit of the culm, bracteate at the base; perigynium broad-ovate, compressed, nerved, bifid, somewhat diverging, scabrous on the margin, rather shorter than the ovate mucronate scale.

Rocky woods. Mass. and N. Y. to Car. May, June. ♀.—*Culm* 1—2 feet high, thick. *Leaves* broad-linear. *Plant* dark green. *Muhlenberg's Sedge*.

14. *C. siccata* Dew.: spikelets 4—8, staminate above, often wholly staminate, ovoid, close, or approximate; perigynium ovate-lanceolate, acuminate, compressed, scabrous on the margin, bifid, nerved, nearly equal to the ovate-lanceolate scale.

Sandy plains. Mass. and N. Y. June. ♀.—*Culm* 12—18 inches high, slender, rough. *Plant* light green, and of a dried appearance.

Dry-spiked Sedge.

15. *C. rosea* Schk.: spikelets 4—6, remote, about 9-flowered, the lowest one with a setaceous bract exceeding the spike; perigynium oblong-lanceolate, acuminate, diverging and radiate, rough on the margin, twice as long as the ovate obtuse scale.

Moist woods. Mass. N. Y. and Penn. to Ohio; common. May. ♀.—*Culm* a foot high. *Spikelets* mostly about 5, yellowish-green; lower ones distant. It is sometimes dwarfish, when it forms the var. *radiata* of Dewey. *Rose Sedge*.

16. *C. retroflexa* Muhl.: spikelets about 4, subapproximate, the lower ones with a short bract; perigynium ovate, acutish, 2-toothed, smooth on the margin, spreading or reflexed, nearly as long as the ovate acute scale.

Meadows and pastures. N. S. May. ♀.—*Culm* about a foot high, slender. *Spikelets* mostly 4, the two lower ones a little distant, 5—8-flowered.

Retroflexed Sedge.

17. *C. stipata* Muhl.: spike compound, oblong; spikelets numerous, 10—15, oblong, aggregated, bracteate; perigynium lanceolate, subterete and smooth below, spreading, with a long tapering beak which is rough on the margin, twice as long as the ovate-lanceolate scale.

Wet meadows. Throughout the U. S. April, May. ♀.—*Culm* 1—3 feet high, thick and succulent, smooth except at the summit. *Spike* 2 inches long, straw-color. *Beaked Sedge*.

18. *C. muricata* Linn.: spikelets about 5, ovoid, sessile, approximate, bracteate, lower ones sometimes remotish; perigynium ovate-lanceolate, plano-convex, 2-toothed, horizontal, scabrous on the margin, sometimes longer than the ovate-lanceolate scale. (*Dew.*)

Fields near Boston, Mass. Arct. Amer.

Muricate Sedge.

19. *C. sparganoides* Muhl.: spikelets 6—10, ovoid; the upper approximate; lower somewhat distant, bracteate; perigynium ovate, compressed, acute, diverging, rough on the narrowly winged margin, about twice as long as the ovate mucronate scale.

Swampy grounds. N. Y. and Mass. to Car. W. to Ohio. May. ♀.—*Culm* 2 feet or more high, rough on the angles above. *Leaves* broad-linear, pale-green. *Bur-reed Sedge.*

20. *C. vulpinoidea* Mich.: spike oblong, decomposed, more or less interrupted, bracteate; spikelets glomerate, ovoid, obtuse; perigynium compressed, ovate, acuminate, bifid, 3-nerved, diverging, rather shorter than the ovate cuspidate scale. *C. multiflora* Muhl.

Low grounds. N. Eng. and N. Y. to Car.; common. May, June. ♀.—*Culm* 1½—2 feet high, obtusely triangular above, leafy. *Spike* consisting of 8—10 clusters of spikelets. *Fox Sedge.*

21. *C. setacea* Dew.: spike oblong, decomposed, bracteate; spikelets glomerate, ovoid, obtuse; perigynium ovate-lanceolate, acuminate, compressed, bifid, somewhat diverging, as long as the ovate-lanceolate awned scale.

Wet meadows. Mass. and N. Y. to Del. June, July. ♀.—*Culm* about 2 feet high, acutely triangular, striate, rough above. Resembles the preceding, but it has a more compact spike, and the perigynia are narrower and more compressed. *Setaceous Sedge.*

22. *C. bromoides* Schk.: spikes 4—6, alternate, oblong, erect, uppermost one fertile above, the rest pistilliferous or androgynous, with staminate and fertile flowers both above and below; perigynium erect, lanceolate, acuminate, scabrous, nerved, longer than the lanceolate scale.

Swampy grounds. Mass. N. Y. and Penn. to Ohio; common. May. ♀.—*Culm* 12—18 inches high, slender, rough above. *Scales* light brown. *Brome-like Sedge.*

23. *C. alopecoidea* Tuckerman: spike compound, oblong; spikelets 8—10, ovoid, aggregated, staminate above; perigynium ovate, plano-convex, nearly nerveless, about as long as the ovate mucronate scale; the beak acuminate, serrulate-scabrous on the margin. (*Torr. N. Y. Fl.*) *C. cephalophora* var. *maxima* Dew.

Woods. Penn.-Yan, N. Y. ♀.—*Culm* 2—4 feet high, rough on the angles. *Spike* yellowish-green. *Fox-tail Sedge.*

24. *C. Sartwellii* Dew.: spike compound; spikelets 12—20, ovoid, sessile, compact, bracteate; lower ones fertile; upper often staminate; perigynium ovate-lanceolate, convex-concave, subulate, somewhat 2-toothed, about as long as the ovate acute scale.

Junius, Seneca County, N. Y. *Dr. Sartwell.* ♀.—*Culm* 1½—2 feet high, somewhat rigid, rough on the angles, leafy below. *Leaves* flat, linear, shorter than the culm. Closely allied to *C. disticha* of Europe. *Sartwell's Sedge.*

25. *C. teretiuscula* Good.: spike decomposed, oblong, dense, at length brown; spikelets ovoid, acute, sessile; perigynium ovate, acuminate, convex and gibbous, ciliate-serrulate on the margin, longer than the ovate acute scale.

Marshes and bogs. N. Eng. and N. Y. May. ♀.—*Culm* 2 feet or more high, rough on the angles, leafy below. *Scales* brownish. *Smaller-panicled Sedge.*

26. *C. decomposita* Muhl.: spike decomposed and paniculate; spikelets very numerous, ovoid, alternate, at length brown; perigynium ovate, sessile, convex on both sides, acute or short-rostrate, about as long as the ovate acuminate scale.

Swamps. Yates County, N. Y. Dr. Sartwell. W. to Mich. ♀.—Culm 2—3 feet high, obtusely triangular, leafy. Leaves broad-linear, rough.

Large-panicled Sedge.

** *Spikelets staminate at the base.*

27. *C. trisperma* Dew.: spikelets mostly 3, about 3-flowered, remote, alternate, sessile, ovoid, uppermost one without a bract; perigynium oblong, acute or short-rostrate, entire at the point, nerved, subscabrous above, somewhat diverging, longer than the oblong acute whitish scale.

Marshes and wet woods. N. Eng. and N. Y. June. ♀.—Culm 1—2 feet high, triangular, slender and weak, leafy. Leaves very narrow.

Three-seeded Sedge.

28. *C. Deweyana* Schw.: spikelets about 3, sessile, ovoid-lanceolate, alternate, rather distant, the uppermost with a bract; perigynium oblong-lanceolate, acuminate-rostrate, 2-toothed, slightly scabrous on the margin, rather longer than the ovate-lanceolate awned hyaline scale.

Woods. N. Eng. and N. Y. June. ♀.—Culm 1—4 feet high, weak and slender, subprocumbent. Leaves yellowish-green, mostly radical, narrow.

Dewey's Sedge.

29. *C. stellulata* Good.: spikelets 3—4, roundish or ovoid, rather remote; perigynium ovate, acuminate, scabrous on the margin, at length spreading horizontally, a little longer than the ovate somewhat obtuse scale. *C. sterilis* Willd.

Wet grounds. Mass. to Car. May. ♀.—Culm 8—18 inches high, stiff, leafy below. Perigynium broad-ovate, almost cordate when mature.

Star-like Sedge.

30. *C. scirpoides* Schk.: spikelets about 4, ovoid, obtuse, approximate, sessile, lowest bracteate; perigynium ovate, cordate, compressed, lanceolate or rostrate, scabrous on the margin, diverging or horizontal, longer than the ovate-lanceolate acute scale.

Wet meadows. N. Eng. to Car. May. ♀.—Culm 6—12 inches high, leafy at base. Perigynium erect, or spreading horizontally. Perhaps only a variety of the preceding.

Scirpus-like Sedge.

31. *C. canescens* Linn.: spikelets about 6, rather remote, cylindrical-ovoid, with minute bracts at base; perigynium broad-ovate, plano-convex, rather acute, somewhat rough on the margin, nearly entire at the orifice, about as long as the scale. *C. curta* Good. *C. sphærostachya* Dew.

Wet meadows. Can. N. Eng. and N. Y. May, June. ♀.—Culms about 2 feet high, clustered, triangular, rough above. Spikelets silvery white when mature.

Canescent Sedge.

32. *C. tenuiflora* Wahl.: spikelets 2—3, roundish-elliptic, approximate, the lowest bracteate at base; perigynium elliptic, obtuse, compressed, erect, about as long as the broad-ovate somewhat obtuse scale.

Sphagnous swamps. Ver. Mass. N. Y.; rare. June. ♀.—Culms cespitose, 8—12 inches long, very slender, often prostrate. Leaves light green, narrow-linear, shorter than the culm.

Slender-spiked Sedge.

33. *C. scoparia* Schk.: spikelets ovoid, sessile, approximate, aggregate, lowest bracteate; perigynium ovate-lanceolate, margined, nerved, smooth, bifid, longer than the lanceolate acuminate scale.

Swamps. Mass. to Car. May. ♀.—*Culm* 1—2 feet high, triangular, rough above. *Leaves* long and narrow. *Fruit* tawny when mature, not winged, 9-nerved. *Broom-like Sedge.*

34. *C. lagopodioides* Schk.: spikelets 8—20, cylindric-ovoid, rather crowded, alternate and sessile; bract beneath the lowest overtopping the culm; perigynium lanceolate, tapering at both ends, nerved, bidentate, with a narrow serrulate margin, twice as long as the ovate-lanceolate scale.

Wet meadows. Mass. to Car. May. ♀.—*Culm* 1—2 or more feet high, furrowed. *Spikes* large, subcylindric when young. Dr. Torrey considers it a variety of the preceding. *Hare's-foot-like Sedge.*

35. *C. straminea* Schk.: spikelets 3—15, ovoid, roundish-ovoid or ovoid globose; perigynium ovate or broad-ovate, much compressed, acuminate, with a broad-winged ciliolate-scabrous margin, a little longer than the lanceolate scale.

Wet meadows and swamps. N. Eng. to Penn. W. to Ohio. May, June. ♀.—A very variable species, including, according to Dr. Torrey, *C. fœnea* Muhl. *C. festucea*, *mirabilis*, *cristata* and *tenera* Dew. *Straw-colored Sedge.*

C. Spikes several, (rarely solitary,) all androgynous. Stigmas 3.

* *Staminate at the summit.*

36. *C. pedunculata* Muhl.: spikes about 4, on long peduncles, very remote; perigynium obovoid, triquetrous, entire, a little longer than the oblong cuspidate scale.

Rocky hills. Can. to Penn.; rare April. ♀.—*Culms* 4—12 inches high, cespitose, slender. *Peduncles* mostly radical. *Peduncled Sedge.*

** *Staminate at the base.*

37. *C. squarrosa* Linn.: spikes 1—3, very thick, oblong-cylindric; perigynium ovate, subglobose, long-rostrate, smooth, squarrose, 2-toothed at the summit, longer than the lanceolate scale. *C. typhina* Mich.

Bogs. Can. to Geor. W. to Miss. May, June. ♀.—*Culm* 2 feet high, triangular, rough, leafy. *Spike* 1—2 inches long, and from half to three-fourths of an inch in diameter. *Squarrose Sedge.*

D. Spikes several: terminal one androgynous; the others fertile. Stigmas 3.

38. *C. Buxbaumii* Wahl.: spikes about 4, obovoid or oblong, rather remote; upper one androgynous and pedunculate; the rest sessile, with very long bracts; perigynium elliptic, obtuse, rather compressed, slightly 2-lobed, shorter than the ovate cuspidate scale.

Swampy swamps. N. Eng. and N. Y. W. to Mich.; rare. May. ♀.—*Culm* 1—2 feet high, leafy at base. *Scales* chestnut brown. *Buxbaum's Sedge.*

39. *C. hirsuta* Willd.: spikes 3, oblong, approximate; upper one pedunculate; the others nearly sessile and bracteate; perigynium obovate, obtuse, nerved, smooth when mature, entire at the orifice, about as long as the ovate acuminate scale. *C. triceps* Mich.

Woods and meadows. Can. to Geor. W. to Mich. May. ♀.—*Culm* 12—18 inches high, triangular, rough, leafy. *Leaves* and *sheaths* retrorsely pubescent.
Pubescent Sedge.

40. *C. virescens* Muhl. : spikes 2—4, oblong, erect; upper one pedunculate, sterile below; the rest fertile, subsessile and bracteate; perigynium ovoid, obtuse, costate, pubescent, rather longer than the ovate mucronate scale. *C. costata* Schw.

Dry woods. Can. to Car. May. ♀.—*Culm* 1—2 feet high, rather slender, triangular, leafy. *Leaves* and *sheaths* pale green, pubescent.
Greenish Sedge.

41. *C. gracilima* Schw. : spikes mostly 4, distant, slender, pedunculate, loosely-flowered, nodding; uppermost androgynous, fertile above; the rest all fertile; perigynium oblong, triangular, obtuse, smooth, longer than the oblong-mucronate scale. *C. digitalis* Schw. & Torr.

Wet meadows. Mass. to Del. W. to Mich. June. ♀.—*Culm* 18 inches high, nearly smooth, leafy. *Leaves* short, pale green. *Spikes* linear and filiform.
Slender-nodding Sedge.

42. *C. formosa* Dew. : spikes 3—4, oblong, thick, distant, on exsert peduncles, nodding, uppermost one sterile at the base; perigynium oblong, triquetrous, somewhat inflated, rather acute at each end, nearly entire or 2-lobed at the orifice, twice as long as the ovate acute scale.

Wet meadows. Mass. and N. Y.; rare. May. ♀.—*Culm* 12—18 inches high, triangular, smooth. *Leaves* sometimes pubescent, pale green.
Showy Sedge.

43. *C. Davisii* Schw. & Torr. : spikes mostly 4, somewhat distant, oblong-cylindric, few-flowered, pedunculate and somewhat nodding; perigynium oblong, somewhat inflated, acute, smooth, slightly 2-toothed, about as long as the awned scale. *C. aristata* and *Torreyana* Dew.

Wet meadows. Mass. and N. Y. May. ♀.—*Culm* 1—2 feet high, triangular, leafy, rough above. *Leaves* sometimes pubescent, rough on the margin.
Davis's Sedge.

E. *Spikes several; one or more of the terminal ones entirely staminate; the rest pistillate.*

* *Stigmas* 2.

44. *C. rigida* Good. : sterile spike mostly solitary, erect; fertile spikes 2—4, oblong-cylindric, subremote, erect, loose-flowered, on short peduncles; perigynium oval, acute at each end, compressed, shortly beaked, smooth, about equalling the ovate-oblong acutish scale. *C. Washingtoniana* Dew. *C. nigra* Schw. & Torr.

Damp grounds. White Mountains, N. H. Mount Marcy, N. Y. July. ♀.—*Culm* a foot high, subscabrous above. *Leaves* light green, somewhat rigid.
Rigid Sedge.

45. *C. acuta* Linn. : sterile spikes 1—3; fertile mostly 3, subpedunculate, somewhat nodding, cylindric, remote; perigynium oval or oblong, obtuse, short-rostrate, about as long as the oblong acute scale. *C. stricta* Lam. *C. angustata* Boott.

Wet grounds. Can. to Car. W. to Ohio. May. ♀.—*Culm* 2 feet high, acutely triquetrous. *Leaves* subglaucous. *Scales* blackish brown.
Large Bog Sedge.

46. *C. cespitosa* Linn.: sterile spikes solitary or sometimes 2, cylindrical-oblong; fertile mostly 3, cylindrical, obtuse, distant, the lower on a short exsert peduncle; perigynium ovoid or oval, somewhat acute, smooth, mostly longer than the oblong obtuse blackish scale. *C. concolor* Brown.

Mountain bogs. Can. to Penn. May. Culm 12—18 inches high, slightly rough above. Leaves light green, flat. Fertile scales nearly black.

Smaller Bog Sedge.

47. *C. aquatilis* Wahl.: sterile spikes 1—4, erect, oblong; fertile mostly 3, on short peduncles, cylindrical, thick-clavate above, dense-flowered, sub-erect, sometimes sterile at the apex; perigynium elliptic, sublenticular, smooth, with the orifice entire and protruded, about equal to the ovate acutish scale.

Marshes and wet places. Mass. and N. Y. June. Culm 20—30 inches high, triangular, nearly smooth. Leaves smoothish, pale green and glaucous.

Water Sedge.

48. *C. aurea* Nutt.: sterile spike solitary, pedunculate; fertile spikes 3—4, oblong, loose-flowered, subpendulous, rather approximate, lower ones pedunculate; perigynium obovoid or pyriform, obtuse, nerved, entire at the orifice, longer than the ovate acute scale.

Wet rocks. Can. Mass. and N. Y. W to Mich. May, June. Culm 4—10 inches high, subprocumbent, slender. Perigynium orange-yellow when mature.

Golden Sedge.

49. *C. crinita* Lam.: sterile spikes one or more, lax oblong, sometimes with a few fertile flowers; fertile spikes 4—5, dense, distant; perigynium roundish-ovoid, ventricose, slightly rostrate, entire at the orifice, much shorter than the oblong scabrous awned scale. *C. paleacea* Wahl.

Swamps and meadows. Can. to Geor. June. Culm 2—4 feet high, triangular, rough. Leaves pale green. Fertile spikes 2—3 inches long.

Fringed Sedge.

** *Stigmas* 3.

† *Perigynium inflated, with a more or less elongated beak.*

50. *C. oligosperma* Mich.: sterile spike mostly solitary, slender, pedunculate; fertile spikes 1—3, ovoid, sessile, distant, bracteate, few-flowered; perigynium ovoid, somewhat inflated, acute, nerved, short-rostrate, entire at the orifice, smooth, a little longer than the ovate acute scale. *C. Oakesiana* Dew.

Borders of lakes. Arct. Amer. N. Eng. and N. Y. June. Culm 1—2 feet high, triangular, rough above. Leaves linear, light green, at length involute.

Few-fruited Sedge.

51. *C. bullata* Schk.: sterile spikes 2—3; fertile mostly 2, oblong-cylindrical, rather loose, exsertly pedunculate and somewhat nodding, distant; perigynium globose-ovoid, inflated, erect, smooth, costate, rostrate-acuminate, twice as long as the lanceolate scale. *C. monile* Dew.

Wet grounds. Mass. N. Y. Penn. and Ohio. May. Culm 1½—2½ feet high, triangular, rough above, leafy. Leaves longer than the culm.

Inflated Sedge.

52. *C. cylindrica* Tuckerm.: sterile spikes 2—3; fertile 1—3, remote, cylindrical, on short peduncles, erect or inclined; perigynium ovoid, inflated,

conic-rostrate, 2-forked, smooth, about twice as long as the ovate-lanceolate scale. *C. Tuckermanni* Dew.

Wet grounds. Mass. and N. Y. May? ♀.—*Culm* about 2 feet high, triangular, leafy, rough above. *Leaves* narrow, longer than the culm.

Cylindrical Sedge.

53. *C. vesicaria* Linn.: sterile spikes about 3, erect, oblong; fertile mostly 2, cylindric, erect, long-bracteate; perigynium oblong-conic, inflated, rostrate, nerved, bicuspidate, nearly twice as long as the oblong-lanceolate scale. *C. utriculata* Boott.

Meadows. Mass. and N. Y. to Del. W. to Mich. May. *Culm* 2 feet high, shorter than the leaves, acutely triangular. *Plant* bright green.

Bladder Sedge.

54. *C. ampullacea*: sterile spikes 2—4, oblong, cylindric, erect; fertile 2—3, cylindric, erect, close-flowered, short-pedunculate; perigynium subglobose, inflated, diverging, rostrate, bifurcate, longer than the lanceolate scale.

Marshes. Arct. Amer. to Mass. and N. Y. ♀.—*Culm* 2—3 feet high, obtusely triangular. *Leaves* light green. Perhaps identical with the preceding.

Bottle-like Sedge.

55. *C. subulata* Mich.: sterile spike solitary, short-pedunculate; fertile spikes mostly 3—4, sessile, or with included peduncles, very remote, few-flowered, sparingly staminate at the top; perigynium subulate, reflexed, bifid at the orifice, longer than the lanceolate scale. *C. Collinsii* and *Michauxii* Dew.

Cedar swamps. Long Island, N. Y. and N. J. June. ♀.—*Culm* 1—2 feet high, almost filiform, leafy. *Leaves* deep green.

Awl-fruited Sedge.

56. *C. folliculata* Linn.: sterile spike solitary; fertile spikes 2—4, ovoid, distant, few-flowered, pedunculate; perigynium oblong-conic, somewhat inflated, tapering to a long point, horizontal or diverging, twice as long as the ovate mucronate scale. *C. xanthophysa* Wahl.

Swamps. Can. to Flor. July. ♀.—*Culm* 2—4 feet high, obtusely triangular, leafy. *Leaves* flat, smooth. *Plant* pale green, at length yellow.

Tall Yellow Sedge.

57. *C. intumescens* Rudge: sterile spike oblong, pedunculate; fertile spikes 1—3, roundish, approximate, few-flowered, upper one sessile, lower on a short peduncle; perigynium ovoid, acuminate-rostrate, much inflated, diverging, three times as long as the ovate cuspidate scale. *C. folliculata* Schk.

Wet grounds. N. Y. Mass. Penn. and Ohio. June. ♀.—*Culm* 18 inches high, triangular, smooth. *Leaves* broad-linear, rough on the margin.

Swollen Sedge.

58. *C. lupulina* Muhl.: sterile spike on a short peduncle; fertile spikes 3, ovoid-oblong, approximate; bracts very long and leafy; perigynium ovoid, inflexed, nerved, long-rostrate, bicuspidate, much longer than the ovate or lanceolate scale.

var. 1. *polystachya* Torr.: fertile spikes 5, oblong-cylindric; lowest one remote, on a long peduncle.

var. 2. *pedunculata* Gray: fertile spikes all pedunculate; the lower long-pedunculate, distant; the 3 upper subumbellate.

Swamps. Hudson's Bay to Geor. June, July. ♀.—*Culm* 2—3 feet high, very thick, triangular, smooth. *Leaves* longer than the culm, bright green. Var. 1. is found in Putnam County, N. Y.; var. 2. in Chester County, Penn., and on the shores of lake Erie.
Hop-like Sedge.

59. *C. scabrata* Schw.: fertile spikes about 5, rather remote, cylindric, nearly erect; lower ones long-pedunculate; perigynium ovoid, acuminate-rostrate, subventricose, scabrous, orifice oblique and somewhat bifid, longer than the ovate-lanceolate ciliate scale.

Swamps. N. H. to Penn. May. ♀.—*Culm* 18 inches high, rather slender, triangular. *Leaves* long, very rough, dark green.
Rough Sedge.

60. *C. Schweinitzii* Dew.: sterile spikes 2, the lower one often pistillate at the base; fertile about 3, oblong-cylindric, somewhat pendulous, loose-flowered, rather remote, lowest often long-pedunculate; perigynium oblong-ovoid, inflated, rostrate, bicuspidate, longer than the lanceolate-subulate scale.

Wet sandy soils. N. Eng. N. Y. and N. J. June.—*Culm* about a foot high, rough above, very leafy. *Leaves* taller than the culm, yellowish-green.
Schweintz's Sedge.

61. *C. retrorsa* Schw.: sterile spikes about 3, lower one often fertile at the base; fertile about 5, oblong-cylindric, approximate, dense-flowered, the lowest often remote and long-pedunculate; perigynium ovoid, inflated, reflexed, rostrate, bicuspidate, much longer than the lanceolate scale.

Near ponds. N. Eng. and N. Y. May.—*Culm* 2 feet high, slightly rough on the edges. *Fertile spikes* thick.
Retorse Sedge.

62. *C. tentaculata* Muhl.: sterile spike solitary; fertile spikes 2—3, ovoid or ovoid-cylindric, bracteate, mostly approximate, spreading, the peduncles included; perigynia crowded, ovoid, ventricose, very long-rostrate, 2-toothed at the apex, longer than the lanceolate-subulate scale.

Wet meadows. Can. to Geor. May. ♀.—*Culm* 12—18 inches high, triangular, rough on the angles. *Leaves* longer than the culm, bright green.
Long-pointed Sedge.

63. *C. rostrata* Mich.: sterile spike short and small; fertile spikes 2—3, subglobose or capitate, bracteate; perigynia crowded, erect, or diverging, very long-rostrate, oblong-conic, slightly inflated, twice as long as the ovate-oblong acutish scale.

Can. Mich. Base of the White Mountains, N. H. Oakes. ♀.—*Culm* 8—16 inches high, erect, stiff, few-leaved. *Plant* pale yellow.
Beaked Sedge.

64. *C. hystericina* Willd.: sterile spike solitary; fertile spikes 2—4, thick, at length cernuous, upper one nearly included, the rest on exsert peduncles; perigynium ovoid, inflated, spreading, many-nerved, rostrate, bifid, twice as long as the oblong awned scale.

Wet grounds. Can. to Geor. W. to Ohio. July, Aug. ♀.—*Culm* 1—2 feet high, triangular, rough above. *Leaves* long, linear-lanceolate, yellowish-green.
Porcupine Sedge.

65. *C. Pseudo-Cyperus* Linn.: sterile spike solitary, long and slender; fertile spikes 2—5, cylindric, thick, pendulous, pedunculate, upper ones somewhat geminate; perigynium ovoid-lanceolate, rostrate, reflexed, many-

nerved, divaricately bifid at the summit, a little longer than the lanceolate awned scale.

Swamps. Can. to Geor. June. ♀.—*Culm* 2—3 feet high, thick, rough on the angles. *Leaves* broad, rough. *Cyperus-like Sedge.*

66. *C. longirostris Torr.*: sterile spikes mostly 3, short; fertile 2—3, cylindric, loose, at length pendulous, long-pedunculate, rather distant; perigynium globose-ovoid, smooth, with a very long beak, bifid, a little longer than the lanceolate scale.

Shady places. N. Eng. and N. Y. W. to Mich. Gray. June. ♀.—*Culm* about 2 feet high, slender, nearly smooth. *Leaves* bright green and shining. *Long-beaked Sedge.*

67. *C. trichocarpa Muhl.*: sterile spikes 2—4; fertile 2—3, distant, pedunculate, erect, oblong-cylindric; perigynium ovoid-conic, acuminate, bicuspidate, pubescent, longer than the ovate acuminate scale.

Swamps. Can. to Geor. June. ♀.—*Culm* 2 feet high, rough above. *Leaves* and *sheaths* pubescent. *Hairy-fruited Sedge.*

68. *C. aristata Brown*: sterile spikes 2—4; fertile 2—4, distant, close-flowered, erect; perigynium ovoid-oblong, somewhat inflated, smooth, long-rostrate, many-nerved, deeply bifid, longer than the oblong awned scale. *C. mirata Dew.*

Watertown, Jefferson County, N. Y. British Amer.; rare. *Torr. Culm* 2—3 feet high, smooth, leafy. *Leaves* on the under side, and the *sheaths* pubescent. Closely allied to the preceding. *Awned Sedge.*

†† *Perigynium villous, not inflated.*

69. *C. umbellata Schk.*: cespitose; sterile spike short, erect; fertile spikes mostly 4, ovoid, few-flowered; one sessile at the summit of the culm; the rest on radical peduncles, subumbellate; perigynium ovoid, acuminate, rostrate, subpubescent, as long as the ovate acuminate scale.

Rocky grounds. N. Eng. N. Y. and Penn. May. ♀.—*Culms* in dense tufts, 1—6 inches high. *Leaves* radical, narrow, rough, longer than the culm. *Umbelled Sedge.*

70. *C. varia Muhl.*: sterile spike erect, sessile or on a short peduncle; fertile spikes 2—3, ovoid, sessile, approximate, few-flowered; perigynium ovoid or subglobose, acuminate-rostrate, bifid, obtusely triangular, hispidly pubescent, as long as the ovate acuminate scale. *C. Emmonsii* and *collected Dew.*

Dry woods. Hudson's Bay to Geor. April. ♀.—*Culm* 8—12 inches high, erect, filiform. *Leaves* pale green. Torrey considers it a variety of the next. *Variable Sedge.*

71. *C. Pennsylvanica Lam.*: sterile spike erect, pedunculate, somewhat triangular; fertile spikes 1—3, ovoid, subsessile, subapproximate, few-flowered; perigynium ovoid-globose, short-rostrate, bifid, about as long as the ovate mucronate or acuminate scale. *C. marginata Muhl.*

Dry woods. Can. to Car.; common. April. ♀.—*Culms* growing in tufts, 4—12 inches high, slender, rough above. *Leaves* short, somewhat glaucous. *Pennsylvanian Sedge.*

72. *C. Nova-Angliae Schw.*: sterile spike on a short peduncle; fertile spikes 2—3, sessile, ovoid, few-flowered, rather remote; perigynium oblong-

ovoid, subtriquetrous, rostrate, minutely pubescent, longer than the ovate-mucronate scale. *C. collecta* Dew.

Mountains. Mass. and N. Y. June. ♀.—*Culm* 6—8 inches high, filiform, nearly decumbent. *Leaves* smoothish, pale green. *New England Sedge*.

73. *C. filiformis* Linn.: sterile spikes 2—3; fertile spikes 2—3, ovoid-oblong, close-flowered, somewhat remote; perigynium ovoid, short-rostrate, bifurcate, about as long as the ovate acute scale.

Marshes. N. Eng. N. Y. and N. J. W. to Mich. June. ♀.—*Culm* 2—3 feet high, obtusely triangular, rigid. *Leaves* mostly radical, in a tuft, with a long filiform point, pale green. *Filiform Sedge*.

74. *C. lanuginosa* Mich.: sterile spikes 2; fertile 2—3, ovoid-cylindric, remote, erect, nearly sessile; perigynium ovoid, somewhat triangular, woolly, short-rostrate, bicuspidate, about as long as the ovate-lanceolate awned glume. *C. pellita* Muhl.

Wet grounds. Can. to Del. W. to Ohio. May. ♀.—*Culm* about 2 feet high, nearly round below. *Leaves* flat, linear-lanceolate, rough on the margin. *Woolly Sedge*.

75. *C. vestita* Willd.: sterile spikes 1—2, cylindric-oblong; fertile 2, ovoid-oblong, sessile, subapproximate, often staminate at the summit; perigynium ovoid, triangular, nerved, short-rostrate, pubescent, rather longer than the ovate mucronate scale.

Wet grounds. N. Y. and Mass. to Geo.; rather rare. May. ♀.—*Culm* about 2 feet high, acutely triangular, leafy below. *Leaves* rough. *Short Woolly Sedge*.

76. *C. pubescens* Muhl.: sterile spike sessile; fertile spikes 3, oblong, erect, rather loosely flowered, the lowest on a short peduncle; perigynium obovoid-triangular, rostrate, pubescent, nearly entire at the orifice, a little longer than the ovate-oblong mucronate scale.

Moist woods. Can. to Del. W. to Ohio. May. ♀.—*Culm* 12—18 inches high, slender, leafy below. *Leaves* shorter than the culm, very pubescent. *Pubescent Sedge*.

77. *C. præcox* Jacq.: sterile spike single, erect, subclavate; fertile spikes 1—3, ovoid, bracteate, approximate, the lower one short-pedunculate; perigynium globose-ovoid, triangular, short-rostrate, about as long as the ovate mucronate scale.

Rocky hills. Mass. Dewey.—*Culm* 2—6 inches high, leafy at the base. *Early Dwarf Sedge*.

††† *Perigynium* smooth, short, not inflated. *Spikes* dark purple or black.

78. *C. limosa* Linn.: sterile spike solitary, pedunculate; fertile spikes 1—3, ovoid or oblong, pedunculate, somewhat distant, pendulous; perigynium roundish-elliptic, compressed, very short-rostrate, about as long as the oblong or ovate cuspidate scale. *C. lenticularis* and *irrigua* Dew.

Swamps. Arct. Amer. to Del. June. ♀.—*Culm* 9—24 inches high, obtusely triangular, very smooth, leafy below. *Leaves* flat, narrow, somewhat glaucous. *Mud Sedge*.

79. *C. rariflora* Smith: sterile spike single; fertile spikes about 2, linear, loose-flowered, long-pedunculate, nodding; perigynium ovoid-oblong, triangular, depressed, as long as the ovate subcircinate (brown) scale.

White Mountains, N. H. *Dewey*.—*Culm* 10 inches high, glaucous.
Few-flowered Mountain Sedge.

80. *C. Grayana Dew.*: sterile spike oblong; fertile spikes 2—3, oblong-cylindric, rather loosely flowered; perigynium ovoid-oblong, subtriangular, subinflated, obtuse or acutish, entire at the orifice, longer than the oblong obtuse scale.

Sphagnous swamps. N. Y. and N. J. June. ♀.—*Culm* 6—16 inches high, erect, triangular. *Leaves* about as long as the culm, glaucous. Torrey thinks it identical with *C. livida Willd.*, but according to Dewey it differs in several respects.
Gray's Sedge.

††† *Spikes green.*

81. *C. flava Linn.*: sterile spike on a short peduncle; fertile spikes 2—4, ovoid-oblong, rather distant, sometimes androgynous; perigynia ovoid, densely imbricate, bidentate, with a curved and reflexed beak, shorter than the ovate-lanceolate scale.

Wet meadows. Can. to N. Y. June. ♀.—*Culm* 10—20 inches high, obtusely triangular, leafy. Whole plant yellowish green.
Large Yellow Sedge.

82. *C. Ederi Ehrh.*: sterile spike on a short peduncle; fertile spikes 2—4, ovoid-oblong, nearly sessile, densely flowered; perigynium ovoid-globose, horizontal, with a subulate beak, a little longer than the ovate scale.

Rocky banks. Hudson's Bay to N. J. June. ♀.—*Culm* 3—12 inches high, obtusely triangular, leafy. Resembles *C. flava*, but differs in having the spikes more densely flowered and the perigynium much smaller.
Eder's Sedge.

83. *C. palescens Linn.*: sterile spike solitary, on a short peduncle; fertile spikes 2—3, ovoid-cylindric, on exserted peduncles, densely flowered, at length somewhat nodding; perigynium obovoid-oblong, obtuse, smooth, about as long as the ovate scale.

Wet grounds. Mass. and N. Y. May. ♀.—*Culm* a foot high, erect, slender, and with the *leaves* light green and slightly pubescent.
Pale Sedge.

84. *C. Torreyi Tuckerman*: sterile spike solitary, oblong, on a short peduncle; fertile spikes, 2—3, short, subsessile, erect; perigynium obovoid, obtuse, smooth, somewhat triangular, entire at the orifice, subrostrate, a little longer than the acute scale.

N. Y. *Tuckerman*.—*Culm* 12—18 inches high, erect, triangular. *Plant* pale green and pubescent.
Torrey's Sedge.

85. *C. striata Mich.*: sterile spikes 1—2; fertile mostly solitary, rarely 2 and distant, cylindric-oblong, punctulate, erect, loose; perigynium oblong-ovoid, subtriangular, nerved, rough-punctulate, erect, with an oblique conical beak, rather longer than the ovate acutish scale. *C. Haiscyana Dew.*

Swamps. Mass. and N. Y. May. ♀.—*Culm* 12—18 inches high, triangular, roughish. *Leaves* linear-lanceolate, dark green.
Striated Sedge.

86. *C. granularis Muhl.*: sterile spike sessile or short-pedunculate; fertile spikes mostly 3, oblong-cylindric, remote, dense, the two lowest peduncled; perigynium globose-ovoid, nerved, entire at the orifice, with a very short recurved beak, twice as long as the ovate acuminate scale.

Wet grounds. Can. to Del. W. to Ohio. May. ♀.—*Culm* a foot high, erect or somewhat decumbent. *Leaves* subglaucous. *Round-fruited Sedge*.

87. *C. laxiflora* Lam.: sterile spike solitary, sessile; fertile spikes mostly 3, rather loose, remote, pedunculate, erect; perigynium ovoid-oblong, ventricose, obtuse, somewhat shining, longer than the ovate cuspidate scale.

Moist woods. Can. to Geor. May. ♀.—*Culm* 12—18 inches high, erect, smooth. *Leaves* deep green, longer than the culm. *Loose-flowered Sedge*.

88. *C. conoidea* Schk.: sterile spike pedunculate; fertile spikes 2—3, oblong, remote, rather loose, uppermost sessile, the lower on a long peduncle; perigynium oblong-conic, obtuse, smooth, nerved, subdiverging, entire at the orifice, as long as the ovate subulate scale. *C. granularoides* Schw.

Moist woods. Can. to Car. May.—*Culm* 6—12 inches high, angles scabrous. *Leaves* shorter than the culm, bright green. *Conical-fruited Sedge*.

89. *C. tetanica* Schk.: sterile spike long-pedunculate; fertile spikes 2—3, oblong-cylindric, loose, the lowest on a long peduncle; perigynium obovoid, smooth, nerved, recurved and entire at the apex, shorter than the ovate acute or mucronate scale.

Wet meadows. Can. to Car.; rare. May. ♀.—*Culm* 6—10 inches high, slender, erect. *Leaves* linear-lanceolate, about as long as the culm, light green. *Crooked-necked Sedge*.

90. *C. oligocarpa* Schk.: sterile spike solitary, pedunculate; fertile spikes 2—3, erect, 3—4-flowered, on exserted peduncles; perigynium roundish-triangular, short-rostrate, longer than the ovate mucronate scale.

Rocky woods. Hudson's Bay to Penn. W. to Ken. May. ♀.—*Culm* 6—12 inches high, erect. *Leaves* longer than the culm, dark green. *C. Hitchcockiana* Dew. is a taller variety, with the culm and leaves minutely pubescent. *Torr.* *Few-fruited Sedge*.

91. *C. digitalis* Willd.: sterile spike solitary; fertile spikes mostly 3, few-flowered and loose, remote, slender, on long and somewhat cernuous peduncles; perigynium oblong, triangular, nerved, smooth, short-rostrate, entire at the orifice, longer than the ovate mucronate scale. *C. retrocurva* Dew.?

Rocky woods. Mass. and N. Y.; rare. May. ♀.—*Culm* 6—15 inches high, slender, sharply triangular. *Leaves* mostly narrow, (sometimes very wide,) light green and subglaucous. *Slender Wood Sedge*.

92. *C. anceps* Muhl.: sterile spike solitary, pedunculate; fertile spikes mostly 3, remote, subcylindric, loosely flowered, lower ones pedunculate; perigynium oval, triangular, acute, striate, recurved at the apex, nearly entire at the orifice, about as long as the ovate cuspidate scale. *C. plantaginea* Muhl.

Woods. Can. to Car. May. ♀.—*Culm* 9—18 inches high, somewhat 2-edged above. *Leaves* very variable; the radical ones sometimes nearly an inch wide; those of the culm much narrower. *Two-edged Sedge*.

93. *C. blanda* Dew.: sterile spike solitary, triangular; fertile spikes 2—4, oblong-cylindric, sparse-flowered, the lowest on a long 2-edged peduncle; perigynium ovoid, somewhat triangular, nerved, recurved and entire at the apex, a little longer than the ovate mucronate scale. *C. conoidea* Muhl.

Dry woods. Mass. to Penn.; common. May. ♀.—*Culm* 6—12 inches high, triangular, leafy near the base. *Leaves* as long as the stem, pale green and somewhat glaucous. Resembles the preceding. *Pale Sedge.*

94. *C. Crawei* Dew.: sterile spike single, oblong; fertile 2—3, oblong-cylindric, distant, erect, rather closely flowered, the lowest on a longish peduncle; perigynium ovoid-oblong, with a short beak, slightly nerved, entire at the orifice, twice as long as the ovate scale. (*Torr. N. Y. Fl.*)

Banks of Black River, near Watertown, N. Y. *Dr. Craue. Culm* 4—8 inches high, erect, leafy. *Leaves* smooth, as long as the culm, light green. *Craue's Sedge.*

95. *C. plantaginea* Lam.: sterile spike solitary, pedunculate; fertile spikes 3—4, arising from included or exerted peduncles; the lower ones with subulate bracts, loose-flowered; perigynium oblong, triangular-elliptic or cuneiform, acute at each end, recurved at the apex, longer than the ovate cuspidate scale. *C. latifolia* Schk.

Shady woods. Mass. N. Y. and Penn. April, May. ♀.—*Culm* 8—20 inches high, erect, with purplish-brown sheaths. *Leaves* radical, broad, strongly 3-nerved. *Plantain-like Sedge.*

96. *C. Careyana* Torr.: sterile spike solitary; fertile spike 2—3, oblong, few-flowered, loose, lower ones on exerted peduncles; perigynium ovoid, triangular, smooth, nerved, acuminate, tapering at base, entire at the orifice, twice as long as the ovate mucronate scale.

Shady woods. N. Y. and Ohio. May. ♀.—*Culm* 1—2 feet high, erect, leafy near the base. *Leaves* linear-lanceolate, strongly nerved, dark green. Closely allied to the preceding. *Carey's Sedge.*

97. *C. eburnea* Boott: sterile spike solitary; fertile spikes 2—3, erect, 3—6-flowered, ovoid, with white leafless sheaths and the upper higher than the sterile spike; perigynium obovoid, triangular, short-rostrate, shining, twice as long as the white ovate hyaline scale. *C. alba* Dew.

Rocky banks. N. H. Ver. and N. Y. May. ♀.—*Culms* 4—12 inches high, densely cespitose, erect, setaceous, naked. *Leaves* in a radical tuft, shorter than the culm, setaceous. *Bristly White Sedge.*

98. *C. flexilis* Rudge: sterile spike solitary, oblong, pedunculate; fertile spikes 2—4, oblong-cylindric, on nodding naked peduncles; perigynium ovoid, rostrate, bidentate, about as long as the ovate ciliolate scale. *C. blepharophora* Gray.

Moist shady places. N. Y. June. ♀.—*Culm* 12—18 inches high, erect, striate. *Leaves* narrow, short, pale green, and with the bracts ciliate. *Fringed Sedge.*

99. *C. debilis* Mich.: sterile spike solitary, pedunculate; fertile spikes 3—4, on long nodding peduncles, filiform, remote, loose-flowered; perigynium oblong, subtriangular, alternate, rostrate, bifid, twice as long as the ovate-lanceolate scale. *C. flexuosa* Muhl.

Wet meadows. Can. to Geor. June. ♀.—*Culm* 1—2 feet high, weak and slender, sometimes procumbent, leafy. *Leaves* narrow. *Weak Sedge.*

100. *C. arctata* Boott: sterile spike cylindric; fertile spikes 3—4, remote, on long nodding peduncles, slender, loose-flowered; perigynium ovoid-elliptic, triangular, nerved, beaked, bifid at the orifice, rather longer than the ovate membranaceous mucronate scale. *C. sylvatica* Dew.

Moist woods. Can. and N. Y. ; common. May. ♀.—*Culm* 9—18 inches high, slender, leafy. *Leaves* narrow, shorter than the culm, pale green.

Narrow Sedge.

101. *C. miliacea* Muhl. : sterile spike solitary, pedunculate ; fertile spikes 3, slender, cylindric, on filiform nodding peduncles ; perigynium ovoid, triangular, nerveless, slightly rostrate, entire at the orifice, as long as the ovate-lanceolate scale.

Wet grounds. Can. to Geor. June. ♀.—*Culm* 1—2 feet high, slender, leafy below. *Leaves* narrow, about as long as the culm, yellowish-green.

Millet-like Sedge.

102. *C. lacustris* Willd. : sterile spikes 2—4 ; fertile 2—3, erect, oblong-cylindric, short-pedunculate ; perigynium oblong, many-nerved, subrostrate, smooth, bifurcate, somewhat longer than the oblong mucronate scale. *C. riparia* Muhl.

Marshes. Can. to Car. June. ♀.—*Culm* 3—5 feet high, stout, acutely triangular, rough above, leafy. *Leaves* long, somewhat glaucous, green.

Lake Sedge.

103. *C. capillaris* Linn. : sterile spike single, small ; fertile spikes 2—3, ovoid-oblong, about 6-flowered, loose, on long and recurved peduncles ; perigynium oval, short-rostrate, oblong, oblique, longer than the ovate-oblong obtuse scale.

Alpine regions of the White Mountains, N. H. Dr. Robbins. *Culms* 2—7 inches high, in tufts, leafy at base. *Leaves* long and narrow, pale green.

Capillary Sedge.

104. *C. panicea* Linn. : sterile spike single ; fertile spikes 2—3, loose-flowered, distant, the lowest long-pedunculate ; perigynium subglobose, obtuse, entire at the mouth, a little larger than the ovate acute scale.

Near Boston, Mass. Dewey. *Culm* a foot high, triangular, leafy at base. *Leaves* shorter than the culm, light green.

Farinaceous Sedge.

105. *C. binervis* Smith : sterile spike single ; fertile spikes 3, oblong-cylindric, somewhat dense-flowered ; perigynium round-ovoid, short-rostrate, bicuspidate, smooth, 2-nerved, twice as long as the ovate subacute glume.

Near Boston, Mass. Dewey. *Culm* a foot or more high, triangular, leafy near the base, pale green.

Two-nerved Sedge.

106. *C. Greeniana* Dev. : sterile spikes 1—2, erect ; fertile 2—3, oblong, bracteate, pedunculate ; perigynium ovoid-lanceolate, triangular, nerved, rostrate, bifurcate, about as long as the ovate cuspidate scale.

Near Boston, Mass. ; rare. Dewey. *Culm* 1—2 feet high, scabrous above, leafy towards the base, light green.

Greene's Sedge.

ORDER CXLVII. GRAMINACEÆ.—GRASSES.

Flowers consisting of imbricated bracts ; of which the outer (usually 2) are called *glumes*, the two inner immediately enclosing the stamens, *paleæ*, and the 2 or 3 innermost at the base of the ovary (sometimes wanting), *scales*. Stamens 1—6 or more, but usually 3 ; anthers versatile. Ovary simple ; styles 2 or 3, rarely united into 1 ; stigmas feathery or hairy. Pericarp mem-

branous ; albumen farinaceous. Stem (*culm*) cylindric, usually hollow and closed at the joints, sometimes solid. Leaves narrow and undivided, alternate, with a split sheath, and a membranous expansion (*ligule*) at the junction of the stalk and blade. Flowers green, in small spikelets, arranged in a spiked racemed or paniced manner.

I. ORYZÆE. *Spikelets either one-flowered, with the glumes mostly abortive, or 2—3-flowered, one or both of the lower flowers with a single palea and neutral, the terminal one fertile. Palea somewhat coriaceous. Stamens 1—6.*

1. LEERSIA. Swartz.—White Grass.

(Named in honor of J. D. Leers, a German botanist.)

Spikelets 1-flowered, compressed. Glumes none. Palea 2, compressed-carinate, awnless ; lower one much broader. Stamens 3—6, rarely solitary.—Panicle simple or branched.

1. *L. Virginica* Willd. : panicle simple, the lower branches spreading ; flowers appressed, monandrous, sparingly ciliate on the keel.

Wet woods. Can. to Car. W. to Ohio. Aug. ♀.—*Culm* 2—4 feet high, slender, branched, geniculate, erect or decumbent. *Leaves* linear-lanceolate, rough. *Panicle* terminal, at length much exserted ; branches few and solitary.
Virginian White-grass.

2. *L. oryzoides* Swartz : panicle branched, diffuse, often sheathed at base ; spikelets rather spreading ; flowers triandrous ; palea strongly ciliate on the keel.

Ditches and swamps. Throughout the U. S. Aug. Sept. ♀.—*Root* creeping. *Culm* 3—5 feet high, geniculate, rough. *Leaves* lanceolate, acuminate, very rough, with hooked prickles. *Panicle* with many widely spreading and flexuous branches. A worthless grass.
Cut-grass.

2. ZIZANIA. Linn.—Wild Rice.

(A Greek name, supposed to have been originally applied to *Lolium perenne*.)

Monœcious. Spikelets one-flowered. STERILE. FL. Glumes none, or only rudimentary. Palea 2, herbaceous, concave, nearly equal, awnless. Stamens 6. PERFECT. FL. Glumes none. Palea 2, herbaceous ; lower one longer, oblong, keeled, terminating in a straight awn. Styles 2, short.—Panicle large, terminal.

1. *Z. aquatica* Linn. : panicle pyramidal ; lower branches spreading, sterile ; upper branches nearly erect, fertile ; spikelets on clavate pedicels ; awns long ; caryopsis slender, linear. *Z. clavulosa* Mich.

Swamps and overflowed banks. Can. to Flor. W. to Miss. Aug. ♀.—*Culm* 4—8 feet high, stout, terete, smooth. *Leaves* very long, broad-linear. *Panicle* terminal, a foot or more long, with verticillate branches.

Wild Rice. Water Oats.

2. *Z. miliacea* Mich.: panicle effuse, pyramidal; sterile and fertile flowers intermixed; style 1; paleæ with short awns; caryopsis ovate, smooth.

Swamps, &c. Penn. to Car. W. to Ark. Aug. ♀.—*Culm* erect, 6—10 feet high. *Leaves* very long, narrow, glaucous. *Panicle* terminal, large.

Millet-like *Zizania*.

II. PHALAREÆ. *Spikelets* perfect, polygamous or rarely monœcious; either 1-flowered, with or without a rudimentary stipe-like flower; or 2-flowered, the flowers perfect or sterile; or 2—3-flowered, the terminal flowers perfect, the rest imperfect. *Glumes* mostly equal. *Paleæ* often shining and indurated in fruit.

3. CRYPISIS. Ait.—Crypsis.

(From the Greek κρυψις, concealment; the flowers being hidden in the sheath of the leaf.)

Glumes 2, compressed, unequal. *Paleæ* 2, unequal, longer than the glumes. *Stamens* 2—3. *Caryopsis* loose, covered by the paleæ.—*Panicle* spike-like, oblong.

C. Virginica Nutt.: culm procumbent and geniculate; leaves at length involute, rigid, pungent; spike oblong-cylindric, thick and lobed. *Agrostis Virginica* Willd.

Sandy fields, near Philadelphia. Aug.—Oct. ①.—*Culm* 6—12 inches long, branched from the base. *Leaves* short, filiform, nearly smooth and somewhat glaucous. *Spikes* closely sheathed, axillary and terminal. *Virginian Crypsis*.

4. ALOPECURUS. Linn.—Fox-tail Grass.

(From the Greek αλωπηξ, a fox, and ουρα, a tail; in allusion to the form of the spike.)

Spikelets 1-flowered. *Glumes* 2, boat-shaped and keeled, awnless, nearly equal, united at base. Lower palea membranaceous, compressed, with the margins united below, awned on the back below the middle; upper palea wanting. *Styles* often connate at the base.—*Panicle* spiked, cylindric, terminal.

1. *A. pratensis* Linn.: culm erect, smooth; spike cylindric, obtuse; glumes ciliate, connate below the middle, as long as the palea.

Fields and pastures. N. S.; rare. May—Aug. ♀.—*Culm* simple, 2—4 feet high. *Leaves* flat, smooth. *Spike* 1½ inches long. Introduced from Europe.

Common Fox-tail-grass.

2. *A. geniculatus* Linn.: culm ascending, geniculate at base; spike cylindric, obtuse; glumes cuneate at base, obtuse, hairy on the back and margin; awn twice as long as the flower.

var. *aristulatus* Torr.: awn scarcely exerted. *A. aristulatus* Mich.

Wet meadows. Arct. Amer. to N. Y. W. to Ohio; rare. June. ♀.—*Culm* 12—18 inches high, knee-jointed and rooting below, terete, smooth. *Leaves* linear-lanceolate, very acute. *Spike* nearly 2 inches long.

Water Fox-tail-grass.

5. PHLEUM. *Linn.*—Cat-tail Grass.

(An ancient Greek name; supposed however to have been originally applied to a different plant.)

Glumes 2, much longer than the paleæ, distinct, equal, boat-shaped, beaked or mucronate. Paleæ 2, included in the glumes, awnless, truncate.—Panicle spiked, dense, cylindric.

P. pratense Linn.: culm erect; spike cylindric; glumes truncate, mucronate, with a ciliate keel; awn shorter than the glume.

Fields. N. S. June—Aug. ♀.—*Culm* 2—3 feet high, simple, smooth. *Leaves* flat, smooth and glaucous. *Spike* long, cylindric, green. Introduced from Europe. *Timothy. Herd's-grass.*

6. PHALARIS *Linn.*—Canary Grass.

(From the Greek *φαλος*, *shining*; in allusion to the smooth and polished paleæ.)

Spikelets 3-flowered; the two inferior flowers scale-like and minute; upper flowers perfect. Glumes 2, nearly equal, membranaceous, gibbous on the back, keeled, awnless. Paleæ 2, coriaceous, shorter than the glumes, awnless; upper one surrounded by the lower.—Panicle dense and spike-like.

1. *P. arundinacea Linn.*: panicle ovoid, spiked; glumes boat-shaped, serrulate; paleæ unequal; abortive flowers hairy. *Calamagrostis colorata Nutt.*

Swamps. Can. to Car. July, Aug. ♀.—*Culm* 2—5 feet high, erect, a little branching. *Leaves* deep green, lanceolate. *Panicle* 2—4 inches long, at length a little spreading. The *Ribbon-grass*, sometimes cultivated in gardens, is a variety of this species. *Reed Canary-grass.*

2. *P. Canariensis Linn.*: panicle spike-like, oval; glumes boat-shaped, entire at the apex; abortive flowers smooth.

In pastures and wet places, N. Y. July. ①.—*Culm* a foot and a half high, simple. *Leaves* broad-linear, pale green. *Glumes* twice the length of the paleæ, yellowish-green. Introduced from Europe. *Common Canary-grass.*

7. HOLCUS. *Linn.*—Soft Grass.

(From the Greek *ὄλκος*, derived from *ελεω*, to *extract*; because of its supposed virtue in drawing out thorns from the flesh.)

Spikelets 2-flowered, polygamous. Glumes herbaceous, somewhat boat-shaped, mucronate. Lower flower perfect, awnless; upper one staminate or neutral, pedicillate; the lower palea awned on the back.—Panicle more or less contracted.

H. lanatus Linn.: panicle oblong, rather contracted; flowers shorter than the glumes, the upper one with a recurved awn.

Wet meadows. N. Y. Mass. and Penn. W. to Mich. July. ♀.—*Plant* covered with a soft whitish pubescence. *Root* fibrous. *Culm* 18 inches high. *Leaves* 2—5 inches long, flat. *Panicle* somewhat dense. *Glumes* pubescent, whitish or tinged with purple. A grass of little or no value. Introduced from Europe. *Meadow Soft-grass. White Timothy.*

III. PANICEÆ. *Spikelets 2-flowered; the lower flower imperfect, usually neutral, rarely staminate. Glumes of a thinner texture than the paleæ; the lower one often (rarely both) abortive. Paleæ more or less coriaceous, mostly awnless; the lower one concave.*

8. PASPALUM. *Linn.*—Paspalum.

(From the Greek *πασπαλος*, millet; on account of the resemblance of its grain.)

Spikelets 2-flowered. Glume single. Lower flower neutral, of a single palea, membranaceous, awnless, as long as the glume. Perfect flowers with 2 coriaceous awnless paleæ; the lower concave and embracing the upper. Stamens 3.—Flowers in unilateral spikes.

1. *P. setaceum Mich.*: culm erect or decumbent, slender; leaves and sheaths hairy; spikes mostly 2, the one on a long, the other on a short peduncle from the same sheath; spikelets in 2 rows. *P. pubescens Muhl.*

Sandy fields. N. Y. to Car. July, Aug. 2.—*Culm* prostrate or erect, 1—2 feet high. *Leaves* narrow, mostly very hairy and ciliate on the margin. *Terminal spike* on a peduncle which is 2—6 inches long. *Hairy Paspalum.*

2. *P. ciliatifolium Mich.*: culm decumbent; leaves hairy and ciliate; sheaths hairy; spikes 1—2, rather lax; spikelets indistinctly 3-rowed. *P. ciliatum Pursh.*

Sandy fields. Mass. to Car. Sept. 2.—*Culm* 18 inches long, slender and simple. *Spike* mostly solitary, terminal. *Fringed Paspalum.*

3. *P. lave Mich.*: culm erect, very smooth, rather stout; leaves short, mostly smooth, hairy at base; spikes 3—6, alternate; spikelets in two rows, ovoid-roundish, smooth.

Dry meadows. N. Y. to Car. Aug. 2.—*Culm* 1½—3 feet high. *Leaves* broad-linear, long. *Spikes* usually 3—4, spreading; *rachis* flexuous. *Smooth Paspalum.*

4. *P. stoloniferum Bosc.*: culm prostrate at base; leaves short, subcordate; spikes in elongated racemes, somewhat verticillate, spreading; flowers serrulate-ciliate, transversely rugose.

Cedar swamps. N. J. Aug. 2.—*Culm* 2 feet long, branched, geniculate, stoloniferous. *Spikes* very numerous (30—50.) *Stoloniferous Paspalum.*

9. MILIUM. *Linn.*—Millet Grass.

(Supposed to be derived from the Latin *mille*, a thousand; on account of its fertility.)

Spikelets 2-flowered. Glume single, membranaceous, concave. Lower flower neutral, and consisting of a single palea resembling the glume; upper flower perfect, the paleæ awnless. Lower palea concave and embracing the upper. Stamens 3.—Panicle spreading.

1. *M. effusum Linn.*: panicle diffuse, compound, branches horizontal; glumes ovate, very obtuse; paleæ awnless, smooth and shining.

Woods and meadows. Can. and N. Y. July, Aug. ♀.—*Culm* 3—6 feet high, erect, simple, smooth. *Leaves* broad-linear, smooth beneath, roughish above. *Panicle* oblong, 6—10 inches in length. *Common Millet-grass.*

2. *M. amphicarpon Pursh*: leaves linear-lanceolate, hairy, ciliate; panicle simple, contracted, bearing staminate flowers; fertile flowers on solitary elongated radical scapes, at length subterraneous. *M. ciliatum Muhl.*

Sandy Swamps. N. J. Aug., Sept. ♀.—*Culms* numerous, 1—2 feet high, assurgent. *Panicle* appressed. *Glumes* acuminate. This species is well figured by Pursh. *Fringed Millet-grass.*

10. DIGITARIA. Scop.—Finger Grass.

(From the Latin *digitus*, a *finger*; the spikes being digitate or finger-like.)

Spikelets unilateral, in pairs, on short bifid pedicels. Glumes mostly 2-valved; lower valve very small, sometimes wanting. Lower flower abortive; paleæ single, membranaceous. Upper flower perfect; paleæ 2, coriaceous, nearly equal, lance-oblong.—Spikes linear, digitate or fasciculate.

1. *D. sanguinalis Scop.*: leaves and sheaths somewhat hairy; spikes numerous, fascicled, somewhat spreading; spikelets oblong, in pairs; flowers pubescent on the margin. *Panicum sanguinale Linn.*

Cultivated grounds. Can. to Car. Aug.—Oct. ①.—*Culm* 12—18 inches long, decumbent or assurgent. *Leaves* lanceolate, sometimes undulate on the margin. *Spikes* usually 4—6, sometimes 8—9, becoming purple; *rachis* flexuous. *Hairy Finger-grass. Crab-grass.*

2. *D. glabra R. & S.*: leaves and sheaths smooth; spikes digitate, somewhat alternate, (3—4,) spreading; spikelets ovoid, crowded; lower glume almost wanting, upper as long as the abortive flower, both hairy. *Panicum glabrum Gaud. Torr. (Torr. N. Y. Fl.)*

Sandy fields. N. Y. to Virg. Aug., Sept. ①.—*Culm* about a foot long, mostly decumbent. *Leaves* sometimes very slightly hairy. *Spikes* mostly 3, about 2 inches long. Probably introduced. *Smooth Finger-grass.*

3. *D. filiformis Beauv.*: culm filiform, erect; leaves short; lower sheaths very hairy; spikes 2—4, filiform, alternate and opposite; spikelets in twos and threes, all pedicellate, elliptic-oblong; glume 1-valved, as long as the abortive flower, pubescent. *Panicum filiforme Linn.*

Sandy fields. N. Y. to Geor. Aug. ①.—*Culm* 1—2 feet high, very slender. *Leaves* 1—2 inches long, sometimes a little hairy. *Spikes* mostly 2, 1—2 inches long; *rachis* rough, flexuous. *Slender Finger-grass.*

11. PANICUM. Linn.—Panic Grass.

(Said to be derived from the Latin *panis*, *bread*; the grain of some species being used for food.)

Spikelets 2-flowered, naked. Glumes 2, unequal, membranaceous, concave. Lower flower of one or two paleæ, staminate or neutral, membranaceous. Upper flower perfect; the paleæ 2, coriaceous, nearly equal, concave. Stamens 3.—Spikelets in loose or somewhat racemose panicles.

* *Spikelets in loose panicles.*

1. *P. virgatum* Linn.: whole plant very smooth; panicle diffuse, very large; spikelets scattered; flowers acuminate; the lower one staminate, with nearly equal paleæ.

Wet banks, especially near salt water. N. Y. to Car. July, Aug. 2l.—Culm 3—5 feet high. Leaves very long, flat. Panicle virgate, at length spreading, often a foot long. *Fall Smooth Panic-grass.*

2. *P. capillare* Linn.: culm erect, straight; sheaths very hairy; panicle large, capillary, expanding, loose; spikelets on long peduncles, acuminate, smooth; abortive flower without an upper palea.

Cultivated grounds. Can. to Flor. Aug., Sept. ①.—Culm 1—2 feet high, sometimes branched. Leaves flat, broad. Panicle pyramidal, often purplish. *Hair-stalked Panic-grass.*

3. *P. depauperatum* Muhl.: culms cespitose; panicle nearly simple, on a long peduncle, few-flowered, with flexuous branches; spikelets obovoid, alternate, pedicellate, large and somewhat turgid; upper palea of the neutral flower very small. *P. rectum* R. & S. *P. involutum.* Torr. Fl.

Dry sandy soils. N. Y. to Virg. May, June. 2l.—Culm about a foot high, mostly simple. Leaves short, becoming longer above, narrow-linear, hairy beneath, at length involute. Panicle terminal, on a slender peduncle; branches mostly in pairs, the lower longer and bearing 2 spikelets. *Few-flowered Panic-grass.*

4. *P. dichotomum* Linn.: culm at first nearly simple, with a single pedunculate terminal compound panicle, but at length more or less branched and fastigiate with small lateral nearly simple panicles; spikelets minute, on long peduncles, obovoid, mostly pubescent; lower glume one-third the length of the upper; lower flower neutral, the upper palea minute. (Torr. N. Y. Fl.) *P. nitidum* Lam. *P. barbuiatum* and *ramulosum* Mich.

Moist meadows and woods. N. Y. to Car. July—Sept. 2l.—Culm 8—24 inches high, mostly erect, but sometimes procumbent, smooth or pubescent. Radical leaves short and very broad, often purplish; upper ones narrower and much longer. Panicle changing its form, often purplish. A very variable species. *Variable Panic-grass.*

5. *P. verrucosum* Muhl.: culm slender, decumbent and geniculate, branching from the base, and with the leaves smooth; panicle capillary, widely spreading, few-flowered; spikelets ovoid; flowers verrucose; neutral flowers without an upper palea.

Sandy swamps. N. Y. to Geor. Aug., Sept. 2l. Culm 1—2 feet long, much branched; the nodes smooth and inflated. Leaves narrow, spreading, smooth. Panicles terminal and lateral, loose; the branches flexuous. *Warty-flowered Panic-grass.*

6. *P. clandestinum* Linn.: culm with short axillary branches, the nodes smooth; leaves broad-lanceolate, somewhat cordate at the base; sheaths hispid, enclosing the short lateral panicles; spikelets ovoid, pubescent; the lower flower neutral, with 2 paleæ; upper valve obtuse. *P. latifolium* var. *clandestinum* Pursh.

var. *pedunculatum* Torr.: sheaths less hispid; terminal panicle on a long peduncle. (N. Y. Fl.) *P. pedunculatum* Torr. Fl.

Moist woods. N. Y. to Car. July, Aug. 2l.—Culm 1—3 feet high, erect, rigid, very leafy. Leaves broad, strongly nerved. Panicles terminal and lateral,

the former wholly concealed in the leaves, exerted, or on a long peduncle. *Anthers and stigmas purple.*

Hidden-flowered Panic-grass.

7. *P. latifolium* Linn.: culm mostly simple, bearded at the joints; leaves oblong-lanceolate, smooth, or with the sheaths somewhat pubescent; panicle terminal, a little exerted, simple, pubescent; spikelets oblong-ovoid; lower flower staminate, of 2 paleæ; upper palea somewhat herbaceous, nearly as long as the lower, acute.

Moist woods. Can. to Car. W. to Ill. June, July. 2l.—Culm 1—2 feet high, simple or a little branched. *Leaves cordate and clasping at base. Panicle 2 inches long, with pubescent downy branches.* *Broad-leaved Panic-grass.*

8. *P. scoparium* Lam.: whole plant softly villous; leaves lanceolate; panicle erect, compound, setaceous, much branched; spikelets turgid, ovoid, pubescent.

Wood. N. J. to Car. 2l.—Culm 2 feet high, mostly simple. *Flowers larger than in any of our species. Scarcely distinct from the preceding.*

Broom-like Panic-grass.

9. *P. nervosum* Muhl.: culm simple, with the nodes smooth; leaves broad-lanceolate, smooth, a little ciliate on the margin; panicle much branched, smooth, many-flowered; spikes oblong; lower flower staminate; upper palea somewhat herbaceous, shorter than the lower.

Marshy grounds. N. J. to Car. July. 2l.—Culm 3—4 feet high. *Panicle 4—5 inches long, decompound. Allied to P. latifolium, but is taller, and has the joints smooth and the panicles decompound and smooth.*

Nerved Panic-grass.

10. *P. xanthophysum* Gray: culm erect, simple or branching from the base; leaves lanceolate, strongly nerved, ciliate at the base; sheaths hairy; panicle nearly simple, few-flowered, the branches erect; spikelets globose-obovate, pubescent; lower flower staminate, of 2 paleæ, as long as the obovate perfect flower.

Dry pine plains. Oneida, Hamilton, and Madison counties, N. Y. July. 2l.—Culm 12—15 inches high, slender, smooth. *Leaves very acute. Panicle on a long naked slender peduncle. Whole plant yellowish when dry.*

Yellow Panic-grass.

11. *P. macrocarpon* Torr.: culm erect, simple; leaves linear-lanceolate, erect, a little hairy beneath; joints naked; sheaths hispid; panicle rather compound, smooth; spikelets globose-ovoid; abortive flower neutral.

Banks of streams. Mass. and N. J. July. 2l.—Culm 3 feet high, erect. *Panicle with few spreading flexuous branches.* *Large-fruited Panic-grass.*

12. *P. pubescens* Linn.: erect, much branched, leafy, softly pubescent; leaves lanceolate, ciliate; panicle small, few-flowered, free; spikelets subglobose-ovoid, pubescent.

Shady woods. Penn. to Car. July. 2l.—Culm 18 inches high. *Leaves and nodes hairy. Panicle with horizontal branches.* *Hairy Panic-grass.*

** *Spikelets in somewhat racemose panicles.*

13. *P. agrostoides* Muhl.: culm erect, compressed, smooth; leaves very long; panicles terminal and lateral, pyramidal, spreading; the spikelets ovoid-oblong, acute, appressed, and somewhat racemose; lower flower neutral, with 2 nearly equal paleæ. *P. elongatum* Pursh.

Moist meadows. N. Y. to Virg. July—Sept. 2.—*Culm* 2—3 feet high, smooth at the joints. *Leaves* forming a tuft at the base of the culm. *Panicle* mostly dark purple. *Agrostis-like Panic-grass.*

14. *P. anceps* Mich.: culm compressed; sheaths ancipital, hairy near the throat and on the margin; panicles erect, oblong, with simple branches; spikelets interruptedly racemose, acuminate; neutral flower with the upper palea oblong obtuse or emarginate. *P. rostratum* Muhl.

Fields and meadows. Penn. to Car. July. 2.—*Culm* 2—4 feet high, compressed, somewhat geniculate at base. *Leaves* linear-lanceolate, hairy above, roughish on the margin. *Panicles* terminal and lateral, oblong, the branches erect. A variable species. *Two-edged Panic-grass.*

15. *P. proliferum* Lam.: smooth; culm assurgent or procumbent, branching and geniculate at base; panicles terminal and lateral, compound; spikelets somewhat racemose; abortive flower without an upper palea. *P. dichotomiflorum* Mich. *P. geniculatum* Muhl.

Wet meadows. N. Y. to Geor. Aug., Sept. ①.—*Culm* 1—3 feet long, stout and somewhat succulent. *Leaves* 8—12 inches or more in length. *Panicles* large and pyramidal. *Proliferous Panic-grass.*

16. *P. longifolium* Torr.: very smooth; culm compressed, erect, simple, slender; leaves very long and narrow; panicle simple, elongated, racemose; spikelets acuminate; abortive flower with 2 paleæ.

Pine Barrens. N. J. Sept., Oct. 2.—*Culm* about 2 feet high. *Leaves* a foot or more long, very narrow. *Panicle* few-flowered.

Long-leaved Panic-grass.

17. *P. Crus-Galli* Linn.: spikes alternate and in pairs, simple or compound; spikelets imbricate; glumes and outer paleæ of the neutral flower hispid, awned or mucronate; rachis hispid, about 5-angled; sheaths smooth. *Oplismenus Crus-Galli* Kunth.

var. *hispidum* Torr.: sheaths hispid; awns very long. *P. hispidum* Muhl.

Wet places, near barn-yards, &c. N. Y. to Car. Aug., Sept. ①.—*Culm* 2—4 feet high, terete, smooth. *Leaves* rather broad, flat, serrulate on the margin. *Panicle* dense, pyramidal, with the spikelets in dense spike-form racemes. The rough variety is often found near salt water. Introduced?

Cock's-foot Panic-grass.

12. SETARIA. Beauv.—Bristle Grass.

(From the Latin *seta*, a *bristle*; in allusion to the bristly involucre of the spikelets.)

Spikelets 2-flowered, invested with an involucre of 2 or more bristles. Glumes 2, unequal, herbaceous. Lower flower abortive; paleæ 1 or 2, herbaceous. Upper flower perfect; paleæ cartilaginous.—Flowers in a compound cylindrical spike.

1. *S. viridis* Beauv.: spike cylindrical; involucre of 4—10 fasciculate bristles, much longer than the spikelets; paleæ of the perfect flower longitudinally striate, dotted; margin of the sheaths hairy. *Panicum viride* Linn. *Pennisetum viride* Brown.

Cultivated grounds. N. Y. and Mass. to Car. W. to Ohio. July, Aug. ①.—*Culm* 2—3 feet high, erect, mostly simple. *Leaves* linear, flat, roughish. *Spike* terminal, 2—3 inches long, green; the *rachis* hairy. Probably a naturalized foreigner. *Green Bristle-grass.*

2. *S. glauca Beauv.*: spike cylindrical; involucre of 6—10 fascicled bristles, much longer than the spikelets; glumes smooth; paleæ of the perfect flower transversely rugose. *Panicum glaucum Linn.* *Pennisetum glaucum Brown.*

Cultivated grounds. N. Y. and Mass. to Car. W. to Ohio. July, Aug. ①.—*Culm* 2—3 feet high. *Leaves* lanceolate, hairy at base. *Spike* 2—4 inches long, tawny or orange-yellow; the *rachis* angular and hairy. Introduced from Europe. *Glaucous Bristle-grass.*

3. *S. verticillata Beauv.*: spike subverticillate; bristles of the involucre in pairs, retrorsely scabrous; spikelets solitary; paleæ of the perfect flower roughish-punctate. *Panicum verticillatum Linn.* *Pennisetum verticillatum Nutt.*

Cultivated grounds. Mass. to Del. July. ①.—*Culm* about 2 feet high, smooth. *Leaves* lanceolate, acuminate, rough on the margin. *Spike* 2—3 inches long, composed of interrupted whorls; *rachis* angled and rough. Introduced from Europe. *Rough Bristle-grass.*

4. *S. Italica Beauv.*: involucre many times longer than the flowers; spike compound, interrupted at base, nodding; spikelets glomerate. *Panicum Italicum Linn.* *Pennisetum Italicum Nutt.*

Wet grounds. N. J. to Car. July. ①.—*Culm* 4, (at the South sometimes 10,) feet high. *Spike* or *panicle* 6—8 inches long. A naturalized foreigner; of little value as a grass. *Italian Bristle-grass.*

13. CENCHRUS. Linn.—Bur Grass.

(From a Greek word signifying *millet*; supposed to have been originally applied to some other plant.)

Spikelets 2-flowered, 1—3, enclosed in a lacinate spiny or bristly involucre which is finally hardened. Glumes 2, unequal, membranaceous. Flowers dissimilar; the lower staminate or neutral; the upper perfect.—Inflorescence racemose.

C. tribuloides Linn.: involucres globose, pubescent, muricate-spinose, split on one side, enclosing 2—3 spikelets. *C. echinatus Muhl.*

Dry sandy soils. Throughout the U. S. Aug. ①.—*Culm* erect or decumbent, 1—2 feet long, geniculate, branching. *Leaves* rather short, flat. *Spikes* about 2 inches long, consisting of 8—10 sessile bur-like heads. A very troublesome weed. *Bur-grass. Hedgehog-grass.*

IV. STIPEÆ. *Spikelets* 1-flowered. *Lower palea involute, usually indurated in fruit, awned at the tip; the awn simple or 3-cleft, mostly twisted and articulated at the base. Ovary more or less stipitate. Scales mostly 3.*

14. ORYZOPSIS. Mich.—Mountain Rice.

(From the Greek *ορυζα*, rice, and *οψις*, resemblance.)

Glumes herbaceo-membranaceous, equal, awnless. Paleæ 2, elliptic, nearly equal, coriaceous, with an articulated awn at the tip. Scales linear-elongated.—Inflorescence paniced.

1. *O. asperifolia Mich.*: radical leaves elongated; sheaths of the culm

nearly leafless; panicle racemose; awn longer than the flower; palea whitish when mature.

Rocky woods. Subarct. Amer. to N. Y. April, May. 2.—*Culm* about 18 inches high, simple, smoothish, purple at base. *Radical leaves* as long as the culm, rough. *Panicle* very simple; the branches short and appressed.

White Mountain Rice.

2. *O. melanocarpa* Muhl.: culm leafy; panicle nearly simple, the lower branches more or less spreading; flowers somewhat racemose; glumes ovate-lanceolate; palea blackish when mature, somewhat hairy; the lower one with an awn 2—3 times as long as the flower. *Piptatherum nigrum* Torr. Fl.

Rocky woods. N. Eng. and N. Y. Aug. 2.—*Culm* 2—3 feet high, erect, simple. *Leaves* long, linear-lanceolate. *Panicle* sparingly branched. *Awn* nearly an inch long. *Caryopsis* black.

Black-fruited Mountain Rice.

3. *O. Canadensis* Torr.: leaves very short, pungent; panicle contracted, the branches usually in pairs, ovoid; palea hairy; awn short, often deciduous or wanting. (Torr. N. Y. Fl.) *Milium pungens* Torr. Fl.

Rocky hills. Mass. and N. Y. 2.—*Culm* 8—15 inches high, slender, simple, rigid. *Radical leaves* 6—8 inches long, about a line wide, at length involute, pungent. *Panicle* oblong, few-flowered.

Dwarf Oryzopsis.

15. STIPA. Linn.—Feather Grass.

(From the Greek *στύπη*, a feathery substance; particularly applicable to one of the species.)

Spikelets 1-flowered; the flower stipitate. Glumes 2-valved, membranaceous. Palea 2, longer than the glumes, somewhat coriaceous, cylindric-involute; the lower awned at the summit. Awn twisted at the base. *Caryopsis* terete, furrowed.—Inflorescence panicle.

S. avenacea Linn.: leaves setaceous; panicle spreading, somewhat secund, the branches mostly in pairs; glumes as long as the palea; awn very long, naked. *S. barbata* Mich.

Sandy woods. N. Y. and Mass. to Geor. June. 2.—*Culm* about 2 feet high, slender, simple. *Leaves* mostly radical, 6—8 inches long. *Panicle* nodding, at length diffuse.

Black Oat-grass.

16. ARISTIDA. Linn.—Three-awned Grass.

(From the Latin *arista*, an awn or beard.)

Flower stipitate. Glumes membranaceous, unequal. Palea mostly 2; lower one coriaceous, involute, 3-awned at the tip; upper very minute or obsolete. Scales 2, entire, smooth.—Spikelets racemose or paniculate.

1. *A. dichotoma* Mich.: culm cespitose, dichotomously branched; panicle contracted, racemose; lateral awns very short; the intermediate one nearly as long as the palea, contorted.

Sterile soils. Mass. and N. Y. to Car. Aug. ①?—*Culm* 9—15 inches long, slender, branching at the joints. *Leaves* flat, very slender, smoothish. *Racemes* on clavate peduncles.

Forked Three-awned Grass.

2. *A. gracilis* Ell.: culm very slender, erect; panicle spiked, the flowers appressed; lateral awns rather shorter than the paleæ, erect; middle one longer, bent, not twisted; lower palea spinulose on the keel. (*Torr. N. Y. Fl.*) *A. stricta* Darlingt. not of Mich.

Sterile sandy soils. N. Y. to Car. Sept. ①.—Culm 4—15 inches high, smooth. Leaves very narrow, convolute when dry. Panicle 2—5 inches long, slender. *A. stricta* Mich. is probably confined to the southern states.

Slender Three-awned Grass.

3. *A. purpurascens* Poir.: culm filiform, erect, simple; leaves very narrow, flat; flowers in a long spiked panicle; awns nearly equal, twice as long as the paleæ, divaricate.

Sandy fields and woods. Mass. to Penn.? Sept. ②.—Culm 2—3 feet high, Leaves filiform at the extremity. Panicle elongated, loose, purple. Introduced?

Purple Three-awned Grass.

V. AGROSTÆE. Spikelets 1-flowered, rarely with the subulate rudiment of an upper flower. Glumes and paleæ 2, membranaceously herbaceous; lower palea often awned. Stigma mostly sessile.

17. MUHLENBERGIA. Schreb.—Muhlenbergia.

(In honor of the late Henry Muhlenberg, D.D., one of the most distinguished American botanists.)

Glumes 2, very minute, unequal, one scarcely perceptible. Paleæ much longer than the glumes, linear-lanceolate, nerved, hairy at base; the lower one terminating in a long slender bristle.—Panicle more or less contracted.

1. *M. diffusa* Schreb.: culm decumbent, diffuse; leaves linear-lanceolate; panicle slender, branched, the branches appressed; bristles about twice as long as the palea.

Woods and pastures. N. Y. to Car. July. ③.—Culm 12—18 inches long, compressed, geniculate, branched. Leaves rough. Panicles terminal and lateral, very slender; bristle purplish.

Spreading Muhlenbergia. Drop-seed Grass.

2. *M. erecta* Schreb.: culm erect, simple; leaves lanceolate, pubescent; panicle simple, loose; awn twice as long as the palea; upper palea with an awn at base lodged in a groove on the back. *Brachyelytrum aristatum* Beauv.

Rocky hills. Can. to Car. July. ④.—Root creeping. Culm 2—3 feet high, erect, slender. Leaves 4—6 inches long. Panicle simple, racemose, erect. Lower palea with a very long awn.

Erect Muhlenbergia.

18. CINNA. Linn.—Cinna.

(From the Greek *κιννα*, a kind of grain.)

Glumes nearly equal, compressed, the upper one 3-nerved. Paleæ 2, nearly equal, compressed, shortly stipitate, naked at the base; the lower one larger, enclosing the upper, with a short awn near the summit. Stamen 1.—Panicle loose.

C. arundinacea Willd. : culm simple, smooth ; leaves linear-lanceolate ; panicle large, loose, with the branches somewhat in fours, capillary. *Muhlenbergia Cinna* Trin. *Agrostis Cinna* Pursh.

Wet grounds. Can. to Car. Aug. ♀.—Culm 2—5 feet high. Leaves a foot or more in length, rough on the margin. Panicle terminal, 8—12 inches long. Flowers green or purplish. Reed-like *Cinna*.

19. AGROSTIS. Linn.—Bent Grass.

(From the Greek *aypos*, a field ; in reference to the place of growth.)

Glumes 2, nearly equal, usually longer than the flower, pointless. Paleæ 2 ; the lower one mostly awned on the back ; upper often minute or nearly wanting.—Panicle diffuse.

1. *A. stricta* Willd. : culm erect ; panicle elongated ; the branches verticillate, nearly erect ; glumes equal, oblong acute ; paleæ two, smaller than the glumes, unequal ; the lower one twice as long as the upper, with an awn at the base about twice as long as the palea.

Sandy fields. N. Eng. and N. Y. June. ♀.—Culm about a foot high, smooth, with black nodes. Leaves linear-lanceolate, rough on the margin. Panicle oblong, the primary branches whorled in fives. Spikelets somewhat crowded. Upright-flowered Bent-grass.

2. *A. vulgaris* With. : culm ascending ; panicle oblong, spreading, the branches smoothish and at length divaricate ; paleæ unequal, the outer one 3-nerved. *A. alba* Muhl. *A. polymorpha* Gray.

Pastures and meadows. Throughout the U. S. July. ♀.—Root creeping, throwing out many mostly ascending culms 1—2 feet high. Leaves linear-lanceolate, flat, scabrous, the ligule very short. Panicle 4—6 inches long, purplish, the branches a little rough. Introduced, but now completely naturalized. Herd's-grass. Red-top.

3. *A. alba* Linn. : panicle contracted, at length spreading, the branches hispid ; lower palea 5-nerved ; ligule oblong. *A. stolonifera* Linn. *A. decumbens* Muhl.

Wet meadows. Throughout the U. S. June, July. ♀.—Root creeping. Culm 1—2 feet high, ascending, often rooting at the lower joints. Leaves roughish, the sheaths smooth. Panicle pale green or purplish. Closely allied to the preceding, but generally stouter and taller. Introduced, but everywhere naturalized. Herd's-grass. Fiorin-grass.

4. *A. lateriflora* Mich. : culm erect, branched ; panicles lateral and terminal, contracted, dense-flowered ; glumes acuminate ; paleæ about as long as the glumes, equal, pubescent at base, awnless. *A. Mexicana* Muhl. *Muhlenbergia Mexicana* Trin.

Moist grounds. N. Y. to Virg. Aug., Sept. ♀.—Root creeping. Culm 2 feet or more high, much branched, often geniculate. Leaves broad-linear, flat. Panicles numerous, terminating the branches, pale green or purplish. Lateral-flowered Bent-grass.

5. *A. sobotifera* Muhl. : culm erect, branched ; panicle contracted, filiform, simple, with appressed alternate branches ; paleæ equal, longer than the glumes, awnless, hairy at base, the lower one mucronate at the tip. *Muhlenbergia sobotifera* Trin.

Rocky woods. N. Y. to Virg. Aug., Sept. ♀.—Culm 2 feet high, soboliferous, sometimes decumbent. Leaves pale green, somewhat scabrous. Panicle with the flowers rather crowded. Slender-branched Bent-grass.

6. *A. tenuiflora* Willd.: culm nearly simple, pubescent about the joints; branches appressed; panicle contracted, filiform; paleæ twice as long as the glume, hairy at base, the lower one three or four times as long as the spikelet. *Muhlenbergia Willdenovii* Trin.

Rocky woods. Can. to Car. July, Aug. 21.—*Root* creeping. *Culm* 3 feet or more high, with swelling and pubescent nodes. *Leaves* few, spreading, strongly nerved. *Panicle* elongated, very slender and contracted.

Slender-flowered Bent-grass.

7. *A. sylvatica* Torr.: culm ascending, much branched, diffuse, smooth; panicle slender, rather dense-flowered; paleæ longer than the glumes; awn about three times as long as the flower. *A. diffusa* Muhl. *Muhlenbergia sylvatica* Torr & Gr.

Rocky hills. N. Y. to Virg. Aug. 21.—*Root* creeping. *Culm* 2—3 feet high. Resembles the preceding, but differs in being much branched and diffuse.

Spreading Bent-grass.

8. *A. compressa* Torr.: whole plant very smooth; culm erect, compressed, simple; panicle oblong, subcontracted; glumes equal, shorter than the paleæ, acute; paleæ rather obtuse, smooth at the base.

Sandy swamps. N. J. Sept. 21.—*Root* creeping. *Culm* soboliferous. *Leaves* linear, long, compressed, with carinate sheaths. *Panicle* purple.

Compressed Bent-grass.

9. *A. juncea* Mich.: leaves straight and erect, convolutedly setaceous; panicle oblong-pyramidal, verticillate; paleæ awnless, twice the length of the unequal glumes. *A. Indica* Muhl.

Sandy barrens. N. J. to Flor. Oct. 21.—*Culm* 1—2 feet high, terete. *Panicle* purple.

Rush-like Bent-grass.

10. *A. canina* Linn.: var. ? *tenella* Torr.: panicle loose, somewhat contracted; the branches mostly in threes, slightly hispid; glumes nearly equal, lanceolate, very acute, rough on the keel; lower palea narrow-lanceolate, rather acute, with a geniculate awn a little below the middle; the awn about twice the length of the flower; upper palea nearly wanting. (*Torr. N. Y. Fl.*)

Mountains in Northern N. Y. Aug. 21.—*Culm* about a foot high, slender, smooth. *Leaves* very narrow, flat. *Panicle* very slender, the branches somewhat flexuous. Differs from *A. canina* in its less diffuse panicle, narrow glumes and flat leaves.

Brown Bent-grass.

20. TRICHODIUM. Mich.—Thin Grass.

(From the Greek *τριξ*, hair, and *ειδος*, form; in allusion to the hair-like inflorescence.)

Glumes 2, nearly equal, very acute, scabrous on the keel. Palea 1, shorter than the glumes, sometimes awned. Caryopsis loose, covered by the palea.—Flowers in loose panicles.

1. *T. laxiflorum* Mich.: culm erect; leaves lance-linear, short, the sheaths somewhat rough; panicle diffuse, capillary, with trichotomous branches; glumes unequal, aculeate-hispid on the keel. *T. montanum* Torr. *Fl.* *Agrostis laxiflora* Richardson. *A. Michauxii* Trin.

Dry fields. Subarct. Amer. to Car. May, June. 21.—*Culm* 18 inches high, very slender. *Lower leaves* 3—6 inches long, becoming involute and fili-

form. *Panicle* purple, very loose, the lower branches in fives or sixes, the upper ones in threes, at length spreading. *Spikelets* clustered at the extremity of the branchlets. A somewhat variable species. *Loose-flowered Thin-grass.*

2. *T. scabrum* Muhl.: culm geniculate at base, assurgent, branched; leaves linear-lanceolate, flat, scabrous on the margin; panicle oblong; branches spreading or divaricate, the divisions trichotomous; glumes unequal. *Agrostis scabra* Willd. *A. laxiflora* var. *scabra* Torr. N. Y. Fl.

Woods. Can. to Car. July, Aug. ♀.—*Culm* 12—18 inches high, often somewhat decumbent and branching. *Leaves* 4—6 inches long. *Panicle* pale green, the branches slender, but shorter than in the preceding. *Spikelets* not clustered. *Rough Thin-grass.*

3. *T. elatum* Pursh.: culm stiffly erect; leaves narrow-linear, flat, scabrous, the sheaths smooth; panicle verticillate, somewhat spreading; glumes nearly equal. *Agrostis dispar* Mich.?

Sandy swamps. N. J. to Car. Aug. ♀.—*Culm* 2—3 feet high. *Panicle* purple, exserted. *Tall Thin-grass.*

21. VILFA. Adans.—Vilfa.

(Origin unknown.)

Glumes carinate; the lower one smaller. *Paleæ* awnless; the lower one rather acute, longer than the glumes; the upper 2-keeled. *Stigmas* simply plumose. *Caryopsis* deciduous.—*Panicle* diffuse or contracted and spike-like.

1. *V. vaginæflora* Torr.: culms numerous, assurgent; leaves distichous, involute, rigid; panicles lateral and terminal, spike-form; the lateral ones concealed in the sheaths; glumes equal, about as large as the *paleæ*. *Agrostis Virginica* Muhl.

Sandy soils. N. Y. to Virg. Sept., Oct. ①.—*Culms* about a foot high, cespitose, geniculate at base. *Leaves* with a slender point, the sheaths tumid. *Panicle* oblong, compressed, few-flowered. *Anthers* purple.

Hidden-flowered Vilfa.

2. *V. aspera* Beauv.: leaves very long, filiform and recurved towards the apex; panicle contracted, spiked, partly exserted from the uppermost sheath; *paleæ* much longer than the glumes, subequal, smooth or hairy, without awns. *Agrostis aspera* Mich.

Sandy fields and hill sides. N. Y. and Mass. to Car. Sept., Oct. ♀.—*Culm* 2—4 feet high, simple, terete. *Leaves* 1—2 feet long, tapering to a filiform extremity, rough on the margin. *Panicles* lateral and terminal, the former more or less exserted. *Rough-leaved Vilfa.*

3. *V. serotina* Torr. & Gr.: culm filiform, much compressed; leaves very narrow, keeled, erect; panicle elongated, capillary, somewhat diffuse; glumes ovate, unequal, about half as long as the awnless *paleæ*. *Agrostis serotina* Torr. Fl.

Sandy swamps. N. Y. and N. J. Sept. ♀.—*Culm* 12—18 inches high. *Leaves* short, almost filiform. *Panicle* slender, with the branches flexuose.

Late-flowering Vilfa.

4. *V. heterolepis* Gray: leaves setaceous; panicle pyramidal, sparsely flowered; lower glume subulate; the upper one ovate, cuspidate, about

twice the length of the lower; paleæ nearly equal, pointless, a little shorter than the upper glume. (*Torr. N. Y. Fl.*)

On rocks. Watertown, Jefferson County, N. Y. W. to Ohio. 2.—*Culm* 1—2 feet high, smooth. *Leaves* convolute-setaceous, the lower ones equalling the culm, the upper shorter. *Panicle* spreading or somewhat contracted, purplish. It is said to emit a strong odor, resembling that of *Poa Eragrostis*.

Strong-scented Vilfa.

5. *V. cryptandra Torr.*. panicle pyramidal, the base usually enclosed in the upper sheath, with spreading mostly alternate branches, which are hairy on the axils; spikelets racemose; flowers awnless; lower glume very short; the upper one as long as the nearly equal lanceolate acute paleæ. (*Torr. N. Y. Fl.*)

Sandy soils. N. Y. and Mass. W. to the Rocky Mountains. Aug. 2.—*Culm* 1½—3 feet high, leafy, smooth. *Leaves* short, smooth; the sheaths densely bearded at the throat. *Panicle* large, bluish.

Large-panicked Vifla.

22. POLYPOGON. Desf.—Beard Grass.

(From the Greek πολυς, many, and πωγων, a beard; in reference to the unusual number of awns.)

Glumes 2-valved, 1-flowered; valves membranaceous, awned. Paleæ 2; the lower one with a long awn; the upper one bifid, toothed.—Panicle spike-form.

1. *P. glomeratus Willd.*: panicle dense, oblong, interrupted below; glumes linear, acuminate, nearly equal, armed with a long rough bristle; paleæ unarmed, hairy at base. *P. racemosus Nutt.* *Muhlenbergia glomerata Trin.*

Bogs and swamps. Mass. and N. Y. W. to Miss. Aug., Sept. 2.—*Culm* 3—4 feet high, a little compressed, simple or sparingly branched above. *Leaves* scabrous and somewhat glaucous. *Panicle* crowded and spike-like, the lower flowers remote.

Close-flowered Beard-grass.

2. *P. sericeus Spreng.*: leaves convolute-filiform, smooth; panicle diffuse, capillary, very slender; pedicels longer than the awns; awns 3—4 times as long as the paleæ. *Trichochloa capillaris D. C.* *Stipa sericea Mich.* *Agrostis sericea Muhl.*

Sandy fields. Mass. to Car. June, July. 2.—*Culms* 2 feet high, cespitose, very slender. *Panicle* 8—10 inches long, glossy and purple.

Silky Beard-grass.

VI. ARUNDINEÆ. *Spikelets either 1-flowered, with or without an abortive pedicel, or many-flowered. Flowers usually with long soft hairs at the base. Glumes and paleæ 2, membranaceously herbaceous.*

23. CALAMAGROSTIS. Adans.—Small Reed.

(From the Greek κάλαμος, a reed, and *Agrostis*, a genus of grasses.)

Spikelets 1-flowered. Glumes 2, nearly equal, acute or acuminate. Paleæ 2, mostly shorter than the glumes, surrounded with hairs at the base; lower one mucronate, mostly awned be-

low the tip; upper with a stipitate pencil-form pappus at base.—Flowers in a loose panicle.

1. *C. Canadensis* Beauv.: panicle oblong, loose; glumes nearly equal, serrulate on the keel, somewhat rough on the sides; paleæ as long as the glumes, the lower with an awn on the back. *Arundo Canadensis* Mich. *A. cinnooides* Muhl.

Wet meadows. Can. to Car. July, Aug. ♀.—*Culm* 8—4 feet high, smooth. *Leaves* a foot long, narrow, somewhat scabrous. *Panicle* erect, much divided, at length spreading. *Canadian Small-reed.*

2. *C. coarctata* Torr.: panicle contracted, thick, and somewhat spike-form; glumes narrow-lanceolate, nearly equal, a little longer than the paleæ, keeled; lower palea awned a little below the summit; pappus two-thirds as long as the flower. *C. Canadensis* Nutt. *Agrostis glauca* Muhl.

Wet meadows and swamps. Arct. Amer. to Penn. Aug. ♀.—*Culm* 3—5 feet high, simple, somewhat glaucous. *Leaves* linear-lanceolate, scabrous and somewhat hairy. *Panicle* terminal, erect, with short aggregated branches. *Glaucous Small-reed.*

3. *C. inexpansa* Gray: panicle contracted, elongated; glumes oblong-lanceolate; paleæ nearly equal, as long as the glumes, the lower one with a scarcely exerted awn inserted below the middle; pappus nearly as long as the flower. (*Torr. N. Y. Fl.*)

Swamps. Northern and Western N. Y. July, Aug. ♀.—*Culm* about 3 feet high, erect, simple. *Leaves* 2—3 lines wide, smooth. *Panicle* 4—6 inches long, slender, with short rough appressed branches. Differs from the preceding in its more slender panicle, broader and less acute glumes, and the awn inserted near the base of the paleæ. *Torr.* *Close-flowered Small-reed.*

24. AMMOPHILA. *Host.*—Sea Reed.

(From the Greek ἀμμος, *sand*, and φίλος, a *lover*; in allusion to its place of growth.)

Glumes nearly equal, keeled. Paleæ shorter than the glumes, surrounded with short hairs at the base, keeled, awnless. Abortive pedicel plumose above.—Panicle spiked, dense and cylindric.

A. arundinacea *Host.*: glumes acute; hairs or pappus about one-third as long as the paleæ. *Arundo arenaria* Linn. *Psamma arenaria* R. & S.

Sandy sea-coast. Can. N. Y. and N. Eng. Aug. ♀.—*Root* branching and extensively creeping in the sand. *Culm* 2—3 feet high, erect. *Leaves* long, smooth, and glaucous. *Panicle* 6—12 inches long, close and spike-like, whitish. The roots of this grass form a mat, which prevents the motion of sand; and it is sometimes planted on shores to protect them from the inroads of the sea. It is used in Massachusetts for the manufacture of paper.

Common Sea-reed or Mat-weed.

25. PHRAGMITES. *Trin.*—Reed.

(From the Greek φραγμος, a *partition* or *hedge*; in allusion to the use said to have been made of it.)

Spikelets 3—7-flowered. Glumes 2, lanceolate, unequal. The lower flower staminate and naked at base; the others per-

fect, and surrounded by a tuft of hairs. Paleæ very unequal; the lower one elongated, acuminate; the upper 2-keeled.—Panicle terminal, very large.

P. communis Trin.: panicle loose, 1-sided; spikelets 3—5-flowered. *Arundo Phragmites* Linn.

Margins of swamps and ponds. Can. to Geor. W. to Miss. Aug. 7.—*Culm* 9—12 feet high, very leafy, with numerous joints. *Leaves* 1—2 feet long, linear-lanceolate, flat, glaucous, rough on the margin. *Panicle* terminal, very large, loose, somewhat nodding. The largest grass in the Northern States; and at a distance somewhat resembling *Broom-corn*. *Common Reed-grass*.

VII. CHLOREÆ. *Spikelets arranged in unilateral digitate or paniculate (rarely solitary) spikes, 1-many-flowered; upper flowers imperfect. Glumes and paleæ 2, membranaceously herbaceous; the latter often awned. Rachis not articulated.*

26. CYNODON. Rich.—Dog's-tooth Grass.

(From the Greek *κυνων*, a dog, and *οδον*, a tooth.)

Spikelets filiform, unilateral, with one perfect flower and one abortive rudiment. Glumes membranaceous, persistent, shorter than the flower and only embracing it at the base. Fertile flower with the upper palea bifid-toothed. Rudiment minute, pedicellate. Caryopsis loose, not furrowed.—Spikes digitate or racemose.

C. Dactylon Pers.: culm creeping; spikes digitate, 3—5, spreading; glume with the keel scabrous; paleæ smooth, longer than the glume, the lower one with a bristle at the base. *Digitaria Dactylon* Muhl.

Sandy soils. Penn. to Geor. July, Aug. 7.—*Culm* a foot or more long, prostrate. *Leaves* narrow, somewhat distichous, hairy on the margin and near the base. *Stigmas* dark purple. Introduced. *Creeping Dog's-tooth Grass*.

27. ELEUSINE. Gart.—Dog's-tail Grass.

(*Ελευσινια* was one of the names of Ceres, the goddess of harvests; probably from *Eleusis*, where she was worshipped.)

Spikelets sessile, 2—6-flowered. Glumes unequal, shorter than the flowers. Paleæ unequal, awnless; the lower keeled; upper shorter, channelled on the back. Caryopsis triangular-ovoid, transversely rugose.—Spikes digitate, unilateral.

E. Indica Gart.: culm oblique, compressed; leaves smooth; spikes 2—4, linear, straight; spikelets closely imbricate, lanceolate, about 5-flowered. *Cynosurus Indicus* Linn.

Cultivated grounds, in farm-yards, &c. Throughout the U. S. July.—Nov. ①.—*Culm* 9—18 inches long, compressed, branching from the base. *Leaves* distichous, linear, somewhat pubescent. *Spikes* 1—6, but usually 2—4. Probably introduced. *Dog's-tail Grass*. *Wire-grass*.

28. SPARTINA. Schreb.—Marsh Grass.

(Said to be named on account of its similarity to *Lygeum Spartum*.)

Spikelets imbricate, one-flowered, much compressed. Glumes and paleæ unequal, awnless. Styles mostly united below.—Spikes unilateral.

1. *S. cynosuroides* Willd.: leaves very long, filiform at the end, at length convolute; spikes numerous, (8—40,) scattered, pedunculate, forming a long secund panicle; glumes serrulate on the keel, with a long slender point; style 2-cleft at the summit. (*Torr. N. Y. Fl.*) *S. polystachya* Muhl. *Limnætis cynosuroides* and *polystachya* Pers.

Marshes and banks of streams. Can. to Car. W. to the Platte River. Aug. ♀.—*Culm* 3—8 feet high, smooth, terete. *Leaves* 1—3 feet long, narrow. *Spikes* linear, about 3 inches long, on scabrous spreading peduncles.

Tall Marsh-grass.

2. *S. juncea* Willd.: leaves distichous, convolute, spreading; spikes few, (1—5,) on smooth peduncles; paleæ rather obtuse; styles distinct nearly to the base. *Limnætis juncea* Pers.

Salt marshes and river banks. Can. to Car. July, Aug. ♀.—*Root* creeping, forming thick tufts. *Culm* 1—2 feet high, rigid, smooth. *Leaves* 6—10 inches long, very slender, smooth. *Spikes* usually 3; the lowest pedunculate. It forms a part of salt hay.

Rush-like Marsh-grass.

3. *S. alternifolia* Loisel.: leaves channelled, erect; spikes numerous, (8—14), elongated, sessile, erect, appressed; glumes and paleæ nearly smooth; styles distinct nearly to the base. *S. glabra* Muhl.

Salt marshes. N. Y. and Mass. to Car. Aug., Sept. ♀.—*Root* creeping extensively. *Culm* 3—5 feet high, smooth and somewhat succulent. *Leaves* broad at the base, tapering to a long point. *Spikes* unequal, closely appressed to the common rachis. For thatching it is said to be preferable to wheat straw. It has a strong rancid smell, which renders it unfit for cattle.

Smooth Marsh-grass.

29. ATHEROPOGON. Muhl.—Atheropogon.

(From the Greek *αθηρ*, a bristle, and *πωγων*, a beard; the beards being bristle-like.)

Spikelets unilateral, nearly sessile, alternate, 2—3-flowered; the terminal flower abortive. Glumes 2, membranaceous, unequal; the lower shorter, setiform. Perfect flower, subcoriaceous. Lower palea 3-toothed or 3-bristled; upper bifid. Abortive flower pedicellate, neutral.—Spikes short, arranged in a raceme.

A. apludoides Muhl.: spikes numerous, in a terminal raceme, alternate, distant, pendulous, at length secund; spikelets mostly 2-flowered; lower palea of the perfect flower tricuspidate; abortive flower with 3 bristles. *Chloris curtispindula* Mich. *Bouteloua racemosa* Lag. *Torr. N. Y. Fl.*

Dry rocky banks. N. Y. N. J. and Penn. W. to the Rocky Mountains; rare. Aug. ♀.—*Culm* 2—3 feet high, geniculate at base, smooth. *Leaves* lanceolate,

attenuate at the end, involute when dry, slightly hairy above. *Spikes* 20—40, on short flat peduncles, each containing 6—8 spikelets. *Anthems* bright red.
Racemed Atheropogon.

30. GYMNOPOGON. Beauv.—Gymnopogon.

(From the Greek *γυμνος*, *naked*, and *πωγων*, a *beard*; in allusion to the awn of the neutral flower.)

Glume 2-valved, carinate, nearly equal. *Paleæ* nearly equal; the lower one with a long and straight bristle a little below the tip. Neutral rudiment pedicellate, of one minute valve produced into an awn.—Flowers in a compound spike or panicle.

G. racemosus Beauv.: culm ascending; leaves distichous, ovate-lanceolate, nerved, short; spikes numerous, arranged in a somewhat whorled panicle; flowers appressed. *Andropogon ambiguus* Mich. *Anthopogon lepturoides* Nutt.

Sandy fields. N. J. to Geor. Aug. ♀.—*Culm* about 2 feet high, decumbent at base. *Leaves* 2 inches or less in length, very acute. *Panicle* large, spreading.
Racemed Gymnopogon.

VIII. AVENEÆ. *Spikelets* 2—many-flowered; *terminal flower* commonly imperfect. *Glumes* and *paleæ* 2, membranaceously herbaceous; *lower palea* usually with a twisted awn on the back.

31. HIEROCHLOA. Gmel.—Holy Grass.

(From the Greek *ἱερός*, *sacred*, and *χλόα*, a *grass*; because in some parts of Prussia it is used on festival days.)

Spikelets 3-flowered, pedicellate. Lateral flowers staminate, triandrous and mostly awned; terminal or central one perfect, diandrous, awnless.—Flowers in a contracted panicle.

1. *H. borealis* R. ♀. *S.*: panicle somewhat one-sided, a little spreading; peduncles smooth; flowers awnless; lower palea ciliate on the margin. *Holcus odoratus* Linn.

Wet meadows. Subarct. Amer. to Virg. W. to Mich. May. ♀.—*Root* creeping. *Culm* 18 inches high, erect. *Leaves* linear-acuminate, smooth and shining. *Panicle* few-flowered, pyramidal, brown and purple. Smell resembling that of *Anthoxanthum odoratum*, and like that grass used to scent clothes and apartments.
Northern Holy-grass. Vanilla-grass.

2. *H. alpina* R. ♀. *S.*: panicle ovate, contracted; spikelets compressed, longer than the branches; glumes lanceolate, almost nerveless; lateral flowers triandrous, obtuse, awned on the back. *Holcus alpinus* Wahl.

High mountains. Essex County, N. Y. White Mountains, N. H. Arct. Amer.; rare. June. ♀.—*Culm* 6—12 inches high, erect. *Leaves* 2—3 lines wide. *Panicle* with the branches in pairs. *Spikelets* larger than in the preceding, shining and purplish-brown.
Alpine Holy-grass.

32. ANTHOXANTHUM. Linn.—Vernal Grass.

(From the Greek *ανθος*, a *flower*, and *ξανθος*, *yellow*; in allusion to the color of its spikes.)

Spikelets 3-flowered; the two lower flowers neutral and each

consisting of a single awned palea; the upper flower perfect, of 2 paleæ, diandrous, nearly equal, short, awnless.—Panicle contracted or spike-like.

A. odoratum Linn.: panicle spiked, ovoid-oblong; flowers pubescent, shorter than the awns.

Meadows and woods. Can. to Car. June—Aug. ♀.—*Culm* about a foot high, erect, rather slender. *Leaves* short, more or less pubescent. *Panicle* contracted into an oblong or ovoid-oblong spike, yellow when mature. When cut and partially dry it gives out a very fragrant odor. Introduced from Europe, but completely naturalized. *Sweet-scented Vernal-grass.*

33. AIRA. Linn.—Hair Grass.

(From the Greek *αἶρω*, to destroy; a name originally applied to a poisonous plant, *Lolium temulentum*.)

Spikelets 2—3-flowered; the flowers without an abortive rudiment between them. Glumes 2, unequal, about as long as the flowers. Paleæ thin and membranaceous, the lower one awned on the back below the middle.—Flowers usually in a compound spreading panicle.

1. *A. flexuosa* Linn.: leaves setaceous, smooth; panicle loose, spreading, trichotomously branched; branches smoothish, flexuous; flowers scarcely longer than the glumes; awn geniculate, longer than the paleæ.

Dry rocky banks. Can. to Car. W. to Mich. June. ♀.—*Culm* 1—2 feet high, smooth. *Leaves* mostly radical or near the base of the culm, involute, slender. *Panicle* capillary, loose, whitish, the lower branches somewhat whorled. *Common Hair-grass.*

2. *A. cæspitosa* Linn.: leaves flat, scabrous; panicle at length diffuse; glumes about as long as the paleæ; awn short, straight. *A. aristulata* Torr. Fl.

Wet places. Can. to Penn. June, July. ♀.—*Culms* 2—3 feet high, cespitose, smooth. *Leaves* narrow, rough above, smooth beneath. *Panicle* large, oblong or pyramidal, capillary, dull purplish; the branches somewhat whorled. *Tufted Hair-grass.*

3. *A. atropurpurea* Wahl.: leaves flat; panicle divaricate, of few spikelets; flowers much shorter than the glumes; paleæ a little hairy at the summit; awn from the middle of the back, nearly twice as long as the flowers. (Torr. N. Y. Fl.)

High mountains of Essex County, N. Y. Aug. ♀. ?—*Culm* 8—15 inches high, erect, slender. *Leaves* short, smooth. *Panicle* loose, purplish or yellowish-green; branches mostly in pairs and flexuous. *Purple Alpine Hair-grass.*

4. *A. præcox* Linn.: leaves setaceous; panicle somewhat spiked; flowers scarcely villous at the base, about as long as the glumes; awn twisted, inserted below the middle, longer than the flowers. *Avena præcox* Beauv.

Sandy fields. N. J. to Virg. June. ♂.—*Culms* 3—4 inches high, cespitose, smooth, leafy. *Leaves* short, smooth. *Panicle* somewhat compact, few-flowered, greenish. Introduced? *Early Hair-grass.*

34. ARRHENATHERUM. Beauv.—Oat Grass.

(From the Greek *αρρηνη*, male, and *αθηρη*, an awn; the staminate flower being awned.)

Spikelets 2-flowered. Lower flower staminate; the lower palea with a long twisted awn below the middle. Upper flower perfect; the lower palea with a short straight bristle below the point.—Panicle loose.

A. avenaceum Beauv. *Avena elatior* Linn.

Cultivated grounds. Mass. N. Y. and Penn. May, June. 2½.—*Root* creeping. *Culm* 2—3 feet high, erect. *Leaves* scabrous on the margin and upper surface. *Panicle* oblong, at first contracted, finally spreading and somewhat nodding; the branches short and semiverticillate. *Spikelets* brownish. Introduced from Europe, but naturalized in several places.

Common Oat-grass. Grass of the Andes.

35. AVENA. Linn.—Oat.

(Name of doubtful origin.)

Spikelets 3—many-flowered; flowers rather remote, the upper ones often imperfect. Glumes loose and membranaceous, nearly equal. Paleæ 2; the lower one bifid at the summit, with a twisted awn above the base.—Panicle compound, loose.

1. *A. Pennsylvanica* Linn.: panicle attenuated, loose, nodding, the branches somewhat verticillate; spikelets 2—3-flowered; flowers smooth, lower one often awnless, upper one on a hairy pedicel; lower palea with a slender awn below the bifid tip, about twice the length of the flower. *A. palustris* Mich. *Trisetum Pennsylvanicum* Beauv. *T. palustre* Torr. Fl.

Wet meadows. N. Y. to Flor. June. 2½.—*Culm* 2—3 feet high, slender, erect. *Leaves* flat, narrow, 2—4 inches long. *Panicle* oblong, yellowish-green, often somewhat one-sided. *Pennsylvania Wild Oat.*

2. *A. striata* Mich.: panicle nearly simple, loose, few-flowered; spikelets 3—5-flowered, somewhat terete, the flowers bearded at the base; lower palea with a slender nearly straight awn below the tip. *Trisetum purpurascens* Torr. Fl.

Moist woods. Can. N. Y. and Mass. July. 2½.—*Culm* 2—3 feet high, erect, smooth. *Leaves* narrow-linear. *Panicle* 4—6 inches long, with a few simple branches. *Glumes* reddish-purple. *Purple Wild Oat.*

36. TRisetum. Pers.—Trisetum.

(From the Latin, in allusion to the three bristles of the flowers.)

Spikelets 2—4-flowered. Glumes membranaceous, keeled, awnless. Paleæ herbaceous; lower one with 2 long cusps at the summit and a twisted awn on the back; upper 2-keeled. Caryopsis smooth, with a longitudinal groove.—Panicle contracted.

T. molle Kunth: whole plant minutely and softly pubescent; panicle

contracted and somewhat spiked; glumes 2-flowered, the flowers not bearded; awn about the length of the palea, not twisted, diverging or recurved. (*Torr. N. Y. Fl.*) *T. subspicatum* Beck *Bot. 1st Ed. Avena mollis* Mich.

Banks of streams and on mountains. Arct. Amer. Western N. Y. White Mountains, N. H. Rocky Mountains. June. ♀.—*Culm* about a foot high, erect, slender. *Leaves* 2—3 inches long, narrow-linear. *Panicle* 2—3 inches long, with appressed branches. Closely allied to *T. subspicatum* and perhaps identical with it. *Soft Trisetum.*

37. DANTHONIA. D. C.—Danthonia.

(In honor of *M. Danthoine*, a French botanist.)

Spikelets 2—10-flowered; the upper flowers often imperfect. Glumes nearly equal, mostly longer than the flower. Paleæ hairy at the base; lower one 2-toothed at the summit, with a twisted awn between the teeth; upper one obtuse, entire.—Flowers in a spiked panicle.

D. spicata Beauv.: leaves subulate; lower sheaths hairy at the throat; panicle spike-form, simple; spikelets 7—9, about 7-flowered; lower palea hairy. *Avena spicata* Linn.

Woods and fields. Can. to Car. W. to Mich. June—Aug. ♀.—*Culms* 1—2 feet high, erect, cespitose at base. *Leaves* very narrow, numerous below. *Panicle* 1-sided, short, the lower branches sometimes divided. *Wild Oats.*

38. URALEPIS. Nutt.—Uralepis.

(From the Greek *ούρα*, a tail, and *λεπίς*, a scale; in allusion to the appearance of the lower palea.)

Spikelets 2—3-flowered, somewhat terete; flowers alternate, distinct, longer than the glumes. Paleæ very unequal, distinctly villous on the margin; lower palea tricuspidate, the central cusp produced into a short bristle; upper entire, concave, incurved. Caryopsis gibbous.—Panicle simple, racemose.

U. aristulata Nutt.: lateral panicles concealed in the sheaths of the leaves, terminal one more or less exserted; spikelets 3-flowered; awn as long as the lateral cusps.

Sea coast and sandy fields. N. Y. and Penn. W. to Ark. Aug., Sept. ♂.—*Culms* about a foot high, cespitose, jointed. *Leaves* short, subulate. *Terminal panicle*, when exserted, spreading. *Flowers* purplish.

Short-awned Uralepis.

IX. FESTUCEÆ. *Spikelets usually many-flowered. Glumes and paleæ 2, of nearly similar texture, usually keeled. Lower palea often awned; the awn not twisted.*

39. POA. Linn.—Meadow Grass.

(Greek *πoa*, grass, or *pasturage*; applied by way of distinction to this genus.)

Spikelets 2- many-flowered; the flowers distichous, perfect.

Glumes 2, pointless, shorter than the flowers. Paleæ nearly equal, membranaceous, awnless, often with a villous web at the base; the lower one keeled or concave; upper one 2-keeled. Stigmas simply plumose. Caryopsis free.—Spikelets in diffuse or contracted panicles.

* *Flowers webbed at base.*

1. *P. pungens* Nutt.: culm compressed; leaves very short, cuspidate; panicle somewhat simple, spreading; spikelets lance-ovate, 3—4-flowered, crowded at the extremities of the branches; flowers rather obtuse. *P. flexuosa* Muhl.

Rocky woods. N. Y. to Car. April, May. ♀.—Culm 1—2 feet high, compressed, smooth, somewhat cespitose. Leaves erect, cuspidate; the radical ones long, linear; those of the culm usually 2, very short. Panicle small, semiverticillate. *Sharp-leaved Meadow-grass.*

2. *P. pratensis* Linn.: culm terete, smooth; leaves keeled, linear, abruptly acute; ligule short, truncate; panicle somewhat crowded, finally spreading; spikelets oblong-ovate, about 4-flowered; flowers acute, 5-nerved. *P. viridis* Muhl.

Fields and meadows. Can. to Car. May—July. ♀.—Root creeping. Culm 2—3 feet high. Leaves deep green, the lower very long, the upper much shorter. Panicle at length pyramidal, spreading. Introduced from Europe. *Smooth-stalked Meadow-grass.*

3. *P. trivialis* Linn.: culm and sheaths somewhat rough; ligule elongated, acuminate; panicle equal, diffuse; spikelets oblong-ovate, 2—3-flowered; flowers 5-nerved. *P. stolonifera* Muhl.

Wet meadows. N. Y. to Del. June—Aug. ♀.—Root fibrous. Culm 2—3 feet high, often stoloniferous at base. Leaves very narrow, pale green. Panicle large, pyramidal, the branches somewhat whorled. *Rough Meadow-grass.*

4. *P. compressa* Linn.: culm decumbent or oblique, much compressed, smooth; panicle contracted, somewhat secund; spikelets ovate-oblong, 4—8-flowered; flowers obscurely nerved.

var. *sylvestris* Torr.: culm slender, nearly erect; panicle loose, somewhat spreading; spikelets 2—3-flowered.

Fields and pastures. N. Eng. N. Y. and Penn. June, July. ♀.—Root creeping extensively. Culm 12—18 inches high, often decumbent and rooting at base. Leaves short, smooth, and with the culm bluish-green. Panicle contracted, at first almost spike-like, finally a little expanding. Introduced from Europe. *Blue-grass. Wire-grass.*

5. *P. scrotina* Ehrh.: culm erect, smooth; panicle elongated, diffuse, at length somewhat nodding at the top; spikelets ovate-lanceolate, 2—3-flowered; flowers yellowish at the tip, obscurely 5-nerved. *P. palustris* Muhl.

Wet meadows. N. Eng. and N. Y. June. ♀.—Root creeping. Culm 2—3 feet high. Leaves flat, smooth. Panicle 6—10 inches long; the branches mostly whorled in fives, rough and flexuous. *Red-top.*

6. *P. nemoralis* Linn.: culm and leaves smooth; ligule almost wanting; panicle slender, a little attenuated, loose; the branches rough and flexuous;

spikelets ovate-lanceolate, about 3-flowered; flowers rather distant, hairy, acute, very obscurely nerved.

Woods and thickets. N. Eng. and N. Y. June, July. ♀.—*Root* creeping. *Culm* 2 feet high, slender. *Leaves* narrow-linear, acute. *Panicle* 6—10 inches long, the branches semiverticillate. *Wood Meadow-grass.*

7. *P. laxa* Hænke: culms cespitose; leaves narrow-linear, acute; ligules all lanceolate; panicle contracted, somewhat nodding at the apex; the branches smooth, mostly in pairs; spikelets ovate, about 3-flowered; flowers acute, hairy. (*Torr. N. Y. Fl.*)

Summit of Mount Marcy, Essex county, N. Y. Aug. ♀.—*Culms* 6—8 inches high, cespitose, very slender. *Leaves* numerous, glaucous, smooth. *Panicle* 1—2 inches long, the branches flexuous. Allied to *P. alpina*.

Wavy Meadow-grass.

8. *P. debilis* Torr.: culm slender; leaves and sheaths smooth; ligule oblong, acute; panicle loose, few-flowered, somewhat spreading; the branches mostly in pairs, flexuous, a little rough; spikelets ovate, obtuse, 3-flowered; flowers smoothish; lower palea oblong, obtuse, slightly 3-nerved.

Rocky banks of streams. N. Y. May. ♀.—*Culm* about 2 feet high, erect, smooth. *Leaves* pale green, rough on the margin. *Panicle* oblong, somewhat contracted.

Weak Meadow-grass.

** *Flowers free, or not webbed at base.*

9. *P. annua* Linn.: culm oblique, compressed; panicle somewhat secund, at length divaricate; spikelets ovate-oblong, about 5-flowered.

Cultivated grounds. Can. to Car. April—Sept. ♂.—*Root* fibrous. *Culms* 3—8 inches long, very smooth, cespitose, often nearly procumbent. *Leaves* lance-linear, bright green. *Panicle* with the branches mostly solitary, at length spreading horizontally.

Annual Meadow-grass.

10. *P. capillaris* Linn.: culm much branched at base; sheaths hairy at the throat; panicle very large, loose, expanding; the branches capillary and much divided; spikelets about 3-flowered, ovate, acute.

Sandy fields. Can. to Flor. Aug. ♂.—*Culms* 12—18 inches high, cespitose. *Leaves* linear, flat, the sheaths fringed with long hairs. *Panicle* 8—12 inches long, pyramidal, much branched.

Hair-panicked Meadow-grass.

11. *P. hirsuta* Mich.: culm erect, simple, compressed; sheaths hairy; panicle very large, capillary; branches expanding, at length reflexed, bearded in the axils; spikelets oblong, 5—15-flowered; upper palea ciliate on the double keel. *P. spectabilis* Pursh.

Sandy fields. N. Eng. and N. Y. to Geor. Aug., Sept. ♂?—*Culm* 1—2 feet high, stout, mostly simple. *Leaves* long, lanceolate, somewhat hairy near the base. *Panicle* 8—15 inches long, very much branched, purplish.

Hairy Meadow-grass.

12. *P. pilosa* Linn.: culm oblique, geniculate; leaves hairy at the base; panicle capillary, pyramidal, the lower branches hairy in the axils; spikelets lance-linear, 5—12-flowered; glumes very unequal; upper palea persistent. *P. pectinacea* Mich. *P. tenella* Pursh.

Sandy soils, road sides, &c. N. Eng. and N. Y. to Car. July, Aug. ♂.—*Culms* 6—12 inches high, cespitose. *Leaves* linear-lanceolate, flat. *Panicle* large, loose, often purplish.

Slender Meadow-grass.

13. *P. reptans* Mich.: diœcious; culm branched, creeping; panicle

somewhat simple, ovate; spikelets approximated on the short branches, linear-lanceolate, 12—20-flowered; flowers acuminate, smooth; lower palea 3-nerved.

Swamps. N. Eng. and N. Y. to Flor. W. to Miss. July, Aug. ①.—*Culm* 6—18 inches long, creeping and rooting at the joints. *Leaves* subulate, flat, pubescent above. *Panicle* 1—2 inches long, with the spikelets much compressed.
Creeping Meadow-grass.

14. *P. dentata* Torr.: culm oblique or decumbent; panicle loose, somewhat spreading; branches capillary, flexuous; spikelets lanceolate, about 5-flowered; flowers rather distant; glumes unequal, the upper 3-nerved and obtuse; lower palea 5-nerved, at length 5-toothed at the apex.

Wet sandy places. N. Eng. and N. Y. W. to Ohio. June, July. ②.—*Culm* 1—3 feet long, rooting at the lower joints. *Leaves* flat, pale green. *Panicle* large, weak, nodding when young.
Toothed Meadow-grass.

15. *P. maritima* Huds.: culm somewhat geniculate; leaves convolute; panicle erect, somewhat crowded; spikelets linear, about 5-flowered, terete; flowers rather obtuse, indistinctly 5-nerved.

Salt marshes. Near Boston, Mass. June. ②.—*Root* creeping. *Culm* 8—12 inches high, rigid. *Leaves* somewhat pungent, glaucous. *Panicle* rigidly erect, sometimes purplish.
Sea Meadow-grass.

16. *P. brevifolia* Muhl.: culm oblique; leaves very short; ligule acuminate; panicle loose; branches in pairs, horizontal; spikelets 3—4-flowered; paleæ pubescent.

Woods. Penn. Muhl. April. ②.—*Culm* about 2 feet high, somewhat angular. *Panicle* loose, flexuous.
Short-leaved Meadow-grass.

17. *P. conferta* Ell.: culm erect, geniculate; panicles terminal and axillary, erect; spikelets about 8-flowered, compressed; flowers clustered, smooth. *P. glomerata* Walt.

Penn. Schweinitz. S. to Car. ②.—*Culm* 2—3 feet high. *Leaves* smooth, flat, serrulate on the margin. *Panicles* 4—8 inches long.
Clustered Meadow-grass.

18. *P. Eragrostis* Linn.: culm oblique; sheaths smooth; panicle spreading, pyramidal; the lower branches hairy in the axils; spikelets ovate-oblong and linear-lanceolate, 8—30-flowered; flowers obtuse; glumes nearly equal. *Briza Eragrostis* Linn. *Megastachya Eragrostis* Beauv.

Sandy fields, road sides, &c. N. Eng. and N. Y. to Flor. July, Aug. ①.—*Culm* 12—18 inches long, geniculate and branching at base. *Leaves* narrow, roughish above. *Panicle* pyramidal; the branches subdivided, short and flexuous. Introduced from Europe, and now extensively naturalized; but it is of little or no value for pasturage.
Quake-grass.

19. *P. Michauxii* Kunth: culms cespitose, erect; leaves distichous, spreading; panicle contracted, spiked; spikelets ovate or ovate-oblong, 5—9-flowered, smooth; lower palea about 9-nerved. (Torr. N. Y. Fl.)
Uniola spicata Linn. *Festuca distichophylla* Mich.

Salt marshes. Mass. and N. Y. to Car. W. to the North West Coast. Aug., Sept. ②.—*Root* creeping extensively. *Culms* 12—18 inches high, branched at base. *Leaves* numerous, slightly glaucous. *Panicle* contracted, in a dense spike.
Michaux's Meadow-grass.

40. GLYCERIA. *Brown*.—Manna Grass.

(From the Greek γλυκός, *sweet*; on account of the sweet taste of the grains.)

Spikelets long, linear, many-flowered; rachis jointed. Glumes 2, membranaceous, nearly equal, pointless. Paleæ membranaceously herbaceous, nearly equal, awnless; the lower one usually obtuse, 7-nerved; the upper 2-keeled. Stigmas decomposed.—Panicle nearly simple.

1. *G. fluitans* *Brown*: panicle secund, slightly branched, divaricate; spikelets linear-terete, appressed, 8—12-flowered; flowers very obtuse. *Festuca fluitans* *Linn.*

Wet grounds. N. Eng. N. Y. and Penn. W. to Mich. June, July. 2½.—*Root* creeping. *Culm* 3—5 feet high, compressed, erect or ascending. *Leaves* long, linear-lanceolate. *Panicle* 12—15 inches long, slender, partly concealed in the upper sheath; branches mostly simple. *Common Manna-grass.*

2. *G. acutiflora* *Torr.*: panicle simple, elongated, appressed; spikelets linear-terete, 4—12-flowered; flowers attenuated, acute, indistinctly nerved. *Festuca acutiflora* *Big.*

Overflowed meadows. N. Y. and Mass. to Del. W. to Ohio. June. 2½.—*Culm* about 18 inches high. *Leaves* short, erect, attenuated at the point. *Panicle* long and slender, somewhat nodding. Resembles the preceding, but distinguished by its acute flowers and nerveless paleæ.

Sharp-flowered Manna-grass.

3. *G. aquatica* *Smith*: panicle equal, diffuse, much branched; spikelets linear-oblong, 5—9-flowered; flowers free, oblong, obtuse, prominently 7-nerved. *Poa aquatica* *Linn.*

Wet meadows. Can. to Virg. July, Aug. 2½.—*Root* creeping. *Culm* 3—5 feet high, thick. *Leaves* broad-linear, a foot or more in length. *Panicle* very large, often purplish. *Reed Manna-grass.*

4. *G. nervata* *Trin.*: panicle diffuse, loose; the branches slender and at length pendulous; spikelets ovate-oblong, about 5-flowered; flowers obtuse, conspicuously 7-nerved. *Poa nervata* *Willd.* *P. striata* *Mich.* *P. parviflora* *Pursh.*

Wet meadows. Can. to Flor. W. to Ohio. June. 2½.—*Culm* 3—4 feet high. *Leaves* narrow-linear, flat, smooth; *ligule* ovate. *Panicle* large, capillary, often purplish. *Nerved Manna-grass.*

5. *G. elongata* *Trin.*: panicle elongated, racemose; branches mostly solitary, appressed; spikelets ovate, obtuse, somewhat tumid, 3—4-flowered; lower palea rather acute; stamens 2. *Poa elongata* *Torr. Fl.*

Swamps and wet meadows. Can. to Penn. June, July. 2½.—*Culm* 3—4 feet high, simple. *Leaves* long, nearly smooth; *ligule* nearly wanting. *Panicle* 8—12 inches long, somewhat nodding. *Long-paniced Manna-grass.*

6. *G. Canadensis* *Trin.*: panicle large, effuse; branches semiverticillate, at length pendulous; spikelets broad-ovate, tumid, 5—8-flowered; lower palea somewhat acute, 7-nerved; upper shorter and very obtuse; stamens 2. *Briza Canadensis* *Mich.*

Swamps. Can. N. Eng. and N. Y. July, Aug. 2½.—*Culm* 2—3 feet high, erect, terete. *Leaves* linear, long, roughish; *ligule* obtuse, lacerate. *Panicle* 6—8 inches long, the branches at length spreading. *Canadian Manna-grass.*

7. *G. obtusa*: panicle dense, ovate; spikelets ovate, tumid, 5—7-flowered; glumes scarios; paleæ ovate, smooth, obtuse; lower one indistinctly 7-nerved. *Poa obtusa* Muhl.

Swamps. N. Eng. N. J. and Penn. Muhl. Aug., Sept. ♀.—Culm 3—4 feet high. Leaves linear, as long as the culm, and with the sheaths smooth. Panicle 3—4 inches long, many-flowered. *Obtuse-flowered Manna-grass.*

41. BRIZA, Linn.—Quaking Grass.

(From the Greek *βριθω*, to balance; the spikelets being delicately suspended.)

Spikelets cordate-ovate, many-flowered. Glumes shorter than the lower flowers. Paleæ ventricose; lower one cordate at base, embracing the upper, which is nearly round and much shorter. Caryopsis beaked.—Panicle loose.

B. media Linn.: panicle erect, few-flowered; spikelets broad-ovate, about 7-flowered; glume smaller than the flowers.

Meadows. Near Boston, Mass. Big. Penn. Muhl. June. ♀.—Culm 12—18 inches high, slender. Leaves short, linear, acuminate. Panicle with filiform spreading purple branches. Introduced from Europe and naturalized in a few places. *Common Quaking-grass.*

42. MELICA, Linn.—Melic Grass.

(A name given in Italy to the *Sorghum vulgare*, on account of the sweet flavor of its stem, from *mel*, honey, and applied by Linnæus to this genus. Hook. Br. Fl.)

Spikelets 2—4-flowered, one or more of the upper flowers incomplete and abortive. Glumes 2-valved, unequal. Paleæ membranaceous, unarmed. Caryopsis loose, not furrowed.—Panicle loose.

M. speciosa Muhl.: smooth; panicle loose, erect, few-flowered; branches simple; flowers obtuse. *M. glabra* Mich.

Mountains. Penn. to Flor. June. ♀.—Culm 3—4 feet high. Panicle subsecund, with solitary branches. *Showy Melic-grass.*

43. KÆLERIA, Pers.—Kæleria.

(In honor of *M. Kæler*, a German botanist.)

Spikelets compressed, 2—4-flowered. Glumes 2, shorter than the flowers; the lower much narrower, keeled. Paleæ membranaceous, unequal; the lower acute or obtuse, unawned or with a short awn below the tip; the upper 2-keeled. Styles very short.—Panicle contracted or spike-like.

1. *K. Pennsylvanica* D. C.: lower leaves and sheaths softly pubescent; panicle long, very slender, rather loose; spikelets mostly 2-flowered; upper glume oblanccolate, obtuse or slightly pointed; lower palea rough. *Aira mollis* Muhl.

var. *major* Torr.: taller; leaves broad-linear, and with the sheaths smooth; panicle more dense.

Moist woods. N. Y. to Car. May, June. ♀.—*Culm* about 2 feet high, simple. *Leaves* short, flat. *Panicle* 4—8 inches long, very slender, with yellowish-green spikelets.
Pennsylvanian Kæleria.

2. *K. truncata* Torr.: leaves and sheaths smooth or pubescent; panicle oblong, contracted; branches short, racemose; spikelets somewhat clustered, 2-flowered; upper glume broad-obovate, very obtuse or truncate; upper palea smoothish. *Holcus striatus* Linn. *Aira truncata* Muhl.

Dry woods. N. Y. and Mass. to Car. June. ♀.—*Culm* about 2 feet high, slender. *Leaves* lance-linear, flat. *Panicle* 3—5 inches long, rather dense, narrow. Perhaps not distinct from the preceding.
Truncated Kæleria.

44. DACTYLIS. Linn.—Orchard Grass.

(From the Greek *δακτυλος*, a *finger*; in allusion to the form of the spike.)

Spikelets 2—7-flowered, aggregated, subsecund. Glumes unequal; the larger keeled, mucronate. Paleæ herbaceous, mucronate; the lower 5-nerved, with a fringed keel; upper bifid. Stigmas plumose.—Panicle contracted, glomerate.

D. glomerata Linn.: panicle distantly branched, somewhat secund; spikelets 3—4-flowered, in dense unilateral clusters at the ends of the branches.

Fields and meadows. N. Y. and Mass. to Car. June. ♀.—*Culm* 2—3 feet high. *Leaves* broad-linear, acuminate, rough. *Panicle* glaucous, contracted; somewhat secund; the clusters ovate, or lance-oblong. Introduced from Europe, where it is sometimes cultivated for cattle. It is thought, however, to be inferior to *Timothy*.
Rough Orchard-grass.

45. TRICUSPIS. Beauv.—Tricuspis.

(From the Latin *tres*, *three*, and *cuspis*, a *point*; in allusion to the lower palea.)

Spikelets nearly terete, many-flowered. Glumes shorter than the flowers. Lower palea bifid at the apex, and tricuspidate by the projecting keel and marginal nerves, the base and sides villous; upper palea slightly bicuspidate.—Panicle compound, spreading.

T. seslerioides Torr.: panicle loose, spreading; branches flexuous, smooth; spikelets ovate-lanceolate, 5—6-flowered, nearly terete, shining. *Poa seslerioides* Mich. *P. quinquefida* Pursh. *Windsoria poæformis* Nutt.

Sandy fields. N. Eng. and N. Y. to Car. Aug. ♀.—*Culm* 3—5 feet high, erect, smooth. *Leaves* long, flat, nerved, the sheaths bearded at the throat. *Panicle* very large, at length spreading and pendulous, usually purple. It is a harsh grass, but is sometimes cut for hay.
Tall Red-top.

46. FESTUCA. Linn.—Fescue Grass.

(Said to be derived from the Celtic *fest*, signifying *food*, *pasturage*.)

Spikelets oblong, 3—many-flowered; the flowers distichous,

free. Glumes unequal, mostly keeled. Paleæ herbaceous; the lower somewhat rounded on the back, acute, mucronate or awned at the summit. Stigmas simply plumose. Caryopsis compressed, somewhat adhering to the upper palea.—Panicle usually compound.

1. *F. Myurus* Linn.: culm leafy in the upper part; panicle secund, elongated, contracted; spikelets about 4-flowered; flowers shorter than the awn, hairy, monandrous.

Dry fields. N. J. to Geor. June. ①.—Culm 8—12 inches high. Leaves linear, setaceous. Panicle 4 or 5 inches long. Introduced?

Wall Fescue-grass.

2. *F. tenella* Willd.: culm filiform; leaves setaceous; panicle simple, spike-form, rather secund; spikelets about 7-flowered; awns shorter than the subulate flowers. *F. bromoides* Mich.

Sandy fields. N. Y. and Mass. to Car. June. ①.—Culms often clustered, 6—12 inches high, geniculate at base. Leaves linear, short. Panicle 2—4 inches long, the spikelets brownish when old.

Slender Fescue-grass.

3. *F. duriuscula* Linn.: root fibrous; culm leaves flat, radical ones setaceous; panicle somewhat contracted, subsecund; spikelets oblong, 5—6-flowered, nearly terete; flowers with short awns.

Fields and pastures. N. Eng. and N. Y. to Car. June. ②.—Culm 12—18 inches high, erect, slender. Leaves smooth, those of the culm involute. Panicle 2—3 inches long, with the branches mostly in pairs. Probably introduced from Europe.

Hard Fescue-grass.

4. *F. rubra* Linn.: root creeping; leaves pubescent on the upper side; panicle secund, erect, spreading; spikelets somewhat terete; flowers longer than their awns.

Dry soils. Penn. Muhl. June. ②.—Root extensively creeping. Culm 18 inches high, erect. Leaves long. Panicle contracted. Differs from the preceding chiefly in its creeping root. Introduced?

Creeping Fescue-grass.

5. *F. elatior* Linn.: root creeping; panicle much branched, rather loose and spreading; spikelets ovate-lanceolate, 4—6-flowered; flowers cylindrical, acuminate or mucronate.

Wet meadows. N. Y. and Mass. to Car. June. ②.—Culm 3—5 feet high. Leaves broad-linear, 9—15 inches long. Panicle 6—8 or 10 inches long, mostly nodding, the branches usually in pairs. Introduced, but extensively naturalized.

Tall Fescue-grass.

6. *F. pratensis* Huds.: root fibrous; leaves linear; panicle spreading, branched, erect; spikelets oblong or linear-lanceolate, many-flowered; flowers cylindrical, awnless; outer palea acute.

Meadows and fields. N. Y. and Mass. to Del. W. to Ohio. June, July. ②.—Culm 2—3 feet high. Leaves broad-linear, nerved, smooth, rough on the margin. Panicle 4—8 inches long, somewhat secund. Introduced, but extensively naturalized. It is said to be a much more valuable grass than the preceding.

Meadow Fescue-grass.

7. *F. nutans* Willd.: panicle slender, diffuse, at length nodding; branches long, in pairs, naked below; spikelets lance-ovate, 2—5-flowered; flowers smooth, awnless, very obscurely nerved.

Moist woods. N. Y. and Mass. to Car. W. to Mich. June. 2.—*Culm* about 3 feet high, erect, rather slender, simple. *Leaves* linear-lanceolate, somewhat rough. *Panicle* very loose, few-flowered. *Nodding Fescue-grass.*

47. DIPLACHNE. Beauv.—Diplachne.

(From the Greek διπλος, *double*, and αχνη, *chaff*; in allusion to the division of the outer palea.)

Spikelets at first terete, 7—9-flowered. Paleæ unequal, mucronate, villous on the margins; lower one slightly bifid at the tip, with a straight bristle between the teeth, 3-nerved; upper bifid, flat on the back. Stigmas simply plumose. Pericarp loose.—Panicle somewhat secund.

D. fascicularis Beauv. Torr. N. Y. Fl. *Festuca fascicularis* Lam. *F. procumbens* Muhl.

Brackish meadows. N. Y. to Car. Aug. ①.—*Culm* 8—15 inches long, branched from the base, procumbent. *Leaves* longer than the culm, narrow, pointed at the end; *ligule* lacerate. *Panicle* erect, with spreading spike-like branches. *Spikelets* one-sided, on short peduncles.

Cluster-flowered Diplachne.

48. BROMUS. Linn.—Brome Grass.

(From βρομος, a name given by the Greeks to a kind of oats.)

Spikelets oblong, 3- many-flowered; the flowers in two rows. Glumes unequal, shorter than the flowers. Lower palea bifid at the apex, and usually awned a little below the tip; upper 2-keeled, the keels pectinate-ciliate. Stigmas simply plumose.—Panicle diffuse or contracted.

1. *B. sterilis* Linn.: panicle drooping, slightly branched; spikelets linear-lanceolate, at length oblong; flowers remote, lanceolate-subulate; paleæ shorter than the straight awn.

Waste grounds. Penn-Yan, Yates county, N. Y. Dr. Sartwell. June, July. ①.—*Culm* about 2 feet high, slender, smooth. *Leaves* pubescent above, smooth beneath. *Panicle* nearly simple, slender. *Spikelets* about 6-flowered. Introduced from Europe. *Barren Brome-grass.*

2. *B. secalinus* Linn.: panicle spreading, the peduncles but little branched; spikelets ovate-oblong, compressed, 8—10-flowered; flowers rather remote; paleæ longer than the flexuous awns.

Cultivated grounds. Can. to Car. W. to Ohio. June. ①.—*Culm* 2—3 feet high; the nodes swollen and pubescent. *Leaves* broad-linear, hairy above. *Panicle* 4—6 inches long; branches semiverticillate, scabrous and pubescent. Introduced from Europe. It is very common in wheat fields, especially when the grain has been injured by frost. This has given rise to the common, but mistaken, idea that wheat is changed into this plant. *Chess. Cheat.*

3. *B. mollis* Linn.: panicle erect, contracted; spikelets oblong-ovate, somewhat compressed, pubescent; flowers imbricate, compressed, about as long as the straight awn.

Fields and pastures. Mass. to Penn. June. ②.—*Culm* 1—2 feet high.

Leaves very soft, pubescent. *Panicle* 3—4 inches long. *Spikelets* nearly erect, 5—10-flowered. The seeds are said to be deleterious. Introduced from Europe.
Soft Brome-grass.

4. *B. purgans* Linn.: panicle oblong, somewhat contracted, at length nodding; spikelets oblong-lanceolate, ovate-oblong when old, 7—8-flowered; flowers hairy; awn straight, nearly as long as the paleæ.

Moist woods. Aret. Amer. to Car. W. to Ohio; rare. July, Aug. ♀.—*Culm* 2—3 feet high, pubescent at the nodes. *Leaves* flat, somewhat hairy. *Panicle* about 3 inches long, with short nearly simple branches.

Canadian Brome-grass.

5. *B. ciliatus* Linn.: panicle loose, nodding; spikelets oblong, terete, 8—12-flowered; flowers appressed-pubescent, longer than the straight awn.
B. Canadensis Mich.?

Woods. Can. to Penn. June. ♀.—*Culm* 3—5 feet high, striate, the nodes black and hairy. *Leaves* broad-linear, hairy above, smoothish beneath. *Panicle* 6—8 inches long; the branches filiform, rough. *Ciliate Brome-grass.*

6. *B. pubescens* Muhl.: panicle loose, nodding; spikelets lanceolate, subterete, 8—12-flowered; flowers pubescent, rather longer than the straight awn.

Woods. Mass. to Car. W. to Ohio. June. ♀.—*Culm* 3—4 feet high, somewhat hairy below, the nodes black. *Leaves* lanceolate, hairy above, smooth beneath. *Panicle* loose, at length nodding, with slender flexuous branches.

Pubescent Brome-grass.

7. *B. arvensis* Linn.: panicle erect, spreading; spikelets lanceolate, compressed, 7—8-flowered; flowers imbricate, compressed, smoothish, about as long as the straight awn.

Fields and meadows. West Chester, Penn. *Darlington*. June, July. ♂.—*Culm* about 2 feet high, smooth; nodes nearly black, pubescent. *Leaves* lance-linear, hairy on both sides. *Panicle* slender, spreading, at length drooping. Introduced from Europe.
Field Brome-grass.

49. UNIOLA. Linn.—Spike Grass.

(Probably so named because the lower flowers of the spikelet consist only of a single palea. Torr.)

Spikelets compressed, many-flowered, one or more of the lower flowers sterile, and consisting of a single palea. Glumes keeled. Paleæ of the perfect flowers 2; lower one boat-shaped; upper smaller, doubly keeled. Stamens 1—3.—Panicle compound, loose.

1. *U. latifolia* Mich.: leaves broad and flat; panicle loose, nodding; spikelets on long peduncles; flowers somewhat falcate, monandrous.

Mountains. Penn. to Geor. Aug. ♀.—*Culm* 2—3 feet high, somewhat branching. *Panicle* a foot long, loose. *Broad-leaved Spike-grass.*

2. *U. gracilis* Mich.: panicle elongated, racemose, appressed; spikelets 3—4-flowered; flowers spreading, monandrous. *Holcus laxus* Linn.

Sandy swamps. N. Y. to Geor. Aug. ♀.—*Culm* 3—4 feet high, cespitose, slender, somewhat compressed, leafy. *Leaves* a foot or more long, narrow, flat. *Panicle* 6—10 inches long, very slender, with short remote branches.

Slender Spike-grass.

X. HORDEÆ. *Spikelets 3- many-flowered, rarely 1-flowered, often awned; the terminal flower imperfect. Glumes and paleæ 2, herbaceous; the former rarely wanting. Stigmas sessile.*

50. LOLIUM. *Linn.*—Darnel.

(A classical Latin name, applied to this genus.)

Spikelets sessile, many-flowered, distichous at right angles with, or the edge to the rachis. Flowers imbricate, naked at the base. Inner glume mostly wanting. Lower palea lanceolate, mucronate or with a short bristle at the tip; upper one 2-keeled.—Spike simple; rachis not jointed.

1. *L. perenne Linn.*: perennial; spikelets longer than the glumes, linear-oblong, compressed, 7—9-flowered; flowers mostly awnless.

Meadows and fields. N. Eng. N. Y. and Penn. June. ♀.—*Culm* 1—2 feet high, smooth. *Leaves* lance-linear, smooth, shining, somewhat rough near the end. *Spikelets* 12—20, alternate, forming a spike about 6 inches long. Introduced, probably from England, where it is esteemed as a valuable grass for the agriculturalist. *Perennial Darnel. Rye-grass.*

2. *L. temulentum Linn.*: annual; spikelets as long as the glumes, much compressed, 5—7-flowered; flowers as long as the rigid awns.

Fields. N. Eng. and Penn. July. ①.—*Culm* about 2 feet high, terete, scabrous above. *Leaves* lance-linear, rough on the margins. *Spikelets* much compressed. The seeds are said to be poisonous. Introduced from Europe. *Bearded Darnel.*

51. TRITICUM. *Linn.*—Wheat or Wheat Grass.

(From the Latin *tritum*, rubbed or ground; because the seed is thus prepared for food.)

Spikelets distichously imbricate, sessile on the teeth of the rachis, 3- many-flowered. Glumes 2, nearly equal, opposite. Paleæ lanceolate; the lower one concave, acuminate or awned at the summit. Scales 2, mostly entire and ciliate.—Flowers spiked.

1. *T. repens Linn.*: root creeping; spike distichous, compressed; spikelets about 5-flowered, distant, alternate, lance-oblong, acute; glumes lanceolate, 5-nerved, acuminate. *Agropyron repens Torr. Fl.*

Fields and meadows. N. S. W. to Miss. June—Aug. ♀.—*Root* or *rhizoma* jointed, proliferous. *Culm* about 2 feet high. *Leaves* lance-linear, somewhat scabrous. *Spike* 3—5 inches long. A very troublesome weed. Introduced from Europe. *Creeping Wheat-grass. Couch-grass.*

2. *T. caninum Linn.*: root fibrous; spike distichous, compressed; spikelets about 5-flowered; glumes lanceolate, 3—5-nerved, acute; lower palea awned. *Agropyron caninum R. & S.*

Fields. Penn-Yan, N. Y. *Dr. Sartwell. Del. Muhl.* July. ♀.—*Culm* 2—3 feet high. *Leaves* flat, smooth. Best distinguished from the preceding by its fibrous root. Introduced from Europe. *Fibrous-rooted Wheat-grass.*

52. ELYMUS. *Linn.*—Lyme Grass.

(From *ελυμος*, a name given by the Greeks to the *panic-grasses*, because they grew abundantly about *Elyma*, in Greece. *Hook. Fl. Br.*)

Spikelets 2 or more at each joint of the rachis, 2—7-flowered, the upper flowers imperfect. Glumes 2, nearly equal, subulate, rarely 1 or wanting. Paleæ 2, lanceolate, subcoriaceous; the lower one usually awned.—Spike simple.

1. *E. Virginicus Linn.*: spike erect, dense; spikelets in pairs, 2—3-flowered, the flowers nearly smooth; glumes lanceolate, nerved, as long as the spikelets.

Banks of streams. N. Y. and Mass. to Geor. W. to Mich. and Ark. July, Aug. ♀.—*Culm* 3—4 feet high, smooth. *Leaves* broad-linear, flat, scabrous, deep green. *Spike* 3—5 inches long, stiffly erect, thick.

Virginian Lyme-grass. Wild Rye.

2. *E. Canadensis Linn.*: spike rather spreading, nodding at the extremity; spikelets in pairs, 3—5-flowered; flowers hairy; glumes lanceolate-subulate, awned, conspicuously nerved. *E. glaucifolius* and *Philadelphicus Willd.*

River banks. Subarct. Amer. to Del. W. to Miss. Aug. ♀.—*Root* creeping. *Culm* 3—4 feet high, erect. *Leaves* broad-linear, flat, somewhat rough. *Spike* 6—8 inches long, at length nodding.

Canadian Lyme-grass.

3. *E. villosus Muhl.*: spike loose, somewhat nodding; rachis and flowers hispid-pilose; spikelets mostly in pairs, 1—3-flowered; glumes linear, hairy-ciliate, 2—3-nerved. *E. ciliatus Muhl.*

Banks of streams. N. Y. and Mass. to Virg. July. ♀.—*Culm* 2—3 feet high, rather slender, smooth. *Leaves* lanceolate, somewhat pubescent above; the lower sheaths hairy. *Spike* 2—3 inches long, at length spreading and somewhat nodding.

Hairy Lyme-grass.

4. *E. Hystrix Linn.*: spike erect; spikelets in pairs or ternate, distant, diverging, about 3-flowered; flowers awned; glumes minute or wanting.

Rocky woods. Can. to Car. W. to Miss. July. ♀.—*Culm* 2—4 feet high, erect, smooth. *Leaves* broad-linear, flat, often glaucous. *Spike* 4—6 inches long, at length spreading so as to resemble an apothecary's bottle washer.

Bottle-brush Grass.

5. *E. striatus Willd.*: spike erect; spikelets in pairs, 2-flowered, awned, hispid; glumes linear, nerved, awned, nearly as long as the spikelets.

Shady woods. Mass. and N. Y. to Virg. W. to Mich. and Ark. June. ♀.—*Culm* 8 inches high, erect, striate. *Leaves* lanceolate, acuminate, rough above, sheaths smooth. *Spike* somewhat spreading, the *rachis* pubescent.

Striated Lyme-grass.

53. HORDEUM. *Linn.*—Barley.

(An ancient Latin name, the origin of which is doubtful.)

Spikelets 3 at each joint of the rachis, the lateral ones often abortive, each 1-flowered, with a subulate rudiment of a second flower. Glumes 2, nearly equal, collateral, lance-linear, flat, awned. Paleæ 2, the lower with a long awn; the upper 2-keeled, obtuse—Spike simple.

H. jubatum Linn. : lateral flowers abortive, neutral ; bristles of the glume and lower palea 6 times as long as the flowers.

Marshes. Subarct. Amer. to Mass. W. to the Platte River. June. ②.—*Culm* 2 feet high, simple, smooth, slender. *Leaves* rather short, rough on the margin. *Spike* 2—3 inches long. *Wild Barley. Squirrel-tail Grass.*

XI. ROTTBËLLEÆ. *Spikelets* 1- or 2- rarely 3-flowered, seated in an excavation of the rachis, either solitary or in pairs, with one pedicelate and often blighted. One flower of each 2-flowered spikelet imperfect. *Glumes* 1—2, sometimes wanting, mostly coriaceous. *Palea* membranaceous, rarely awned.

54. TRIPSACUM. Linn.—Sesame Grass.

(From the Greek τριβω, to grind ; but the application is obscure.)

Monœcious. STERILE SPIKELETS in pairs on each joint of the rachis, and longer than the joint, collateral, 2-flowered. Flowers each with 2 palæe. FERTILE SPIKELETS solitary, as long as the joint, 2-flowered. Flowers with 2 paleæ ; the outer or lower flower neutral, the inner or upper one fertile.—Spikes solitary, or digitate in twos or threes.

T. dactyloides Linn. : spikes 2—3, aggregated or digitate, sometimes solitary ; sterile flowers above, fertile at the base.

Meadows. N. Y. to Car. W. to Miss. and Ark. July, Aug. ②.—*Culm* erect or oblique, 4—6 feet high, somewhat compressed. *Leaves* large, often 3 feet long, linear-lanceolate, smooth beneath, rough above. *Spikes* usually 2—3, rachis articulated. *T. monostachyon* Willd. is a mere variety with a single spike. The value of this grass for fodder, seems to have been greatly overrated. *Sesame-grass. Gama-grass.*

XII. ANDROPOGONÆ. *Spikelets* 2-flowered ; the lower flower always imperfect, on a bearded pedicel. *Palea* mostly hyaline.

55. ANDROPOGON. Linn.—Beard Grass.

(From the Greek ἀνερ, a man, and πωγων, a beard ; in allusion to the hairy flowers.)

Lower flower staminate or neutral, the glumes and paleæ often very minute or wanting. Upper flower perfect. Glumes awnless. Paleæ 2, shorter than the glumes ; lower one mostly awned.—Flowers in panicles or spikes.

* *Flowers in panicles.*

1. *A. nutans* Linn. : panicle terminal, oblong, branched, at length nodding ; lower flower a mere pedicel, without valves ; outer glume of the perfect flower covered with brownish hairs ; awn contorted. *A. avenaceum* Mich.

Sandy sterile fields. Throughout the U. S. Aug.—Oct. ②.—*Culm* 3—6 feet high, simple, terete. *Leaves* a foot or more long, glaucous. *Panicle* loose, at first erect, at length nodding. *Nodding Beard-grass. Indian-grass.*

** *Flowers in spikes.*

2. *A. scoparius Mich.*: spikes simple, lateral and terminal, pedunculate, in pairs; lower flower neutral, awned; glumes of the perfect flower smooth; awn twisted. *A. purpurascens Willd.*

Old fields and road sides. N. Y. and Mass. to Car. W. to Ohio. Aug. ♀.—*Culm* about 3 feet high, with lateral scattered branches. *Leaves* flat, somewhat hairy. *Spikes* on a flexuous rachis, often purple.

Purple Bear-grass. Brown-grass.

3. *A. furcatus Muhl.*: spikes digitate, generally in threes or fours; lower flower staminate, awnless; awn of the perfect flower somewhat contorted.

Rocky grounds. N. Y. and Mass. to Car. W. to Ark. Aug., Sept. ♀.—*Culm* 3—4 feet high, simple or somewhat branching. *Leaves* flat; the lower very long. *Spikes* about 3 inches long, 3—5 or more at the summit of the culm.

Forked Beard-grass.

4. *A. macrourus Mich.*: spikes fasciculate, in dense lateral and terminal fastigiate panicles; lower flower a mere rudiment without valves; perfect flower monandrous, the awn straight.

Swamps, especially near salt water. N. Y. and Mass. to Flor. Sept., Oct. ♀.—*Culm* 3 feet high, much branched towards the top. *Leaves* roughish; the lower long. *Spikes* very numerous, in large clustered panicles, partly concealed in the boat-like sheaths.

Many-spiked Beard-grass.

5. *A. Virginicus Linn.*: culm somewhat compressed; sheaths smooth; spikes short, 2—3 from each sheath, in slender fascicles, lateral and terminal; lower flower a mere pedicel without glumes; perfect flower monandrous, the awn straight. *A. dissitiflorum Mich.*

Dry swamps. N. Y. and Mass. to Flor. Sept. ♀.—*Culms* about 3 feet high, somewhat cespitose, with short branches above. *Leaves* a foot or more in length, the lower hairy on the upper surface. *Spikes* partly concealed in sheaths.

Virginian Beard-grass.

DIVISION II.

FLOWERLESS OR CRYPTOGAMOUS PLANTS.

PLANTS DESTITUTE OF PROPER FLOWERS; AND PRODUCING
SPORES, INSTEAD OF SEEDS.

CLASS I. FERN-LIKE PLANTS.

Flowerless plants, with a stem having a vascular system and for the most part with distinct leaves or fronds. Spore-cases (the coverings of the spores, sometimes called *thecæ* or *capsules*), axillary, radical or dorsal, one or many-celled.

ORDER CXLVIII. EQUISETACEÆ.—HORSE TAILS.

Fructification in terminal cones or spikes composed of peltate scales attached to a central axis, and bearing on their inner surface several cases or *thecæ*, which contain the spores. Spores oval grains, wrapped round with a pair of highly elastic elaters, which uncoil themselves when dry.—Leafless herbaceous perennial plants. Stems hollow and jointed, either simple or with whorled branches, and furnished at the joints with toothed sheaths. Stomates arranged longitudinally on the cuticle, which contains a large quantity of silica.

EQUISETUM. *Linn.*—Horse Tail.

Character same as that of the order.

* *Fertile stems simple, discolored, appearing before the sterile ones.*

1. *E. arvense Linn.*: sterile stems erect or assurgent, roughish, with 12—14 furrows, the branches 3—4-angled and ascending; teeth of the sheaths ovate-acuminate, subsquarrose; fertile stems simple, erect; the sheaths large, loose, remote.

Moist grounds. Arct. Amer. to Virg. W. to the N. W. Coast. April, May. ♀.—*Sterile stems* 10—15 inches high, with whorls of ascending branches, which are either simple or somewhat divided. *Fertile stems* 6—8 inches high, with brownish or purple sheaths. *Spikes* oblong, obtuse; the scales at first approximated, at length more open. *Field Horse-tail.*

** *Fertile stems at length branched, bearing the fructification at the same time with the branches.*

2. *E. sylvaticum* Linn.: sterile and fertile stems both branched, about 12—furrowed; branches compound, curved downwards; sheaths loose, deeply cleft into several broad-lanceolate membranous teeth.

Moist grounds. Arct. Amer. to Virg. and Ohio. June, July. ♀.—*Stems* 12—18 inches high; the *sterile* ones usually taller and more slender. *Sheaths* divided into 8—17 teeth or leaves, whose points are connected in 2—4 or more lobes. *Spike* oblong. *Wood Horse-tail.*

3. *E. palustre* Linn.: stem deeply grooved, roughish, 7—8-angled; branches whorled, simple, gradually shorter upwards; sheaths distant, cut at the apex into 6—10 fuscous teeth.

Swamps. Arct. Amer. to Virg. June. ♀.—*Stems* 12—18 inches high, generally with simple erect whorled branches. *Sheaths* mostly with 7—9 teeth. *Spike* an inch long, slender and blackish. A variable species. *Marsh Horse-tail.*

4. *E. limosum* Linn.: stem smooth, with 16—21 striæ, sometimes simple; branches nearly erect, simple, short; teeth of the sheaths short, rigid, distinct.

Borders of swamps and ponds. Can. to Virg. W. to Wis. June, July. ♀.—*Stems* 2—3 feet high, erect, simple, or with a few whorls of branches at the top. *Sheaths* numerous, appressed, usually with 17—20 brownish or blackish teeth. *Spike* oblong, scarcely an inch in length. Easily distinguished from the preceding by the structure of its stem and by its teeth. *Smooth Swamp Horse-tail.*

*** *Stems simple or branched only at base.*

5. *E. hyemale* Linn.: stems numerous, simple, naked, erect, very rough; sheaths short, blackish at the base and apex, with about 14—20 very small obtuse finally deciduous teeth.

Wet woods and marshes. Can. to Penn. W. to Miss. and Ken. June, July. ♀.—*Stems* 1—2 feet high, naked, furrowed, pale and somewhat glaucous green. *Sheaths* 2—4 lines long, the teeth deciduous. *Spike* ovoid, blackish. The cuticle abounds in silica, and the stems are well suited for the polishing of hard woods and the metals. *Scouring Rush. Shave-grass.*

6. *E. variegatum* Schleich.: stems several, usually decumbent or assurgent, simple or only branched at the base, rough, filiform, with 4—8 striæ; sheaths with membranaceous lanceolate teeth, blackish at the base.

Wet sandy places. Arct. Amer. to N. Y. July. ♀.—*Stems* 6—12 inches long, several from the same root. *Sheaths* blackish, consisting of about seven 4-keeled persistent teeth. *Spike* ovoid, blackish, smaller than in the preceding. *Variogated Rough Horse-tail.*

7. *E. scirpoides* Mich.: stems cespitose, much branched from the root, ascending, naked, filiform, rough; sheaths blackish, with a few awned teeth. *E. variegatum* Torr. Comp. *E. variegatum* var. *minus* Hook.

Wet rocky places. Arct. Amer. to N. Y. and N. Eng. ♀.—*Stems* in dense tufts, 4—8 inches long, very slender, 5—6-angled. *Sheaths* minute, blackish,

with 3—6 subulate whitish awned teeth. *Spikes* ovoid capitate, 2—3-lines long, blackish. *Torr. N. Y. Fl.* The smallest of the genus.

Smallest Rough Horse-tail.

ORDER CXLIX. FILICES.—FERNS.

Fructification only of one kind on the same individual. Spore-cases sometimes in distinct spikes or racemes, but usually collected into clusters of various shapes, (*sori*.) arising from veins on the under surface of the leaf or *frond*; either pedicellate, with the stalk passing round them in the form of an elastic ring, or sessile and destitute of such a ring; and either naked, or covered with an involucre, (*indusium*.) Spores very minute.—Leafy plants, producing a rhizoma which is mostly creeping, but sometimes arborescent. Fronds coiled up before expansion, simple or variously branched and divided.

I. POLYPODEÆ. *Spore-cases stalked, furnished with an articulated elastic more or less complete ring, opening transversely and irregularly.*

1. POLYPODIUM. *Linn.*—Polypody.

(From the Greek *πολυς*, many, and *πους*, *ποδος*, a foot; from the numerous foot-like branches of the root-stock.)

Sori roundish, scattered on various parts of the lower surface of the frond. Indusium none.

* *Frond pinnatifid.*

1. *P. vulgare* var. *Americanum* Hook.: frond smooth, deeply pinnatifid; segments linear-oblong, obtuse, crenate-serrulate, the upper ones becoming gradually smaller; sori large, distinct. *P. Virginianum* Willd.

Rocky woods. Arct. Amer. to Car. W. to Miss. July. ♀.—*Rhizoma* creeping, clothed with brownish chaffy scales. *Fronds* 6—10 inches long, 1½—2 inches wide, growing in thick patches; segments mostly alternate. *Sori* large, in double rows on the back of each segment, at first distinct and yellowish, at length in contact and dark colored. According to Torrey, the American plant differs from the European only in the fronds being narrower and more oblong, the segments more distant, and the sori nearer the margin.

Common Polypody.

** *Frond bipinnatifid.*

2. *P. hexagonopterum* Mich.: stipe smooth; frond bipinnatifid, slightly pubescent, the lowest divisions deflexed; segments lanceolate, obtuse, ciliate, crenate or toothed; the lowest pairs adnate-decurrent, connected by an oblong somewhat hexagonal wing; sori minute.

Moist woods. Can. to Car. July. ♀.—*Stipe* 12—15 inches long, slender, smooth. *Frond* triangular in its outline, the base 6—9 inches wide, and often exceeding the length. *Sori* very small, roundish, distinct, marginal, in 1—3 rows.

Winged Polypody.

3. *P. Phegopteris* Linn.: stipe pubescent, somewhat chaffy; frond bipinnatifid, the two lower divisions deflexed; segments linear-lanceolate, obtuse, entire, ciliate, the lowermost ones adnate-decurrent; veins hairy; sori solitary, marginal. *P. connectile* Mich.

Shady woods. Throughout the U. S. July, Aug. ♀.—*Stipe* 6—10 inches long, minutely pubescent and a little chaffy. *Fron*d triangular, 3—5 inches long. *Sori* minute, mostly 4 on each segment. Identical with the foreign plant, and differing from the preceding chiefly in its smaller size, pubescent stipe, and more closely approximated pinnæ. *Beech Polypody.*

*** *Fron*d ternate, bipinnate.

4. *P. Dryopteris* Linn.: frond ternate; the divisions bipinnate, spreading and deflexed; segments oblong, obtuse, somewhat crenate; sori marginal, at length confluent. *P. calcareum* Smith. *Nephrodium Dryopteris* Mich.

Wet woods. Arct. Amer. to Penn. July. ♀.—*Rhizoma* black, creeping and slender. *Stipe* 6—12 inches long, erect, slender, smooth. *Fron*d 4—6 inches wide, triangular, of a light green color. *Sori* small, light brown. *Three-branched Polypody.*

2. ONOCLEA, Linn.—Sensitive Fern.

(An ancient Greek name, applied to this genus.)

Sterile frond deeply pinnatifid; the segments sinuous or pinnatifid, with reticulated veins. Fertile frond bipinnate, small; the segments contracted, with their margins revolute, forming a general involucre and resembling berries. Sori 4—6, confluent. Indusium lateral, cucullate, thin and membranaceous.

O. sensibilis Linn.: sterile frond pinnate; pinnæ lanceolate, acute, lacinate, upper ones united at base; fertile frond bipinnate, with the segments recurved and globosely contracted, resembling a compound spike.

var. *obtusiloba* Torr.: fertile frond deeply bipinnatifid; segments obovate, very obtuse; the margin slightly recurved. *O. obtusilobata* Schk.? Pursh.

Moist woods. Can. to Flor. July. ♀.—*Stipe* 8—12 inches long, angular, a little chaffy at the base, elsewhere smooth. *Sterile frond* 8—12 inches long, triangular, deeply pinnate, smooth. *Fertile frond* 3—6 inches long, nearly erect; the contracted and somewhat triangular-globose segments smoothish, dark brown, resembling berries in two-rowed unilateral spikes. The var. *obtusilobata* is quite rare, and is said by Torrey to have been hitherto obtained in only three localities. In one of these it was found growing on the same root with the common variety. *Sensitive Fern.*

3. ASPIDIUM, Swartz.—Shield Fern.

(From the Greek ασπίς, a shield; in allusion to the form of the indusium.)

Sori roundish, scattered. Indusium orbicular, fixed by the centre, or reniform and fixed at the sinus.

* *Fron*d pinnate.

1. *A. acrostichoides* Swartz: stipe and rachis chaffy; frond pinnate; pinnæ linear-lanceolate, acute, somewhat falcate, mucronate-serrulate, au-

riculate at base on the upper side, subsessile; the upper ones smaller and only fertile; sori at length confluent. *Nephrodium acrostichoides* Mich.

var. *incisum* Gray: segments unequally and incisely toothed; sori mostly distinct. *A. Schweinitzii* Beck Bot. 1st Ed.

Rocky and low shady places. Can. to Car. W. to Miss. June—Aug. ♀.—An erect fern 12—18 inches high, growing in clusters. *Stipe* short, pale, and with the *rachis* very chaffy. *Fronde* lanceolate, very acute or cuspidate, pale green. *Sori* rather large, in a single or double row, at length confluent and covering the whole lower surface of the terminal leaflets. *Indusium* orbicular. Var. *incisum*, has been found in Oneida county, N. Y., by Gray, and near Philadelphia by Schweinitz. *Terminal Shield-fern.*

** *Fronde* pinnate-pinnatifid.

2. *A. Thelypteris* Swartz: frond pinnate; pinnæ mostly opposite, linear-lanceolate, sessile, deeply pinnatifid, the lower ones longer; segments ovate-oblong, rather acute, the margin slightly crenulate, revolute when in fruit; sori small, a short distance from the margin, contiguous, at length confluent. *Polypodium Thelypteris* Linn.

Wet woods and swamps. Can. to Del. July. ♀.—*Stipe* about a foot long, smooth and naked. *Fronde* 6—12 inches long, oblong-lanceolate in outline, deep green and delicate. *Sori* between the margin and midrib of the segments, at length confluent and usually covering their whole under surface. *Indusium* orbicular-reniform. *Marsh Shield-fern.*

3. *A. Noveboracense* Willd.: frond pinnate; pinnæ linear-lanceolate, sessile, deeply pinnatifid, the lower ones gradually smaller; segments oblong, obtuse, entire, ciliate; sori minute, nearly marginal, distinct. *A. thelypteroides* Swartz. *Nephrodium thelypteroides* Mich.

Moist woods. Can. to Car. July. ♀.—A fern about as large as the preceding, but of a more rigid habit. *Stipe* smooth or slightly pubescent. *Fronde* pale green; the segments linear-oblong and sometimes a little acute. *Sori* in two rows. *Indusium* orbicular-reniform. Perhaps not distinct from *A. Thelypteris*. *New York Shield-fern.*

4. *A. cristatum* Swartz: *stipe* nearly naked; frond pinnate, (nearly bipinnate,) lanceolate, somewhat rigid; pinnæ somewhat cordate, oblong, deeply pinnatifid; segments oblong, obtuse, doubly serrate; sori near the midrib. *A. Lancastriense* Spreng.

Moist woods. Can. to Del.; rare. July. ♀.—*Stipe* stout, somewhat chaffy, varying from tawny to brown. *Fronde* 1½—2 feet long, linear-lanceolate in its outline, bright green; lower pinnæ broad at the base. *Sori* middle-sized, distinct, dark brown, mostly in two rows, usually on the upper half of the frond. *Crested Shield-fern.*

5. *A. Goldianum* Hook.: frond pinnate, broad-ovate; pinnæ deeply pinnatifid, lanceolate, acuminate; segments oblong, subacute, somewhat falcate, mucronate-serrate; sori in two rows near the midrib on the lower segments. *A. Filix mas* Pursh not of Willd.

Moist woods. Can. to Del. July. ♀.—*Fern* 1½—3 feet high, with the *stipe* somewhat chaffy. *Fronde* 6—12 inches wide, yellowish-green. Resembles *A. cristatum* more than any other species, but can at once be distinguished by the broader frond, by the form of the pinnæ, which are never broader at base, and by the narrower and slightly falcate segments. *Goldie's Shield-fern.*

*** *Fronde* bipinnate.

6. *A. marginale* Swartz: *stipe* chaffy; frond bipinnate; pinnæ lance-

olate; segments oblong, obtuse, crenate-serrate, decurrent, the lower ones nearly distinct; sori nearly marginal, distinct. *Nephrodium marginale* Mich.

Rocky woods. Can. to Car. July. ♀.—*Fern* 12—18 inches high. *Stipe* stout, chaffy, especially near the root, with large tawny scales. *Fron*d ovate-oblong, smooth, bluish-green, the upper part only fertile. *Sori* middle-sized, one at each notch in the segments. *Indusium* peltate-reniform.

Marginal Shield-fern.

7. *A. dilatatum* Swartz: *stipe* chaffy; *frond* bipinnate; the pinnules oblong, distinct, deeply and incisely pinnatifid; segments mucronate-serrate; sori minute, distinct, in a double row about the middle of the pinnules.

A. intermedium Mühl. *A. spinulosum* Pursh. *Nephrodium cristatum* Mich.

Shady woods. Can. to Virg. July. ♀.—*Stipe* 6—12 inches long, pale brown, chaffy with thin brown scales. *Fron*d 12—18 inches long, ovate-lanceolate in its outline, varying in the divisions of the *pinnæ*, sometimes almost tripinnate; serratures of the segments cuspidate or sharply acuminate. *Sori* rather small, numerous, somewhat in two rows, brownish. *Indusium* umbilicate in the centre.

Dilated Shield-fern.

8. *A. aculeatum* Swartz: *stipe* and *rachis* chaffy; *frond* bipinnate; pinnules ovate, somewhat falcate, slightly petioled, mucronate-serrate, obliquely truncate and auricled at the base on the upper side, obtusely cuneate on the lower, upper ones fructiferous. (*Torr. N. Y. Fl.*)

White mountains, N. H. Green Mountains, Vt. Mountains of Essex county, N. Y. Aug. ♀.—*Stipe* 2—6 inches long, and with the *rachis* clothed with chaffy lanceolate-subulate scales. *Fron*d 1½—2 feet long, of a rigid texture, broad-lanceolate in its outline. *Sori* rather large, 6—8 on each pinnule, near the middle. *Indusium* reniform-peltate.

Prickly Shield-fern.

4. WOODSIA. *Brown.*—Woodsia.

(Named in honor of *Joseph Woods*; an English botanist.)

Sori globose. *Indusium* more or less globose or cup-shaped, seated under the sorus, and at length cut at the margin into numerous often capillary segments. *Spore-cases* globose, pedicellate.

1. *W. ilvensis* Brown: *frond* lanceolate, pinnate; *pinnæ* oblong, obtuse, deeply pinnatifid; segments oblong, obscurely crenate, the under surface as well as the *rachis* and *stipe* chaffy. *W. ilvensis* and *rufidula* Beck Bot. 1st. Ed. *Polypodium ilvense* Swartz.

Rocky banks of streams. Subarct. Amer. to Car. June. ♀.—*Fern* 4—6 inches high, growing in dense tufts. *Fron*ds 2—4 inches long, the under surface clothed with rusty scales; *pinnæ* about 12, alternate. *Sori* small, near the margin of the segments, at length confluent. *Indusium* surrounding the slightly pedicellate spore-cases, the margin cut into numerous capillary segments.

Oblong-leaved Woodsia.

2. *W. hyperborea* Brown: *frond* lanceolate, pinnate; *pinnæ* ovate-cordate, incisely pinnatifid, covered with chaffy hair beneath; segments rounded, unequal. *Polypodium hyperboreum* Swartz.

In clefts of rocks. Can. and on the high mountains of Penn. and Virg. Pursh. July. ♀.—Resembles the preceding, but is sometimes quite small, and differs in having the *pinnæ* as well as the segments more rounded and less deeply

pinnatifid, except at their base, where the bottom pair of segments are often so deeply separated as to form two little pinnules. *Rounded-leaved Woodsia.*

3. *W. obtusa* Torr. : stipe and rachis somewhat chaffy; frond lanceolate, somewhat bipinnate, minutely glandular-pilose; divisions pinnate or deeply pinnatifid; segments oblong, obtuse, crenate-toothed; sori mostly solitary on each lobule of the segments, and near the sinus. (*Torr. N. Y. Fl.*)
W. Perriniana Hook. & Grev. *Alsophila Perriniana* Spreng. *Aspidium obtusum* Willd.

Rocky banks. Can. to Car.; rather rare. July. ♀.—*Fern* 8—12 inches high. *Stipe* 2—3 inches long, straw-colored, chaffy. *Frond* covered with a minute glandular pubescence; the divisions ovate-oblong. *Sori* small, at length almost confluent. *Indusium* hemispheric, at length opening at the top with an irregular lobed margin. Dr. Torrey states that the *Alsophila Perriniana* was described by Sprengel from specimens sent by him, which were placed by mistake in a collection of plants brought from the West Indies by M. Perrin.
Obtuse Woodsia.

5. CISTOPTERIS. Bernh.—Bladder Fern.

(From the Greek *κιστη*, a box, and *περις*, a fern.)

Sori roundish. *Indusium* inserted by its broad cucullate base at the under side of the sorus, opening by its lengthened free extremity which points towards the apex of the segment.

1. *C. fragilis* Bernh. : frond bipinnate; pinnæ ovate-lanceolate; pinnules ovate-lanceolate, deeply pinnatifid; segments toothed; rachis winged. *Aspidium fragile* Swartz. *A. tenue* Willd. *Nephrodium tenue* Mich.

Moist rocks. Arct. Amer. to Ver. Mass. and N. Y. June, July. ♀.—*Fern* 6—14 inches high, growing in tufts. *Stipe* slender, dark colored and a little chaffy at base. *Frond* delicate, deep green; *pinnules* somewhat variable in their shape and divisions. *Sori* large, pale, mostly solitary, near the margins of the segments. *Indusium* forming a sort of cup or hood. *Brittle Bladder-fern.*

2. *C. bulbifera* Bernh. : frond bipinnate, lanceolate, attenuate at the upper part; segments opposite, oblong, obtuse, serrate, the lower ones pinnatifid; rachis bearing bulbs; sori minute. *Aspidium bulbiferum* Swartz. *Nephrodium bulbiferum* Mich.

Shady rocks. Can. to Penn. and Ohio; common. July. ♀.—*Fern* sometimes 2 feet or more high, growing in tufts. *Stipe* smooth, pale. *Frond* narrow, smooth, green, much elongated and often bending over at the end. *Rachis* bearing greenish somewhat flattened bulbs, which are about the size of a pea.
Bulb-bearing Bladder-fern.

6. ASPLENIUM. Linn.—Spleenwort.

(From the Greek *α*, privative, and *σπλην*, the spleen; from its supposed medicinal virtues.)

Sori oblong or linear, oblique, scattered. *Indusium* of the same shape, superficial, arising from the lateral veins, and opening longitudinally on the side towards the midrib.

* *Frond pinnate.*

1. *A. angustifolium* Mich. : frond pinnate; pinnæ linear-lanceolate, cre-

nate-serrulate, somewhat repand; the base truncate on the lower side, rounded on the upper.

Moist woods. Can. to Mass. and N. Y. July. ♀.—*Fern* 1—2 feet high, erect. *Sterile fronds* forming a circle with the *fertile* ones smaller and central. *Sori* oblong-linear, diverging like veins from the midrib, at length confluent. *Indusium* vaulted, thick. *Narrow-leaved Spleenwort.*

2. *A. ebeneum* Willd.: frond pinnate; pinnæ sessile, lanceolate, somewhat falcate, serrate, auriculate on the upper side of their base; stipe and rachis smooth and shining, dark purple. *A. trichomanoides* Mich. *A. polypodioides* Muhl.

Rocky woods. Can. to Car. July. ♀.—*Fern* 8—12 inches high, erect. *Stipe* very smooth, dark purple or nearly black. *Fron*d lance-linear in its outline, pale green, smooth. *Sori* in short diverging lines, arranged in a double row along the midrib of the pinnæ, at length confluent. *Indusium* thin and membranaceous. *Ebony Spleenwort.*

3. *A. Trichomanes* Linn.: frond pinnate; pinnæ obliquely oval or roundish-obovate, subsessile, crenate, cuneate or cuneate-truncate at base; stipe and rachis smooth, shining, very dark purple. *A. melanocaulon* Willd.

Shady rocks. Can. to Car. July. ♀.—*Fern* 4—8 inches high, growing in dense spreading tufts. *Stipe* slender, smooth and shining, blackish-purple. *Fron*d lance-linear in its outline, dark green. *Sori* 2—6 on each pinna, linear-oblong, at length nearly oval. *Common Rock Spleenwort.*

** *Fron*d pinnate-pinnatifid.

4. *A. thelypteroides* Mich.: frond pinnate; pinnæ sessile, oblong-lanceolate, acuminate, deeply pinnatifid; segments oblong, obtuse, denticulate-serrate.

Shady banks of streams. Can. to Car. July. ♀.—*Fern* 1—2 feet high. *Stipe* smooth, straw-color, slightly chaffy. *Fron*d oblong-lanceolate, pale glaucous green; pinnæ long, numerous, distinct. *Sori* oblong and oblique, forming two rows, one on each side of the partial rib, at length almost confluent. *Thelypteris-like Spleenwort.*

*** *Fron*d bipinnate.

5. *A. Ruta muraria* Linn.: frond bipinnate at base, simply pinnate at the top; segments rhomboid-cuneate, obtusely denticulate at the extremity.

Limestone rocks. N. Y. to Car.; rare. July. ♀.—*Fern* 2—4 inches long, growing in tufts. *Fron*d ovate, spreading, smooth, rather rigid, glaucous green. *Sori* linear-oblong, slightly oblique, at length of a darker color and confluent. *Wall-rue Spleenwort.*

6. *A. montanum* Willd.: frond smooth, bipinnate; pinnules oblong-ovate, pinnatifid; segments 2—3-toothed at the apex. *A. Adiantum nigrum* Mich.

Mountain rocks. Bethlehem, Penn. to Car. *Schweinitz.* July. ♀.—*Fern* 4—8 inches high, growing in tufts. *Fron*d having a narrow outline, mostly bipinnate, but more or less divided according to its size. *Sori* linear, at length confluent. Differs from the foreign *A. Adiantum nigrum* in being much smaller, and in having the segments more obtuse. *Mountain Spleenwort.*

7. *A. Filix femina* Bernh.: frond bipinnate; pinnules linear-oblong; segments oblong-lanceolate, incised-serrate, the serratures 2—3-toothed; sori oblong, at length lunate and recurved. *Aspidium Filix femina* and

asplenioides Swartz. *A. angustum Willd.* *Nephrodium Filix fœmina* and *asplenioides Mich.*

Shady woods. Throughout the U. S. and Can. July. ♀.—*Fern* 1—2 feet or more high, smooth. *Stipe* tawny. *Fron*d with an outline varying from oblong to broad-lanceolate, variously divided and subdivided. *Sori* small, one on each segment of the pinnules, inserted laterally into its minute midrib, oblong and straight, at length by the pushing back of the indusium becoming kidney-shaped and appearing nearly round, but always remaining distinct.

Female Spleenwort.

7. ANTIGRAMMA. *J. Smith.*—Antigramma.

(From the Greek *αντι*, like, and *γραμμα*, writing; in allusion to the appearance of the sori.)

Sori linear, unilateral, mostly approximated in pairs and facing each other, scattered. *Indusium* linear; one margin free.

A. rhizophylla J. Smith: frond lanceolate, somewhat crenate, (rarely sinuate,) auriculate-cordate at base; the point very long, attenuate and often rooting. *Asplenium rhizophyllum Willd.*

Wet rocks. Can. to Car.; rather rare. July. ♀.—*Fron*ds several from the same root, 6 or 8 inches long and half an inch to an inch wide at the base, gradually tapering, with a long and linear point which is bent to the ground and often takes root, the base often hastate or conspicuously auricled; veins forked, reticulated. *Sori* often approximating in pairs and sometimes confluent.

Walking Fern.

8. SCOLOPENDRIUM. *Smith.*—Hart's Tongue.

(Thus named from the resemblance which the lines of fructification bear to the insect called *Scolopendra*.)

Sori linear, transverse, on lateral nerves. *Indusium* double, occupying both sides of the sorus, superficial, opening inwards, as it were, by a longitudinal suture.

S. officinarum Smith: frond simple, oblong-ligulate, entire, cordate at base. *Asplenium Scolopendrium Linn.*

Limestone rocks along Chittenango Creek, near the Falls, N.Y.; abundant. *Torr.* July. ♀.—*Fern* 12—20 inches high, growing in thick tufts. *Stipe* rather short, chaffy. *Fron*d 8—15 inches long, 1—2 wide, bright green, pale beneath. *Sori* linear, 6—9 lines long, oblique to the midrib, confluent in pairs.

Common Hart's Tongue.

9. WOODWARDIA. *Smith.*—Woodwardia.

(In honor of *Thomas J. Woodward*, an English botanist.)

Sori oblong or linear, distinct, parallel with the ribs of the frond on either side. *Indusium* superficial, vaulted, separating towards the rib.

1. *W. angustifolia Smith*: sterile frond pinnatifid, with lanceolate slightly serrulate segments; fertile frond pinnate; pinnæ linear, entire, acute. *W. onocleoides Willd.* *Onoclea nodulosa Mich.*

Swamps. Can. to Flor.; rather rare. Aug. ♀.—*Fern* 1—2 feet high, growing in tufts, smooth except at the lower part of the stipe. *Fron*d lanceolate, tapering at the top; the veins of the sterile one much reticulated. *Sori* 3—4 lines long, at length nearly covering the back of the pinnæ. *Indusium* involute. *Narrow-leaved Woodwardia*.

2. *W. Virginica Swartz*: sterile and fertile fronds similar, very smooth, pinnate; pinnæ sessile, lanceolate, pinnatifid. *W. Banisteriana Mich.* *Doodia Virginica Presl*.

Swamps. N. Y. and Mass. to Geor. July. ♀.—*Fern* about 2 feet high, growing in tufts, smooth. *Stipe* brown. *Fron*d oblong-lanceolate in its outline, light green, with the segments rather obtuse and a little incurved. *Sori* in interrupted double lines near the midrib of the pinnæ and segments. *Indusium* revolute. *Virginian Woodwardia*.

10. PTERIS. Linn.—Brake.

(From the Greek πτερυξ, a plume or feather; in allusion to the form of the frond.)

Sori marginal, linear, continuous or interrupted, forming a transverse receptacle which connects the apices of the veinlets. *Indusium* linear, narrow, occupying the margin of the frond; the inner side free.

1. *P. aquilina Linn.*: frond 3-parted; branches bipinnate; pinnules linear-lanceolate, lower pinnatifid, upper undivided; segments oblong, obtuse. *P. cordata Pursh*.

Dry woods. Can. to Flor. July, Aug. ♀.—*Stipe* 1—2 feet long, angular, smooth, light brown, divided into large opposite branches. *Fron*d 1—2 or 3 feet in diameter, bi-triternately divided, spreading, dull green; some of the pinnules with only a single lobe, and appearing auricled. *Sori* uninterrupted, resembling a thickened russet edging. One of our largest ferns. *Common Brake*.

2. *P. atropurpurea Linn.*: frond pinnate or subbipinnate; lower divisions ternate or pinnate; segments lance-oblong, obtuse, entire, obliquely truncate or subcordate at base. *Platyloma atropurpurea J. Smith*.

On rocks. N. Y. to Car. July. ♀.—*Stipe* 2—4 inches long, dark purple, terete, slender, roughish-pubescent. *Fron*d 4—8 inches long, grayish-green. *Sori* conspicuous, linear and marginal. *Indusium* membranaceous, often undulately crenate. *Purple-stalked Brake*.

3. *P. gracilis Mich.*: frond lanceolate; the sterile pinnate, with pinnatifid divisions and a few broad-ovate obtuse segments; the fertile bipinnate, with linear-oblong acute slightly crenate segments. *Cheilanthes gracilis Spreng.* *Allosurus gracilis J. Smith*.

Moist rocks. Can. and N. Y.; rare. Aug. ♀.—*Stipe* 1—3 inches long, dark brown and shining. *Fron*d 2—4 inches long, smooth, membranaceous. *Sori* approximated. *Indusium* membranaceous. Smaller and more delicate than the preceding. Abundant on the rocks near Whitehall, N. Y. *Slender Brake*.

11. ADIANTUM. Linn.—Maiden Hair.

(From the Greek αδιαντος, dry; its surface repelling moisture.)

Sori oblong or roundish, marginal. *Indusium* membranaceous, arising from the reflexed margin of distinct segments of the frond, opening along the lower or inner side.

A. pedatum Linn.: frond pedate; divisions pinnate; segments dimidiate, triangular-oblong, or somewhat rhomboid; the upper margin incisely lobed and serrate; sori somewhat lunate.

Shady woods. Can. to Virg. W. to Miss. and Louis. July. ♀.—A delicate and graceful fern 1—2 feet high, easily known by its long slender black highly polished *stipe*, and its pedate nearly horizontal *frond*. *Maiden-hair*.

12. CHEILANTHES. Swartz.—Cheilanthes.

(From the Greek *χειλος*, a *lip*, and *ανθος*, a *flower*; in allusion to the labiate form of the indusium.)

Sori roundish, distinct, situated at the margin of the frond. Indusium of distinct membranaceous inflexed scales, opening inwards.

C. vestita Willd.: frond bipinnate, hairy on both sides; pinnules pinnatifid; segments rounded, oblong, very entire; *stipe* and rachis hairy.

Rocky banks. Penn. to Car. W. to the Rocky Mountains. July. ♀.—*Fern* 6—8 inches high, covered with long brownish hair. *Stipe* somewhat rigid. *Frond* lance-oblong in its outline. Sori at length contiguous or crowded. *Hairy Cheilanthes*.

13. HYMENOPHYLLUM. Smith.—Filmy Fern.

(From the Greek *ιμην*, a *membrane*, and *φυλλον*, a *leaf*; in allusion to the texture of the frond.)

Sori in separate spots on the the margin of the frond. Spore-cases inserted upon a narrow receptacle, within a 2-valved indusium which is of the same texture as the frond, opening above.

H. ciliatum Smith: frond pinnate; lower divisions larger; upper ones gradually smaller, pinnatifid; segments linear-obtuse, bifid, ciliate, hairy on the veins; *stipe* and rachis winged and ciliate. *Trichomanes ciliatum* Swartz.

Trunks of trees in shady places. Penn. and Virg. ♀.—*Pursh*. *Ciliate Filmy-fern*.

14. STRUTHIOPTERIS. Willd.—Ostrich Fern.

(From the Greek *στρουθός*, an *ostrich*, and *πτερις*, a *fern*; on account of the fancied resemblance to the plumes of that bird.)

Fertile frond contracted; the margins revolute, forming a general involucre. Sori round, confluent, naked; the pedicels of the spore-cases cohering at the base, forming an elevated thickened receptacle.

S. Germanica Willd.: sterile frond pinnate; pinnae pinnatifid, sessile; segments entire, rather acute, lower ones elongated. *S. Pennsylvanica* Willd. *Onoclea Struthiopteris* and *nodulosa* Schk.

Low grounds. Can. N. Eng. and N. Y.; rather rare. July. ♀.—*Sterile fronds* 2—3 feet high, forming circular tufts. *Fertile fronds* central, much

smaller than the sterile, but having a thicker stipe; segments incurved and filled with the confluent sori. *Common Ostrich-fern.*

15. DICKSONIA. *L'Herit.*—Dicksonia.

(In honor of *James Dickson*, an English botanist.)

Sori small, roundish or dot-like, distinct, marginal. Indusium coriaceous or membranaceous, formed in part of the lobule of the frond and of the proper indusium more or less united, 2-valved or entire, sometimes cup-shaped.

D. pilosiuscula Willd.: frond bipinnate; pinnæ lanceolate, sessile; pinnales decurrent, ovate-oblong, pinnatifid; segments incised-toothed; sori solitary, minute; indusium cup-shaped. *D. punctiloba Hook.* *Nephrodium punctilobum Mich.* *Aspidium punctilobum Willd.*

Moist shady places. Can. to Virg.; common. July. ♀.—*Frond* 15—20 inches high, lance-oblong, somewhat hairy, pale yellowish-green and rather delicate. *Stipe* and *rachis* somewhat hairy, pale green. *Sori* solitary, minute, near the divisions of the segments. *Hairy Dicksonia.*

II. OSMUNDEÆ. *Capsules destitute of a ring, reticulated, striated with rays at the apex, opening lengthwise and usually externally.*

16. OSMUNDA. *Linn.*—Flowering Fern.

(Etymology uncertain.)

Spore-cases subglobose, pedicellate, radiate-striate or wrinkled, half 2-valved, in terminal paniculate racemes, or clustered on the contracted frond. Indusium none.

1. *O. Claytoniana Linn.*: frond pinnate; pinnæ pinnatifid; segments oblong, entire; some of the intermediate pinnæ fertile. *O. interrupta Mich.*

Low wet grounds. Can. to Virg.; common. June. ♀.—*Stipe* nearly smooth, 6—8 inches long. *Frond* 18—24 inches long, linear-oblong in its outline; pinnæ mostly opposite, 2 or 3 of the central pairs contracted into pinnate clusters of dark brown spore-cases. *Interrupted Flowering-fern.*

2. *O. spectabilis Linn.*: frond bipinnate, fruit bearing at the summit; pinnales lance-oblong, nearly equal at the base, subpetiolate, serrulate; raceme large, decompound, smooth. *O. regalis Mich.*

Moist meadows and thickets. Can. to Flor. July. ♀.—*Fern* 3—4 feet high, smooth, grayish-green, with numerous spreading branches. *Raceme* terminal, 4—8 inches long. Smaller and of a more rigid texture than the foreign *O. regalis*, and also differing from it in having the pinnales distinct and without the auricle on the lower side. *Flowering-fern.*

3. *O. cinnamomea Linn.*: sterile frond pinnate; pinnæ elongated, pinnatifid; segments ovate-oblong, entire; fertile frond bipinnate; pinnæ contracted, and with the stipe woolly.

var. *frondosa Torr.*: frond leafy below, fruit-bearing at the summit; stipe less woolly. *O. Claytoniana Conrad* not of *Linn.* (according to *Torr.*)

Low grounds. Can. to Flor. Aug. 21.—*Fern* sometimes 4—5 feet high, in large bundles or circles. *Fertile fronds* usually central, less numerous than the sterile, with the pinnæ much smaller and covered with dense clusters of ferruginous or cinnamon-colored spore-cases. *Var. frondosa* has been found in a few localities in the state of N. Y. I am doubtful whether it may not still turn out to be a distinct species. *Woolly Flowering-fern.*

17. LYGODIUM. *Swartz.*—Climbing Fern.

(From the Greek *λυγος*, a twig; in allusion to its twining habit.)

Spore-cases sessile, ovate, in 2-ranked little spikes, which issue from the margin of the frond, radiate-striate, or wrinkled, opening on the inner side from the base to the summit. Indusium scale-like, covering each spore-case.

L. palmatum Swartz: stem flexuous and climbing; fronds conjugate, cordate, palmate, 5—7-lobed, the lobes entire and obtuse; terminal ones contracted and fruit-bearing, forming a compound panicle. *Hydroglossum palmatum Willd.* *Cleisium paniculatum Mich.*

Low woods. Mass. and N. Y.? to Car.; rare. July. 21.—*Stem* climbing, 3—4 feet long, smooth and slender. *Petioles* alternate, forked at a short distance from the stem, and supporting two leaves or fronds, which are deeply lobed, light green above and paler beneath. *Fertile fronds* variously divided into small linear segments with the sori in two imbricated rows. *Climbing-fern.*

18. SCHIZEA. *Smith.*—One-sided Fern.

(From the Greek *σχίζω*, to split; in allusion to the cloven appearance of the spikes.)

Spikes unilateral, flabellate, aggregate. Spore-cases with radiating furrows at the top, somewhat turbinate, bursting laterally, sessile. Indusium continuous, formed of the inflexed margin of the spikes.

S. pusilla Pursh: frond simple, linear-compressed, tortuous; spikes few, conglomerated at the summit of a long slender stipe. *S. tortuosa Muhl.*

Sandy moist grounds. Near the Academy in the town of Yates, Orleans county, N. Y. *T. E. Wetmore.* Near Quakers' Bridge, N. J. Aug. 21.—A very small fern, with numerous cespitose fronds, which are about 2 inches long. *Stipe* 3—5 inches long, filiform, with a few brownish secund spikes. It has been found in Newfoundland and in the Falkland Islands, but the only intermediate localities known are those above noticed. *One-sided Fern.*

III. OPHIOGLOSSÆ. *Spore-cases* roundish, 1-celled, adnate at the base, coriaceous, opaque, destitute of a ring, sometimes connate, half 2-valved. *Vernation* straight.

19. OPHIOGLOSSUM. *Linn.*—Adder's Tongue.

(From the Greek *οφίς*, a serpent, and *γλωσσα*, a tongue; in allusion to the appearance of the spike.)

Spore-cases roundish, smooth, 1-celled, 2-valved, opening transversely, forming a compact 2-ranked linear spike. Indusium none.

1. *O. vulgatum* Linn.: root fibrous; spike cauline; frond simple, oblong-ovate, obtuse, closely reticulate.

Low moist woods. N. S.; rare. June. ♀.—*Stipe* smooth and succulent, 6—8 inches high, bearing about the middle a single entire sessile frond. *Spike* about an inch long, on a slender peduncle. *Common Adder's-tongue*.

2. *O. bulbosum* Mich.: root bulbous; spike cauline; frond subcordate, ovate, somewhat obtuse. *O. crotalophoroides* Wall.

Low sandy grounds. N. J. to Car.; rare. May. ♀.—*Stipe* 6 inches high. *Fron*d 1—1½ inches long and an inch broad, reticulate.

Bulbous Adder's-tongue.

20. BOTRYCHIUM. Swartz.—Moonwort.

(From the Greek βότρυς, a bunch of grapes; in allusion to the fructification.)

Spore-cases subglobose, 1-celled, 2-valved, distinct, smooth, sessile along the margin of a compound pinnate rachis, opening transversely. Indusium none.

1. *B. simplex* Hitchcock: scape with one frond above; frond ternate, pinnatifid; segments roundish, cuneate, obovate, entire or somewhat incised.

Dry woods. Can. N. Y. and Mass. June. ♀.—*Scape* seldom more than 4 or 5 inches high. *Fron*d solitary, from a torn membranaceous sheath, divided into 3 or 4 unequal segments or pinnatifid; the segments often much cut. *Spike* pinnate. *Small Moonwort*.

2. *B. lunarioides* Swartz: scape bearing the petioled frond near the base; frond smooth, 3-parted, the divisions bipinnatifid; segments obliquely lance-ovate, crenulate; spike bipinnate. *B. fumarioides* and *obliquum* Willd. *Botrypus lunarioides* Mich.

Moist low grounds. Can. to Car. W. to Ark. June. ♀.—*Scape* 6—15 inches long, smooth or slightly hairy. *Fron*d triangular in its outline, petioled, but often more compound; segments lunate, crenulate. *Spore-cases* in double rows on the pinnules, which are very narrow and without teeth. *B. dissectum* Muhl. is nothing more than a variety, with the frond more dissected and the segments narrower. *Tall Moonwort*.

3. *B. Virginicum* Swartz: somewhat hairy; scape bearing the frond near the middle; frond 3-parted, the divisions bipinnatifid; segments obtuse, incisely toothed; spike bipinnate. *B. gracile* Pursh. *Botrypus Virginicum* Mich.

Shady woods. Can. to Car. May—July. ♀.—*Scape* 10—18 or 20 inches high. *Fron*d 3-parted or ternate; the divisions 4—6 inches long, broad-ovate or somewhat deltoid in their outline and again variously subdivided; segments acutely 2—6-toothed. *Spike* oblong, loose, brownish. *Virginian Moonwort. Rattlesnake Fern*.

ORDER CL. LYCOPODIACEÆ.—CLUBMOSES.

Fructification axillary or spiked, composed of 1—3-celled sessile spore-cases containing either minute powdery matter, or grains of larger size.—Moss-like plants, with creeping or prostrate stems and imbricate leaves, the axis abounding in annular

vessels; or stemless plants, with erect subulate leaves and a solid corm.

1. LYCOPODIUM. *Linn.*—Club Moss.

(From the Greek *λυκος*, a *wolf*, and *πους, ποδος*, a *foot*; on account of a supposed resemblance in the appearance of some species.)

Spore-cases all of one kind, 1-celled, reniform, somewhat didymous, opening transversely at the apex or rarely at the base.

* *Spore-cases in spikes.*

† *Spikes pedunculate.*

1. *L. clavatum Linn.*: stem creeping, with ascending branches; leaves scattered, numerous, subulate-linear, incurved and hair-pointed; spikes mostly in pairs, cylindric, pedunculate; scales ovate, acuminate, closely denticulate. *L. tristachyum Pursh.?* *L. integrifolium Goldie.*

Dry woods. Can. to Del. W. to Mich. July. ♀.—*Stem* closely trailing on the ground, several feet long, rooting and throwing up fertile branches 2—6 inches long. *Leaves* 3—4 lines long, light green, entire or minutely denticulate. *Spikes* usually in pairs, sometimes 1, rarely 3 or 4, yellowish, erect. *Peduncles* 2—5 inches long. *Common Club-moss.*

2. *L. complanatum Linn.*: stem trailing; branches erect or ascending, dichotomously and pedately subdivided, with the branchlets flattened and spreading; leaves 4-rowed, the marginal ones connate and diverging at the apex, the middle rows distinct and appressed; spikes 2—4, cylindric, on a long common peduncle.

Woods and thickets. Arct. Amer. to Car.; common. July. ♀.—*Stem* 2—8 feet long, procumbent or sometimes shorter and nearly erect, variously branched. *Leaves* short, 4-rowed, those on each margin broad at the base and somewhat spreading, those of the middle row smaller and closely pressed to the flattened sides of the stem. *Spikes* about an inch long. *Flattened Club-moss.*

†† *Spikes sessile.*

3. *L. inundatum Linn.*: stem prostrate, creeping; fertile branches solitary, erect, with a single oblong sessile and leafy spike at the extremity; leaves linear, scattered, acute, entire or sparingly denticulate, curved upwards. *L. Carolinianum Big.*

var. *alopeuroides Tuckerman*: fertile branches elongated; leaves linear-subulate, sparingly ciliate-denticulate at the base. *L. alopeuroides Linn.*

Swamps and wet sandy margins of ponds. Hudson's Bay to Flor. July, Aug. ♀.—*Stem* long, creeping close to the ground, yellowish-green. *Fertile branches* subradical, 2—10 inches high. *Sterile branches* short, flaccid. *Leaves* varying from entire to conspicuously denticulate. *Spikes* 6 lines to an inch or more long, leafy. *Marsh Club-moss.*

4. *L. annotinum Linn.*: stem creeping, very branching; branches ascending, 2—3-forked, the branchlets simple; leaves in about 5 rows, linear-lanceolate, mucronate, serrulate at the apex, spreading; spike solitary, oblong-cylindric, sessile.

var. *montanum* Tuckerman: low; leaves in 4 rows. *L. sabinæfolium* Beck Bot. 1st. Ed.

Rocky and mountain woods. Arct. Amer. to N. Y. W. to Miss. July. ♀.—*Stem* often several feet in length, sending up ascending branches which are 6—3 inches high. *Leaves* rigid, light green, those of the stem shorter. *Spike* about an inch long. I concur in the opinion expressed by Mr. Tuckerman, that *L. sabinæfolium* of the previous edition is an alpine variety of this species.

Interrupted Club-moss.

5. *L. obscurum* Linn.: stem erect, much branched near the summit; branches alternate, subdivided, erect, or somewhat spreading; leaves linear-lanceolate, in 4—6 unequal rows, spreading; spikes 1—3, sessile. *L. dendroideum* Mich.

Shady woods. Can. to Car. July ♀.—*Stem* 6—9 inches high, bushy near the summit, the branches dichotomously subdivided. *Leaves* entire, those of the lateral rows longest. *Spikes* sometimes solitary, but occasionally 4 or 5, about 2 inches long, somewhat tapering at the summit. *Ground Pine.*

6. *L. selaginoides* Linn: stem filiform, creeping; branches few, ascending, simple; leaves scattered, lanceolate, somewhat spreading, ciliate-denticulate; spike solitary, sessile, leafy.

Wet hill sides. Can. and N. S.? July. ♀.—*Fertile branches* 2—4 inches high, nearly erect, yellowish-green, with the leaves larger than those of the sterile ones. *Spike* about an inch long. *Lesser Alpine Club-moss.*

** *Spore-cases axillary, scattered.*

7. *L. lucidulum* Mich.: stem 2—3-forked, the branches ascending; leaves in about 8 rows, linear-lanceolate, denticulate, acute, spreading or reflexed.

Moist shady woods. Can. to Car. July, Aug. ♀.—*Stem* mostly prostrate, the branches 8—12 inches high. *Leaves* longer than in any of the preceding, dark green and shining. *Spore-cases* subreniform or semi-circular, pale yellow, sessile in the axils of the leaves about an inch from top of the branches.

Shining Club-moss.

8. *L. Selago* Linn.: stem erect, fastigiate, dichotomously branched; leaves in about 8 rows, linear-lanceolate, acuminate, entire, imbricate, rigid.

Alpine summits. White Mountains N. H. Green Mountains, Vt. Whiteface Mountain and Mount Marcy, N. Y. Arct. Amer. July. ♀.—*Stem* 3—8 inches high, rigid, with the branches of the same thickness from the top to the base. *Leaves* 3—5 lines long, dark green, shining, rigid. *Spore-cases* in the axils of the leaves, reniform, yellowish.

Fir Club-moss.

2. SELAGINELLA. Spring. Torr.—Selaginella.

(The diminutive of *Selago*.)

Spore-cases of two kinds, 1-celled; some filled with minute powdery matter, and opening at the apex; others containing 1—4 rarely 6 globose-angular grains.

1. *S. rupestris* Spring: cespitose, with ascending stems; leaves crowded, imbricate, linear-lanceolate, ciliate, with a hair-like point at the tip; spikes terminal, sessile, acutely quadrangular. *Lycopodium rupestre* Linn.

Rocks and hill sides. Can. to Car. July, Aug. ♀.—*Plant* grayish-green. *Stems* 1—3 inches long, much branched. *Leaves* ending in hairs, which give

the summits of the branches a whitish appearance. *Spikes* 3—6 lines long, square and scarcely distinguishable from stem below. *Spore-cases* mostly with larger grains. *Small Rock Club-moss.*

2. *S. apus Spring*: cespitose; stems flaccid, creeping, flat; leaves in 4 rows, not auricled; those of the lateral rows roundish-ovate, oblique and spreading; the intermediate ones on the upper side of the branches smaller, appressed; spikes dense, leafy. (*Torr. N. Y. Fl.*) *Lycopodium apodum Linn.* *L. albidulum Pursh.*

Wet rocky places. N. Y. to Flor. July, Aug. ①?—A small pale green moss-like plant. *Stems* numerous, 1—4 inches long, with somewhat flattened branches. *Leaves* small, membranaceous. *Spikes* terminal, 2—4 lines long, with the larger *spore-cases* at the lower part. Resembles *S. Helvetica* of Europe. *Moss-like Selaginella.*

ORDER CLI. MARSILEACEÆ.—PEPPERWORTS.

Fructification enclosed in indusia or involucre of two kinds; the one clustered and stalked, or crowded confusedly without stalks, and distinct from the second, or mixed with it, or in contact with it; the other, simple oval bodies, sometimes having a terminal nipple, from which germination uniformly proceeds.—Stemless plants, creeping or floating. Leaves usually petioled, sometimes sessile and scaly, occasionally destitute of lamina and rolled up in vernation

1. AZOLLA. Lam.—Azolla.

(Said to be derived from the Greek $\alpha\zeta\omega$, to *dry*, and $\alpha\lambda\lambda\upsilon\mu\iota$, to *destroy*; it being quickly killed by dryness.)

Reproductive organs in pairs, attached to the stem and branches, one above the other, concealed in a membranaceous indusium. Capsules? of each pair either difform—in which case the lowest one is oblong-ovoid, the upper globose—or both of either kind; the upper half generally tinged with red. The oblong-ovoid capsule opens by circumcission; the globose one has a rugose surface from the pressure of the secondary capsules. (*Griffith, in Lind. Veg. King.*)

A. Caroliniana Willd.: leaves 2-ranked, imbricate, ovate-oblong, obtuse, spreading, reddish beneath.

Lakes and slow flowing streams. N. Y. to Flor. W. to Miss.; rare in the N. S. ①.—A small plant floating on water, and somewhat resembling a *Jungmannia*, dark green, pinnately branched. *Leaves* less than half a line long. *Sterile indusia* solitary or in pairs at the base of the much larger sterile ones. *Carolinian Azolla.*

2. SALVINIA. *Micheli*.—Salvinia.(In honor of *Salvini*, an Italian professor.)

Reproductive organs near the root solitary, or in racemes of 3—5, covered with brown rigid hairs. Upper ones of each raceme filled with innumerable spherical bodies, brownish and reticulated; lower ones more oblong, containing 6—18 larger oblong-ovoid, brown and reticulated bodies, on short stout compound pedicels. (*Griffith, in Lind. Veg. King.*)

S. natans Willd.: leaves elliptic, subcordate, obtuse, with fascicles of hairs above. *Marsilea natans Linn.*

Lakes and still waters. Can. and Western N. Y. *Pursh.* Leaves opposite, 2-ranked, fine green. Floating on water like a *Lemna.* *Floating Salvinia.*

3. ISOETES. *Linn.*—Quill-Wort.(From the Greek *ισος*, equal, and *ερος*, the year, or evergreen.)

Spore-cases membranaceous, oblong, 1-celled, not opening, imbedded in the dilated base of the frond. Spores globose or slightly angular, attached to numerous filiform receptacles which traverse the capsule.

I. riparia Engelman: emersed rhizoma small (orbicular?); leaves slender, soft, yellowish-green; sheaths short (longer than broad); spores neatly and minutely farinaceous and reticulated. (*Sill. Jour. Jan. 1847.*)

In ponds and wet shady places. Banks of the Delaware below Philadelphia. Chester county, Penn. *Darlington.* July, Aug. 2.—*Root* or *rhizoma* 4 or 5 lines in diameter. *Fronde* numerous, 4—6 inches long, (*Engelm.*), 4—12 or 15 inches, (*Darlingt.*), linear subulate, somewhat like the leaves of a *Juncus.* *Fructification* oval-oblong, membranaceous, imbedded in the swollen base of the frond. According to Professor Braun, *I. lacustris* has hitherto been found only in middle and northern Europe. See *Sill. Jour. Jan. 1847.*

Mud Quill-wort.


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OF THE

ORDERS AND GENERA,

WITH ACCENTS.

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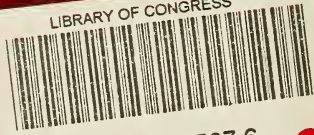








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