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AGRICULTURAL BOTANY:

AN

ENUMERATION AND DESCRIPTION

OF

USEFUL PLANTS AND WEEDS,

WHICH MERIT THE NOTICE, OR REQUIRE THE ATTENTION,

OF

AMERICAN AGRICULTURISTS.

BY WILLIAM DARLINGTON, M. D.

Hic Segetes, illic veniunt felicius Uvae:
Arborei fetus alibi, atque injussa virescunt
Gramina. *Virgil, Georg. 1.*

Here golden harvests wave, there Vineyards glow,
Fruit bends the bough, or Herbs unbidden grow.
Sotheby.

PHILADELPHIA:
J. W. MOORE, 138 CHESNUT STREET.

NEW YORK:
MARK H. NEWMAN & CO., 199 BROADWAY.
1847.

Oct
122

ENTERED according to Act of Congress, in the year one thousand eight hundred and forty seven (1847), in the Clerk's office of the District Court of the Eastern District of Pennsylvania.

E. C. DARLINGTON, PRINTER,
LANCASTER, PENNSYLVANIA.

TO THE YOUNG FARMERS
OF THE UNITED STATES,
THIS HUMBLE ATTEMPT
TO AID AND PERSUADE THEM
TO CULTIVATE A DEPARTMENT OF SCIENCE,
ESSENTIAL TO AN ENLIGHTENED AGRICULTURE,
AND
INDISPENSABLE TO AN ACCOMPLISHED YEOMANRY,
IS RESPECTFULLY DEDICATED BY
THE AUTHOR

PREFATORY.

AGRICULTURE, in a broad and legitimate sense, being a comprehensive system of Natural Science—involving more especially a practical acquaintance with the useful portion of the Vegetable Creation,—I have long thought it due to the Profession, and desirable in every point of view, that the young Farmers of the United States should acquire an exact knowledge of the Plants which it immediately concerns them to know; and that they should be enabled to designate, and treat of them, with the precision and methodical perspicuity which belong to scientific language and arrangement. Under this impression, and in the hope of promoting an object deemed so important, the present work has been compiled. In submitting it to those for whom it is more particularly intended, I am not unaware that its technical features are ill-suited to the notions of many plodding disciples of the old school of Agriculture, who despise every form of knowledge derivable from *Books*,—and whose ideas never stray beyond the manual operations of the field and the barn-yard. It is scarcely probable, indeed, that any written treatise—though couched in the most familiar dialect—would obviate the objections, or conciliate the prejudices, of such antiquated tillers of the soil. My views, therefore, have not been directed to that unpromising quarter. I address myself to the youthful and aspiring Agriculturists of our country, who seek to elevate their noble Profession to its just rank among human pursuits,—and who feel that the exercise of *intellect*, as well as of muscle, is indispensable to the accomplishment of their purpose.

I have preferred to treat of the Plants, which it more immediately behoves the farmer to be acquainted with, according to the most approved *method* of our day, and in the *language* of Systematic Botany. By exhibiting as much of the classification, or frame-work of the Science, as is requisite to present the Genera and Species, here described, in their natural and relative positions, the Student will be enabled to comprehend their connection with the other portions of the System, and to examine them, as the Geologists say, *in situ*. In that process, he will necessarily have to learn something of their structure, and essential character; and *that* I should consider as an important advantage,—even if his researches should there terminate. His knowledge, however limited, will be established on a correct basis,—and will be always available in his intercourse with men of science: But, to those who may subsequently resolve upon a more extended acquaintance with the vegetable kingdom, such knowledge will be a clear gain, and a valuable preliminary step;—that step which, according to the proverb, is the only one which costs.

In adopting the machinery of Science—preferring the botanical to the popular names of plants, as well as arranging them in kindred groups—I have supposed that such a plan would be most conducive

to accuracy of conception,—and would, in fact, facilitate the investigation of their true character. By employing names, and phrases, which have an exclusive application, and a definite meaning, the study of plants is really simplified; and the knowledge acquired—being thereby communicable with more readiness and precision—is greatly enhanced in practical value. By using, every where, the same terms in the same sense, men of different regions, or districts, can be sure that they comprehend each other's meaning,—and may then discuss questions understandingly. When disputes arise, touching the merits or demerits of particular plants, both parties will have clear conceptions of the objects referred to,—and will consequently have the advantage of knowing exactly what they are talking about:—which is far from being always the case when they make use of a variable popular nomenclature.

It is a great mistake, in my opinion, to suppose that the significant language of our Science must necessarily be merged in the vernacular idiom, or degraded into a local *patois*, in order to adapt it to the capacities of intelligent practical men. An active intellect, I think, more readily acquires *new terms*, appropriate to a Science, than *new meanings* of old familiar words: and hence it is that most persons, as they advance in any department of knowledge, are apt to discard all equivocal terms, and to substitute those which are definite, technical and peculiar. Instead, therefore, of *writing down* to the level of boorish apprehension, I would rather see Agricultural works gradually *written up* to the scientific standard. I would have our young Farmers taught to appreciate the importance of scientific precision, and incited to take their appropriate position in the intellectual community.

In the present work, it is hoped and believed that with the aid of the copious *Glossary*, the *Index of Common Names* and *Synonyms*, and the other facilities annexed, there can be no difficulty in becoming familiar with the terms employed, nor in the investigation of the plants enumerated:* And the farmer who shall have accomplished that much, will find that he has obtained many new and interesting views of objects intimately connected with his Profession,—that he has acquired a capacity for observing and profiting by numerous processes and phenomena, in the vegetable economy, which had theretofore been unheeded, or imperfectly understood. A spirit of research will often be awakened, which, in itself, is an unfailing source of gratification to ingenuous minds,—and not unfrequently leads to important practical results.

The study of BOTANY, in its widest sense—comprising, as it does, the entire vegetable creation,—will ever have its select votaries in those who can appreciate its manifold charms, and find their reward in the pleasures incident to the pursuit: But when regarded in a

* As a convenient and satisfactory mode of acquiring the requisite Botanical knowledge—and of keeping that knowledge always within reach, in case of forgetfulness,—I would recommend to the young Farmer, the formation of a select *Herbarium*, containing authentic specimens—neatly prepared, and appropriately labelled—of those plants which it is his interest to be acquainted with.—Such a Collection could readily be obtained by every one who has the taste, or even the curiosity, to extend his information in that direction. It would afford instructive subjects for investigation, and comparison, in seasons of leisure; and the contents, being duly arranged, could be examined, or referred to, with the like facilities, and advantages, as attend the consultation of a Dictionary.

more limited and practical point of view, it may fairly challenge the attention even of the most inveterate *Utilitarians*. There are *three* aspects, or relations of the Science, in which its importance will scarcely be denied by the most penurious calculator of economical values: namely, 1. *Agricultural Botany*,—2. *Medical Botany*,—and 3. *Artistical Botany*, or the history of those plants which are employed, or afford materials, in the processes of the Arts and Manufactures. The *Medical* branch of the science has been often treated of, with something like system, by the Professional writers of Europe and America. The other two divisions less frequently, and with less method, in various *Agricultural Journals*, *Cyclopaedias*, and *Mercantile Dictionaries*. The attempt here made, is an *Essay on the Agricultural branch*,—or a systematic description of those Plants (both useful and pernicious) which more immediately interest *American Farmers*—especially those in the middle States of this Confederacy. The *Botany of the Arts*, whenever undertaken, will afford a highly interesting theme for some future laborer in this elegant department of Natural History.

In compiling this *Farmer's Flora*, I found it somewhat difficult to determine, satisfactorily, the line of demarcation between the Plants intitled to a place in it, and those which might properly be omitted. It may, perhaps, be thought by some, that the list is unnecessarily large,—while others may be of opinion that there are species left out, which ought to have been inserted. My aim has been—not, certainly, to describe all the plants which an accomplished Agriculturist might very properly desire to know; but—to include those only (whether in the woodlands, the fields, or the kitchen-garden,) of which no intelligent Farmer would willingly be ignorant. When he shall have made himself familiar with these, he can extend his acquaintance with the Vegetable Tribes, at pleasure, by having recourse to more general and comprehensive works: such, for example, as the *Flora of North America* by TORREY and GRAY,—or Prof. DE CANDOLLE'S *Prodromus* of a Natural System, comprising all the known forms of vegetation upon this terraqueous globe.

In my humble opinion, no Education can be deemed sufficient, without some acquaintance with the rudiments, or first principles, of Botanical Science—some rational knowledge of the vast and multiform creation around us, known as the Vegetable Kingdom. I consider such knowledge just as indispensable to a rightly instructed people, as any of the usual elementary branches of school learning. By this, however, I do not mean the smattering of a few obsolete terms, unconnected with any available ideas—which, in too many instances, passes under the imposing name of "BOTANY": but I do mean, that thorough conception of the general nature and relations of Plants, which may be acquired by the aid of such works as the *Botanical Text-Book* of Prof. A. GRAY. In all other employments, it is very properly expected that a workman shall not only be expert in the manipulations of his art, but shall also be well acquainted with the nature of his materials: and I can perceive no good reason why it is not equally incumbent on a practical farmer to understand the true character of those plants, which it is his especial interest either to cultivate or to extirpate.

If our American Youths, who are being educated with a view to

Agricultural pursuits, were thoroughly instructed in the admirable *Text-Book*, above referred to,—and were then required to make themselves botanically acquainted with that portion of the vegetable kingdom which annually demands their attention, on the farm,—the Profession would speedily assume a new and engaging aspect. The labors of the field would be blended with the contemplation of facts and phenomena of the deepest interest to inquiring minds,—and *Agriculture*—instead of being shunned as an irksome drudgery—would be justly esteemed as one of the noblest employments of a free and intellectual people.

If the present Essay may in any degree tend to promote that auspicious result, the Author will derive a sincere gratification from the belief, that the time and attention devoted to its preparation have not been wholly misapplied.

WEST-CHESTER, PENNA.

June, 1817.

GLOSSARY

OF THE

PRINCIPAL BOTANICAL TERMS USED IN THIS WORK.

☞ The reader will bear in mind, that where *compound* descriptive terms are employed in this work, the *last member* of the compound word is intended to give the *predominant character*,—and that the word or syllable *prefixed*, merely indicates a *modification* of that character:—as, for example,—“ovate-lanceolate” signifies *lanceolate*, but *inclining somewhat to ovate*; while “*lance-ovate*” means *ovate with something of the lanceolate form*, &c. So of colors: “*yellowish-green*,” “*bluish-green*,” &c. signify that *green* is the prevailing hue,—but that it is *tinged* with a shade of *yellow*, *blue*, &c. Terms indicative of the *size* of any organ, or portion of a plant—as “*large*,” “*small*,” or “*middle-sized*”—are, of course, relative,—and have reference to the usual or average size of such parts, or organs, in other species of the same genus, or family.

- ABIETINEAE.** The *Abies* Sub-order, or Pine and Fir section, of the Order CONIFERAE.
- Abortion**, an imperfect development of any organ.
- Abortive**, not arriving at perfection; producing no fruit.
- Abrupt**, not gradual; sudden.
- Abruptly** acuminate, suddenly narrowed to an acumination.
- Abruptly** pinnate. See *Even-pinnate*.
- Acaulescent**, apparently stemless.
- Accessory**, additional, or supernumerary.
- Accumbent** cotyledons, having the radicle applied to the cleft, or recurved along the *edges* of the cotyledons (represented by this sign, o=),—as in some Tetradyamous or Cruciferous plants.
- ACERACEAE.** The *Acer* or Maple family.
- Acerose**, linear and needle-like,—as Juniper leaves, &c.
- Achenium.** See *Akene*.
- ACHYRANTHAEAE.** A *Tribe* of the Order AMARANTHACEAE, represented by the genus *Achyranthes*.
- Acicular**, needle-shaped.
- Acrogenous** plants. Plants which grow or develop from the apex or summit only, of the stem.
- Acrogens.** Apex-growers, or *acrogenous* plants;—which see.
- Aculeate**, prickly; armed with prickles.
- Aculeolate**, armed with little prickles.
- Acuminate**, ending in a produced tapering point.
- Acumination.** An extended tapering point.
- Acute**, sharp; ending in an angle, or point; not rounded.
- ADENOSTYLEAE.** A *division* of the Sub-tribe EUPATORIEAE,—characterized by *glandular styles*.
- Adherent**, attached to, or united with, another different organ,—as the calyx-tube to the ovary, &c. See *coherent*.
- Adnate**, adhering laterally; fixed or growing to.
- Adventitious**, happening irregularly; not produced naturally, or usually.
- Aestivation.** The mode in which *sepals* and *petals* are arranged in the flower-bud, before they expand.
- Aftermath.** The second growth of the grasses in the same season, after being cut off.
- AGARICINAE.** A *Sub-tribe* of the FUNGI,—of which *Agaricus* is the type.
- Aggregatsd**, crowded, or standing together on the same receptacle.
- AGROSTIDEAE.** The *Agrostis* or *Herd-grass* *tribe* of the Order GRAMINEAE.
- AJUGOIDEAE.** The *Ajuga* *tribe* of the Order LABIATAE.
- Akene** (or *Achenium*). A 1-seeded fruit with a dry indehiscent pericarp,—often bony or nuthke.
- Alae.** Wings, or membranous expansions.
- Alate**, winged; having a membranous border.
- Albumen.** A deposit of nutritive inorganic matter, distinct from the Embryo, found in many *seeds*,—and sometimes (as in the grasses) constituting their chief bulk.
- Albuminous** seeds, furnished with, or containing albumen.
- ALGAE.** The great aquatic Order, or family, of *Sea-weeds*.
- ALISMACEAE.** The *Alisma*, or Water-Plantain, family of plants.
- ALISMAEAE.** A *Sub-order* of ALISMACEAE, specially typified by the genus *Alisma*.
- Alternate**, not opposite; placed alternately on the axis, or receptacle.

- Alveolate*, having pits, or cells like a honeycomb.
- ALYSSINEAE. The *Alyssum* tribe of the Order CRUCIFERAE.
- AMARANTHACEAE. The *Amaranthus*, or Princes'-Feather, family of plants.
- AMARANTHEAE. A *Sub-tribe* of ACHYRANTHEAE,—typified by the genus *Amaranthus*.
- AMBROSIEAE. A *division* of the *Senecio* tribe of COMPOSITAE,—of which *division* *Ambrosia* is the type.
- Ament*. A slender spike of naked and usually diclinous flowers, with imbricated scales or bracts.
- AMMINEAE. The *Ammi* tribe of the UMBELLIFERAE.
- Amplexicaul*, embracing or clasping the stem.
- AMYGDALAEAE. The *Amygdalus* or Almond *Sub-order* of the family of ROSACEAE.
- ANACARDIACEAE. The *Anacardium* or Cashew-nut family.
- Analogue*. A body or organ resembling, substituted for, or equivalent to, another body or organ.
- Anastomosing*, applied to branching vessels which imbricate, or unite again, like net-work.
- Anatropous* ovule, or seed. Turned: inverted on the funiculus, so that the orifice, or apex, points towards the placenta.
- Antipital*, two-edged; somewhat flattened with opposite edges.
- Andiogyneus*, having staminate and pistillate flowers distinct, but on the same spike, or plant.
- ANDROPOGONEAE. The *Andropogon* or Indragrass *tribe*, of the Order GRAMINEAE.
- ANGIOGASTERES. A *Sub-tribe* of the FUNGI,—with the sporules in a *central sac*.
- Angiospermous*, having the seeds contained in a distinct pericarp or seed-vessel.
- Angulate*, having angles, or corners, mostly of a determinate number.
- Anisate*, resembling anise-seed, in taste or odor.
- Annotinous*, applied to leaves, &c. which are annual, or renewed every year.
- Annual*, living or enduring but one year.
- Annular*, in the form of a ring.
- Annulate*, having a ring, or belt.
- Anomalous*, not according to rule or system; forming an exception to usual appearances, or structure.
- ANOPHYTES. Superior plants,—i. e. *cellular* plants (as *Mosses*) which emulate or resemble the *forms* of *vascular* plants; a *class* of flowerless plants.
- Anterior*, in front,—as that part of a flower next to the bract, or farthest from the axis of inflorescence.
- ANTHEMIDEAE. A *Sub-tribe* of *Senecio*-like plants, represented by *Anthemis*.
- Anther*. The knob, or capsule, containing the pollen,—usually supported on a filament.
- Antheridia*. The analogues, equivalents, or representatives of Anthers.
- Antheriferous*, bearing Anthers.
- Apetalous*, destitute of petals; not having a corolla.
- Apex*. The summit, upper or outer end.
- Aphyllous*, destitute of leaves.
- ANTIRRHINEAE. The *Antirrhinum*-tribe of the Order SCROPHULARIACEAE.
- Apothecia*. The cups, or shield-like receptacles of the fructification of the Lichens.
- Appendiculate*, having some appendage annexed.
- Appressed*, pressed to, or lying close against.
- Approximate*, growing or situated near each other.
- Aquatic*, growing naturally in water, or in wet places.
- ARABIDEAE. The *Arabis* tribe of the Order CRUCIFERAE.
- ARACEAE. The *Arum* or Indian Turnep family of plants.
- Arachnoid*, resembling a spider's web.
- ARALIACEAE. The *Aralia* or Spikenard family of plants.
- Arborescent*, approaching the size or height of a tree.
- Arcuate*, curved, or bent like a bow.
- Areola*. A small cavity,—as in the base of some akenes.
- Arid*, dry, as if destitute of sap.
- Arillate*, having an arillus.
- Arillus*. An expansion of the *funiculus* or seed-stalk, forming a loose (and often fleshy) coating of the seed.
- Aristate*, awned; having awns, or bristle-like processes.
- ARISTOLOCHIACEAE. The *Aristolochia* or Snake-root family.
- Armed*, having thorns or prickles.
- Aromatic*, having a spicy flavor or fragrance.
- ARTEMISIEAE. A *division* of the *Sub-tribe* ANTHEMIDEAE,—of which the genus *Artemisia* is the type.
- Articulated*, jointed; connected by joints, or places of separation.
- Articulations*. Joints; the places at which articulated members are separable.
- ARUNDINACEAE. The *Arundo* or Reed-tribe of the Order GRAMINEAE.
- Ascending*, rising from the ground obliquely.
- ASCLEPIADACEAE. The *Asclepias* family.
- ASCLEPIADEAE. The genuine or proper *tribe* of the *Asclepias* family.
- ASPHODELEAE. A *Suborder* of LILIACEAE, represented by the genus *Asphodelus*.
- Assurgent*, rising in a curve from a declined base.
- ASTEREA. The *division* of the *Sub-tribe* ASTERINEAE most allied to *Aster*.

- ASTERINEÆ.** The *Sub-tribe* of Aster-like plants, of which *Aster* is the special type.
- ASTEROIDEÆ.** The *Aster-like tribe* of the Order COMPOSITÆ.
- ATRIPLICEÆ.** The *Atriplex tribe* of the *Chenopodium* family.
- Attenuated*, tapering gradually until it becomes slender.
- AURANTIACEÆ.** The *Aurantium* or Orange family.
- Auriculate*, having rounded appendages at base, like ears.
- AVENACEÆ.** The *Avena* or Oat *Tribe* of the Order GRAMINEÆ.
- AWN.* A slender bristle-like process,—common on the chaff of Grasses: sometimes on anthers, &c
- Awning*, furnished with awns, or bristle-like appendages.
- Awnless*, destitute of awns.
- AXIL.** The angle between a leaf and stem, or branch, on the upper side.
- Axillary*, growing in, or proceeding from, the axil.
- AXIS.** A central stem, or peduncle; or, a real or imaginary central line extending from the base to the summit.
- BACCATE.** berried,—becoming fleshy or succulent, like a berry.
- Bald* akenes, naked at summit; destitute of pappus or crown.
- BALSAMIFLUEÆ.** The *Balsam flowing* or Sweet-Gum family.
- BAMBUSEÆ.** A *Sub-tribe* of FESTUCACEÆ, typified by the genus *Bambusa*.
- BARB.** A straight process, armed with one or more teeth pointing backwards.
- BASILAR.** originating at, or affixed to, the base of another organ.
- BEAK.** A terminal process, like a bird's bill.
- Beaked*, having, or terminating in, a beak.
- Bearded*, crested or furnished with parallel hairs: the term is applied, also, to *awned wheat*, &c.
- BERRY.** A pulpy valveless fruit, in which the seeds are imbedded.
- BETULACEÆ.** The *Betula* or Birch family of plants.
- Bibracteate*, having 2 bracts.
- Bibracteolate*, having 2 small bracts, bractlets, or bracteoles.
- Bicuspidate*, ending in 2 sharp points, or cusps.
- Bidentate*, furnished with 2 teeth.
- BIDENTIDEÆ.** A *division* of the *Helianthus Sub-tribe*, represented by the genus *Bidens*.
- Biennial*, living 2 years—in the second of which the flowers and fruit are produced—and then dying.
- Bifarious*, in two series, or opposite rows; pointing in two directions.
- Bifid*, two-cleft, or split into two segments.
- Bifoliate*, having or producing 2 leaves.
- Bifurcate*, forked; ending in two equal branches.
- Bi-gibbous*, having 2 hunches, or gibbous productions.
- Bi-glandular*, having or producing two glands.
- BIGNONIACEÆ.** The *Bignonia* or Trumpet-flower family.
- BIGNONIEÆ.** The *Tribe* of BIGNONIACEÆ specially represented by the genus *Bignonia*.
- Bi-labiate*, having 2 lips.
- Bilamellate*, having 2 lamellae, or thin plates.
- Bilocular*, having 2 cells.
- Bipartite*, separable into 2 parts.
- Bipartite*, two-parted.
- Bipinnate* leaf. Twice pinnate; the common petiole having opposite branches, and those branches bearing opposite articulated leaflets.
- Bipinnatifid* leaf. The common petiole bearing opposite pinnatifid segments.
- Bi-rostrate*, having 2 beaks.
- Bi-setose*, having 2 bristles.
- Bisulcate*, having 2 grooves or furrows.
- Bitemate* leaf, twice ternate; the common petiole 3-parted, and each division, or branch, bearing 3 leaflets.
- Bivalved*, having 2 valves.
- Biventricose*, having 2 bellied or distended portions.
- Bloom.* A fine powdery coating on certain fruits, &c. as the plum.
- BORAGEÆ.** The *Tribe* of BORAGINACEÆ specially typified by the genus *Borago*.
- BORAGINACEÆ.** The *Borago* family.
- Bowl-shaped*, hemispherical and concave, or hollow, like a bowl.
- Brachiate*, having the branches spreading, opposite and decussate.
- BRACT.** A floral leaf; a modified leaf, from the axil of which arises the flower-branch, or peduncle.
- Bracteate*, furnished with bracts, or modified leaves among or near the flowers.
- Bracteoles*, or *Bractlets*. Small bracts.
- Bractless*, destitute of bracts.
- Branchlets*. Small branches, or subdivisions of branches.
- BRASSICEÆ.** The *Brassica* or Cabbage *tribe* of the Order CRUCIFERÆ.
- Bristles*. Stiffish elastic hairs, straight or hooked.
- BROMEÆ.** A *Sub-tribe* of FESTUCACEÆ, typified by the genus *Bromus*.
- BROMELIACEÆ.** The *Bromelia* or Pine-apple family of plants.
- BUD.** A growing point, or undeveloped axis, covered with the rudiments of leaves.
- Bubb.* A kind of bud, formed of fleshy scales, or coats, and usually seated on the neck of the root,—sometimes in the axils of the leaves.
- Bulbiferous*, bearing or producing bulbs.
- Bulbous*, formed of, or like, a bulb.
- Bullate* leaf, having *bubble-like* convexities on the upper surface, with corresponding cavities beneath.

- Caducous*, falling off immediately, or earlier than usual for such organs.
- Calcarate*, spurred; having a process like a horn, or spur,—usually hollow.
- Callous*, firm and gristle-like.
- Callus*. A compact gristle-like tubercle, or substance.
- Calyciform*, shaped like a calyx.
- Calyculate*, having an additional (usually small) outer calyx, or calyculus.
- Calyptra*. The cap, or hood (resembling the extinguisher of a candle,) on the fructification of the mosses.
- Calyx*. The flower-cup, or outer (and sometimes the only) covering of a flower, usually green.
- CAMELINEÆ. The *Camelina* tribe of the Order CRUCIFERÆ.
- Campanulate*, in the form of a bell.
- CAMPYLOSPERMÆ. A *Sub-order* of UMBELLIFERÆ, with the face or commissure of the carpels incurved on the margins, or apparently grooved lengthwise.
- Campylotropous* ovule, or seed. Where the ovule curves upon itself, and thus brings the orifice, or apex, near to the funiculus.
- Canaliculate*, channelled or furrowed.
- Canescent*, hoary; clothed with a whitish or gray pubescence.
- CANNABINEÆ. The *Cannabis* *Sub-order*, or Hemp section, of the *Urtica* family.
- Capillaceous*, or *capillary*, long and fine, or slender, like a hair.
- Capitate*, head-form; growing in a head, or globular mass.
- Capituliform*, in the form of a little head.
- CAPRIFOLIACEÆ. The *Caprifolium* or Honeysuckle family.
- Capsular*, resembling, or being, a capsule.
- Capsule*. A dry hollow seed vessel,—usually opening by regular valves, and definite seams.
- CARDUINEÆ. A *Sub-tribe* of the *Cynaralike* COMPOSITÆ, of which the genus *Carduus* is the type.
- CARICEÆ. The *Carex* or *Sedge* tribe of the Order CYPERACEÆ.
- Carinal*, belonging to the keel, or midrib.
- Carinate*, keeled; having a ridge on the back, like the keel of a boat.
- Carnose*, fleshy; more firm than pulp.
- Carpel*. A little fruit; usually a partial pistil, or constituent portion of a compound fruit.
- Carpophore*. A slender central axis, bearing the carpels,—as in UMBELLIFERÆ.
- Carpophylls*. The modified leaves which form the pericarp,—as in the capsule of the *Gentian* family.
- Cartilaginous*, hard yet somewhat flexible, like gristle.
- Caruncle*. A fleshy excrescence, sometimes found at the hilum of seeds.
- CARYOPHYLLACEÆ. The *Caryophyllus* or Clove-Pink family,
- Caryopsis*. A fruit where the pericarp is very thin, indehiscent, and closely adherent to the surface of the seed,—as in the *Grasses*, *Cyperaceæ*, &c. See *Utricle*.
- CASSIÆÆ. The *Cassia* tribe of the Order LEGUMINOSÆ.
- CATALPEÆ. A *Sub-tribe* of BIGNONIÆÆ, typified by the genus *Catalpa*.
- Cauda*. A tail. *Caudate*, having a tail, or tail-like appendage.
- Caulrescent*, having an evident or true stem.
- Cauline*, belonging to, or growing on, the main stem.
- Cellular*, made up of little cells, or cavities, formed of membranaceous sacs.
- Cellular* plants. The lower orders of plants (including the *Mosses*, and those below them), composed exclusively of cellular tissue.
- CELTIDEÆ. The *Celtis* *Sub-order* of the ULMACEÆ or Elm family.
- CENTAURIEÆ. A *Sub-tribe* of the *Cynara* tribe of COMPOSITÆ, of which *Centaurea* is the type.
- Centrifugal* inflorescence,—where the central flower of a cyme precedes the others,—i. e. the flowering commences at the centre and extends successively to the circumference.
- Centripetal* inflorescence, where the outer flowers of a corymb or umbel precede the inner ones,—i. e. the flowers expand, in succession, from the circumference to the centre.
- Cephalodia*. The knobs, or head-shaped fructifications, of some of the LICHENES.
- Cereal*, pertaining to *Ceres*; belonging to those farinaceous grains, or seeds, of which bread is made.—and over which the Goddess *Ceres* was supposed, by the ancients, to preside.
- Cernuous*, nodding; the apex or summit drooping, or turned downwards.
- Cespitose*, having many stems growing from the same root, forming a tuft, or tussock.
- Chaff*. A dry membrane,—usually the small husks, or seed-covers, of the grasses; also the bracts on the receptacle of many compound and other aggregated flowers.
- Chaffy*, bearing chaff; also resembling chaff.
- Channels*. Longitudinal grooves; the interstices between the ribs on the fruit of umbelliferous plants.
- Channelled*, grooved or furrowed.
- Character* (in Natural History). The features of objects, or classes of objects, by which they are known, and distinguished from each other.
- Chartaceous*, of a texture resembling that of paper.
- CHENOPODIACEÆ. The *Chenopodium* or Goose-foot family.

- CHENOPODIEAE.** The *Tribe* of *proper Chenopodiums*, of the Order CHENOPODIACEAE.
- CHLOREAE.** A *Sub-tribe* of GENTIANEAE, represented by the genus *Chlora*.
- CHLORIDAEAE.** A *Tribe* of Grasses, typified by the genus *Chloris*.
- CHRYSANTHEMEAE.** A *division* of the *Anthemis Sub-tribe*, of which *Chyanthemum* is the type.
- CHRYSOCOMEAE.** A *division* of *Aster-like plants*, of which the genus *Chrysocoma* is the type.
- Cicatrice.** A scar,—such as that left at the place of articulation, after the fall of a leaf, &c.
- CICORACEAE.** The *Tribe* of COMPOSITAE of which *Cichorium* is the type.
- Cilia.** Hairs arranged like eye-lashes, along the margin of a surface.
- Ciliate**, fringed, or edged with parallel hairs, like eye-lashes.
- Ciliate-serrate**, having serratures resembling cilia, or short eye-lashes.
- CIMICIFUGEAE.** The *Cimicifuga tribe* of the Order RANUNCULACEAE.
- Cinereous**, of the color of wood-ashes.
- Circinate**, with the apex rolled back on itself, like the young fronds of a fern.
- Circumscissed**, cut round transversely, or opening horizontally, like a snuff-box.
- Cirrhose**, bearing tendrils, or terminating in a tendril.
- Cirrhus.** A tendril,—which see.
- Class.** One of the higher or primary divisions of plants, or other natural objects, in a systematic arrangement.
- Clavate**, club-shaped; thicker towards the summit, or outer end.
- Clavellate**, in the form of a little club,—i. e. larger at summit.
- Claw** of a petal. The slender tapering portion at base, or below the middle.
- Cleft**, split, or divided, less than half way to the base: sometimes the division itself is called a *cleft*.
- Clypeate**, in the form of an ancient shield or buckler.
- Coactaneous** flowers, appearing at the same time with the leaves.
- Coarctate**, contracted, or crowded into a narrow compass.
- Coccus** (plural *cocci*). A kind of semi-baccate indehiscent carpel.
- Cochleate**, coiled like a snail-shell.
- COELOSPERMAE.** A *Suborder* of UMBELLIFERAE, with the face or commissure of the carpels concave by the incurving of base and apex.
- Coherent**, united with an organ of the same kind,—as stamens coherent with each other, &c. See *adherent*.
- Collateral**, placed side by side; or on the same side of another organ.
- Colored**, of any other color than green.
- Columella.** A little column.
- Column.** The axis or central pillar of a capsule: or the combined filaments and style of a Gynandrous or Orchidaceous plant.
- Coma.** A terminal tuft of hair, bracts, &c.
- Commissure.** The line of junction of two bodies,—as the face of the carpels (or *mericarps*), in UMBELLIFERAE.
- Common** (petiole, peduncle, &c.), belonging to, or sustaining, several similar subordinate parts.
- Comose**, having a tuft or topknot of hairs, bracts, or leaves, at summit, or at one end.
- Compact**, condensed, or pressed together.
- Complete flower**, having both calyx and corolla.
- COMPOSITAE.** The family of *Compound*, or Syngenesious aggregated flowers.
- Compound**, not simple,—but made up of similar simple parts.
- Compound flower.** An aggregated cluster, or head of syngenesious florets, seated on a common receptacle, and embraced by an involucre, or many-leaved common calyx.
- Compound leaf.** Consisting of several leaflets, or laminae, each articulated with the common petiole, and ultimately falling from it.
- Compound Ovary.** Consisting of 2 or more carpels, or simple ovaries, cohering together.
- Compound Umbel.** An Umbel in which each primary peduncle, or ray, bears a small umbel at summit.
- Compressed**, flattened, as if squeezed or pressed.
- Compressed Akene** (in compound flowers), flattened, with one edge to the front, or periphery. See *obcompressed*.
- Concave**, presenting a hollow or depressed surface.
- Concentric layers**, or circles. Circles of different sizes, or diameters, with a common centre.
- Concrete**, grown together, or united.
- Conduplicate**, doubled lengthwise, or folded together like a sheet of paper, or the leaves of a book.
- Cone.** The woody ament of the Pines; also the fruit of the Hop, &c.
- Conic, Conical**, or Conoid, having the figure of a cone.
- Confluent**, blended, or running together; forming a junction.
- Congener.** A plant belonging to the same genus: nearly related.
- Conglomerate**, clustered or heaped together.
- CONFIFERAE.** The family of *conebearing plants*,—as the Pines, &c.
- CONIOMYCETES.** A *Tribe* of the Order FUNGI, or Mushroom family: minute *powder-like fungi*.
- Conjugate**, in pairs; coupled.
- Connate**, growing together, or cohering.
- Connective, or Connectivum.** The organ which connects the two cells of an

- anther,—conspicuous in some of the LABIATAE.
- Cornivent*, the summits meeting, or bending towards each other.
- Constant*, invariable; also never failing, or wanting.
- Contiguous*, so near as to seem to touch.
- Continuous*, without interruption, or articulation.
- Contorted*, twisted; or obliquely overlapping.
- Contracted*, narrowed, or reduced into a smaller compass.
- Contrary* dissepiment. Not parallel, but at right angles, or nearly so, with the valves of the pericarp.
- Convex*, presenting an elevated rounded surface.
- Convolute*, rolled into a cylindrical form.
- CONVOLVULACEAE. The *Convolvulus* or Bind-weed family.
- CONVOLVULACEAE. The proper *Convolvulus* Tribe of the Order CONVOLVULACEAE
- Coraloid*, resembling coral, in appearance.
- Cordate*, heart-shaped, with the sinus or notch at the base.
- Cordate-oblong*, oblong, with a cordate base.
- Coriaceous*, tough and leather-like.
- CORIANDREAE. The *Coriandrum* Tribe of the Order UMBELLIFERAE.
- Cormophytes*. Plants having a stem, or axis of growth.
- Cornus*. A fleshy subterraneous stem, of a round or oval figure, and an uniform compact texture, as in the *Arum*, or Indian Turnep.
- CORNACEAE. The *Cornus* or Dog-wood family.
- Corneous*, having the consistence or appearance of horn.
- Corniculate*, having little horns or spurs.
- Cornus*, having appendages like horns.
- Corolla*. The delicate inner covering of the flower, between the calyx and stamens, mostly colored.
- Coroniform*, in the shape of a crown.
- Corrugated*, contracted into wrinkles.
- Cortical*, belonging to the bark.
- Corymb*. A mode of flowering: a kind of raceme, with the lower peduncles elongated so as to form a level top.
- Corymbose*, in the manner of a corymb.
- Corymbulose*, having the flowers in little corymbs.
- CORYPHINAE. A Tribe of the Order PALMAE, of which the genus *Corypha* is the type.
- Costate*, ribbed.
- Cotyledons*. The seed-lobes, or first crude leaves of a plant,—formed in the seed; and sometimes becoming green leaves in vegetation.
- Creeping*, running along the ground, and putting forth small roots.
- Crenate*, notched on the edge, with the segments rounded, and not inclining towards either extremity.
- Crenulate*, very finely crenate.
- Crested*, having an appendage resembling a cock's comb.
- Crisp*, curled, or wavy at the edges.
- Cristate*, crested; having a crest.
- Cross*, or *cross-breed*. A hybrid, or mule,—produced by the mixing of two nearly allied species.
- CROTONEAE. A Tribe of EUPHORBIACEAE, represented by the genus *Croton*.
- Crowded*, thickly set; standing in close order.
- Crown*. A circular series of petaloid appendages at the throat of a corolla; also of chaffy scales at the summit of an akene.
- Crowned*, having appendages resembling a crown.
- Crown-shaped*, resembling the figure of a crown.
- Cruciate*, or *cruciform*, having 4 petals arranged in form of a cross,—as in Tetradynameous flowers.
- CRUCIFERAE. The *cross-bearing* family of plants: Tetradynameous plants with 4 petals arranged in the form of a cross.
- Crustaceous*, having a dry brittle shell.
- Cryptogamous* plants. Plants which are destitute of visible genuine flowers.
- Cucullate*, in the form of a cowl; the edges rolled in so as to meet at base, and spreading above,—like a hood thrown back.
- CUCURBITACEAE. The *Cucurbita* or Gourd family.
- CUCURBITEAE. The special Gourd tribe, of the Order CUCURBITACEAE.
- Culm*. The stem of the Grasses, and Cyperaceous plants.
- Cuneate*, or *cuneiform*, wedge-shaped; tapering with straight edges to the base.
- CUPRESSINEAE. The *Cupressus* or Cypress Sub Order of the CONIFERAE.
- Cupule*. The cuplike involucre of the acorn, &c.
- CUPULIFERAE. The family of cupule-bearing trees and shrubs,—as the Oaks, &c.
- CUSCUTEAE. The *Cuscuta* or Dodder tribe of the CONVOLVULACEAE.
- Cusp*. A stiffish tapering sharp point.
- Cuspidate*, tapering to a straight suffish sharp point.
- Cuticle*. The outer skin,—usually thin and membranaceous.
- CYCLOGLOBEAE. A Sub Order of CHENOPODIACEAE, in which the embryo is coiled in a circle round the albumen.
- Cylindric*, long, round, and of uniform diameter.
- Cyme*. A kind of panicle, depressed nearly to the form of an umbel,—with the principal peduncles rising from the same centre, but the subdivisions irregular.
- Cynose*, with the flowers in cymes, or approaching that form.

- Cymules.** The reduced cymes, or cymose clusters, of the LABIATAE; sometimes called *Verticillasters*.
- CYNAREAE.** A Tribe of COMPOSITAE, of which the genus *Cynara* is the type.
- CYNOGLOSSAEAE.** A Subtribe of BORAGAEAE represented by *Cynoglossum*.
- CYPERACEAE.** The *Cyperus* or Sedge family of plants.
- CYPEREAE.** A Tribe of the Sedge family, specially typified by the genus *Cyperus*.
- DALYCARDEAE.** A Subtribe of the Order ROSACEAE, typified by the genus *Dalibarda*.
- DATUREAE.** The *Datura* or Thorn-apple tribe of the Order SOLANACEAE.
- DAUCINEAE.** The *Daucus* or Carrot tribe of the UMBELLIFERAE.
- Decantrous,** having ten distinct stamens.
- Deciduous,** falling off at the usual time, or at the end of the season; more durable than *Caducous*,—which see.
- Declinate,** or *declined*, bent off horizontally; or curved downwards.
- Decomposed,** twice compound; composed of compound parts.
- Decumbent,** leaning upon the ground, with the base only erect.
- Decurrence.** A running or extending down, or backwards.
- Decurrent leaf.** When the two edges are continued down the stem, like wings.
- Decussate,** growing in opposite pairs and alternately crossing each other.
- Definite,** clearly defined, or limited; also of a constant or determinate (and not large) number.
- Deflected,** bent off, or downwards.
- Dehiscent,** gaping, or opening naturally by seams, at maturity.
- Deltoid,** triangular in the outline,—like the Greek letter *Delta*.
- Demersed,** growing or being under water.
- Dense,** closely arranged; compact.
- Dentate,** toothed; edged with tooth-like projections.
- Denticulate,** having very small teeth.
- Depauperated,** with a starved or stunted inflorescence; few-flowered.
- Depressed,** flattened vertically, or pressed down at summit.
- Depressed-globose,** globular, with the base and apex flattened.
- Diadelphous,** having the filaments united in 2 parcels,—usually 9 and 1, with a papilionaceous corolla.
- Diandrous,** having 2 stamens.
- Diaphanous,** transparent; permitting light to pass through.
- Dichotomal flower.** Situated in the fork of a dichotomous stem or branch.
- Dichotomous,** forked; regularly divided and subdivided, in two equal branches.
- Diclinous,** having the stamens and pistils in distinct flowers,—whether on the same or different plants.
- Dicotyledonous plants.** Where the embryo has 2 lobes, or cotyledons.
- Didymous,** twin; growing in pairs, and more or less united.
- Didynamous,** having 2 long and 2 shorter stamens, mostly in a bilabiate, ringent, or personate corolla.
- Diffuse,** spreading widely in a loose irregular manner.
- Digitate leaf.** Where a simple petiole connects several distinct leaflets, *finger-like*, at its summit,—as in the Horse Chestnut.
- Digynous,** having 2 pistils, or 2 distinct stigmas.
- Dilated,** made wider; stretched or expanded.
- Dimerous,** composed of two parts,—as a dimerous calyx or corolla, when there are 2 sepals or petals.
- Dimidiate,** halved,—as if one side, or half had been cut off.
- Dingy,** of a dull, soiled, smoky, or leaden-brown color.
- Dioicous,** having staminate and pistillate flowers on distinct plants.
- Dioicously polygamous,** having perfect and imperfect flowers on different plants.
- Dipetalous,** having 2 petals.
- DIPSACEAE.** The *Dipsacus* or Teasel family.
- Discoid flower, or head.** A disk of compound flowers, without ray-florets.
- Disepalous,** having 2 sepals.
- Disk.** The surface of the leaf; also the face, or central part, of a head of compound flowers.
- Dissected,** cut into segments, or lobes.
- Dissepiment.** The partition between the cells of seed-vessels.
- Distant,** having a larger intervening space than usual.
- Distichous,** two-rowed; bearing leaves, flowers, &c. in 2 opposite rows.
- Distinct,** separate; not connected with each other, nor with any contiguous organ.
- Divaricate branches.** Spreading so as to form more than a right angle with the stem above.
- Divergent,** spreading widely; making a right angle, or nearly so, with the stem.
- Divided,** separated or cleft to the base,—or to the midrib, if a leaf.
- Dorsal,** belonging to, or growing on, the back.
- Dorsal suture.** The line or seam on the back of a carpel, or folded leaf,—being at the place of the midrib: the opposite of *ventral suture*,—which see.
- Dorsally compressed,** flattened on the back.
- Dots.** Minute tubercles, or specks.
- Dotted,** covered with dots, specks, or minute and slightly elevated points.
- Doveny,** clothed with soft fine hairs.
- Drooping,** inclining downwards, more than *nodding*.
- Drupaceous,** drupe-like,—of a structure resembling a drupe, or what is usually called *stone-fruit*.
- Drupe.** A fleshy, succulent, or spongy pericarp, without valves, containing a 1 or 2-seeded nut, or stone.

- Drupe*. A little drupe; a constituent portion of a compound berry,—such as that of *Rubus*.
- DRYADEAE**. A *tribe* of **ROSACEAE**, typified by the genus *Dryas*.
- EBENACEAE**. The *Ebenum* or Ebony family.
- Ebracteate*, destitute of bracts.
- Ebracteolate*, destitute of bractlets.
- Ecaudate*, destitute of a *cauda*, or tail.
- ECHIEAE**. A *Subtribe* of **BORAGEAE**, represented by the genus *Echium*.
- Echinate*, hedge hog-like; covered with prickles.
- Elaters*. Minute clubshaped filaments, which are coiled round the spores of certain cryptogamous plants,—and by unrolling, assist in dispersing those spores.
- Elliptic*, or *elliptical*, oval; longer than wide, with the two ends narrowing equally.
- Elongated*, exceeding the usual or average length.
- Elongating*, becoming gradually and finally elongated.
- Emarginate*, having a notch or sinus at the end.
- Embryo*. The young plant in the rudimentary state, as it exists in the seed.
- Emersed*, raised out of water.
- Endocarp*. That membranous or bony portion of the pericarp which lines the cavity, or forms the cells for the seeds (*ex. gr.* the stone, or hard shell, in a *Drupe*).
- Endogenous* plants. Those which have a single cotyledon,—and grow by *central deposits* of new matter, distending or pushing the older deposits outwards.
- Endogens*. Inside-growers; plants which increase by central or internal deposits of new matter. See *Endogenous* plants.
- Enneandrous*, having 9 stamens.
- Ensisiform*, sword-shaped; two-edged and tapering from base to apex.
- Entire*, having a continuous even margin; without incision, notch, or tooth.
- ENTOPHYTL**. A *Subtribe* of parasitic **FUNGI** which develop themselves within the tissue of other, and usually living, plants,—as mildew, &c.
- Envelope*. An integument, or covering.
- Ephemeral*, diurnal; enduring one day only.
- Epicarp*. The outer coating of the pericarp, or fruit.
- Epigynous*, adnate to the ovary so that the upper portion is apparently inserted on its summit,—as sepals, petals, and more especially stamens: exemplified in *Umbelliferae* and *Araliaceae*.
- Epipetalous*, inserted on the petals.
- Equal*, similar parts equal among themselves,—as calyx-segments, sepals, petals, stamens, &c.
- EQUISETACEAE**. The *Equisetum* family.
- Equitant* leaves. When alternate distichous leaves are infolded lengthwise and towards each other, the outer ones inclosing or embracing the inner.
- ERECHTITEAE**. A *division* of the *Senecio* *subtribe* of **COMPOSITAE**, represented by the genus *Erechtites*.
- Erect* ovules, or seeds. When they arise from the bottom of the ovary, or base of the cell, and point upwards.
- ERICACEAE**. The *Erica* or Heath family of plants.
- ERICINEAE**. The *Sub-order* of **ERICACEAE**, of which the genus *Erica* is the special type.
- Eroded*, or *erose*, irregularly notched, as if gnawed by insects.
- Esculent*, eatable; fit or safe to be eaten.
- Etiolation*, the blanching of plants,—or rendering them white by the exclusion of light; as practised with *Celery*, *Endive*, &c.
- Eu*, a greek adverb, meaning *clearly*, or *certainly*,—often prefixed to the names of *Sub-tribes*, or *Divisions*, indicating their genuineness, or close affinity to the typical genus.
- EU-ANTHEMIDEAE**. A *division* of the *Chamomile* *Sub-tribe* of **COMPOSITEAE**, embracing plants of the *true Anthemis* structure or type.
- EU-ASTEREAE**. The *Sub-division* of *Aster-like* plants, which includes *Aster* itself, and the most nearly allied genera.
- EU-HELICANTHEAE**. A *division* of the *Helianthus* *Sub-tribe*, specially represented by that genus.
- EUPATORIACEAE**. The *Eupatorium* *Tribe* of the Order **COMPOSITAE**.
- EUPATORIEAE**. The *Sub-tribe* of **EUPATORIACEAE**, specially typified by the genus *Eupatorium*.
- EU-PHASEOLEAE**. A *Sub-tribe* of **PHASEOLEAE**, eminently and clearly allied to *Phaseolus*.
- EUPHORBIAEAE**. The *Euphorbia* family of plants.
- EUPHORBIEAE**. A *tribe* of **EUPHORBIAEAE**, specially typified by the genus *Euphorbia*.
- EU-SENECIONEAE**. A *division* of the *Senecio* *tribe*, specially represented by that genus.
- Evanescens*, disappearing; speedily vanishing.
- Even-pinnate* leaf. With the leaflets all in pairs, or without a terminal odd one; often termed *abruptly pinnate*.
- Evergreen*, continuing green, and persisting all the year.
- Exalbuminous*, destitute of albumen.
- Excentric*, deviating from the axis, or centre.
- Exfoliate*, to throw off layers or plates,—as bark, &c.
- Exogenous* plants. Those which have 2 (or sometimes more) cotyledons,—

- and grow by annual layers of wood (or new matter) on the *outside*, between the old wood and bark.
- Exogens.** Outside-growers: plants which increase by annual additions to the outside. See *Erogenous* plants.
- Exsert**, or *exserted*, projecting, or protruding out,—as stamens from the tube of the corolla.
- Exstipulate**, destitute of stipules.
- Extrorse** anthers. Having the cells turned outwards, or from the pistils,—and the filament, or connective, extending up the inner side.
- Falcate**, sickle-shaped; curved like a sickle, or scythe.
- Family** of plants. A definite group of kindred plants, called also an *Order*.—sometimes of numerous genera and species—sometimes comprising but a single genus.
- Fan-shaped**, cuneate below, and spreading above,—like a lady's fan.
- Farinaceous**, mealy; reducible to a meal-like powder.
- Fascicle.** A little bundle, or bunch, of flowers, leaves, &c. originating from nearly the same point.
- Fasciculate**, growing in bundles, or bunches, from the same point.
- Fastigate**, level-topped; the summits of the branches all rising to the same height.
- Favose**, deeply pitted; somewhat like a honeycomb.
- Feather-veined** leaf. Where the lateral veins (or nerves) diverge regularly from each side of the midrib,—like the plumage of a quill.
- Ferruginous**, of the color of rust of iron; reddish-brown.
- Fertile**, having perfect pistils, and producing fruit.
- FESTUCACEAE.** The *Festuca* or *Fescue* tribe of the Order GRAMINEAE.
- Fibrous**, composed of fibres, or thread-like processes.
- Fide**, on the faith, or authority, of.
- Filament.** That part of the stamen (usually thread-like) which supports the anther.
- FILICES.** The family of *Ferns*.
- Filicoid**, fern-like; belonging to or resembling ferns.
- Filiform**, very slender and terete, like a thread.
- Fimbriae.** Fringes, or fringe-like processes.
- Fimbriate**, finely divided at the edge, like a fringe.
- Fimbriolate**, clothed with *fimbrillae* (i. e. membranaceous, linear or subulate filaments)—as the receptacle of thistles, &c.
- Fissure.** A slit, crack, or narrow opening.
- Fistular**, hollow and terete, like a pipe. tubular.
- Flabelliform**, fan-shaped,—which see.
- Flaccid**, so limber as to bend by its own weight.
- Flagelliform**, long, slender, and pliable,—like a whip lash.
- FLAVIFLORAE.** The *yellow-flowered* tribe of the Order LAURACEAE.
- Flexuose**, serpentine, or with a succession of short alternating curves.
- Floccose**, or *flocculent*, covered with *flocks*, or flakes, or little matted bunches of partly detached tomentum.
- Floral**, belonging to, or situated near, a flower.
- Floral envelopes.** The verticils, or coverings of flowers,—usually known as calyx and corolla; sometimes as chaff.
- Floret.** A little flower; usually one of the number in compound or aggregated flowers.
- Floriferous**, bearing flowers.
- Foliaceous**, of a leaf-like form and texture; resembling a leaf.
- Follicle.** A capsular fruit opening longitudinally by a suture on one side.
- Follicular**, resembling, constructed like, or being, a follicle.
- Foramen** (plural, *foramina*), a roundish hole, or opening.
- FRAGARIEAE.** A *Sub-tribe* of the Order ROSACEAE, typified by the genus *Fragaria*, or Strawberry.
- FRAXINEAE.** The *Fraxinus* or *Ash* tribe of the Order Oleaceae.
- Free**, not adhering to each other, nor to any adjacent organ.
- Froned.** The leaf, or leaf-like expansion, of Cryptogamous plants.
- Frondose**, leafy or with leaf-like appendages.
- Fructification.** The flower and fruit, with their parts.
- Fruit.** The mature ovary or seedvessel, and its contents.
- Frutescent**, becoming shrubby, or hard and woody.
- Fruticose**, shrub-like, or shrubby.
- Fugacious**, fleeting; of short duration.
- Fulvous**, tawny, fox or tan-colored.
- FUNGI.** The *Order* of Mushrooms.
- Fungous**, of rapid growth and soft texture, like the *fungi*.
- Funiculus.** The *little cord* by which seeds are attached to the placentae.
- Funnel-form**, tubular below, and expanding above,—like a funnel.
- Fuscous**, greyish-brown, or deep brown with a tinge of green.
- Fusiform**, spindle-shaped; terete and tapering to a point.
- Galea.** A helmet; the arched upper lip of a ringent corolla.
- Galeate**, helmeted; resembling a casque, or helmet.
- GALEGEAE.** The *Galega* tribe of the Order LEGUMINOSAE.
- Gamopetalous**, having the petals all more or less united,—forming what is called (rather incorrectly) a monopetalous corolla.

- Gamosepalous*, having the sepals all more or less united,—forming a monosepalous calyx.
- GASTEROMYCETES.** A tribe of FUNGI, with the spores in a *ventral sac*.
- Generic*, pertaining or relating to a genus.
- Geniculate*, forming an angle at the joints, like a bent knee.
- GENTIANACEAE.** The *Gentiana* or *Gentian* family.
- GENTIANEAE.** The *proper Gentian* tribe of the Order GENTIANACEAE.
- Genus* (plural, *genera*). A group of species which agree with each other in the structure or essential characters of the flower and fruit; sometimes a genus comprizes but a single species.
- Germ.* The growing part of a bud.
- Germen.* The old name for the ovary.
- Germination*, the sprouting, or incipient growth, of a seed.
- Gibbous*, hunched, or swelled out, on one or both sides.
- Gills.* The fruit-bearing membranes of the *Agarics*, or Mushrooms.
- Glabrous*, very smooth; without any roughness or pubescence.
- Gland.* A small roundish organ, or appendage, which often secretes a fluid.
- Glandular*, furnished with glands.
- Glandular-hispid*, or *glandular-pubescent*, hairy or pubescent, and the hairs tipped with glands.
- Glaucous*, silvery; pale bluish- or greenish-white; covered with a greenish-white mealiness.
- Globose*, or *globular*, spherical; round on all sides.
- Glomerate*, densely clustered in small heaps, or irregular heads.
- Glomerules.* Small dense roundish clusters.
- Glumaceous*, chaff-like; resembling chaff or glumes.
- Glumes.* The bracts, or outer chaff, embracing the spikelets of the grasses (calyx, of *Lin.*). See *Palea*.
- Glumose*, having glumes (or, sometimes, having *conspicuous* glumes).
- Glutinous*, viscid; covered with an adhesive fluid.
- GNAPHALIEAE.** A *Sub-tribe* of *Senecio-like* plants, represented by the genus *Gnaphalium*.
- GRAMINEAE.** The family of *true Grasses*.
- Gramineous*, grass-like; resembling grasses.
- Graniferous*, bearing a grain, or grains.
- Granular*, formed of grains, or small particles.
- GROSSULACEAE.** The family of Gooseberries and Currants.
- Gymnospermous*, having the seeds naked—*i. e.* not inclosed in a pericarp.
- Gynandrous*, having the stamens growing on, or adhering to, the pistil.
- Gynostegium.* The *pistil-covering*, or tube, formed by the connate filaments of the *Asclepias* family.
- Habit* of plants. Their general external appearance and mode of growth, by which they are recognized at sight.
- Habitat*, or *habitatio*. The natural or native place of growth.
- Halved*, one-sided,—as if one half had been cut off.
- Hastate*, shaped like a halbert; lanceolate, with a divaricate lobe on each side of the base.
- Head.* A dense roundish cluster of sessile flowers.
- HELIANTHEAE.** A *Sub-tribe* of *Senecio-like* plants, typified by the genus *Helianthus*.
- HELLEBOREAE.** The *Helleborus* tribe of the Order RANUNCULACEAE.
- Heptandrous*, having 7 stamens.
- Herbaceous*, not woody; of a tender consistence, and usually destructible by frost.
- Herbarium.* A collection of dried specimens of plants.
- Herbs.* Plants which are not woody—of a more tender structure than trees and shrubs, and usually killed by frost.
- Heterocephalous* flowers. Heads of Syngenesious florets of different sexual character (*i. e.* staminate and pistillate heads distinct) on the same plant,—as in *Ambrosia*, &c.
- Heterogamous* heads. Heads of Syngenesious flowers, containing florets of different structure and sexual character.
- Heterophyllous*, having leaves of different forms.
- Hexamerous*, consisting of 6 parts.
- Hexandrous*, having 6 stamens of equal length.
- Hilum.* The scar left on a seed, at the point of attachment to the funiculus.
- HIPPICASTANACEAE.** The *Horse-chestnut* family.
- Hirsute*, rough-haired; clothed with stiffish hairs.
- Hispid*, bristly; beset with rigid, spreading, bristle-like hairs.
- Hoary*, covered with a white or whitish pubescence.
- Homogamous* heads. Heads of Syngenesious flowers, in which all the florets are of similar structure and the same sexual character.
- Hooded.* See *cucullate*.
- HORDEACEAE.** The *Hordeum* or Barley tribe of the GRAMINEAE.
- Horizontal* ovules. When they project from the side of the cell, pointing neither to base nor apex.
- Horn.* A process or elongation resembling a horn. See *Spur*.
- Horny*, of a texture or consistence like horn. See *corneous*.
- Humus.* The mould, or soil, formed by the decomposition of vegetable matter.
- HYACINTHEAE.** A *tribe* of the Sub-order

- ASPHODELEAE**, represented by the genus *Hyacinthus*.
- Hyaline*, transparent, like glass.
- Hybrid*. A mule; a cross-breed between two varieties, or nearly allied species, partaking of each but different from both.
- HYMENINI**. A section of the tribe **HYMENOMYCETES**.—*i. e.* FUNGI with the sporules contained in a superficial membrane, or in gills.
- Hymenium*. The membrane containing the sporules of certain FUNGI; the plates, or gills, on the under side of the pileus of the Agarics.
- HYMENOMYCETES**. A tribe of the Order FUNGI, containing the sporules in a membrane, or *hymenium*.
- HYOSERIDEAE**. A Sub-tribe of **CICHORACEAE**, represented by the genus *Hyoseris*.
- HYPERICACEAE**. The *Hypericum* or St. John's Wort family.
- HYPERICAE**. The tribe of **HYPERICACEAE**, of which *Hypericum* is the special type.
- HYPODERMIA**. A division of the Sub-tribe of **ENTOPHYTES**; minute FUNGI seated under the skin or epidermis of living plants.
- Hypogaeal*, situated, growing, or remaining, under ground.
- Hypogynous*, inserted beneath the ovary.—*i. e.* on the receptacle, and free from the surrounding organs.
- Icon*. An image, figure, or representation.
- Icosandrous*, having about 20 stamens, which are perigynous,—*i. e.* growing to, or apparently inserted on the rim of, the calyx.
- Imbricate*, or *imbricated*, the edges lying closely and regularly over the next series,—like shingles on a roof, or scales on a fish.
- Imperfect flower*. When either stamens or pistils are deficient.
- Incised*, cut, or gashed; separated by incisions.
- Inclinate*, or *inclined*, bent over towards the ground, or some other object.
- Included*, wholly contained within a tube, or cavity; the opposite of *exserted*.
- Incomplete flower*. When either Calyx or Corolla is wanting.
- Incassate*, thickened upwards, or towards the summit.
- Incumbent*, lying upon, against, or across.
- Incumbent anther*. Attached at or near its middle, and lying horizontally across the summit of the filament.
- Incumbent cotyledons*. Having the radicle bent over and applied to the back of one of the cotyledons (represented by this sign, o||).
- Incurved*, bent or curved inwards.
- Indefinite*, not distinctly limited, or defined; numerous, and of no constant or determinate number.
- Indehiscent*, not opening at maturity.
- Indigenous*, native; growing naturally, or originally, in a country.
- Induplicate*, folded inwards.
- Indurated*, hardened; become hard.
- Indusium*. The membrane, or veil, which covers the young *Sorus* (or cluster of fruit) on the Ferns.
- Inferior calyx*. Having the ovary above, and free from the calyx.
- Inferior ovary*. Situated apparently below the calyx, or rather its segments;—*i. e.* adnate to the tube of the calyx, and consequently bearing the segments (if any) at its summit.
- Inflated*, distended or swelled like a blown bladder.
- Inflexed*, or *inflexed*, bent suddenly inwards.
- Inflorescence*. The disposition or arrangement of flowers and their footstalks on a plant,—such as Umbel, Panicle, Raecme, &c.
- Inserted*, fixed upon, or growing out of.
- Internode*. That portion of a culm, or stem, between the nodes or joints.
- Interpetiolar stipules*. Situated or originating between the petioles of opposite leaves.
- Interrupted*, having intervals; or the continuity broken.
- Interruptedly pinnate*, having smaller pinnae, or leaflets, between each pair of larger ones.
- Intra-petiolar stipules*. Situated within and above the petioles,—usually sheathing the branch above the axil of the leaf; as in *Platanus*.
- Introrse anthers*. Having the cells turned inwards, or towards the pistils,—and the filament, or connective, extending up the outer side.
- Inversely*, in a contrary position; end for end, or upside down.
- Involucel*. The verticil of leaflets at the base of an umbellet.
- Involucellate*, having involuclles.
- Involucrate*, having an involucre.
- Involucre*. An assemblage of modified leaves accompanying certain forms of inflorescence,—usually verticillate at the base of an Umbel,—or in imbricated series beneath or around the heads of aggregated flowers.
- Involute*, rolled inwards.
- Irregular*, the component parts differing in size and shape.
- JUGLANDACEAE**. The *Juglans* or Walnut family.
- JUNCACEAE**. The *Juncus* or Rush family of plants.
- Keel*. A longitudinal central ridge on the back of a leaf, sepal, &c. resembling the keel of a boat: Also, the lower pair of united petals in a papilionaceous flower.
- Keeled*, having a keel. See *Cvinate*.
- Kernel*. The nucleus, or seed contained in a nut.

- Knot.** A node; a solid, inseparable, and often swelling joint,—as in the stem of the grasses. &c.
- KOCHIEAE.** A *Sub-tribe* of CHENOPODI-EAE, typified by the genus *Kochia*.
- LABIATAE.** The family of *labiate* or two-lipped flowers.
- Lacerate,** divided into irregular segments as if torn.
- Laciniate,** jagged; the margin irregularly cut into unequal segments.
- Lactescent,** milky; containing a milky or whitish juice.
- LACTUCEAE.** A *Sub-tribe* of CICHONA-CEAE, typified by the genus *Lactuca* or Lettuce.
- Lamellae.** The plates or gills (*Hymenium*) of the *Agaric*, or common Mushroom.
- Lamellate,** divided or dilated into thin plates.
- Lamina.** A thin layer or plate; the expanded or flat portion of a leaf, or petal, as distinguished from the petiole, or claw.
- Lanate,** woolly; clothed with wool.
- Lanceolate,** tapering gradually from near the base to the apex,—like the head of an ancient Lance, or Spear.
- Lance-linear, Lance-ovate,** &c., linear, ovate, &c., with something of the lanceolate form.
- Lance-ovoid,** egg-shaped, or terete, with a swelling base and tapering apex.
- Lanuginous,** clothed with a loose wool.
- Lateral,** at the side.
- Laterally** compressed, flattened on the sides; the lateral edges pressed towards each other.
- Latticed,** obliquely cross-barred, with open spaces like net-work.
- LAURACEAE.** The *Laurus* or Bay-tree family of plants.
- Lax,** loose, or limber; not compact.
- Leaflets.** Partial leaves; the constituent leaves of a compound leaf.
- Leaf-like (foliaceous),** having a texture and expansion resembling a leaf.
- Leafy (foliosus),** furnished or abounding with leaves.
- Legume.** A Bean,—or fruit formed of a single carpel of 2 valves, with the seeds affixed along the upper suture, only.
- LEGUMINOSAE.** The family of *Legume-bearing* plants.
- Leguminous,** having the structure of a Legume; bearing or producing the fruit called a Legume, or Bean.
- Lenticular,** having the form of a lens; orbicular and compressed, but convex on both faces.
- LEPIDINEAE.** The *Lepidium* tribe of the Order CRUCIFERAE.
- LICHENES.** The family of *Lichens*; an Order of flowerless *Thallophytes*, or vegetable expansions.
- Ligneous,** woody; of a firm woody texture.
- Lignescant,** becoming somewhat woody.
- LIGULAEFLORAE.** The third *Sub-order* of COMPOSITAE, in which all the florets are *ligulate*.
- Ligulate,** strap shaped, or ribband-shaped; flat and linear.
- Ligule.** The usually membranous appendage at the base of the leaf, or summit of the sheath, in the grasses.
- LILACEAE.** The *Lilium* family, or Order of Lily-like plants.
- Limb.** The summit of a monosepalous calyx; or the upper spreading part of a monopetalous corolla.
- LINACEAE.** The *Linum* or Flax family.
- Line.** The twelfth part of an inch.
- Linear,** of an uniform width; long and narrow with parallel sides.
- Linear-lanceolate,** &c., partaking of both forms, but more of the latter.
- Lip.** The upper or under division of a labiate flower; or the lower perianth-segment of many Orchidaceous flowers.
- LITHOSPERMEAE.** A *subtribe* of BORAG-EAE, represented by the genus LITHOSPERMUM.
- Lobe.** The division, or segment, of a petal, or leaf: the free portion of a gamopetalous corolla.
- Lobate, or lobed,** cut or divided into lobes.
- LOBELIACEAE.** The *Lobelia* family.
- LOBELIEAE.** The *tribe* of LOBELIACEAE, specially represented by the genus *Lobelia*.
- Loculicidal** dehiscence. When the pericarp opens naturally on the back of a cell (*i. e.* at the dorsal suture) directly into the cavity.
- Loment.** An induscent 2 or several-seeded legume, contracted between each seed, and finally separating at the joint-like contractions.
- LOMENTACEAE.** A *division* of the Order CRUCIFERAE, containing plants with lomentaceous pods.
- Lomentaceous** legume, or pod. A pod of 2 or more seeds, with a joint-like contraction, or transverse partition, between the seeds.
- Longitudinal,** length wise; parallel with the axis,—or in a direction from the base towards the summit or apex.
- Lunate, or lunulate,** having the figure of a new moon.
- LYCOPODIACEAE.** The *Lycopodium* or club-moss family.
- Lyrate,** lyre-shaped; pinnatifid, with the terminal segment largest and mostly rounded.
- MAGNOLIACEAE.** The *Magnolia* family or Order.
- MAGNOLIEAE.** The *tribe* of MAGNOLIACEAE, of which the genus *Magnolia* is the special type.
- MALVACEAE.** The *Malva* or Mallow family.

- Marcrescent*, withering and shrivelling on the stem, instead of falling off.
- Margin*. The edge or circumference of a leaf, or other expansion; also, the thin wing-like border of certain seeds, &c.
- Marginal*, belonging to, or situated at, the margin.
- Marginate*, or *marginated*, having a border or edging of a texture or color different from that of the disk; surrounded by a wing-like expansion, or narrow membrane.
- Medullary rays*. Bands or thin plates of cellular tissue, which pass from the pith to the bark, in woody stems.
- MELAMPODINEAE. A *Sub-tribe* of *Senecio-like* plants, of which the genus *Melampodium* is the type.
- MELIACEAE. The *Melia* or *Pride* of India family.
- MELISSINEAE. The *Melissa* or *Balm-tribe*, of the Order LABIATAE.
- Melliferous*, producing or containing honey.
- Membranaceous*, or *membranous*, thin, flexible, and often slightly translucent.
- MENTHOIDEAE. The *Mentha* or *Mint-tribe*, of the Order LABIATAE.
- Meri carp*. A name given to the indehiscent carpel of the UMBELLIFERAE.
- Micro-pyle*. The small foramen, or opening in the proper coats of a seed, to which the radicle always points.
- Midrib*. The main central nerve of a leaf,—apparently a continuation of the petiole.
- Monadelphous*, having the filaments all united in one set,—usually forming a tube.
- Monandrous*, having a single stamen.
- MONARDEAE. The *Monarda* or *Horse-mint-tribe* of the Order LABIATAE.
- Moniliform*, arranged like, or resembling the beads of a necklace.
- Monoclinous*, having the stamens and pistils in the same flower.
- Monocotyledonous* plants. Where the embryo has but a single lobe, or cotyledon.
- Monograph*. A description (usually ample and elaborate) of a single thing or class of things,—as of a Genus, Tribe, or Family, &c.
- Monogynous*, having but one pistil.
- Monocious*, having staminate and pistillate flowers distinct, but on the same plant.
- Monociously polygamous*, having perfect and imperfect flowers on the same plant.
- Monopetalous*, having but one petal; or more correctly, the petals united into one. See *gamopetalous*.
- Monophyllous*, consisting of a single leaf.
- Monosepalous*, consisting of one sepal,—or rather, several sepals united more or less completely. See *gamosepalous*.
- MOREAE. The *Morus Sub-order*, or Mulberry section of the URTICACEAE, or Nettle family.
- MUCOROIDEI. A *Sub-tribe* of the GASTEROMYCETES, or closed FUNGI, typified by the genus *Mucor*, or Mould.
- Mucronate*, terminated by a *mucro*, or small projecting point,—usually the prolongation of the midrib, in leaves.
- Mucronulate*, having a small *mucro*, or terminal projecting point.
- Multifid*, many-cleft; cut into numerous segments.
- Multiple*. A number containing another number several times without a fraction, or remainder;—as 9 is a multiple of 3.
- Multiple fruits*. Where there is a combination of several flowers into one aggregate mass,—as in the Pine-apple, Mulberry, &c.
- Muricate*, armed or covered with short spreading points, or acute excrescences,—like a *Murex*.
- MUSCI. The family of *Mosses*.
- Mutic*, or *muticous*, awnless or pointless: the opposite of mucronate.
- Naked*, destitute of the usual covering, or appendage,—as a *stem* without leaves, or scales—*leaves* without pubescence—*corolla* without a calyx, or crown—*seeds* without a pericarp—a *receptacle* without chaff, or hairs—an *Umbel* without an involucre, &c.
- Napiform*, turnep-shaped.
- Natural Order*, family, or tribe. An association or group of kindred genera,—or of plants which are nearly related in their structure, and most important characters.
- Nectary*. That organ, or portion of a flower, which secretes honey; a term formerly applied to all disguised or modified forms of petals and stamens.
- NEPETEAE. The *Nepeta* or *Catnep-tribe*, of the Order LABIATAE.
- Nerved*, having nerves, or coarse rib-like fibres.
- Nerves*. Rib-like fibres (in leaves, &c.) which usually extend from the base to, or towards, the apex.
- Neuter*, or *neutral* flower. Having neither stamen nor pistil.
- NICOTIANEAE. The *Nicotiana* or *Tobacco-tribe*, of the Order SOLANACEAE.
- Nodding*, turning downwards; somewhat drooping.
- Node*. The knot, or solid and often tumid joint, of a stem or branch.
- Nodose*, having numerous nodes, or tumid joints.
- Normal*, according to rule; agreeing with the pattern or type.
- Nuciform*, nut-like; resembling a nut.
- Nucleus*. A central body; the seed, or kernel of a nut.
- Nucules*. Little nuts, or nut-like fruit.
- Nut*. A hard 1-celled indehiscent fruit, usually containing a single seed.

- Ob*, a preposition which inverts the usual meaning of the word to which it is prefixed.
- Obcompressed* akenes (in the *COMPOSITÆ*). Flattish, with the greatest diameter from right to left,—or with the flattened side to the front, or periphery of the head.
- Obconic*, inversely Conical.—*i. e.* with the point or apex downwards.
- Obcordate*, heart-form, with the sinus at summit, and the narrowed point at place of insertion.
- Ob lanceolate*, inversely lanceolate,—or with the widest part above the middle, and tapering gradually to the base.
- Oblique*, a position between horizontal and erect; also descriptive of the base of a leaf, &c., when it is unequal, or produced on one side.
- Oblong*, longer than wide, with the sides parallel, or nearly so.
- Obovate*, inversely ovate,—or with the broadest end above.
- Obovoid*, inversely ovoid.
- Obsolete*, indistinct, as if worn out.
- Obtuse*, blunt, or rounded.
- Obversely*, turned contrary to the usual position.
- Obvolute* leaves. When one of the margins of each folded leaf is exterior, the other interior; also termed *half-equitant*. See *Equitant*.
- Ochrea*. A membranous stipular sheath, embracing the stem like a boot-leg; as in *Polygonum*, &c.
- Ochroleucous*, yellowish-white, or cream colored.
- OCIMOIDEÆ*. The *Ocimum* or Sweet Basil tribe, of the Order *LABIATÆ*.
- Ocintrosus*, having 8 stamens.
- Odd-pinnate* leaf. Having the leaflets in opposite pairs, with a terminal odd one; often termed *impairi-pinnate*.
- OENOTHERÆÆ*. The *Oenothera* section or *Sub-tribe* of the *ONAGRACEÆ*.
- Official*, used in, or belonging to, a shop, or medical office.
- OLEACEÆ*. The *Olea* or Olive family.
- OLEINEÆ*. The tribe of *OLEACEÆ* especially typified by the genus *Olea*.
- Oleraceous*, of the nature or quality of pot-herbs.
- ONAGRACEÆ*. The *Onagra* or Evening Primrose family.
- ONAGREÆ*. The proper *Onagra* tribe of the Order *ONAGRACEÆ*.
- Opaque*, not transparent.
- Opercular*, opening like a lid that is fixed by a hinge at one side.
- Opposite*, situated directly against each other, or at the same height, on contrary sides of the stem.
- Orbicular*, circular and flat, like a coin: the length and breadth equal and the circumference an even circular line: a term applied to leaves, or flattened bodies. See *Terete*.
- Orchidaceous*, or *Orchideous*, belonging to, or resembling, plants of the *Orchis* family.
- Order*. A family or group of allied natural objects; a subdivision of a *Class*, embracing kindred *Genera*.
- Ordinal*, belonging to the Orders, or to an Order.
- Ordinal* names. The names of the Natural Orders, or families of plants.
- ORTHOSPERMÆÆ*. A *Sub-order* of *UMBELLIFERÆÆ*, in which the face, or commissure of the carpels, is *straight* and *flat*.
- Orthotropous* ovule, or seed. Straight; not curved, nor turned from its original or natural direction.
- ORYZÆÆ*. The *Oryza* or Rice tribe, of the Order *GRAMINEÆÆ*.
- Oval*, longer than broad, with the two ends of equal breadth and curvature, and the sides curving from end to end.
- Ovary*. The young seedvessel, or fruit; the hollow portion at the base of the pistil, containing the *ovules*, or bodies destined to become seeds.
- Ovate*, flat, with the outline of a longitudinal section of an Egg; a somewhat oval figure, but broader near the base.
- Ovate-lanceolate*, lanceolate, inclining to ovate at base.
- Ovate-oblong*, oblong, with an ovate dilatation near the base.
- Ovoid*, egg-shaped; terete, and swelling near the base—*i. e.* having the outline of an entire egg.
- Ovoid-oblong*, the ovoid form lengthened out.
- Ovules*. The rudiments of future seeds, contained in the *Ovary*, or young fruit.
- Palate*. The prominence in the lower lip of a personate corolla.
- Palea* (plural, *paleæ*). Chaff; a term applied to the inner, or immediate, floral covering of the Grasses. (Corolla, of *Linn*). See *Glumes*.
- Paleaceous*, chaffy; of a chaffy texture, —or furnished with chaff-like scales.
- PALMÆÆ*. The *Paln* family.
- Palmate*, hand-shaped; deeply divided, with the segments nearly equal and spreading like fingers on the open hand.
- Palmately* veined, or cleft,—having the veins or segments divergent, like the spreading fingers of an open hand.
- Panturniform*, fiddle-shaped; oblong with the sides contracted, like a violin.
- PANICEÆÆ*. The *Panicum* tribe of the Order *GRAMINEÆÆ*.
- Panicle*. A loose irregular compound raceme,—in which the peduncles are unequally elongated, and variously and irregularly subdivided; as in *Oats*, &c.
- Paniculate*, disposed in the form of a panicle.

- PAPAVERACEAE.** The *Papaver* or Poppy family.
- PAPILIONACEAE.** A Sub-order of LEGUMINOSAE, containing the papilionaceous corollas.
- Papilionaceous corolla.** Butterfly-shaped; when complete, consisting of 5 petals,—the upper one (mostly largest) called the *vexillum* or banner,—the 2 lateral ones termed the *alae* or wings,—the 2 lower ones more or less cohering by their lower margins, and from their form, denominated the *keel* .
- Papillate, or papillose,** having the surface covered with fleshy dots, or points, like minute teats.
- Pappus.** The crown of the fruit,—being the segments, or free portion of an adherent calyx, in the COMPOSITAE, and some other plants,—usually hair-like, or plumose.—sometimes in the form of minute chaff, or scales.
- Parasite.** A plant growing on, or deriving sustenance from, another plant; as Dodder, Mistleto. &c.
- Parasitic,** being or relating to, a Parasite.
- Parenchyma.** The soft spongy cellular tissue (often green), which forms the pith of stems, the pulp of leaves and young fruit, and fills the interstices of woody or vascular fibres.
- Paries** (plural, *parietes*). The outside wall, or inclosing shell, which circumscribes the cavity of a pericarp.
- Parietal,** affixed to, or belonging to, the *paries* or outer wall of the seed-cell of a pericarp.
- Parietal placentae.** When the placentae are borne upon the *walls* , instead of the axis, of the ovary, or pericarp.
- Parted,** divided deeply, almost to the base.
- Partial,** a term applied to constituent portions of a compound whole.
- Partition.** See *Dissepiment* .
- Patellulae.** Small orbicular *receptacles* of the LICHENES, resembling *little dishes* ; sometimes termed spangles.
- Pectinate,** finely, regularly and deeply cleft, so as to resemble the teeth of a comb.
- PEDALIACEAE.** The *Pedalum* family of plants.
- PEDALINEAE.** The tribe of PEDALIACEAE, of which the genus *Pedalum* is the special type.
- Pedate leaf.** Like a bird's foot; divided nearly to the petiole in narrow segments, with the lateral ones diverging.
- Pedicel.** A partial peduncle; the ultimate branch, or division (next to the flower, or fruit), in a compound inflorescence.
- Pedicellate,** having, or being supported on, a pedicel.
- Peduncle.** A simple flower-stem; also, the common footstalk of a compound inflorescence.
- Pedunculate,** having a peduncle; not sessile.
- Pellucid,** transparent; pervious to light.
- Pellucid-punctate,** having punctures which permit light to pass through.
- Peltae.** Little flat *receptacles* on the LICHENES, resembling targets, or shields.
- Peltate,** like a shield; having the footstalk affixed to the under surface, and not to the margin.
- Pencil-form,** resembling a painter's pencil, or little brush.
- Pendulous,** hanging down; attached at one end, and swinging loosely.
- Pendulous ovules,** or seeds. When their direction is downwards.
- Penicillate,** tipped or tufted with hairs, like a painter's penneil.
- Penninerved leaf.** Having the lateral nerves pinnately arranged, or feather-like. See *Feather-veined* .
- Pentagonal,** having 5 angles, or corners.
- Pentagynous,** having 5 pistils.
- Pentamerous,** composed of 5 parts.
- Pentandrous,** having 5 stamens.
- Pentapetalous,** having 5 petals.
- Penultimate,** next to the last; the one next to the terminal one.
- Pepo.** An indehiscent, fleshy or internally pulpy fruit, usually composed of 3 carpels invested by the calyx-tube, and with a firm rind; as the Melon, &c.
- Perennial,** living more than two years, and for an indefinite period.
- Perfect flower.** Having both stamen and pistil (1 or more of each), and producing fruit.
- Perfoliate,** having the stem apparently pierced through the leaf.
- Perianth.** A term for the envelopes of a flower, where the calyx and corolla are not clearly distinguishable.
- Pericarp.** The seed vessel, or fruit; the ovary in a mature state.
- Perichaeth, or perichaetium.** The verticil, or cluster of bract-like leaves, round the base of the *seta* , or footstalk of the urn, in Mosses,—often called *perichaetial leaves* .
- Peridium.** A term applied to the outer sac, or envelope of the sporanges, in some of the FUNGI.
- Perigonium.** A name for the envelope of the flower,—said to be *double* when there is both calyx and corolla: but often used synonymously with *Perianth* —which see.
- Perigynium.** The sac (formed by the union of 2 bractlets) which encloses the ovary of the *Carices* .
- Perigynous petals and stamens.** Inserted on the calyx,—or rather adhering to the inner surface of the calyx-tube—and thus surrounding the pistils.
- Periphrical,** fixed or coiled round the circumference, or periphery.
- Perisperm.** A deposit in many seeds, affixed to, or surrounding, the embryo—synonymous with *albumen* —which see.
- Peristome.** The circle of teeth, or bris-

- tle-like processes, which surround the orifice of the *Theca* or capsule of the *Mosses*
- Persistent*, not falling off; remaining beyond the time when similar organs usually fall off.
- Personate* corolla. Masked; having the throat closed by a prominent palate,—as in *Linaria*.
- Petal*. The (usually) delicate colored flower leaf. In a flower of one petal (or united petals), the corolla and petal are the same; in a flower of more than one petal, the corolla is the whole, and the petals are the parts.
- Petaloid*, petal-like; delicate and colored, or expanded, like a petal.
- Petiole*, seated on, or belonging to, the petiole.
- Petiolate*, having, or being supported on, a petiole; not sessile.
- Petiole*. The stem or footstalk of a leaf.
- Petiolulate*, having a partial or subdivided petiole.
- Petiolule*. A little or partial petiole; the footstalk of a leaflet.
- PEUCEDANEA. The *Peucedanum* tribe of the Order UMBELLIFERAE.
- Phaenogamous*, or *phanerogamous*, having visible genuine stamens or pistils; bearing true flowers.
- PHALARIDEAE. The *Phalaris* or Canary-Grass tribe of the Order GRAMINEAE.
- PHASEOLEAE. The *Phaseolus* or Garden-Bean tribe of the Order LEGUMINOSAE.
- Phyllodium*. The imitation, analogue, or substitute of a leaf,—usually the dilated foliaceous petiole of an abortive compound leaf.
- PHYTOLACCACEAE. The *Phytolacca* or Poke family of plants
- P. LEATI. A division of the HYMENINI sub-tribe of FUNGI, having the receptacle dilated and orbicular, like a cap or hat.
- Pileus*. The cap, or hat-like receptacle, borne on the stipe of a mushroom; as in the *Agarics*.
- Pilose*, hairy; composed of, or clothed with, distinct straightish hairs.
- Pinnæ*. The paired or opposite leaflets of a pinnate leaf.
- Pinnate* leaf. Having distinct articulated leaflets in pairs, on opposite sides of a simple petiole.
- Pinnatifid* leaf, or frond. Cleft in a pinnate manner, but the segments united or confluent at base.
- Pinnatifidly*, in a pinnatifid manner.
- Pinnatisect*, pinnately dissected or divided,—but the segments not articulated with the petiole.
- Pinnules*. The leaflets or subdivisions of a bi-tri- or multi-pinnate leaf, or frond.
- Pistil*. The central organ of a fertile flower,—consisting usually of *ovary*, *style*, and *stigma*: sometimes the *style* is wanting,—or, in other words, the *stigma* is sessile.
- Pistillate* flowers. Those which have pistils, but not stamens.
- Pistillidia*. Small bottle-shaped bodies,—the analogues or substitutes of pistils, in the *Mosses*.
- Pistilliferous*, bearing pistils.
- Placenta* (plural, *placentæ*). That part of a pericarp to which the seeds are attached; the line, or ridge projecting in the cavity of the ovary, which bears the ovules.
- Placental*, pertaining to the placenta.
- Placentiferous*, bearing the placenta.
- Plane*, flat, and with an even surface.
- Plano-convex*, flat on one side and convex on the other.
- PLANTAGINACEAE. The *Plantago* or Plantain family.
- PLATANACEAE. The *Platanus* or Buttonwood family.
- Plicate*, plaited; folded or crimped, like a fan, or ruffle.
- Plumose*, feather-like. A *pappus* is plumose, when each hair has other hairs arranged on opposite sides of it,—as in *Cirsium*.
- Pod*. A dry seed-vessel, narrow and more or less elongated, and usually of 2 valves. The term is often applied indiscriminately to both *Legumes* and *Siliques*.
- Podetia*. The pedicels or footstalks which support the knobs (*Cephalodia*) of the LICHENES.
- Pollen*. The fertilizing powder contained in the anthers.
- Pollen-masses*, or *Pollinia*. The waxy masses of pollen, in the *Asclepias* and *Orchis* families.
- Polyadelphous*, having the filaments united in 3 or more parcels.
- Polyandrous*, having more than ten hypogynous stamens.
- POLYGALACEAE. The *Polygala* family.
- Polygamo-dioicous*, having perfect and imperfect (or fertile and sterile) flowers on distinct plants
- Polygamous*, having some flowers perfect, and others either staminate, pistillate, or neuter.
- POLYGONACEAE. The *Polygonum* or Knot-weed family.
- Polygonæe*. The tribe of POLYGONACEAE specially typified by the genus *Polygonum*.
- Polymorphous*, variable; assuming, or apt to assume, many different forms.
- Polypetalous*, having many distinct petals,—or, at least, more than one.
- Polysepalous*, having many distinct sepals,—or more than one.
- Pome*. An apple; a fleshy fruit formed of several cartilaginous or bony carpels, imbedded in pulp and invested by the tube of the adherent calyx.
- POMEAE. A Sub-order of ROSACEAE, characterized by bearing *pomes*.
- Porous*, full of holes, cells, or tubular openings.

- PORTULACACEAE.** The *Portulaca* or Purslane family.
- Praemorse**, end-bitten; ending blunt, as if bitten off.
- Prickle.** A sharp process arising from the bark, only,—and not originating in the wood.
- Primary**, first in a series, in order of time, or in importance,—opposed to *secondary*.
- Primordial**, first in Order; usually applied to the first genuine leaves,—or those which are next above the cotyledons or seminal leaves.
- Prismatic**, like a prism; having several angles and intermediate flat faces.
- Process.** A protuberance, eminence, or projecting part.
- Procumbent**, lying on the ground, without putting forth roots.
- Protromus.** A herald, or harbinger,—usually the fore-runner of another more complete and extensive work on the same subject.
- Produceed**, extended, or lengthened out.
- Proliferous**, producing its like in an unusual way,—as lateral bulbs; or putting forth a young and unusual accessory growth, from the centre of an umbel, flower, &c.
- Prostrate**, lying flat, or close on the ground.
- Protophytes.** First plants; a term applied to the ALGAE, which are supposed to have been the earliest created tenants of our earth.
- Pru-nose**, covered with a glaucous mealiness, like a plum.
- Pseudo-pinnate**, falsely or imperfectly pinnate,—the leaflets (or rather segments) not articulated at base: See *Pinnatisect*.
- Puberulent**, covered with a minute, short and fine pubescence.
- Pubescence.** A general term for the hairy covering of plants.
- Pubescent**, clothed with hairs,—especially with short weak hairs.
- Pulp.** A soft, fleshy or juicy mass.
- Pulverulent**, dusty; composed of, or covered with, a fine powder.
- Punctate**, appearing as if pricked full of small holes, or covered with indented points.
- Punctulate**, having very minute punctures, or indented points.
- Pungent**, sharp-pointed, or prickly at apex; also acrid.
- Pyramidal**, tapering upwards; usually applied to 4-sided solids which diminish to the apex.
- Pyriform**, shaped like a pear; largest at the upper end.
- PYROLEAE.** A *Sub-order* of ERICACEAE, of which the genus *Pyrola* is the type.
- Quadrangular**, four-angled.
- Quadrifarious**, in 4 rows, or directions; facing or pointing 4 ways.
- Qual. ifid.** 4-cleft.
- Quaternate**, 4 together; arranged in fours.
- Quinate**, 5 together; arranged in fives.
- Quinqueplicate**, having 5 plait or folds.
- Race** of plants. A fixed and peculiar form or modification,—produced by the crossing or blending of distinct varieties: or sometimes, perhaps, accidental forms rendered permanent by culture, or other influences.
- Raceme.** A mode of flowering, in which the common peduncle is elongated, with the flowers on short lateral simple pedicels.
- Racemose**, having the flowers in racemes.
- Rachis.** The common peduncle, or elongated receptacle, on which florets are collected in a spike; also the midrib of a pinnatisect frond.
- Radiate**, having rays (i. e. spreading ligulate florets) at the circumference; as the heads of many *Compositae*.
- Radiate-veined**, where the veins of a leaf diverge from a common centre, or point, at the summit of the petiole.
- Radiatiform**, a term applied to heads of compound flowers in which all the florets are ligulate, and directed towards the circumference.
- Radical**, belonging to, or growing immediately from, the root.
- Radicaling**, sending out roots, or striking root at the nodes.
- Radicle.** A little root; the slender fibrous branch of a root.
- Rameal**, pertaining or belonging to the branches.
- Ramentaceous**, covered with *ramenta*—i. e. the scales, or persistent remains (vestiges, or *debris*) of leaves, or other previously existing organs.
- Ramification.** The branching or division of an organ into several parts.
- Ramose**, branching.
- Rank.** A row, or arrangement in a line.
- RANUNCULACEAE.** The *Ranunculus* or Butter-cup family.
- RANUNCULEAE.** A *tribe* of RANUNCULACEAE, specially represented by the genus *Ranunculus*.
- RAPHANEAE.** The *Raphanus* or Radish *tribe* of the order CRUCIFERAE.
- Raphe.** The line, or little ridge, on one side of anatropous (i. e. inverted) ovules and seeds,—formed by the adhesion of a portion of the funiculus.
- Ratoon** (Span. *Retono*). A sprout from the root of a plant which has been cut off (chiefly used in reference to the Sugar-cane).
- Rays.** The spreading ligulate florets round the disk of a compound flower; also, the footstalks, and enlarged marginal flowers, of an umbel.
- Receptacle.** The apex of the peduncle (much dilated in the *COMPOSITAE*), on which the parts of a flower (or entire florets) are inserted; the *seat* of the fruit, or of seeds and their equivalents.

- Recurved*, curved backwards.
- Reduplicate*, with the edges folded or turned outwards.
- Reflexed*, bent or doubled backwards.
- Regular*, having the parts uniform and equal among themselves,—as the lobes or petals of a corolla.
- Remote*, seated or growing at an unusual distance.
- Reniform*, kidney-shaped.
- Repand*, having the margin slightly indented with shallow sinuses.
- Replicate*, folded back on itself.
- Replum*. A name given to parietal placentae when separated from the valves; also, the persistent border of a fallen legume.
- Resupinate*, turned upside down.
- Reticulate*, netted; having veins or nerves crossing each other, or branching and reuniting, like network.
- Retorse*, or *retorsely*, pointing backwards or downwards.
- Retuse*, having a shallow sinus at the end.
- Revolute*, rolled backwards, or outwards.
- Rhizoma*. A root-stock,—or root-like subterranean stem.
- Rhomboid*, rhomb-shaped; having four sides, with unequal angles.
- Ribbed*, having ribs, or longitudinal parallel ridges.
- Ribs*. Parallel ridges, or nerves, extending from the base to, or towards, the apex.
- Rigid*, stiff, inflexible, or not pliable.
- Ringent*, gaping, with an open throat.
- Root-stock*. See *Rhizoma*.
- ROSACEAE. The *Rose* family.
- ROSACEAE PROPER. The *Sub-order* of ROSACEAE, of which the genus *Rosa* is the special type.
- ROSEAE. The *tribe* of ROSACEAE PROPER immediately represented by the *Rose*.
- Rostrate*, beaked; having a process resembling the beak of a bird.
- Rosulate*, in a rosette; arranged in circular series, like the petals of a double rose.
- Rotate* corolla. Wheel-shaped; monopetalous (or gamopetalous) and spreading almost flat, with a very short tube.
- ROTTBOELLIACEAE. A *tribe* of the order GRAMINEAE, represented by the genus *Rottboellia*.
- Rough*, covered with dots, points, or short hairs, which are harsh to the touch.
- Round*, circular, or globular; not angular. See *globose*, *orbicular*, and *terete*.
- RUBIACEAE. The *Rubia* or *Madder* family.
- Rudiment*. An imperfectly developed organ.
- Rufescent*, becoming reddish-brown, or rust-colored.
- Rufous*, reddish-brown, or rust-colored.
- Rugose*, wrinkled. *Rugulose*, finely wrinkled.
- Ruminated*. a term applied to a variegated albumen—i. e. when its substance is wrinkled or plicate, and the investing membrane prolonged within the folds.
- Runcinate*, resembling the teeth of a mill-saw; somewhat pinnatifid, with the segments acute and pointing backwards.
- Runner*. A slender shoot, producing roots and leaves at the end, only,—and at that point giving rise to another plant: exemplified in the Strawberry-plant.
- SABALINEAE. A *Sub-tribe* of the *Palmae*, represented by the genus *Sabal*.
- Sac*. A membranous bag, or boundary of a cavity.
- Saccate*, having, or being in the form of, a sac, or pouch.
- Sagittate*, arrow-shaped; notched at base, with the lobes (and frequently the sinus) acute.
- SALICACEAE. The *Salix* or Willow family.
- Salverform*, or *salver-shaped*, tubular, with the limb abruptly and flatly or horizontally expanded.
- Samara*. A kind of Akene, or dry indehiscent pericarp, having a winged apex, or margin,—as the Maple, Ash, Elm, &c.
- Samaroid*, winged or margined like a Samara.
- SAMBUCACEAE. The *Sambucus* or Elder *tribe* of the order CAPRIFOLIACEAE.
- SANTALACEAE. The *Santalum* or Sandal-wood family.
- Sarcocarp*. The fleshy portion of a pericarp (*ex. gr.* of a *Drupe*) between the *Epicarp* and the *Endocarp*.
- Sarmentose*, having, or sending forth, or being in the form of, runners.
- Sarmentum*. A runner—which see.
- SATUREINEAE. The *Satureja* or Marjoram *tribe* of the Order LAMIATAE.
- SAXIFRAGACEAE. The *Saxifraga* family.
- SAXIFRAGACEAE. The *Sub-order* of SAXIFRAGACEAE, specially typified by the genus *Saxifraga*.
- Scabrous*, rough with little points, or hairs.
- Scales*. Small thin plates, or leaf-like processes; also the leaflets of the involucre, in the COMPOSITAE.
- Scandent*, climbing,—usually by means of tendrils.
- Scapae*. A peduncle proceeding directly from the root, and mostly naked.
- Scarious*, dry and skinny,—generally transparent.
- Scattered*, disposed or distributed thinly, without any regular order.
- SCIRPEAE. The *Scirpus* or Club-Rush *tribe* of the Order CYPERACEAE.
- SCORZONEREAE. A *Sub-tribe* of CICHORACEAE, typified by the genus *Scorzonera*.
- Scrobiculate*, having the surface excavated into little pits, or hollows.

- SCROPHULARIACEAE.** The *Scrophularia* family.
- Scutellae.* The little shield-like orbicular sessile receptacles of some of the LICHENES.
- SCUTELLARINAE.** The *Scutellaria* tribe of the Order LABIATAE.
- Scutellate,* shaped like, or resembling, a target or shield.
- Scam.* See *Suture*.
- Secund,* one-ranked; all seated on, or turned to, the same side.
- Segment.* The division, or separated portion, of a cleft calyx, leaf, &c.
- Semi,* half; as *semi-bivalved,* half-2-valved.—*semi-terete,* half-round, &c.
- Sempervirent,* always green; living through the winter, and retaining its verdure.
- SENECIONEAE.** A *Sub-tribe* of the *Senecio-like* plants, specially typified by that genus.
- SENECIONIDEAE.** The *Senecio* or Groundsel tribe of the Order COMPOSITAE.
- Sepal.* The leaflet, or distinct portion, of a calyx.
- Sepaloid,* resembling sepals; green and not petal-like.
- Septicidal* dehiscence. When a compound pericarp opens by splitting the dissepiments—i.e. the carpels separate from each other, and open to the seeds by the ventral suture.
- Septifrous,* bearing a septum.
- Septifragal* dehiscence. When the dissepiments remain attached to the axis, while the valves break away from them.
- Septum.* The partition which divides the cells of fruit.
- Sericous,* silky; covered with soft smooth glossy appressed hairs.
- Series.* A division, or comprehensive group, of objects in Natural History; also, a continued succession of things of the same Order.
- Serrate,* sawed; having sharp teeth on the margin, pointing towards the apex.
- Serratures.* The teeth, or sharp segments, of a serrate margin.
- Serrulate,* finely serrate; having small teeth or serratures.
- SESELINAE.** The *Seseli* tribe of the Order UMBELLIFERAE.
- Sessile,* sitting closely; without any footstalk or pedicel.
- Seta* (plural, *Setae*). A bristle; a stiffish elastic hair.
- Setaceous,* bristle-like; resembling a bristle in size and figure.
- Setose,* bristly; having the surface covered with bristles.
- Sheath.* A membranous expansion which is tubular, or convolute, and inclosing or embracing a stem.
- Sheathed,* inclosed or embraced by a sheath.
- Sheathing,* embracing the stem with a sheath.
- Shining,* glossy smooth and bright.
- Shrub.* A small woody plant, branching near the ground,—often without any principal stem.
- Shrubby,* hard and woody; of the texture and size of a shrub.
- SILENEAE.** The *Silene* tribe of the Order CARYOPHYLLACEAE.
- Silicle.* A little or short silique, nearly as wide as long.
- SILICULOSAE.** A *division* of the Order CRUCIFERAE, comprising the plants bearing *Silicles*, or short pods.
- Silique.* A long slender pod, or membranous seedvessel of 2 valves, having the seeds fixed alternately along both sutures.
- SILIQUOSAE.** A *division* of the Order CRUCIFERAE, comprising the plants with *Siliques*, or long pods.
- Siliquose,* having siliques,—or resembling a silique.
- Simple,* undivided; not branched; not compound.
- Simple Umbel.* When each ray terminates in a single flower,—instead of a secondary or partial umbel.
- Sinuate,* having sinuses, scallops, or gashes which are open and rounded at bottom.
- Sinuate-dentate,*—*Sinuate-serrate,* having teeth, or serratures, with the clefts or openings rounded at bottom.
- Sinus.* An open notch; a rounded incision, or scallop.
- SISYMBRIEAE.** The *Sisymbrium* tribe of the Order CRUCIFERAE.
- SMILACEAE.** The *Smilax* family.
- SMYRNEAE.** The *Smyrnium* tribe of the Order UMBELLIFERAE.
- Soboliferous,* producing young plants from the roots.
- SOLANACEAE.** The *Solanum*, Potato, or Nightshade family.
- SOLANAE.** The *tribe* of SOLANACEAE specially typified by the genus *Solanum*.
- SOLIDAGINEAE.** A *Sub-division* of Aster-like COMPOSITAE, of which *Solidago*, or Golden Rod, is the type.
- Solitary,* standing alone; one only in a place.
- SOPHOREAE.** The *Sophora* tribe of the Order LEGUMINOSAE.
- Sori* (plural of *Sorus*). Small clusters of granules, or *sporangies*, on the back of the fronds of Ferns.
- Spadix.* A sort of dense-flowered, fleshy or club-like Spike,—usually enveloped by, or proceeding from, a sheathing involucre called a Spathe.
- Spathaceous,* having a spathe, or resembling a spathe.
- Spathe.* A sheathing kind of bract, common calyx, or involucre, open on one side,—often containing the spadix.
- Spathulate,* or *spatulate*, like a spatula; obovate-oblong, or larger and rounded at the end, and tapering to the base.
- Species.* The lowest permanent division

- of natural objects, in a systematic arrangement; a group comprising all similar individuals.
- Specific*, belonging to, or distinguishing, the species.
- Spermoderm*. The proper coating of a seed.
- Sphacelate*, dark-colored, as if gangrenous, or dead.
- Sphagnous*, full of bog-moss, or *Sphagnum*.
- Spicate*, in the form, or after the manner, of a spike.
- Spike*. A kind of inflorescence in which the flowers are sessile on the sides of a long common peduncle, or rachis.
- Spikelet*. A little spike,—or sub-division of a compound spike.
- Spine*. A thorn; a sharp process originating in the wood—i. e. a pointed abortive branch.
- Spinulose*, armed with minute spines.
- Spinescent*, becoming thorny,—or inclining to be thorny.
- Spinose*, thorny; armed with thorns.
- Spinulose*, covered with small spines.
- Spongioles*. The delicate sponge-like tissue, forming the growing-points of roots.
- Sporange*. The pericarp of the cryptogamous plants; the membranaceous envelope of the sporules.
- Spores*, or *sporules*. The seminal equivalents, or analogues of seeds, in cryptogamous plants.
- Sporidia*. Spore-like bodies; or sometimes the cells, or sacs, which contain the sporules of the FUNGI.
- Sporocarp*, a synonym of *Sporange*.
- Sporules*. Dimin. of *Spores*; which see.
- Spur*. A tapering hollow production of the base of a petal, or sepal,—usually called a nectary.
- Spurred*, having a spur, or spur-like elongations.
- Squamose*, scaly; covered more or less with scales.
- Squarrose*, jagged; having spreading tips, or divaricate points, all round,—as the scales of some involucre.
- STACHYDEÆ. The *Stachys* or Hedge-nettle tribe of the Order LABIATÆ.
- Stamen*. The organ of a flower which prepares the pollen,—usually consisting of a *filament* and *anther*, and situated between the corolla and the pistil.
- Staminate* flower. Having stamens, but not pistils.
- Stamiferous*, bearing or supporting the stamens.
- Staminodia*. Imperfect organs occupying the position of, and resembling *Stamens*,—being in the transition stage between petals and stamens.
- STELLATÆ. A *Sub-order* of RUBIACÆ distinguished by whorled or *stellate* leaves.
- Stellate*, like a star; arranged like the rays of a star.
- Stellular*, radiating after the manner of little stars.
- Stellular* pubescence. Compound or fasciculate hairs, with the branches spreading like rays.
- Stem*. The main axis or body of a plant; the common supporter of branches, leaves, flowers and fruit.
- Stemless*, having no visible or aërial stem: applied to plants where the stem is suppressed, or so short as to be apparently wanting.
- Sterile*, barren, or unproductive; applied to flowers which produce no fruit.
- Stigma*. The summit of the style,—or that portion of the pistil through which the pollen acts.
- Stigmatic*, belonging or relating to the stigma.
- Stigmatiferous*, or *stigmatose*, bearing, or belonging to, the stigma.
- Stipe*. A little pedicel, or footstalk, of seeds, &c. also, the petiole of the frond, in ferns.
- Stipellat'e*, furnished with *stipelles*.—i. e. the stipules of *leaflets*, in compound leaves.
- Stipelles*. The stipular appendages, or *little stipules*, of *leaflets*, in compound leaves.
- Stipitate*, having a stipe; supported on a little pedicel.
- Stipitif'orm*, resembling a stipe.
- Stipular*, belonging or relating to stipules.
- Stipulate*, furnished with stipules.
- Stipules*. Leaflets, or leaf-like appendages, at the base of a petiole, or leaf.
- Stole* (corruptly, *stool*), to put forth stoles (or *stolones*)—i. e. suckers, or branches, from the root: usually applied to young wheat, in autumn and spring.
- Stole-bearing*, producing stoles. See *stoloniferous*.
- Stoles* (i. e. *stolones*—corruptly, *stools*). The shoots, suckers, or off-sets, from the base of the stem, or roots, of plants: usually applied to young winter grain,—as wheat, &c. See *Tiller*.
- Stoloniferous*, having suckers, off-sets, or running shoots (*stolones*), from the base of the stem, or crown of the root.
- Striæ*. Fine parallel ridges, or lines.
- Striate*, marked with longitudinal lines, or stripes.
- Striate-sulcate*, scored with minute longitudinal grooves and ridges.
- Strict*, straight and rigidly upright.
- Strigose*, armed with spreading bristly hairs, which taper from base to apex.
- Strobile*. The cone, or collective fruit, of the Pines, Firs, &c.
- Strophiole*. A *little crown*, or fungous appendage to the hilum of a seed.
- Style*. The columnar (usually slender) portion of the pistil, between the ovary and the stigma,—sometimes wanting.
- Styliferous*, bearing or producing a style, or styles.
- Sty'opodium*. The *foot* or thickened base

- of the style (or united styles), at the junction with the epigynous disk,—as in *UMBELLIFERÆ*.
- Stylostegium*. The hood or covering of the style,—as in the *Asclepias* family. See *Gynostegium*.
- Sub*—a preposition signifying *under*, or a *division*.—as a *Sub-class*, *Sub-order*, &c.; also employed as a diminutive, or qualifying term, equivalent to *almost*, *somewhat*, or *about*,—as *sub-sessile*, *nealy sessile*, &c.
- Suberose*. of a texture resembling cork.
- Subulate*, shaped like an awl-blade; linear or cylindrical below, angular and tapering to a sharp point at summit.
- Succulent*, juicy; full of juice.
- Sucker*. A shoot, or offset, from the root, or base of the stem.
- Suffrutescent*, almost shrubby.
- Suffruticose*, somewhat shrubby; shrubby at base.
- Sulcate*, furrowed, or grooved.
- Super*, or *supra*, a preposition signifying *above* or *upon*, *beyond* or *more than*.—as *super-axillary*, situated above the axil.
- Super*—or *Supra-decompound*, more than decompound; many times subdivided, or compounded.
- Superior*, above; a term applied to the *ovary* when it is above the calyx, or *free* in the flower; also to the *calyx*, when the tube is adherent to the ovary, and the segments borne on its summit.
- Suppression*, the non-production, or failure in the development, of an organ.
- Surculose*, bearing suckers, or offsets.
- Suspended* ovules, or seeds. When they are attached to the summit of the ovary, or pericarp, and hang perpendicularly in the cavity.
- Suture*. The line, or seam, formed by the junction of two margins.
- Symmetrical* flower. When there is an equal number of parts in each series, or vertical.
- Syngenesious*, having the anthers united,—as in the *COMPOSITÆ*.
- Synonym*. Another name for the same thing.
- Tenacious*, sticky or adhesive; also, holding on by means of little hooked points.
- Tendr.* A filiform twining branch, or appendage, by which some plants climb, or sustain themselves: in the grape vine, it is an abortive raceme.
- Telete*, round, like a column,—and either cylindrical or tapering; applied to stems, or stem-like bodies. See *orbicular*.
- Terminal*, situated at, or proceeding from; the end or summit.
- Ternary*, arranged in threes; consisting of three parts, or elements.
- Ternate*, three-fold; three together,—as the leaflets of clover, &c.
- Tessellate*, resembling mosaic work; in little squares, or chequers, like a chess-board.
- Testa*. The outer integument, or proper coat, of a seed.
- Tetradynamous*, having 4 long and 2 short stamens, in a cruciate flower.
- Tetragonous*, 4-cornered, or having 4 angles.
- Tetramerous*, consisting of 4 parts, or constituent portions.
- Tetrandrous*, having 4 stamens of equal length.
- Thallogenous* plants. Plants destitute of stem, or ax; consisting of *Thalli*, or mere expansions of cellular vegetable growth.
- Thallophytes*. A Class of flowerless plants,—consisting wholly of *Thallus*, or vegetable leaflike expansion.
- Thallus*. A name for the stemless; frond-like expansion, of which many Cryptogamous plants are entirely composed.
- Theca* (plural, *Thecae*). A name for the little case, sac, or capsule, (*sporocarp*), containing the spores of certain Cryptogamous plants (*e. g.* the Mosses).
- Thorn*. A sharp process from the woody part of a plant,—being a stunted, or abortive branch.
- Throat*. The orifice or passage into the tube of a corolla.
- Thyrsoid*, resembling, or being in the form of, a *Thyrus*.
- Thyrus*. A kind of contracted, or dense, ovoid panicle,—as in the Lilac, Horse-Chesnut, &c.
- TILIACEÆ**. The *Tilia* or Linden family.
- Tiller*. A sucker, or young shoot, of Wheat, Rye, &c.
- Tiller*, or *tillow*, to put forth suckers, or new shoots, from the root, or base of the stem—as Wheat, &c. See *Stole*, or *stool*.
- Tissue*. Web, or fabric; the intimate organic structure, or composition, of bodies,—especially those which are, or have been, alive.
- Tomentose*, covered with a curled, or matted, cottony pubescence.
- Tomentum*. A matted downy or cottony pubescence.
- Toothed*: See *dentate*.
- Torose*, or *torulose*, swelled out in obtuse ridges.
- Tortuous*, bent in different directions.
- Torus*. The bed, or receptacle, at the apex of a flowerstalk, on which are inserted all the parts of the flower.
- Translucent*; clear, or transmitting light faintly.
- Transverse*, *transversely*, across; crosswise; at right angles with lengthwise.
- Triadelphous*, having the filaments united in 3 parcels.
- Triandrous*, having 3 stamens.
- Triangular*, having 3 angles, corners, or points.

- Tribes.** Groups of kindred plants, intermediate between Orders and Genera.
- Tribracteate,** having 3 bracts.
- Trichotomous,** three-forked; dividing by 3 equal branches.
- Tricoccos,** composed of three separable indehiscent carpels (or cocci).
- Tricuspitate,** having, or terminating in, 3 sharp points.
- Trifarious,** facing, or pointing, in 3 directions.
- Trifid,** three-cleft; partially cut or divided into 3 segments.
- Trifoliate,** having 3 leaves; or the leaves arranged in threes.
- TRIFOLIEAE.** The *Trifolium* or Clover tribe, of the Order LEGUMINOSAE.
- Trigonus,** three-cornered.
- Trigynous,** having 3 pistils.
- Trilobate,** three-lobed.
- Trimerous,** consisting of 3 parts.
- Tripartite,** three-parted.
- Tripectatus,** having 3 petals.
- Tripartite,** thrice-pinnate; the common petiole 3 times divided, or with bipinnate divisions on each side.
- Tripartite,** pinnately dissected, with the primary divisions twice pinnatifid.
- Triplinerved,** having 3 principal nerves from the base.
- Triquetrous,** having 3 angles and 3 flat sides,—as the culms of many CYPERACEAE.
- Trispalcos,** having 3 sepals.
- Triternate leaf.** When the petiole is twice divided ternately, and each final branch bears 3 leaves.
- TROPAEOLACEAE.** The *Tropaeolum* or Nasturtium family.
- Truncate,** having the end blunt, as if transversely cut off.
- Tube,** a pipe, or hollow cylinder.
- Tuber.** A solid fleshy knob, attached to roots.
- TUBERACEAE.** A division of the *Subtribe* ANGIOGASTERES, typified by the genus *Tuber*, or Truffle.
- Tubercle.** A small excrescence, knob, or point, on a surface—making it rough, or uneven.
- Tubercula.** The *partial receptacles* of some of the LICHENS.
- Tuberculate,** covered with tubercles.
- Tuberiferous,** bearing or producing tubers.
- Tuberous,** consisting of, or fleshy and solid like tubers.
- Tubular,** having a tube, or constructed like a tube.
- TUCLIFLORAE.** The first *Sub-order* of COMPOSITAE, with the perfect or disk florets all tubular.
- Tuft.** A bunch, or fascicle, growing from the same root, or originating nearly at the same point.
- Tumid,** swelled, or enlarged like a swelling.
- Tunicate,** coated; having concentric coats, or thin layers.
- Turbinate.** top-shaped; resembling an inverted cone.
- Turf.** The green sward, or grassy sod.
- Turgid,** swelled, but not inflated.
- Twign.** A thick, tender, young shoot of a plant,—as of Asparagus, Hop, &c.
- Tussock.** A dense tuft or bunch formed at the root,—as in some species of Carex, Grasses, &c.
- Twin,** two of the same kind connected, or growing together.
- Twining,** winding round and ascending spirally.
- Two-ranked (or rowed),** See *d'stichous*.
- TYPHACEAE.** The *Typha* or Cat-tail family of plants.
- ULMACEAE.** The *Ulmus* or Elm family.
- ULMEEAE.** The *Sub-order* of ULMACEAE, of which the genus *Ulmus* is the special type.
- Umbel.** A kind of inflorescence, in which the flower-stalks proceed from a common centre, like rays or the braces of an umbrella. Umbels are *simple*, or *compound*: which see.
- Umbellate,** in the form or manner of an umbel.
- Umbellit.** A partial umbel; one of the subdivisions of a *compound umbel*: which see.
- UMBELLIFERAE.** The Order or family of Umbel bearing plants.
- Umbelliferous,** bearing the flowers in umbels.
- Umbilicate,** navel-like; having a central pit, or depression.
- Urn-shaped,** without thorns or prickles.
- Uncinate,** hook-shaped; hooked at the end.
- Undulate,** wavy; curved, or rising and depressed, like waves.
- Unequal,** the parts not corresponding in length, size, form or duration.
- Unguiculate,** having a slender or narrow base, like an *unguis*, or claw.
- Uniform,** or *uniformly*, in one form, or manner; equally and alike.
- Unilateral,** on one side; growing, or inserted, all on one side of a stem, or common peduncle.
- Unisexual,** of one sex—i. e. staminate, or pistillate, only.
- Urceolate,** pitcher-shaped, or urn shaped; swelling below, and contracted to a neck, above.
- URTICACEAE.** The *Urtica* or Nettle family of plants.
- URTICEAE.** The *Sub-order* of URTICACEAE, specially typified by the genus *Urtica*.
- Utricle.** A little sac, or thin membranaceous pericarp, which incloses, but does not adhere to, the seed. See *Caryopsis*.
- VACCINIEAE.** A *Sub-order* of ERICACEAE, represented by the genus *Vaccinium*.
- Valvate aestivation.** When the sepals or petals are folded together, and fit by their edges, without overlapping.
- Valves.** The several parts of a regularly dehiscent pericarp,—especially of a

- capsule: also, the scales which close the tube, in some corollas; and the chaffy pieces which cover the flowers of the Grasses.
- Var** (*Varietas*), a variety, or modification of a species.
- Variety**. A new or unusual form, or modification of a plant, produced by accidental causes,—such as crossing, soil, climate, culture, &c. but not permanently, or at least, not *specifically*, distinct.
- Vascular plants**. The higher Orders of plants (including all above the *Mosses*),—composed more or less of woody fibres, and elongated cells, or *vessels*, in the form of slender tubes.
- Vaulted**, arched over, like the roof of the mouth.
- Veil** (of the FUNG). A delicate membrane or fringe, in certain *Agarics*, which in an early stage connects the margin of the pileus with the stipe.
- Veined**, having the vessels variously branching, over the surface.
- Venation** of a leaf. The distribution of the veins, or frame work, in the lamina or blade.
- Ventral**, contained in, or belonging to, the belly.
- Ventral suture**. The line or seam of a carpel, or folded leaf, formed by the union of its margins: the opposite of *dorsal*.
- Ventricose**, bellied; swelling out in the middle, or below it.
- VERBASCÆÆ**. The *Verbascum* or Mullein *tribe*, of the Order SCROPHULARIACEÆ.
- VERVAINACEÆ**. The *Verbena* or Vervain family.
- Vernation**. The mode in which young leaves are folded and packed in a bud.
- VERNONACEÆ**. The *Vernonia* or Iron weed *tribe* of the Order COMPOSITÆ.
- VERNONIÆÆ**. The *Sul-t. ÷ve* of VERNONIACEÆ, of which the genus *Vernonia* is the special type.
- Verrucose**, warty; covered with wart-like excrescences.
- Versatile anther**. When it is fixed by the middle on the point of the filament, and moves round lightly and readily,—as in the Grasses, &c.
- Vertical**, or *vertically*, in a perpendicular direction; from the zenith, or highest point directly downwards.
- Vertical leaves**. When they stand edge up, or present their margins—and not their faces—to the earth and sky: indicative rather of *Phytodia*, than of true leaves.
- Verticil**. A whorl; flowers, leaves, or other organs, arranged in a horizontal ring, round a stem, or at its summit.
- Verticillaster**. A spurious verticil; a condensed cyme, or cluster resembling a verticil,—as in many LABIATÆ.
- Verticillate**, growing or arranged in a verticil, whorl or horizontal ring.
- Vesicles**. Little bladder-like vessels.
- Vesicular**, or *vesiculose*, made of, or resembling, little bladders.
- Vespertine flowers**. Those which expand in the evening.
- Vexillum**. The banner, or broad upper petal of a papilionaceous corolla.
- VICIÆÆ**. The *Vicia* or Vetch *tribe*, of the Order LEGUMINOSÆÆ.
- Villose**, or *villous*, velvety; clothed with numerous, and rather long, soft hairs.
- Villus** (plural, *villi*). The velvet-like pubescence on a villous plant.
- Virescent**, inclining to, or becoming, green.
- Virgate**, wand-like; long, slender, and straight.
- Viridescent**, greenish.
- Viscid**, clammy; covered with a sticky or adhesive moisture.
- VITACEÆÆ**. The *Vitis* or Grape family.
- Vittæ**. Fillets; linear receptacles of oily matter on the carpels of Umbelliferous plants.
- Viviparous**, producing a collateral offspring by means of bulbs; or having the seeds to germinate before they are detached from the parent plant.
- Volubis**, ascending spirally, or climbing by embracing another object. See *Twining*.
- Volva**. The wrapper, or outer covering of a young Mushroom (*Agaric*).—which bursts by the rapid development of the plant, leaving its remains adherent to the base of the stipe.
- Vulgo**, commonly called (in the vernacular); in common parlance.
- Wavy**.—See *undulate*.
- Whorl**.—See *verticil*.
- Winged**, having a thin extended margin.
- Wings**. The side-petals of a papilionaceous corolla: also, the membranous expansion at the summit or margin of certain pericarps, and on the sides of some petioles.
- Woolly**, clothed with a long, curled or matted pubescence, resembling wool.
- XANTHOXYLACEÆÆ**. The *Xanthoxylon* or Prickly Ash family of plants.

ABBREVIATIONS AND REFERENCES.

- o= The sign of Cotyledons *accumbent*
 o|| " " Cotyledons *incumbent*.
- Ach.* Eric Acharius, Swedish Botanist.
Adans. Michel Adanson, French.
Agardh. Car. Ad Agardh, Swedish.
A. Gr. Asa Gray, American.
Ait. Wm. & Wm. T. Aiton, English.
All. Car. Allioni, Italian.
A'ph. De. Alphonse De Candolle, French.
Barlt. Friedr. G. utl. Bartling, German.
Bartr. John & Wm. Bartram, American.
Beauv. Palisot de Beauvois, French.
Ben'h. George Bentham, English.
Benth. Lab. Labiatarum Genera et Species. By Geo. Bentham. 1 vol. 8 vo—
 London, 1832-6.
Bess. Wilib. Besser, German.
Blume. Carl Ludw. Blume, German.
B. orn. Heinr. Geo. Bronn, German.
Brot. Felix Avellar Brotero, Portuguese.
C. A. Mey. Carl Amt. Meyer, German.
Cass. Alex. Hen. Garb. de Cassini, Italian.
Chav. M. Chavannes, French.
Chois. Jaq. Denis Choisy, French.
Correa. Abbé Correa de Serra, Portuguese.
Crantz. Heinr. Joh. Nepom. Crantz, German.
DC. Ang. Pyramus De Candolle, French.
DC. (Alph.) Alphonse De Candolle, French.
Dene. J. Decaisne, French.
DC. P. otr. Prodrromus Systematis Naturalis Regni Vegetabilis: Auctore Ang. Pyr. De Candolle. 10 vols. 8 vo 1821-16
Desf. René Louis Desfontaines, French
De Theis. Alexandre de Theis, French
Dillen. Joh. Jac. Dillenius, German.
Don. David & Geo. Don, English.
Duby. Jean Etienne Duby, French.
Duham. Hen. Louis Duhamel, French.
Dunal. Michel Felix Dunal, French.
Ehrh. Friedrich Ehrhart, German.
Ell. Stephen Elliott, American.
Endl. Stephen Endlicher, Hungarian.
Enll. Gen. Genera Plantarum secundum Ordines Naturales disposita: Auctore Stephano Endlicher. 1 vol. 8 vo. 1836-40.
excl. syn. excluding the synonyms.
ex. gr. (exempli gratia) for the sake of example.
fig. a figure or representation.
Fl. Flowers expanded.
Fl. Cestr. Flora Cestrice: By Wm. Darlington, 1. vol. 12 mo. 1837.
Fl. Londl. Flora Londonensis: By Wm. Curtis & Wm. J. Hooker. 4 vols. in Folio. 1815.
Forst. George (John, & c) Forster, English.
Fr. in the French language; also, Fruit mature.
Fries. Elias Fries, German.
Gaertn. Jos. & Carl Friedr. Gaertner, German.
Gaudich. M. Ch. Gaudichaud, French.
German. in the German language.
Glo. Benj. Petr. Gloxin, German.
Gooden. Saml. Goodenough, English.
Gray Gram. North American Gramineae and Cyperaceae: By Asa Gray. 2 vols. Folio. 1834-5.
H. B. K. Humboldt, Bonpland, & Kunth.
Hall. or *Haller.* Albert von Haller, Dutch.
Hoffm. Geo. Fr. (et al.) Hoffmann, German.
Hoffmsg. J. C. Count Hoffmannsegg, German.
Hook. Sir Wm J. Hooker, English.
Huds. Wm Hudson, English.
Juss. Ant. Laur. de Jussieu, French.
Koch. Wilh. Dan Jos. Koch, German.
Kunth. Car. Sigism. Kunth, German.
Kunth. Enum. Enumeratio Plantarum omnium hucusque cognitarum. &c. auctore C. S. Kunth. 4 vols. 8 vo. 1832-43.
L. Car. Linnaeus, Swedish.
Lam. J. Bapt. Monet de la Marek, French.
Lamb. A. B. Lambert, English.
l. c. ('oco citato) in the place already cited or referred to.
Less. Chr. Fr. Lessing, German.
Lestib. Fr. Jos. Lestiboudois, Belgian.
Lindl. John Lindley, English.
Link. Heinr. Friedr. Link, German.
Loddig. Conrad Loddiges, English.
Marsh. Humphry Marshall, American.
Mart. Carl Friedr. Phil. von Martius, German.
Medik. Fied. Casim. Medikus, German.
Mey (C. A.) Carl. Ant. Meyer, German.
Mich. Pet. Ant. Micheli, Italian.
Mill. Philip Miller, English.
Mi. b. C. F. Brisseau-Mirbel, French.
Moench. Conrad Moench, German.
Muhl. Henry Muhlenberg, American.
Mx. Andr. Michaux, French.
Mx. Fl. Bor. Am. Flora Boreali-Americana: 2 vols. 8 vo. Paris, 1803.
Mx. Sylva. The North American Sylva: By F. Andrew Michaux. 3 vols. 8 vo. 1817-19.
Neck. Natal. Jos. de Necker, French.
Nees. Chr. Goufr. Nees von Esenbeck, German.
Nutt. Thomas Nuttall, Anglo-American.
Obs. Observation, or remarks.

- Pers.* Chr. Henri Persoon, Dutch ?
Ph. or *Pursh.* Fredk. Pursh.
Presl. Carl Boriwog Presl, Hungarian.
Raf. or *Rafin.* C. Rafinesque-Schmaltz, Sicilian.
R. Br. Robert Brown, English.
Rich. Louis Claude Richard, French.
Risso. A. Risso, French ?
Roxb. Wm. Roxburgh, English.
Rumph. Geo. Everh. Rumphius, Dutch
Salisb. Richd. Anth. Salisbury, English.
Savi. Gaetano Savi, Italian.
Schott. Heinrich Schott, German.
Schrad. Heinr. Adolph. Schrader, German.
Schreb. Joh. Chr. Dan. von Schreber, German.
Schum. Chr. Fr. Schumacher, German.
Scop. Joh. Ant. Scopoli, Italian.
Ser. Nich. Charles Seringe, Swiss ?
Sibth. Joh. Sibthorp, English.
Soland. Dan. Cnrr. Solander, Swedish.
Span. in the Spanish language.
Spreng. Kurt Sprengel, German.
Sw. Olaus Swartz, Swedish.
tab. (tabulo) a plate, or sheet containing one or more figures.
Theis. (De.). Alexandre de Theis, French.
Tode. Heinr. Jul. Tode, German.
Torr. & Gr. Jno. Torrey & Asa Gray, American.
Torr. & Gr. Fl. N. Am. A Flora of North America: By John Torrey and Asa Gray. vols. 8 vo. 1838-4.
Torr. N. Am. Cyp. Monograph of N. American Cyperaceae: By John Torrey. 1836.
Tournef. Jos. Pitton de Tournefort, French.
Trin. Car. Bern. Trinius, German.
Vahl. Martin Vahl, Danish.
Vaill. Sebastian Vaillant, French.
Vant. Etienne Pierre Ventenat, French.
Vill. D. Villars, French.
Walp. Repert. Repertorium Botanicæ Systematicæ: Auctore Gul. Gerardo Walters. 2 vols. 8 vo. 1842-3.
Walt. Thomas Walter, Anglo-American.
Wangenh. Fr. Ad. Jul. Wangenheim, German.
Weih. Aug. Weihe, German.
Willd. Carl Ludw. Willdenow, German.
Willd. Sp. Pl. Caroli à Linné Species Plantarum: Curante Carolo Ludovico Willdenow. 5 vols 8 vo. 1797-1810.
With. Wm. Withering, English.

LINNAEAN ARRANGEMENT

OF THE GENERA TREATED OF IN THIS WORK.

☞ For the convenience of those who are accustomed to investigate Genera by the *Linnaean Method*, the following Synopsis is here inserted.

DIANDRIA MONOGYNIA.

A. FLOWERS COMPLETE, *regular*. *Fruit a Berry*.

LIGSTRUM. *Calyx* minutely 4-toothed. *Corolla* 4-lobed; lobes ovate, spreading. *Berry* 2-celled; cells 2-seeded. ORD. CV. OLEACEAE. *page* 136.

B. FLOWERS MOSTLY INCOMPLETE. *Fruit a Samara*.

FRAXINUS. DIOICOUSLY POLYGAMOUS: *Calyx* 0, or 3-4-parted. *Corolla* 0, or 4-petaled. *Capsule* (or *Samara*) 2-celled, compressed, with a thin wing-like extension at apex. ORD. CV. OLEACEAE. *p.* 131.

[*Catalpa*. ORD. LXXXVIII. BIGNONIACEAE. *p.* 107.]

[*Hedeoma*, and *Salvia*. ORD. XCIII. LABIATAE. *p.* 111.]

DIGYNIA.

[*Anthoxanthum*. ORD. CLX. GRAMINEAE. *p.* 210.]

TRIANDRIA MONOGYNIA.

[For the Genera belonging here, See ORD. CLIX. CYPERACEAE. *p.* 199.]

[*Juncus communis*. ORD. CLV. JUNCACEAE. *p.* 199.]

DIGYNIA.

[The Genera belonging here, are the *true Grasses*,—and will be found in ORD. CLX. GRAMINEAE. *p.* 204.]

[*Amaranthus albus*. ORD. CIX. AMARANTHACEAE. *p.* 141.]

TETRANDRIA MONOGYNIA.

A. OVARY INFERIOR. a. *Corolla monopetalous*.

DIPSACUS. *Flowers in ovoid heads*: *Calyx* minute, cup-shaped, entire. *Corolla* tubular; limb 4-cleft, erect. *Fruit* akene-like, 1-seeded, crowned with the calyx. *Receptacle* conical, chaffy. ORD. LXXXIV. DIPSACEAE. *p.* 73.

RUBIA. *Calyx* 4-toothed. *Corolla* 4 or 5-parted, rotate. *Style* bifid. *Fruit* didymous, subglobose, baccate or succulent. ORD. LXXII. RUBIACEAE. *p.* 72.

b. *Corolla tetrapetalous*.

CORNUS. *Calyx* 4-toothed. *Petals* 4, oblong. *Drupe* with a 2 or 3-celled nut. ORD. LXIX. CORNACEAE. *p.* 70.

B. OVARY SUPERIOR. *a. Flowers complete.*

PLANTAGO. *Calyx* mostly 4-parted. *Corolla* monopetalous, marcescent; limb 4-cleft, reflexed. *Stamens* much exerted. *Capsule* 2-celled, circumscissid (or opening horizontally). ORD. LXXXIV. PLANTAGINACEAE. *p.* 105.

b. Flowers incomplete.

SYMPLOCARPUS. *Spathæ* conch-shaped, acuminate. *Spadix* roundish-oval. *Calyx* deeply 4-parted, persistent; segments cuneate, truncate and somewhat cucullate, becoming thick and spongy. *Style* 4-sided, tapering; *stigma* minute. *Seeds* solitary, imbedded in the spadix. ORD. CXXXV. ARACEAE. *p.* 189.

DIGYNIA.

[*Cuscuta epilinum*. ORD. XCIX. CONVULVULACEAE. *p.* 127.]

PENTANDRIA MONOGYNIA.

A. FLOWERS COMPLETE. § 1. *Ovary superior.*

a. Corolla monopetalous. † *Seeds or Nuts* 4, apparently naked.
* *Nuts fixed to the bottom of the calyx.*

LITHOSPERMUM. *Calyx* 5-parted. *Corolla* small, funnel-form; limb 5-lobed; throat open. *Stamens* included. *Nuts* imperforate at base, bony, rugose or sometimes smooth. ORD. XCIV. BORAGINACEAE. *p.* 123.

ECHINUM. *Calyx* 5-parted. *Corolla* irregular, subcampanulate; limb unequally and obliquely 5-lobed; tube short; throat open. *Nuts* imperforate at base, tuberculate. ORD. XCIV. BORAGINACEAE. *p.* 122.

** *Nuts affixed to the Style or central column.*

CYNOGLOSSUM. *Calyx* 5-parted. *Corolla* funnel-form; throat closed by 5 obtuse connivent scales. *Nuts* (or *Akenes*) echinate, somewhat depressed, ovate, convex externally and angular on the inner side. ORD. XCIV. BORAGINACEAE. *p.* 124.

†† *Seeds in an evident Pericarp.* * *Fruit a Capsule.*

SABBATIA. *Calyx* 5 to 12-parted. *Corolla* sub-rotate, 5 to 12-parted. *Stamens* sometimes 6; *anthers* finally revolute. *Stigmas* 2, spirally twisted. *Capsule* 1-celled, 2-valved. ORD. CI. GENTIANACEAE. *p.* 132.

CONVOLVULUS. *Calyx* 5-sepaled, naked or with 2 bracts at or near the base. *Corolla* campanulate-funnel-form; limb obsolete 5-lobed, plicate. *Filaments* dilated at base. *Stigmas* 2, linear-terete, often revolute. *Capsule* 2-celled, 2-valved. ORD. XCIX. CONVULVULACEAE. *p.* 125.

BATATAS. *Calyx* 5-sepaled. *Corolla* campanulate; limb quinque-plicate. *Filaments* scarcely dilated at base. *Stigma* capitate, 2-lobed. *Capsule* 3-4-celled, 3-4 valved. ORD. XCIX. CONVULVULACEAE, *p.* 124.

DATURA. *Calyx* tubular, 5-angled, 5-cleft at summit, deciduous. *Corolla* funnel-form; limb 5-angled, plicate. *Capsule* ovoid, mostly muricate, 2 to 4-celled, 4-valved. ORD. C. SOLANACEAE. *p.* 128.

NICOTIANA. *Calyx* somewhat urceolate, 5-cleft, persistent. *Corolla*

funnel-form; limb spreading, plicately 5-lobed. *Capsule* ovoid, smooth, bisulcate, 2-celled, 2 to 4-valved. ORD. C. SOLANACEAE. p. 127.

VERBASCUM. *Calyx* 5-parted. *Corolla* rotate; limb unequally 5-lobed. *Stamens* declined; filaments (or some of them) hairy. *Capsule* ovoid or globose, 2-celled, 2-valved. ORD. XCI. SCROPHULARIACEAE. p. 109.

* * *Fruit a Berry.*

SOLANUM. *Calyx* 5 to 10-cleft. *Corolla* rotate or sub-campanulate; limb plicate, mostly 5-lobed. *Anthers* erect, connivent, opening by 2 pores at summit. *Berry* globose, 2 to 4-celled. ORD. C. SOLANACEAE. p. 129.

LYCOPERSICUM. *Calyx* 5 to 10-parted. *Corolla* rotate; limb plicate, 5 to 10-lobed. *Anthers* cohering by an elongated membrane at summit, opening longitudinally. *Berry* mostly depressed-globose and often torose, 2 to 3-celled. ORD. C. SOLANACEAE. p. 131.

CAPSICUM. *Calyx* mostly 5-cleft. *Corolla* sub-rotate; limb plicate, mostly 5-lobed. *Anthers* connivent, opening longitudinally. *Berry* without pulp, polymorphous, imperfectly 2-3-celled. ORD. C. SOLANACEAE. p. 129.

b. *Corolla mostly pentapetalous: Fruit a Berry.*

VITIS. OFTEN DIOICOUSLY POLYGAMOUS: *Calyx* minute, 5-toothed. *Petals* cohering at apex, caducous. *Stigma* subsessile, obtuse. *Berry* 2-celled, 4-seeded; cells and seeds often abortive. ORD. XLVI. VITACEAE. p. 28.

§ 2. *Ovary inferior.* a. *Corolla monopetalous.*

LOBELIA. *Calyx* 5-parted. *Corolla* tubular, irregular, cleft on the upper side nearly to the base. *Stamens* more or less united; *anthers* coalesced into a tube. *Stigma* 2-lobed. *Capsule* sometimes half superior, 2 or 3-celled, opening at summit. ORD. LXXVI. LOBELIACEAE. p. 101.

b. *Corolla pentapetalous.*

RIBES. *Calyx* campanulate or tubular, 5-cleft; segments more or less colored. *Petals* small, inserted alternately with the stamens in the throat of the calyx. *Style* 2 to 4-cleft. *Berry* crowned with the shrivelled remains of the flower, 1-celled, pulpy, many-seeded. ORD. LIX. GROSSULACEAE. p. 56.

B. FLOWERS INCOMPLETE.

NYSSA. DIOICOUSLY POLYGAMOUS: STAMINATE FL. *Calyx* 5-parted. *Corolla* 0. *Stamens* 5 to 10 or 12, inserted round a peltate disk. PISTILLATE FL. *Calyx* 5-cleft. *Corolla* 0. *Stamens* 5, or wanting. *Drupe* oval; nut striate. ORD. CXIV. SANTALACEAE. p. 149.

[*Acer rubrum.* ORD. XLI. ACERACEAE. p. 27.]

DIGYNIA.

A. OVARY SUPERIOR. † *Flowers complete.*

CUSCUTA. *Calyx* 4 or 5-cleft. *Corolla* globose-urceolate, 4 or 5-lobed. *Stamens* adnate to the tube of the corolla, alternating with the lobes, supported by fringed scales at base. *Capsule* 2-celled, circumscissid. ORD. XCIX. CONVULVACEAE. p. 126.

ASCLEPIAS. *Calyx* 5-parted. *Corolla* 5-parted; lobes reflexed. *Staminal crown* 5-lobed; lobes erect, cucullate, each with a subulate process projecting from within. *Antheridia* 5-angled, truncate, opening at the winged angles by 5 vertical fissures. *Pollinia* 5 distinct pairs, compressed, pyriform, pendulous. *Ovaries* 2, one mostly abortive. *Follicles* ventricose. ORD. CIII. ASCLEPIADACEAE. p. 133.

† † *Flowers incomplete.*

CHENOPODIUM. *Calyx* 5-parted, persistent. *Corolla* 0. *Styles* very short. *Utricle* thin, membranaceous. *Seed* 1, vertically depressed, lenticular. ORD. CVII. CHENOPODIACEAE. p. 139.

BETA. *Calyx* 5-parted, persistent, adhering to the base of the fruit. *Corolla* 0. *Seed* 1, subreniform-cochleate, imbedded in the base of the calyx. ORD. CVII. CHENOPODIACEAE. p. 138.

ULMUS. *Calyx* small, campanulate, 5 to 8-cleft. *Corolla* 0. *Stamens* 5 to 8. *Samara* 1-celled, 1-seeded, flat, with a broad membranous margin. ORD. CXVII. ULMACEAE. p. 150.

CELTIS. MONOICOUSLY POLYGAMOUS: STAMINATE FL. *Calyx* 6-parted. *Corolla* 0. *Stamens* 6 (*file Nutt.*). PERFECT FL. *Calyx* deeply 5-parted. *Corolla* 0. *Stigmas* subulate, elongated. *Drupe* globose, 1-seeded. ORD. CXVII. ULMACEAE. p. 151.

B. OVARY INFERIOR. † *Flowers in simple Umbels.*

PANAX. DIOICOUSLY POLYGAMOUS: STAMINATE FL. *Calyx* small, turbinate; limb nearly entire. PERFECT FL. *Calyx* obsoletely 5-toothed. *Petals* 5. *Stamens* inserted under the margin of the epigynous disk. *Styles* 2 or 3 (rarely 1). *Fruit* a fleshy or subcoriaceous berry, 2 or 3-celled; cells 1 seeded. ORD. LXVIII. ARALIACEAE. p. 69.

† † *Flowers in compound Umbels.*

[The Genera of this division all belong to ORD. LXVII. UMBELLIFERAE. p. 62.]

TRIGYNIA.

a. *Ovary inferior: corolla monopetalous.*

SAMBUCUS. *Calyx* mostly 5-cleft; limb small. *Corolla* sub-rotate, mostly 5-lobed. *Stamens* sometimes 6 or 7. *Berry* subglobose, 1-celled, 3 to 5-seeded. ORD. LXXI. CAPRIFOLIACEAE. p. 71.

b. *Ovary superior: Corolla pentapetalous.*

RHUS. DIOICOUSLY POLYGAMOUS: STERILE FL. *Stamens* 5, mostly shorter than the petals. *Stigmas* mostly 3. *Ovary* abortive. FERTILE FL. *Stamens* 5, or often wanting. *Stigmas* mostly 3, sessile. *Drupe* small, nearly or sometimes quite dry; nut bony. ORD. XXXIX. ANACARDIACEAE. p. 23.

PENTAGYNIA.

a. *Ovary inferior.*

ARALIA. *Calyx* 5-toothed or entire. *Petals* 5. *Styles* spreading, persistent. *Berry* 5-celled, 5-seeded. ORD. LXVIII. ARALIACEAE. p. 69.

b. *Ovary superior.*

LINUM. *Calyx* deeply 5-parted, persistent. *Petals* 5, unguiculate.

Stamens united at base in a hypogynous ring, with intermediate teeth. *Capsule* globose, 10-celled, 10-valved. *Seeds* solitary, compressed, ovate. ORD. XXXI. LINACEAE. p. 21.

HEXANDRIA MONOGYNIA.

a. *Perianth mostly Corolla-like.* † *Flowers with a Spathe.*

ALLIUM. *Spathe* membranaceous: *Flowers* in a dense terminal umbel, or head. *Perianth* 6-parted. *Filaments* sometimes tricuspidate (i. e. in *threes*, the anthers on the lateral ones abortive).—*Capsule* 3-celled, 3-valved. ORD. CLII. LILIACEAE. p. 195.

† † *Flowers destitute of a Spathe.*

ASPARAGUS. *Perianth* 6-parted; segments linear-oblong, erect. *Stigmas* 3, sessile. *Berry* 3-celled; cells 2-seeded. ORD. CLII. LILIACEAE. p. 198.

ORNITHOGALUM. *Perianth* deeply 6-parted; segments spreading above the middle. *Filaments* dilated at base. *Capsule* roundish, somewhat trigonous, 3-celled. ORD. CLII. LILIACEAE, p. 195.

TILLANDSIA. *Perianth* deeply 6-parted,—the outer verticil nearly distinct and calyx-like; segments of both lanceolate and of equal length. *Capsule* 1 to 3-celled. *Seeds* crowned with a tuft of hair. ORD. CXLVI. BROMELIACEAE. p. 192.

b. *Perianth calyx-like.* † *Flowers on a Spadix.*

ACORUS. *Spadix* terete, sessile on the side of an ensiform leaf-like scape. *Perianth* of 6 glumaceous oblong subeucullate sepals, thickened at apex. *Capsule* angular, 3-celled, indehiscent. ORD. CXXXVIII. ARACEAE. p. 190.

† † *Flowers more or less Paniculate.*

JUNCUS. *Perianth* of 6 glumaceous persistent sepals, bibracteate at base. *Stamens* sometimes 3. *Stigmas* 3, sessile. *Capsule* mostly 3-celled, 3-valved, loculicidal. ORD. CLV. JUNCACEAE. p. 198.

[*Sabatia angularis*. ORD. CI. GENTIANACEAE. p. 132.]

DIGYNIA.

[*Polygonum Persicaria*, *Pennsylvanicum*, and *arifolium*. ORD. CXI. POLYGONACEAE. p. 144.]

[*Oryza sativa*, and *Zizania aquatica*. ORD. CLX. GRAMINEAE. p. 206.]

TRIGYNIA.

SABAL. *Flowers* on a branched *Spadix*, with numerous incomplete *Spathes*. *Calyx* 3-parted. *Corolla* of 3 petals. *Ovaries* 3, at first distinct, finally united. *Drupe* simple and subglobose or 2 or 3-lobed. ORD. CXXXIV. PALMAE. p. 188.

RUMEX. *Flowers* sometimes dioicous. *Perianth* calyx-like, persistent, deeply 6-parted, the outer segments smaller. *Stigmas* many-cleft. *Seed* (*Akene*, *Nut*, or *Caryopsis*) triquetrous. ORD. CXI. POLYGONACEAE. p. 142.

[*Sambucus Canadensis*. ORD. LXXI. CAPRIFOLIACEAE. p. 71.]

HEPTANDRIA MONOGYNIA.

AESCULUS. *Calyx* tubular, somewhat ventricose. *Corolla* of 4 or

5 unequal petals. *Stamens* sometimes 6 or 8. *Capsule* 3-celled, mostly 1-seeded by abortion. *Seed* large. ORD. XLII. HIPPOCASTANACEAE. p. 27.

OCTANDRIA MONOGYNIA.

a. *Ovary inferior.* † *Fruit a Capsule.*

OENOTHERA. *Calyx* tubular, 4-cleft; limb reflected, and with part of the tube caducous. *Petals* 4, obcordate or obovate. *Stigma* 4-lobed, or spherical. *Capsule* 4-celled, 4-valved. *Seeds* not comose. ORD. LIV. ONAGRACEAE. p. 55.

† † *Fruit a Berry.*

OXYCOCCUS. *Calyx* 4-toothed. *Corolla* deeply 4-parted; lobes linear-lanceolate, revolute. *Stamens* connivent; *anthers* bifid, tubular. *Berry* globose, 4-celled, many-seeded. ORD. LXXVIII. ERICACEAE. p. 103.

b. *Ovary superior.* † *Flowers perfect.*

TROPAEOLUM. *Calyx* colored, 5-parted,—the upper segment spurred at base. *Petals* 5, unequal,—the 2 upper ones sessile—the 3 lower ones unguiculate. *Fruit* composed of 3 connate carpels, fleshy or subcoriaceous; carpels, 1-seeded, indehiscent. ORD. XXXV. TROPAEOLACEAE. p. 22.

† † *Flowers mostly polygamous.*

DIOSPYROS. DIOICOUSLY POLYGAMOUS: *Calyx* 4-parted. *Corolla* urceolate, 4-cleft. STAMINATE FL. *Stamens* often 16. *Ovary* abortive. FERTILE FL. *Stamens* 8 to 12, mostly abortive or imperfect. *Ovary* 4-angled. *Berry* subglobose. ORD. LXXX. EBENACEAE. p. 105.

ACER. FLOWERS POLYGAMOUS, or sometimes DIOICOUS: *Calyx* 5-cleft or 5-parted—sometimes truncate with the limb entire. *Petals* 5, or none. *Stamens* about 8,—but ranging from 3 to 12. *Samarae* in pairs, winged at apex, diverging. ORD. XLI. ACERACEAE. p. 26.

DIGYNIA.

[*Ulmus Americana.* ORD. CXVII. ULMACEAE. p. 150.]

TRIGYNIA.

POLYGONUM. *Perianth* mostly 5-parted, persistent, often colored. *Stamens* 5 to 9, mostly 8. *Styles* 2, or 3. *Akene* solitary, compressed or triquetrous according as the styles are 2, or 3. ORD. CXI. POLYGONACEAE. p. 144.

FAGOPYRUM. FLOWERS SOMETIMES POLYGAMOUS: *Perianth* deeply 5-parted, persistent, colored. *Stamens* alternating with 8 hypogynous glands. *Akene* triquetrous. ORD. CXI. POLYGONACEAE. p. 146.

ENNEANDRIA MONOGYNIA.

SASSAFRAS. DIOICOUSLY POLYGAMOUS: *Perianth* 6-parted, colored. STERILE FL. *Stamens* 9, in three series, all perfect,—the 3 inner ones with a gland on each side at base. *Ovary* wholly abortive. FERTILE FL. *Stamens* 6, imperfect. *Ovary* ovoid, acuminate; *stigma* discoid. *Drupe* ovoid-oblong. ORD. CXIII. LAURACEAE. p. 147.

BENZOIN. MOSTLY DIOICIOUS: *Perianth* 6-parted, colored. **STERILE FL.** *Stamens* 9 perfect, and 6 to 9 imperfect in an inner series. *Ovary* a mere rudiment. **FERTILE FL.** *Stamens* 15 to 18, imperfect, filiform, acute. *Ovary* subglobose; *stigma* 2-lobed. *Drupe* oval. **ORD. CXIII. LAURACEAE.** p. 148.

TRIGYNIA.

RHEUM. *Perianth* colored, narrowed at base, 6-parted, persistent. *Ovary* triquetrous; *stigmas* multifid, reflexed. *Akene* triquetrous,—the angles membranaceously margined. **ORD. CXI. POLYGONACEAE.** p. 142.

DECANDRIA MONOGYNIA.

a. *Ovary inferior*: *Corolla monopetalous*.

VACCINIUM. *Calyx* mostly 5-toothed. *Corolla* campanulate or urceolate, mostly 5-cleft. *Berry* globose, 4 or 5-celled, many-seeded, crowned with the persistent calyx-teeth. **ORD. LXXVIII. ERICACEAE.** p. 102.

b. *Ovary superior*. † *Corolla monopetalous*.

ANDROMEDA. *Calyx* 5-parted, persistent. *Corolla* tubular, subcylindric or ovoid; limb 5-cleft, reflexed. *Anthers* awnless or awned at summit. *Capsule* 5-celled, 5-valved, loculicidal. **ORD. LXXVIII. ERICACEAE.** p. 103.

† † *Corolla pentapetalous*.

CHIMAPHILA. *Calyx* 5-cleft. *Petals* 5, roundish-obovate. *Ovary* depressed-globose, umbilicate; *style* very short, immersed in the umbilicus of the ovary; *stigma* peltate, orbicular. *Capsule* depressed-globose, 5-celled, 5-valved, loculicidal at apex. **ORD. LXXVIII. ERICACEAE.** p. 104.

MELIA. *Calyx* 5-parted. *Petals* linear-spatulate. *Stamineal tube* subcylindric, 10-cleft at summit, bearing the *anthers* in the throat. *Stigma* 5-rayed. *Drupe* globose; *nut* 5-celled. **ORD. XXIX. MELIACEAE.** p. 20.

[*Cercis*. **ORD. XLVIII. LEGUMINOSAE.** p. 40.]

DIGYNIA.

SAXIFRAGA. *Calyx* 5-parted, persistent, often adnate to the base of the ovary. *Petals* 5, entire, with short claws. *Capsule* 2-celled, 2-beaked (or rather 2 acuminate connate carpels), opening between the beaks. **ORD. LXV. SAXIFRAGACEAE.** p. 61.

PENTAGYNIA.

LYCHNIS. *Calyx* tubular, 5-cleft, naked at base. *Petals* 5, with slender claws, often crowned. *Capsule* 1-celled, or 5-celled at base, opening with 5 teeth at summit. **ORD. XXI. CARYOPHYLLACEAE.** p. 15.

DECAGYNIA.

PHYTOLACCA. *Perianth* corolla-like, deeply 5-parted. *Ovary* superior, vertically depressed, orbicular. *Berry* 10-celled, 10-seeded. **ORD. CXII. PHYTOLACCACEAE.** p. 146.

ICOSANDRIA (CLASS).

[For the Genera of this Class, See **ORD. XLIX. ROSACEAE.** p. 41.]

POLYANDRIA MONOGYNIA.

☞ *Ovary mostly superior.*

CITRUS. *Calyx* urceolate, 3 to 5-cleft. *Petals* 5 to 8. *Filaments* dilated, united in parcels. *Stigma* hemispherical. *Fruit* a pulpy berry, with a subcoriaceous coat. ORD. XXVIII. AURANTIACEAE. p. 19.

TILIA. *Calyx* 5-parted, deciduous. *Petals* 5, naked within, or each with an internal scale or accessory petal (*staminodium*). *Filaments* distinct, or somewhat united in parcels. *Ovary* globose, villos. *Nut* coriaceous or bony, by abortion 1-celled. O. D. XXVI. TILIACEAE. p. 18.

PORTULACA. *Calyx* adnate to the base of the ovary, 2-parted, finally circumscribed near the base and deciduous. *Petals* mostly 5, inserted on the calyx. *Stamens* 8 to 15. *Stigmas* 3 to 8. *Capsule* subglobose, circumscribed, 1-celled, many-seeded. ORD. XXIII. PORTULACACEAE. p. 15.

PAPAVER. *Calyx* of 2 concave caducous sepals. *Petals* 4. *Stigmas* sessile, radiated. *Capsule* obovoid, opening by small valves under the crown formed by the stigmas. *Seeds* numerous, affixed to placentae which form incomplete disseminents. ORD. XI. PAPAVERACEAE. p. 5.

CIMICIFUGA. *Calyx* of 4 or 5 caducous sepals. *Petals* (or *staminodia*) 3 to 5 or 8, caducous,—sometimes 0. *Carpels* 1 to 8, follicular, many-seeded. ORD. I. RANUNCULACEAE. p. 3.

[DIOSPYROS. ORD. LXXX. ELENACEAE. p. 105.]

DI-PENTAGYNIA.

HYPERICUM. *Calyx* deeply 5-parted. *Petals* 5. *Filaments* united in parcels. *Styles* 3 to 5. *Capsule* membranaceous, 3 to 5-celled, many-seeded. ORD. XIX. HYPERICACEAE. p. 14.

DELPHINIUM. *Calyx* of 5 irregular petaloid deciduous sepals,—the upper one spurred at base. *Petals* 4, irregular,—the two upper ones spurred and introduced into the spur of the calyx. *Carpels* 1 to 5, follicular, many-seeded. ORD. I. RANUNCULACEAE. p. 2.

POLYGYNIA.

† *Carpels dehiscent.*

MAGNOLIA. *Calyx* of 3 deciduous sepals. *Petals* 6 to 9 or 12, in concentric series. *Carpels* crowded in a strobile-like spike, persistent, opening on the back, 1-seeded. *Seeds* in a fleshy coat, suspended by a long *funiculus*. ORD. II. MAGNOLIACEAE. p. 3.

†† *Carpels indehiscent.*

LIRIODENDRON. *Calyx* of 3 somewhat petaloid caducous sepals.—*Petals* mostly 6. *Carpels* samaroid, densely imbricated in a cone, deciduous, 1 or 2-seeded. ORD. II. MAGNOLIACEAE. p. 4.

RANUNCULUS. *Calyx* of 5 deciduous sepals. *Petals* 5 (sometimes 10), each with a nectariferous scale, or pore, at base on the inside. *Carpels* compressed, mucronate, striate, smooth or tuberculate, arranged in a head. ORD. I. RANUNCULACEAE. p. 1.

DIDYNAMIA GYMNOSPERMIA.

[For the Genera belonging here, See ORD. XCH. LABIATAE. p. 111.]

ANGIOSPERMIA.

CATAIPA. *Calyx* 2-parted. *Corolla* campanulate, with a ventricose tube; limb 5-lobed. *Stamens* 2 perfect, and 2 to 3 abortive (sometimes perfectly *Didynamous*). *Capsule* very long, terete, 2-celled, 2-valved. *Seeds* flat, margined and fringed at each end. ORD. LXXXVIII. BIGNONIACEAE. p. 107.

MARTYNIA. *Calyx* 5-cleft. *Corolla* subcampanulate,—the limb 5-lobed. *Capsule* oblong, much acuminate, finally woody with a coriaceous coating, 4-celled, 2-valved,—the acumination splitting into two long incurved claw-like beaks. ORD. LXXXIX. PEDALIACEAE. p. 108.

LINARIA. *Calyx* 5-parted. *Corolla* personate; upper lip bifid, reflexed; lower lip trifid,—the throat closed by the prominent palate; tube inflated, spurred at base. *Capsule* ovoid, 2-celled, opening with several valves at apex. *Seeds* numerous, margined. ORD. XCI. SCROPHULARIACEAE. p. 110.

VERBENA. *Calyx* tubular, 5-toothed. *Corolla* tubular, somewhat funnel-form,—the limb 5-lobed. *Capsule* thin and evanescent, 2 or 4 celled; cells 1-seeded. ORD. XCII. VERBENACEAE. p. 111.

TETRADYNAMIA (CLASS).

[The Genera of this Class all belong to ORD. XIII. CRUCIFERAE. p. 5.]

MONADELPHIA PENTANDRIA.

[*Lobelia*. ORD. LXXXVI. LOBELIACEAE. p. 101.]

POLYANDRIA.

[For the Genera belonging here, See ORD. XXV. MALVACEAE p. 16.]

DIADELPHIA OCTANDRIA.

POLYGALA. *Sepals* 5, irregular,—the 3 outer ones smaller, bract-like—the 2 inner ones wing-like, petaloid. *Petals* 3 to 5, somewhat cohering, united with the stamens,—the lower one keel-shaped. *Capsule* compressed. *Seeds* pubescent. ORD. XLVII. POLYGALACEAE. p. 30.

DECANDRIA.

[For the Genera belonging here, See ORD. XLVIII. LEGUMINOSAE. p. 31.]

SYNGENESIA (CLASS).

[The Genera of this Class belong to ORD. LXXV. COMPOSITAE. p. 74.]

GYNANDRIA HEXANDRIA.

ARISTOLICHA. *Perianth* tubular, ventricose near the ovary,—the limb dilated, somewhat 3-lobed. *Ovary* inferior; *stigmas* 6, sessile. *Capsule* 6-angled, 6-celled, many-seeded. ORD. CVI. ARISTOLICHAACEAE. p. 137.

MONOECIA MONANDRIA.

EUPHORBIA. *Flowers* naked, in involucrate clusters. *Involucre* monophyllous, subcampanulate, with 5 petaloid segments, which have externally 5 gland-like teeth, alternating with them. **STAMINATE FL.** numerous,—each consisting of an *anther* with its *filament* articulated in the middle. **PISTILLATE FL.** solitary, central; *ovary* pedicellate; *styles* 3, bifid. *Capsule* 3-lobed, 3-celled: cells 1-seeded, bursting elastically on the back. ORD. CXXII. EUPHORBIAACEAE p. 152.

DIANDRIA.

[Fraxinus. ORD. CV. OLEACEAE. p. 134.]

TRIANDRIA.

TYPHA. *Florets* in a long dense cylindrical *Spike*,—the *staminate* ones above. STAMINATE FL. *Perianth* 0. *Stamens* united by threes on 1 filament, which is inserted on the hairy receptacle. PISTILLATE FL. *Perianth* 0. *Ovary* pedicellate, surrounded at base with a tuft of pappus-like hairs. ORD. CXXXVIII. TYPHACEAE. p. 190.

[Carex. ORD. CLIX. CYPERACEAE. p. 200.]

[Zea. Tripsacum. ORD. CLX. GRAMINEAE. p. 207.]

TETRANDRIA.

URTICA. *Flowers* sometimes *Dioicous*: STAMINATE FL. *Perianth* of 4 roundish sepals, with the cup shaped rudiment of a pistil in the centre. PISTILLATE FL. *Perianth* mostly of 2 persistent sepals. *Stigma* villous. *Nut* (or *Akene*) compressed, orbicular-ovate, shining. ORD. CXXXI. URTICACEAE. p. 179.

MORUS. *Flowers* in ament-like *spikes*,—sometimes *Dioicous*. STAMINATE FL. in rather loose spikes. *Perianth* 4-parted. PISTILLATE FL. in dense spikes, which are sometimes androgynous. *Perianth* 4-parted,—the segments becoming baccate. *Nut* small, compressed, ovate, covered by the succulent perianth. ORD. CXXXI. URTICACEAE. p. 176.

ALNUS. STAMINATE FL. *Ament* long, cylindrical,—the *scales* cuneate, truncate, 3-lobed, 3-flowered. *Perianth* 4-parted. PISTILLATE FL. *Ament* ovoid-oblong; *scales* subtrifid, 2-flowered. *Perianth* 0. *Nut* compressed, not margined. ORD. CXXVII. BETULACEAE. p. 170.

PENTANDRIA.

AMARANTHUS. STAMINATE FL. *Perianth* deeply 3 or 5-parted, mostly colored, persistent. *Stamens* sometimes 3. PISTILLATE FL. *Perianth* as in the staminate flowers. *Capsule* 1-celled, circumscissed. *Seed* 1. ORD. CIX. AMARANTHACEAE. p. 140.

[Xanthium. Ambrosia. ORD. LXXV. COMPOSITAE. p. 74.]

[Celtis. ORD. CXVII. ULMACEAE. p. 151.]

[Quercus. ORD. CXXV. CUPULIFERAE. p. 160.]

HEXANDRIA.

[Zizania. ORD. CLX. GRAMINEAE. p. 206.]

POLYANDRIA.

SAGITTARIA. *Perianth* deeply 6-parted,—the 3 outer segments sepaloid, persistent—the 3 inner ones petaloid, deciduous. *Pistillate flowers* below the staminate ones. *Ovaries* numerous, in a globose head. *Carpels* compressed, margined, 1-seeded, not opening. ORD. CXXXIX. ALISMACEAE. p. 191.

ARUM. Often *DIOICOUS*: *Spathe* cucullate, convolute at base.—*Spadix* naked at summit, staminate in the middle, and pistillate at base. *Perianth* 0. *Berry* 1-celled, many-seeded. ORD. CXXXV. ARACEAE. p. 188.

QUERCUS. STAMINATE FL. in loose *Aments*. *Perianth* mostly 5-cleft. *Stamens* 4 or 5 to 10. PISTILLATE FL. *Involucre* of numerous

scales, united to form a cup. *Perianth* closely investing the ovary, 6-toothed. *Ovary* inferior, 3-celled; *styles* united into 1; *stigmas* 3. *Nut* (or *Acorn*) by abortion 1-celled, 1-seeded, coated by the enlarged persistent, coriaceous woody perianth, and seated in the cup-shaped involucre. ORD. CXXV. CUPULIFERAE. p. 160.

CASTANEA. STAMINATE FL. numerous, interruptedly clustered in long ament-like *Spikes*. *Perianth* 5 or 6-parted. PISTILLATE FL. usually 3, within an ovoid squarrose or muricate *involucre*. *Perianth* urceolate, 5 or 6 cleft, containing the rudiments of 10 or 12 abortive *stamens*. *Ovary* inferior, connate with the perianth; *stigmas* pencil-form, exserted, cartilaginous. *Nuts* 1 to 3, included in the enlarged echinate 4-valved involucre. ORD. CXXV. CUPULIFERAE. p. 167.

FAGUS. STAMINATE FL. in pendulous globose *Aments*. *Perianth* campanulate, 6-cleft. PISTILLATE FL. mostly 2, in an ovoid squarrose *involucre*. *Perianth* urceolate, with 4 or 5 minute segments at apex. *Ovary* inferior, connate with the perianth; *stigmas* 3. *Nuts* usually 2, triquetrous, included in the coriaceous, muricate, 4-cleft involucre. ORD. CXXV. CUPULIFERAE. p. 166.

CORYLUS. STAMINATE FL. imbricated in cylindric *Aments*; *scales* 3-cleft,—the middle segment covering the 2 lateral ones. *Perianth* 0. *Stamens* about 8. PISTILLATE FL. numerous, in a terminal squamose cluster. *Perianth* obsolete. *Stigmas* 2. *Nut* bony, roundish-ovoid, sub-compressed, embraced by the foliaceous lacinate-dentate *involucre*. ORD. CXXV. CUPULIFERAE. p. 159.

OSTRYA. STAMINATE FL. *Ament* cylindric; *scales* orbicular-ovate, acuminate, ciliate. *Anthers* bearded at summit. PISTILLATE FL. *Ament* loosely imbricated, braeteate, with the flowers in pairs; *scales* in pairs, dilated and cohering by the margins, forming a membranous sac, or involucre, inclosing each flower. *Perianth* slightly urceolate, closely adherent to the ovary. *Nut* somewhat compressed, lance-oblong, included in the bladder-like sac. ORD. CXXV. CUPULIFERAE. p. 158.

BETULA. STAMINATE FL. *Aments* cylindric; *scales* ternate—the middle one bearing the stamens. PISTILLATE FL. *Aments* ovoid-oblong; *scales* trifid, 3-flowered. *Nuts* compressed, margined or samaroid, 1-seeded. ORD. CXXVII. BETULACEAE. p. 169.

PLATANUS. *Aments* all globose, on long peduncles. STAMINATE FL. very minute. *Perianth* 0. *Stamens* numerous, mixed with sub-clavate *scales*. PISTILLATE FL. *Perianth* 0. *Ovaries* numerous, inversely pyramidal, mixed with spatulate *scales*; *style* subulate; *stigma* recurved. *Nuts* coriaceous, clavate, mucronate with the persistent style, invested at base with pappus-like hairs. ORD. CXXX. PLATANACEAE. p. 175.

LIQUIDAMBAR. *Flowers* in conical and globose *Aments*,—each ament embraced by a 4-leaved caducous *involucre*. STAMINATE FL. in compound conical or ovoid-oblong aments. *Perianth* 0. *Anthers* numerous, subsessile in capitate clusters. PISTILLATE FL. in globose aments. *Ovaries* surrounded by numerous *scales*, all cohering together and enlarging. *Styles* 2, subulate. *Capsule* 2-lobed, 2-celled, opening between the diverging styles. ORD. CXXIX. BALSAMIFLUEAE. p. 174.

JUGLANS. STAMINATE FL. *Aments* simple, cylindric, loosely imbricated; *Scales* 5 or 6-parted, sometimes bracteate at base. *Stamens* numerous, subsessile, on a glandular disk. PISTILLATE FL. *Perianth* double,—the outer one 4-toothed—the inner one longer, 4-parted. *Ovary* inferior, ovoid; *style* short; *stigmas* 2, subclavate, spreading,—the upper surface lacerate or fringed. *Drupe* globose or oval, the epicarp spongy or coriaceous, and indehiscent; *nut* rugose and irregularly sulcate, imperfectly 4-celled, 2-valved, 1-seeded. ORD. CXXIV. JUGLANDACEAE. p. 154.

CARYA. STAMINATE FL. *Aments* mostly ternate, slender, imbricated; *scales* 3-parted. *Stamens* 3 to 6 or 8. PISTILLATE FL. *Perianth* single, 4-cleft. *Ovary* inferior; *stigma* 4-lobed, sessile. *Drupe* with a coriaceous epicarp, which finally opens by 4 valves; *nut* oval, somewhat quadrangular,—the surface even and smooth. ORD. CXXIV. JUGLANDACEAE. p. 156.

MONADELPHIA.

PINUS. STAMINATE FL. *Aments* mostly in clustered terminal spikes; *scales* peltate. PISTILLATE FL. in terminal ovoid or oblong *aments* (*cones*, or *strobiles*), clustered or solitary; *scales* closely imbricated, enlarging and becoming woody, often thickened at apex and mucronate. *Seeds* naked, in pairs at the base of the scales, margined,—the margin deciduous, or sometimes persistent. ORD. CXXXII. CONIFERAE. p. 181.

TAXODIUM. STAMINATE FL. *Aments* numerous, crowded in pyramidal terminal spikes; *scales* excentrically peltate. PISTILLATE FL. *Aments* ovoid, in pairs at the base of the staminate spikes; *scales* imbricated, acute, recurved—spreading at apex,—finally somewhat peltate, and woody, forming a subglobose *strobile*. *Seeds* naked, irregularly angular, not margined. ORD. CXXXII. CONIFERAE. p. 184.

THUJA. STAMINATE FL. *Aments* ovoid, terminal, very small; *scales* excentrically peltate, loosely imbricated. PISTILLATE FL. *Aments* terminal, small, somewhat depressed; *scales* quadrifariously imbricated, slightly recurved at apex,—forming an ovoid or subglobose tuberculate *strobile*, at first closed, finally opening. *Seeds* naked, with a narrow margin. ORD. CXXXII. CONIFERAE. p. 185.

RICINUS. STAMINATE FL. *Perianth* 5-parted. *Stamens* numerous. PISTILLATE FL. *Perianth* 3-parted. *Style* short; *stigmas* 3, bifid. *Capsule* muricate, 3-celled; cells 1-seeded. ORD. CXXII. EUPHORBACEAE. p. 153.

LAGENARIA. *Calyx* campanulate or turbinate. *Petals* 5, obovate, adnate to the calyx below its border. STAMINATE FL. *Stamens* 5, triadelphous; *anthers* very long and tortuous. PISTILLATE FL. *Ovary* inferior; *stigmas* 3, 2-lobed, subsessile. *Fruit* a ligneous *pepo*, 1-celled, with 3 parietal placentae. *Seeds* arillate, with tumid margin. ORD. LXIII. CUCURBITACEAE. p. 57.

CUCUMIS. *Calyx* tubular-campanulate. *Petals* 5, nearly distinct and free from the calyx. STAMINATE FL. *Stamens* 5, triadelphous; *anthers* very long and tortuous. PISTILLATE FL. (sometimes *perfect*): *Ovary* inferior, oblong; *stigmas* 3, 2-lobed, subsessile. *Fruit* an oblong fleshy 3 to 6-celled *pepo*. *Seeds* not arillate, acute at base and on the margin. ORD. LXIII. CUCURBITACEAE. p. 58.

CITRULLUS. *Calyx* tubular-campanulate, 5-parted. *Petals* 5, adnate to the calyx. STAMINATE FL. *Stamens* 5, triadelphous; *anthers* long and tortuous. PISTILLATE FL. *Ovary* inferior, subglobose; *stigmas* 3, convex, reniform-cordate. *Fruit* a globose or elliptic *pepo*, 3 to 6-celled, succulent or fleshy. *Seeds* cbovate-oblong, truncate at base, obtuse on the margin. ORD. LXIII. CUCURBITACEAE. p. 59.

CUCURBITA. *Corolla* campanulate,—the petals cohering with each other and with the calyx. STAMINATE FL. *Calyx* campanulate, with a short tube. *Stamens* 5, triadelphous and syngenesious; *anthers* straight and parallel, with the base and apex abruptly curved. PISTILLATE FL. *Ovary* inferior; *calyx* with an obovoid tube, circumscissid below the limb after flowering; *stigmas* 3, thick, 2-lobed. *Fruit* a fleshy or subligneous 3 to 5-celled *pepo*, of various form—either subglobose, oval, obovoid, clavate, or depressed and clypeate. *Seeds* ovate, with the margin scarcely tumid. ORD. LXIII. CUCURBITACEAE. p. 59.

DIOECIA DIANDRIA.

SALIX. *Aments* cylindrical; *scales* imbricated, 1-flowered. *Perianth* 0. STAMINATE FL. *Stamens* 2 to 5, with a nectariferous gland at base. PISTILLATE FL. *Ovary* acuminate, with a nectariferous gland at base; *stigmas* 2, bifid. *Capsule* 1-celled, 2-valved. *Seeds* minute, comose. ORD. CXXVIII. SALICACEAE. p. 171.

[Fraxinus. ORD. CV. OLEACEAE. p. 131.]

TRIANDRIA.

FICUS. *Flowers* numerous and very minute, on the inner surface of the hollow turbinate carnosous *receptacle*; orifice of the receptacle closed by small scales. STAMINATE FL. *Perianth* 3-parted. PISTILLATE FL. *Perianth* 5-parted. *Ovary* 1-celled; *style* lateral; *stigma* bifid. *Utricles* minute, membranaceous, dry, 1-seeded, lining and filling the cavity of the succulent pyriform receptacle. ORD. CXXXI. URTICACEAE. p. 178.

TEFRANDRIA.

MACLURA. STAMINATE FL. racemose. *Perianth* 4-parted; segments ovate. *Ovary* abortive. PISTILLATE FL. coalesced in a dense globose head. *Perianth* 4-sepaled,—the sepals cucullate-concave. *Ovary* sessile, compressed, 1-celled; *styles* 2,—one usually abortive, the other elongated and very villous. *Akenes* 1-seeded, included in the baccate coalesced perianths. ORD. CXXXI. URTICACEAE. p. 177.

BROUSSONETIA. STAMINATE FL. *Spikes* ament-like. *Perianth* 4-parted. PISTILLATE FL. crowded in a dense capitate compound cluster, mixed with hairy scales. *Perianth* urceolate, 3 or 4-toothed. *Ovary* ovate, 1-celled; *style* filiform, excentric. *Akene* subcarnose, elevated on the baccate receptacle, and partially embraced by the perianth. ORD. CXXXI. URTICACEAE. p. 178.

[Morus. Urtica. ORD. CXXXI. URTICACEAE. p. 176-9.]

PENTANDRIA.

HUMULUS. STAMINATE FL. *Perianth* of 5 equal sepals. *Ovary* wholly abortive. PISTILLATE FL. *Aments* ovoid-oblong; *scales* or bracts membranaceous, entire, imbricated, enlarging, 2-flowered. *Perianth* urceolate, thin and transparent, closely embracing the

ovary. *Ovary* ovate, 1-celled; *stigmas* 2, subulate. *Akenes* resinous-glandular. ORD. CXXXI. URTICACEAE. p. 180.

CANNABIS. STAMINATE FL. racemose. *Perianth* deeply 5-parted. PISTILLATE FL. glomerate. *Perianth* ventricose at base, acuminate, including the ovary, slit on one side. *Ovary* subglobose, 1-celled; *stigmas* 2, subsessile, elongated, pubescent. *Nut* ovoid, 1-seeded, indehiscent. ORD. CXXXI. URTICACEAE. p. 180.

SPINACIA. STAMINATE FL. *Perianth* 5-parted. PISTILLATE FL. *Perianth* ventricose-tubular, 2 or 3-toothed. *Ovary* ovoid, 1-celled; *stigmas* 4, subsessile, long and filiform. *Akene* roundish-ovoid, inclosed in the persistent indurated (and sometimes muricate) perianth. ORD. CVII. CHENOPODIACEAE. p. 138.

[Rhus. ORD. XXXIX. ANACARDIACEAE. p. 23.]

[Accr. ORD. XLI. ACERACEAE. p. 26.]

[Vitis. ORD. XLVI. VITACEAE. p. 25.]

[Nyssa. ORD. CXIV. SANTALACEAE. p. 149.]

HEXANDRIA.

SMILAX. *Perianth* colored, campanulate, deeply 6-parted. PISTILLATE FL. *Ovary* superior; *stigmas* 3, subsessile. *Berry* globose, 1 to 3-celled, 1 to 3-seeded. ORD. CLI. SMILACEAE. p. 193.

[Gleditschia. ORD. XLVIII. LEGUMINOSAE. p. 41.]

[Rumex Acetosella. ORD. CXI. POLYGONACEAE. p. 143.]

[Sabal. ORD. CXXXIV. PALMAE. p. 188.]

OCTANDRIA.

POPULUS. *Aments* cylindrical; *scales* lacerately fringed. *Perianth* sub-turbinate, oblique, entire. *Ovary* superior, 1-celled; *stigmas* 2, elongated, bifid, subsessile. *Capsule* 2-valved. *Seeds* minute, comose. ORD. CXXVIII. SALICACEAE. p. 172.

ENNEANDRIA.

[Sassafras. Burzoib. ORD. CXIII. LAURACEAE. p. 147-8.]

DECANDRIA.

ATLANTHUS. DIOICOUSLY POLYGAMOUS: *Calyx* 5-cleft. *Corolla* 5-petaled. STAMINATE FL. *Stamens* as long as the corolla,—the alternate ones opposite the petals, and a little shorter. *Ovaries* 5, or fewer, abortive rudiments. PISTILLATE FL. *Ovaries* 3 to 5, free, compressed, 1-celled; *style* lateral; *stigma* subcapitate. *Samarae* 3 to 5, or fewer by abortion, oblong, tumid in the centre. PERFECT FL. with 2 or 3 stamens. ORD. XL. XANTHOXYLACEAE. p. 25.

MONADELPHIA.

JUNIPERUS. STAMINATE FL. *Aments* ovoid-oblong; *scales* excentrically peltate, imbricated. PISTILLATE FL. *Aments* ovoid, axillary, bracteate at base. *Involucre* of 3 to 6 *scales*, which coalesce and become a subglobose drupaceous tuberculate fruit, inclosing 2 or 3 naked angular nut-like seeds. ORD. CXXXII. CONIFERAE. p. 186.

CRYPTOGAMIA (CLASS).

The few Genera, in the present work, which belong to this Class, will be found in the Series of FLOWERLESS PLANTS,—where they can be as readily determined by their natural characters, as by any artificial arrangement. In fact, the *Cryptogamous* plants are necessarily disposed in conformity with the *Natural Method*.

Le Naturaliste place à côté les uns des autres tous les êtres qui ont le plus grand nombre d'organes communs ou semblables, et sépare ceux qui n'en possèdent en commun qu'un petit nombre ; d'où résulte que, tandis que la perfection d'un système artificiel est de ne compliquer le caractère des classes que du plus petit nombre d'idées possible, une méthode naturelle, au contraire, est d'autant plus parfaite, que les caractères des classes peuvent exprimer un plus grand nombre d'idées.

DE CANDOLLE.

The true *Naturalist* arranges or groups together all those beings which have the greatest number of organs in common, or of similar structure,—and separates those which possess but a small number of them in common: whence it results that, while the perfection of an *Artificial System* consists in connecting with the character of the Classes the smallest possible number of ideas,—a *Natural Method*, on the contrary, is so much the more perfect, as the characters of the Classes are expressive of a greater number of ideas.

GROUPS AND ORDERS

NOTICED IN THIS WORK.

The Vegetable Kingdom is arranged, by Prof. A. GRAY in his *Botanical Text-Book* (which arrangement is here adopted,) in two *Series*, or grand Divisions,—known as *Phaenogamous* or Flowering Plants, and *Cryptogamous* or Flowerless Plants. These, again, are subdivided; and the plants belonging to them are disposed, according to their structure and affinities, in *Classes*, *Sub-Classes*, *Divisions*, *Groups*, *Orders*, *Sub-Orders*, *Tribes*, *Sub-Tribes*, *Genera*, *Sub-Genera*, *Species* and *Varieties*.

The following is a Synoptical View of the general arrangement and grouping of the *Natural Orders*, or Families, to which the plants described in the present work are referable: for which, as the intelligent reader will perceive, I am indebted to the valuable *Text-book*, above mentioned.

SERIES I.

PHAENOGRAMOUS OR FLOWERING PLANTS.

Plants furnished with *Flowers* (essentially consisting of *stamens* and *pistils*), and producing *proper Seeds*.

CLASS I. EXOGENOUS OR DICOTYLEDONOUS PLANTS.

Stem consisting of a *distinct bark and pith*, which are separated by an *interposed layer* of woody fibres and vessels, forming genuine *wood* in all perennial stems: increase in diameter effected by the annual deposition of *new layers* between the old wood and the bark,—which layers are arranged in concentric zones or rings, and traversed by *medullary rays*. *Leaves* commonly articulated with the stem,—their *veins* branching and reticulated. *Sepals* and *Petals*, when present, most commonly in *fives*—sometimes in *fours*—and very rarely in *threes*.* *Embryo* with *two* (in the *Coniferae* with a *verticil of several*) *Cotyledons*.

* A complete symmetrical *Flower* consists of 4 distinct successive orders of verticils or whorls of *modified leaves*, crowded together at the summit of a stem, branch, or peduncle,—the members or constituent parts of the successive verticils being known as *Sepals*, *Petals*, *Stamens*, and *Pistils*. The *normal* or regular number of these modified leaves, in each floral verticil of *Exogenous* plants, is *five*; but they are subject to much variation,—and one or more of them is often suppressed, or abortive—especially in the superior, central, or *pistillate* verticil. Sometimes the members of these verticils are *more than five*; in which cases they are frequently ten, or some multiple of five—clearly indicating a doubling or multiplication of one or more of the normal orders of verticils. This is remarkably the case with the *staminate* verticil; and such multiplied stamens are, moreover, apt to be imperfectly metamorphosed, or left in the form and condition of *Staminodia*,—and even of complete *Petals*: in which latter state they constitute what are called *double flowers*. In *Endogenous* plants, the floral verticils are usually less complete; and each consists, normally, of *three* members,—or, when increased in number, of six, or some multiple of three. The *Sepals* (or lower verticil), in this class, often appear to be wanting; or are so blended with the *petals* as scarcely to be distinguished.

SUB-CLASS I. ANGIOSPERMOUS EXOGENS.

Ovules produced within a *closed ovary*, and fertilized by the action of pollen through the medium of a stigma. *Embryo* with a pair of opposite Cotyledons.

DIVISION I. POLYPETALOUS EXOGENS.*

Floral envelopes consisting generally of both Calyx and Corolla,—the *petals distinct*, or but slightly connected (*united* in ORD. LXIII. CUCURBITACEAE. p. 57. *wanting* in some species of *Fraxinus*, ORD. CV. OLEACEAE. p. 134.).

GROUP 1. *Ovaries* several or numerous (solitary in *Berberidaceae*), distinct; when in several rows sometimes coherent with each other, but not united into a compound pistil. *Petals* and *Stamens* inserted on the receptacle (hypogynous). *Seeds* albuminous.

☞ *Stamens* or *Pistils* (one or both) numerous or indefinite.

ORD. I. RANUNCULACEAE. p. 1.

ORD. II. MAGNOLIACEAE. p. 3.

GROUP 3. † *Ovary* compound (composed of 2 or more united carpels), with parietal placentae! *Calyx* entirely free from the ovary! *Stamens* and *Petals* inserted on the receptacle,—the former mostly distinct. *Leaves* not dotted.

a. *Sepals* 2, or rarely 3, caducous.

ORD. XI. PAPAVERACEAE. p. 4.

b. *Sepals* and *Petals* 4, or rarely 6.

ORD. XIII. CRUCIFERAE. p. 5.

GROUP 4. *Ovary* compound, with the placentae parietal,—or 2 to 5-celled by the meeting of the placentae in the axis; *styles* distinct, or partly united. *Calyx* entirely free from the ovary. *Stamens* and *Petals* inserted on the receptacle,—the former often united in 3 or more parcels (polyadelphous). *Seeds* with a straight embryo, and little or no albumen. *Leaves* punctate with transparent or black dots.

ORD. XIX. HYPERICACEAE. p. 13.

GROUP 5. *Ovary* compound, 1-celled, with a free central placenta,—or 2 to several-celled, with the placentae in the axis,—free from the calyx, or nearly so. *Embryo* coiled around the outside of mealy albumen!

☞ *Petals* 3 to 5 or 6, rarely wanting.

ORD. XXI. CARYOPHYLLACEAE. p. 14. ORD. XXIII. PORTULACACEAE. p. 15.

GROUP 6. *Ovary* compound and several-celled, with the placentae in the axis,—sometimes several carpels more or less coherent with each other, or with a central axis. *Calyx* free, valvate in aestivation. *Stamens* *indefinite*, monadelphous, or sometimes polyadelphous, inserted with the petals (with which they frequently cohere)

* A few instances of polypetalous flowers occur in ORDER LXXVIII; ERICACEAE, (viz. in *Sub-Order III. PYROLEAE*)—which is, nevertheless, placed in the *monopetalous* division of the Series.

† For the sake of conformity and convenient reference, I have not *numbered* the Groups and Orders, here given, *consecutively*; but have retained the numbers as they are applied in the second edition of Dr. GRAY'S *Text-book*.

into the receptacle, or on the base of the calyx. *Embryo* usually curved,—the foliaceous cotyledons twisted and plicately folded.

ORD. XXV. MALVACEAE. p. 16. ORD. XXVI. TILIACEAE. p. 18.

GROUP 7. *Ovary* compound, with 2 or more cells, and the placentae in the axis, free from the calyx, which is imbricated in aestivation. *Stamens* indefinite, or twice as many as the petals, often monadelphous or polyadelphous, inserted with the petals into the receptacle. *Seeds* nearly or quite destitute of albumen. *Embryo* mostly straight, with large or thickened cotyledons.

ORD. XXVIII. AURANTIACEAE. p. 19. ORD. XXIX. MELIACEAE. p. 20.

GROUP 8. *Ovary* compound, or of several carpels adhering to a central axis, with 1 or more ovules in each cell or carpel, free from the calyx, which is mostly imbricated in aestivation. *Petals* as many as the sepals, or sometimes fewer. *Stamens* usually as many, or twice as many, as the petals, inserted on the receptacle, commonly monadelphous. *Seeds* usually with little or no albumen. *Flowers* perfect.

a. *Flowers* regular, or nearly so: *Calyx* imbricate.

ORD. XXXI. LINACEAE. p. 21.

b. *Flowers* irregular and unsymmetrical.

ORD. XXXV. TROPAEOLACEAE. p. 22.

GROUP 9. *Ovary* compound, with 2 or several cells,—or, *Carpels* several, and more or less united by their styles. *Calyx* free. *Petals* as many as the sepals, or rarely wanting. *Stamens* once or twice as many as the petals, distinct, inserted on the receptacle, or base of the calyx. *Flowers* often dioicous or polygamous, regular.

ORD. XXXIX. ANACARDIACEAE. p. 23. ORD. XL. XANTHOXYLACEAE. p. 24.

GROUP 10. *Ovary* compound, mostly 2 or 3-lobed, 2 or 3-celled, with 1 or 2 ovules in each cell, free from the calyx, which is imbricated in aestivation. *Petals* mostly irregular, or one fewer than the sepals, sometimes wanting. *Stamens* distinct, definite, inserted on or around a hypogynous disk. *Seeds* destitute of albumen. *Embryo* curved, with large cotyledons. *Flowers* often polygamous.

ORD. XLI. ACERACEAE. p. 25. ORD. XLII. HIPPOCASTANACEAE. p. 27.

GROUP 11. *Ovary* compound, 2 to 5-celled, free or sometimes adherent to the calyx. *Petals* and *Stamens* as many as the lobes of the calyx and inserted into its base or throat, or into the disk which covers its base. *Seeds* albuminous, with a large and straight embryo. *Flowers* perfect, or sometimes polygamous or dioicous.

☞ *Stamens* opposite the petals !

ORD. XLVI. VITACEAE. p. 28.

GROUP 12. *Ovary* compound, 2-celled, free from the calyx. *Sepals* and *Petals* very irregular. *Stamens* monadelphous,—tube of filaments split on one side, and more or less united with the claws of the hypogynous petals; *anthers* 1-celled, opening by a pore at the apex! *Seeds* albuminous.

ORD. XLVII. POLYGALACEAE. p. 30.

GROUP 13. *Ovary* simple and solitary, free from the calyx,—the

fruit a *Legume*. *Corolla* papilionaceous, or sometimes regular. *Stamens* monadelphous, diadelphous, or distinct. *Seeds* destitute of albumen.

ORD. XLVIII. LEGUMINOSAE. p. 31.

GROUP 14. *Ovaries* simple and distinct, or compound and 2 to several-celled, with the placentae in the axis. *Calyx* free, or often adherent to the ovary. *Petals* regular, inserted on the throat of the calyx. *Stamens* distinct, inserted with the petals. *Seeds* destitute of albumen. *Embryo* straight.

a. *Stamens* mostly indefinite.

ORD. XLIX. ROSACEAE. p. 41.

b. *Stamens* definite.

ORD. LIV. ONAGRACEAE. p. 54.

GROUP 15. *Ovary* compound, 1-celled, with parietal placentae. *Calyx* adherent to the ovary, or sometimes free,—when adherent, bearing the petals and stamens on its throat, and the flowers perfect.

☞ *Calyx* adherent to the ovary.

ORD. LIX. GROSSULACEAE. p. 55.

GROUP 16. *Ovary* compound, 2 to several-celled (or 1-celled by obliteration),—the placentae arising from the axis, but carried outward to the walls of the pericarp. *Calyx* adherent to the ovary. *Corolla* frequently monopetalous! *Stamens* united either by the filaments or anthers. *Flowers* monoicous or dioicous.

ORD. LXIII. CUCURBITACEAE. p. 57.

GROUP 17. *Ovaries* two or more, distinct or partly united,—or combined into a compound pistil, which has 2 or more cells with the placentae in the axis,—or sometimes 1-celled with parietal placentae. *Calyx* free from the ovary, or sometimes more or less adherent. *Stamens* mostly definite, and, with the petals, inserted on the calyx. *Seeds* numerous, with a straight embryo in the midst of albumen.

ORD. LXV. SAXIFRAGACEAE. p. 61.

GROUP 18. *Ovary* compound, 2- (rarely 1- 3- or 5-) celled, with a single ovule suspended from the summit of each cell. *Calyx* usually closely adherent to the ovary. *Stamens* as many as the petals, and inserted with them upon the throat of the calyx, or on an epigynous disk. *Seeds* with a small embryo in the midst of hard albumen. *Petals* mostly valvate in aestivation.

☞ *Calyx-tube* entirely adherent to the ovary: *Stamens* and *petals* epigynous.

ORD. LXVII. UMBELLIFERAE. p. 62. ORD. LXVIII. ARALIACEAE. p. 69.

ORD. LXIX. CORNACEAE. p. 70.

DIVISION II. MONOPETALOUS EXOGENS. *

Floral envelopes consisting of both calyx and corolla,—the *petals* more or less united (forming what is more correctly termed a *gamopetalous* corolla.)

*The plants belonging to ORD. LXIII. CUCURBITACEAE, although commonly *monopetalous* (i. e. *gamopetalous*), will be found in the *polypetalous* division: And some species of *Fraxinus*, belonging to ORD. CV. OLEACEAE, p. 134, at the end of this Division, are *destitute of petals*.

GROUP 1. *Ovary* adherent to the calyx (inferior), 2 to several-celled, with 1 or many ovules in each cell. *Seeds* albuminous. *Stamens* inserted on the corolla.

ORD. LXXI. CAPRIFOLIACEAE. p. 71. ORD. LXXII. RUBIACEAE. p. 72.

GROUP 2. *Ovary* adherent to the calyx (the limb or free portion of which assumes the form of a crown, or pappus,—or else is obsolete), 1-celled and 1-ovuled,—rarely 3-celled, with 2 of the cells empty. *Seeds* with little or no albumen. *Stamens* inserted on the corolla. *Fruit* a kind of *Akene* (or *Achenium*). *Flowers* usually crowded into heads.

- a. *Stamens* distinct. *Seed* suspended.
ORD. LXXIV. DIPSACEAE. p. 73.
b. *Stamens* syngenesious. *Seed* erect.
ORD. LXXV. COMPOSITAE. p. 74.

GROUP 3. *Ovary* adherent to the calyx, 2 to 7- (rarely 1-) celled, with numerous ovules. *Seeds* albuminous. *Stamens* inserted with the corolla upon an epigynous disk; *anthers* not opening by pores.

ORD. LXXVI. LOBELIACEAE. p. 100.

GROUP 4. *Ovary* sometimes adherent to the calyx, but generally free (superior), with 2 or more cells, and usually with numerous ovules. *Seeds* albuminous. *Stamens* inserted with the corolla (either hypogynous or epigynous), or rarely adherent to its base,—as many, or twice as many as its lobes; *anthers* commonly opening by pores or chinks. *Petals* sometimes distinct!

ORD. LXXVIII. ERICACEAE. p. 101.

GROUP 5. *Ovary* free, or rarely adherent to the calyx, several-celled, with a single ovule (or at least a single seed) in each cell.—*Stamens* definite; *anthers* not opening by pores.

ORD. LXXX. EBENACEAE. p. 104.

GROUP 7. *Ovary* free (superior), 1-celled with a single ovule,—or 2-celled with several ovules attached to a thick central placenta.—*Stamens* as many as the lobes of the regular corolla, or the nearly distinct petals,—either alternate with or opposite to them. *Seeds* albuminous.

ORD. LXXXIV. PLANTAGINACEAE. p. 105.

GROUP 8. *Ovary* free, 1 or 2-(or spuriously 4-) celled, with numerous ovules. *Corolla* bilabiate, or more or less irregular; the *Stamens* inserted upon its tube, and mostly fewer than its lobes.

ORD. LXXXVIII. BIGNONIACEAE. p. 107. ORD. LXXXIX. PEDALACEAE. p. 103.

ORD. XCI. SCROPHULARIACEAE. p. 109.

GROUP 9. *Ovary* free, 2 to 4-lobed, in fruit separating into as many Nuts or Akenes. *Corolla* regular, or irregular (bilabiate),—the *Stamens* inserted on its tube, equal in number or fewer than its lobes. *Seeds* with little or no albumen.

- a. *Corolla* irregular or bilabiate.

ORD. XCII. VERBENACEAE. p. 110. ORD. XCIII. LACIATAE. p. 111.

- b. *Corolla* regular.

ORD. XCIV. PORAGINACEAE. p. 122.

GROUP 10. *Ovary* free, compound,—or the carpels 2 or more and

distinct; *ovules* usually numerous in each cell. *Corolla* regular,—the *Stamens* inserted on its tube, as many as the lobes and alternate with them. *Fruit* capsular, follicular, or baccate.

a. *Ovary* compound (of 2 or more united Carpels.)

ORD. XCIX. CONVULVULACEAE p. 124. ORD. C. SOLANACEAE. p. 127.

ORD. CI. GENTIANACEAE. p. 132.

b. *Ovaries* mostly 2 and *distinct*—at least in fruit.

ORD. CIII. ASCLEPIADACEAE. p. 133.

GROUP 11. *Ovary* free, 2-celled; *cells* 1 to 3-ovuled, in fruit 1 or 2-seeded. *Corolla* regular (the *Petals* sometimes nearly distinct, and occasionally wanting). *Stamens* fewer than the lobes of the corolla (usually 2), inserted on its tube, or upon the receptacle.

ORD. CV. OLEACEAE. p. 134.

DIVISION III. APETALOUS EXOGENS.

Corolla mostly none;* the floral envelopes consisting of a single series or verticil (*Calyx*),—or sometimes entirely wanting.

GROUP 1. *Flowers* perfect, with a colored or petaloid calyx. *Ovary* of several cells, with numerous ovules in each.

ORD. CVI. ARISTOLOCHIACEAE. p. 137.

GROUP 2. *Flowers* perfect, or rarely polygamous, with a regular and sometimes a petaloid calyx. *Ovules* solitary in each ovary, or cell. *Embryo* curved or coiled around the outside of mealy albumen, or spiral,—rarely in the axis.

a. *Ovary* 1-celled or simple.

ORD. CVII. CHENOPODIACEAE. p. 137. ORD. CIX. AMARANTHACEAE. p. 140.

ORD. CXI. POLYGONACEAE. p. 142.

b. *Ovary* compound—a verticil of united carpels.

ORD. CXII. PHYTOLACCACEAE. p. 146.

GROUP 3. *Flowers* perfect, or sometimes polygamo-dioicous, not disposed in aments, having a regular and often petaloid calyx. *Ovary* 1-(rarely 2-) celled, with a solitary ovule—or at least a single seed, in each cell. *Embryo* not coiled around albumen.

a. *Style* or *Stigma* 1.

ORD. CXIII. LAURACEAE. p. 147. ORD. CXIV. SANTALACEAE. p. 149.

b. *Styles* or *stigmas* 2, divergent.

ORD. CXVII. ULMACEAE. p. 150.

GROUP 6. *Flowers* monoicous or dioicous, not in aments. *Fruit* capsular, tricoccus, or drupaceous with 2 or more cells,—each cell 1-(rarely 2-) seeded.

ORD. CXXII. EUPHORBACEAE. p. 152.

GROUP 7. *Flowers* monoicous or dioicous,—the sterile ones (and sometime the fertile ones also) in aments, or in heads, or spikes. *Calyx* sometimes wanting. *Ovary* 1- to several-celled,—but the fruit always 1-celled, except in *Liquidambar*. *Trees*, or *shrubs*, with the exception of some of the URTICACEAE, which are *herbaceous*.

*The flowers of some of the plants belonging to EUPHORBACEAE (Ord. CXXII.)—and also to JUGLANDACEAE (Ord. CXXIV.),—are furnished with a *Corolla*.

- a. *Fruit* drupaceous,—the *Epicarp* fibrous or coriaceous: *Calyx* adherent.
ORD. CXXIV. JUGLANDACEAE. p. 154.
- b. *Fruit* a nut, involucrate: *Calyx* adherent.
ORD. CXXV. CUPULIFERAE. p. 153.
- c. *Fruit* indehiscent, 1-seeded: *Flowers* all in aments, and destitute of a calyx.
ORD. CXXVII. BETULACEAE. p. 169.
- d. *Fruit* dehiscent, many-seeded,—the seeds comose: *Flowers* all in aments, and destitute of a calyx.
ORD. CXXVIII. SALICACEAE. p. 171.
- e. *Fruit* a nut, or a 2-celled few-seeded capsule: *Flowers* in globose amentaceous heads, destitute of a calyx.
ORD. CXXIX. BALSAMIFLUE. p. 174. ORD. CXXX. PLATANACEAE. p. 174.
- f. *Fruit* an Akene, often included in a baccate calyx: *Flowers* variously disposed. *Juice* milky, when in trees or shrubs.
ORD. CXXXI. URTICACEAE. p. 175.

SUB-CLASS II. GYMNOSPERMOUS EXOGENS.

Ovules, and consequently the *seeds* naked—i. e. not inclosed in an *ovary*,—the *carpel* being represented either by an *open scale*, as in the Pines; or by a more evident *leaf*, as in *Cycas*; or else altogether *wanting*, as in the Yew. Of course, there is neither *Style* nor *Stigma*.

ORD. CXXXII. CONIFERAE. p. 181.

CLASS II.

ENDOGENOUS OR MONOCOTYLEDONOUS PLANTS.

Stem not distinguishable into *bark*, *pith* and *wood*; no *concentric zones* or layers, and no *medullary rays*; increase in diameter effected by a *central deposit* of new fibres. *Leaves* not articulated with the stem, but often sheathing at base,—the *veins* simple and nearly parallel. *Floral envelopes*, when present, mostly in *threes* (or some multiple of three,)—the calyx and corolla often undistinguishable. *Embryo* with a *single cotyledon*.

GROUP 1. *Flowers* on a spadix, furnished with a double perianth (calyx and corolla). *Ovary* 1 to 3-celled, with a single ovule in each cell. *Trees* with unbranched columnar trunks.

ORD. CXXXIV. PALMÆ. p. 187.

GROUP 2. *Flowers* mostly on a spadix, with the perianth wanting, or scale-like,—rarely regular and single (calyx). Chiefly aquatic herbs.

ORD. CXXXV. ARACEÆ. p. 188. ORD. CXXXVII. TYPHACEÆ. p. 190.

GROUP 3. *Flowers* not on a spadix, furnished with a double perianth (calyx and corolla). *Ovaries* 3 to 6, or numerous, free, distinct, or more or less united. Aquatic or swamp herbs.

ORD. CXXXIX. ALISMACEÆ. p. 191.

GROUP 4. *Flowers* with a single or double perianth, which adheres either to the lower part, or to the whole surface, of the ovary. *Herbs*.

ORD. CXLVI. BROMELIACEÆ. p. 192.

GROUP 5. *Flowers* with a regular perianth, often in 2 series which are similar and more or less petaloid, or rarely (viz. in ORD. CLV. JUNCACEAE. p. 198.) glumaceous, free from the ovary. *Embryo* inclosed in albumen. *Herbs*; rarely shrubby and climbing plants.

ORD. CLI. SMILACEAE. p. 193. ORD. CLII. LILIACEAE. p. 194.

ORD. CLV. JUNCACEAE. p. 198.

GROUP 7. *Flowers* imbricated with chaffy bracts (*glumes* and *paleae*), and disposed in spikelets,—but with no proper floral envelopes or perianth, except in the form of bristles, or small rudimentary scales. *Ovary* 1-celled, with a solitary ovule; *fruit* an Akene, or Caryopsis. *Embryo* at the extremity of the albumen next the hilum. *Sedges* and *Grasses*.

ORD. CLIX. CYPERACEAE. p. 199. ORD. CLX. GRAMINEAE. p. 201.

SERIES II.

CRYPTOGAMOUS OR FLOWERLESS PLANTS.

Plants destitute of *flowers* (or with mere *analogues*, or resemblances of *stamens* and *pistils*), and producing no *proper seeds*,—but propagated by minute cellular particles, or seminal equivalents, called *Spores* or *sporules*,—which are often contained in vessels, coverings, or cavities, called *Thecae*, *Sporanges*, *Sporocarps*, or *Sporidia*—and aggregated on certain parts of the plants: sometimes the spores are *naked*—scattered over the surface, or immersed in the substance, of the parent plants.

CLASS III. ACROGENOUS OR APEX-GROWING PLANTS.

Stem extending or growing only at the *summit*,—having no provision for continued increase in diameter, either by external layers or internal deposit of new fibres.

ORD. CLXI. EQUISETACEAE. p. 237. ORD. CLXII. LYCOPODIACEAE. p. 237.

ORD. CLXIII. FILICES. p. 238.

CLASS IV.

ANOPHYTES, OR SUPERIOR CELLULAR PLANTS.

Plants wholly *cellular*—i. e. destitute of *vascular* and *woody fibres*,—but still resembling the superior Orders of vegetation, in having *distinct stems and foliage*, and the analogues or equivalents of *flowers*.

ORD. CLXV. MUSCI. p. 239.

CLASS V.

THALLOPHYTES, OR VEGETABLE EXPANSIONS.

Plants wholly cellular in their structure,—developing themselves (often indefinitely) in flat leaf-like expansions (*Thalli*), or in roundish masses—but with no clear indication of a *distinct root, stem, or foliage*.

ORD. CLXVII. LICHENES. p. 240. ORD. CLXVIII. FUNGI. p. 242.

ORD. CLXX. ALGAE. p. 246.

AGRICULTURAL BOTANY.



SERIES I.

PHAENOGAMOUS OR FLOWERING PLANTS.



POLYPETALOUS EXOGENS.



ORDER I. RANUNCULACEAE. *Juss.*

Herbaceous (rarely *frutescent*, and occasionally climbing) plants, with an acrid watery juice. *Leaves* mostly alternate, variously lobed or divided—the petioles more or less dilated and stem-clasping at base. *Calyx* of 3 to 6—usually 5—distinct sepals, mostly deciduous. *Petals* 5 to 15, sometimes deformed or irregular—occasionally absent. *Stamens* indefinite, distinct. *Ovaries* numerous (rarely few, or solitary), distinct. *Embryo* minute, at the base of firm albumen.

This Family comprises a number of plants of considerable beauty; but few of Agricultural importance. Some species of *Ranunculus* are highly acrid; the *Aconites* are even poisonous; and the warmly aromatic seeds of *Nigella sativa*, *L.* have been used as a substitute for the Nutmeg. These, however, scarcely come within the scope of the present work.

TRIBE II. RANUNCULEAE. *DC.*

Petals with a small nectariferous scale, gland or pore, at base inside. *Anthers* extrorse. *Carpels* dry, indehiscent, 1-seeded. *Seed* erect, or sometimes suspended.

1. RANUNCULUS. *L. Endl. Gen.* 4783.

[Latin, *Rana*, a frog; the plant often growing where that animal is found.]

Sepals 5. *Petals* 5 (sometimes 10 or more), with a nectariferous scale, pore or glandular spot, on the inside of the claw. *Stamens* mostly numerous. *Carpels* numerous, compressed, ovate, pointed, disposed in roundish or cylindrical heads. *Seed* erect, (rarely suspended).—Annual or perennial *Herbs*. *Leaves* mostly radical, the cauline ones at the base of the branches and peduncles.

☞ *Carpels* smooth and even. *Leaves* dissected.

1. *R. BULBOSUS*, *L.* Hairy; radical leaves petiolate, trifoliolate and somewhat pinnately divided; leaflets usually 3-cleft, incisely toothed, the middle or terminal one petiolulate; stem erect, bulbous at base; peduncles furrowed; calyx reflexed, shorter than the petals; carpels subovate, with a short acute recurved beak. *Torr. & Gr. Fl. N. A.* 1. p. 24. *DC. Prodr.* 1. p. 41. *Fl. Cestr.* p. 331. *Icon, Fl. Lond.* 2.

BULBOUS RANUNCULUS. *Vulgò*—Butter-cups. Crow-foot.

Fr. Bassinet. *Germ.* Knolliger Ranunkel. *Span.* Boton de Oro.

Root perennial. *Stem* about a foot high, often several from the same root, more or less branched, clothed with appressed hairs. *Leaves* variously cut, the segments euneate. *Peduncles* 2 to 6 inches long, sulcate-angular. *Petals* sometimes more than 5 (flowers double), deep yellow and shining. *Carpels* in a globose head.—Pastures and Meadows: introduced. Native of Europe. *Fl. May. Fr. July.*

Obs. This foreigner is becoming extensively naturalized, and is considered quite a nuisance, by many farmers in Chester County, Penn.—particularly in the meadows along the Brandywine. The fleshy bulb is highly acrid,—affording a powerful rubefacient, and even causing ulcers, when externally applied. Beggars in Europe, it is said, use it for this purpose, in order to excite sympathy. I do not know that cattle have been injured by it; but as it is a troublesome weed, when fully introduced, it may be well for farmers to know the plant, and eradicate it upon its first appearance in their grounds. There are several native species, frequent in our woodlands, and moist low grounds; but they have not been found troublesome.*

TRIBE III. HELLEBOREAE. DC.

Calyx mostly petaloid. *Petals* irregular, often bilabiate or tubular, nectariferous—sometimes wanting. *Carpels* few (rarely solitary), follicular, dehiscent, several-seeded.

2. DELPHINIUM. L. *Endl. Gen.* 4796.

[Greek, *Delphin*, a dolphin; from a fancied resemblance in the nectaries.]

Calyx petaloid, irregular, the upper sepal produced into a spur at base. *Petals* 4, irregular, the two upper ones with a spur-shaped appendage at base inclosed in the spur of the calyx. *Ovaries* 1 to 5, mostly 3. *Follicles* many-seeded. Annual or perennial *Herbs*.—*Leaves* petiolate, palmately divided. *Flowers* in terminal racemes.

1. D. CONSOLIDA, L. Stem erect, with spreading branches; leaves many-parted, the segments linear; flowers few, in loose racemes; pedicels longer than the bracts; carpels solitary, smooth. *Torr. & Gr. Fl. N. A.* 1. p. 30. *DC. Prodr.* 1. p. 51.

SOLDER DELPHINIUM. *Vulgò*—Lark-spur. [Caballero. *Fr.* Pied d' Alouette. *Germ.* Der Rittersporn. *Span.* Espuela de

Root annual. *Stem* about two feet high, and with the foliage and flowers somewhat pubescent. *Flowers* blue or violet-purple, sometimes the petals are multiplied into double flowers. Grain fields, and waste places: introduced. Native of Europe. *Fl.* July. *Fr.* August.

Obs. This plant (which gets its specific name from a supposed virtue in soldering or uniting wounded flesh,) has strayed from the gardens, in some places, and is an unwelcome intruder in grain fields and other cultivated grounds. This, and a kindred species (*D. Ajacis*, L. with few erect branches, longer and more crowded racemes,) are so common in gardens, that it requires some attention to prevent them from trespassing on the farm. Plants which have matured their seed in the garden, should never be carried to the Barn-yard, nor permitted to mingle with farm manure,—otherwise the fields will soon be infested with pernicious and worthless weeds.

TRIBE IV. CIMICIFUGAEAE. Torr. & Gr.

Sepals petaloid, caducous. *Petals* (or rather *Staminodia*—dilated sterile filaments.) 3 to 6 or 8. *Anthers* introrse. *Carpels* few—sometimes solitary, rarely numerous—follicular or baccate, with several seeds,—sometimes indehiscent and 1-seeded. *Flowers* occasionally unisexual, by abortion.

* My friend, Prof. A. GRAY, of Cambridge, informs me that *R. acris*, L. also called Butter-cups, and Upright Meadow Crow-foot—a kindred species, (with palmately divided leaves,—the stem not bulbous at base,—and the peduncles not furrowed), is quite common around Boston,—in Western New York, &c., and deserves to be enumerated among the pernicious Weeds of the country.

3. CIMICIFUGA. L. [BOTROPHIS. Raf. Endl. Gen. 4800.]

[Latin. *Cimex*, a bug, and *fugare*, to drive away; in allusion to supposed virtues.]
Sepals 4 or 5. *Petals* (or *Staminodia*) 3 to 5 or 8, concave or unguiculate,—sometimes, by abortion, fewer or none. *Stamens* numerous; *style* short; *stigma* simple. *Carpels* 1 to 8, follicular, many-seeded. Perennial Herbs. *Leaves* bi- or tri-ternately divided. *Flowers* in virgate racemes.

1. C. RACEMOSA, Ell. Leaves triternate; leaflets ovate-oblong; petals slender, forked at apex; carpels solitary. Torr. & Gr. Fl. N. A. 1. p. 36.

Actæa racemosa. L. DC. Prodr. 1. p. 64. Fl. Cestr. p. 319.

RACEMOSE CIMICIFUGA. Vulgò—Tall Snake-root. Black Snake-root.

Root perennial, large, branching. *Stem* 4 to 6 feet high, slender, smooth, leafy near the middle, naked above and below, with one or two radical leaves on long erect petioles. *Leaves* ternately decomposed, petiolate; leaflets 2 to 4 inches long, acute or acuminate, unequally incised-dentate, the terminal one larger and often 3-lobed. *Racemes* terminal, branching, 6 to 12 inches long. *Sepals* 4, orbicular, concave, greenish white. *Petals* (or *staminodia*) 4 to 8, slender, sub-linear, bifurcate or emarginate at apex. *Carpel* ovoid, subcompressed, smooth, obliquely beaked with the persistent style. *Seeds* compressed and angular.—Rich woodlands. Fl. June. Fr. Sept.

Obs. The white terminal racemes of this plant, when in flower, are quite conspicuous in the woodlands of Pennsylvania. The stem and leaves, when bruised, emit a disagreeable odor. The root is somewhat mucilaginous and astringent. Although a plant of no Agricultural value—and probably over-rated as a medicine,—the infusion of the bruised root is so generally regarded as a sort of *Panacea* for stock (especially for sick cows), that every farmer ought to know it, and be able with certainty to designate it.

ORDER II. MAGNOLIACEAE. Juss. DC.

Trees or *shrubs*. *Leaves* alternate, subcoriaceous, entire or lobed (never serrate), often large, stipulate; *stipules* convolute or nearly flat, membranaceous, caducous. *Flowers* solitary, usually large and often fragrant. *Calyx* of 3 to 6 colored deciduous sepals. *Corolla* of 3, 6, or many petals in concentric series. *Stamens* numerous, mostly with short filaments, and long adnate anthers,—the cells either introrse, lateral, or sometimes extrorse. *Carpels* several in a single stellate verticil,—or more commonly numerous and spicate, or imbricated, forming a kind of strobile on the prolonged receptacle. *Seeds* one or two in each carpel; sometimes with a pulpy covering, and suspended (when the carpels open) by a slender elastic cord. *Embryo* minute, at the base of fleshy albumen.

A small but splendid Family; more ornamental, however, than important in Agriculture.

TRIBE II. MAGNOLIEAE. DC.

Carpels spicate on the elongated torus or receptacle. *Anthers* long.

4. MAGNOLIA. L. Endl. Gen. 4737.

[Named in honor of Prof. Pierre Magnol, a French Botanist.]

Sepals 3, deciduous. *Petals* 6 to 12. *Anthers* introrse or lateral. *Carpels* forming a strobile-like fruit, persistent, dehiscent by the dorsal suture. *Seeds* baccate,—when mature, pendulous from the open carpel by a long slender *funiculus*. Fine trees, in the U. States (except the fragrant-flowered *M. glauca*, L. which is usually a shrub,—though I have seen it 30 feet high). *Stipules* convolute. *Leaves* sometimes perennial.

1. *M. ACUMINATA*, *L.* Leaves oval, acuminate, pubescent beneath, deciduous; petals 6 to 9, oblong-obovate. *Torr. & Gr. Fl. N. A.* 1. p. 43. *DC. Prodr.* 1. p. 80. *Icon, Mx. Sylva*, 2. tab. 53.

ACUMINATE MAGNOLIA. *Vulgò*—Cucumber tree.

Fr. Le Magnolier. *Germ.* Der Gurkenbaum. *Span.* Arbol de Castor.

Tree 50 to 80 feet high, and 2 to 3 or 4 feet in diameter at base. *Leaves* 6 to 10 or 12 inches long (on vigorous young saplings much larger—as is usually the case with all trees). *Flowers* large, bluish white, often with a tinge of yellow; petals scarcely expanding. *Fruit* sub-cylindric, 3 to 5 or 6 inches long. Mountain forests, New York to Georgia. *Fl.* June—July. *Fr.* Sept.—October.

Obs. Several species of *Magnolia* are worthy of culture, as ornamental *Shade-trees*; but as they are not otherwise important in Agriculture, I have mentioned this one merely as a sample (and perhaps one of the finest) of that noble genus. The green fruit has some resemblance to a *Cucumber* (whence the common name of the tree); and being intensely bitter and somewhat aromatic, a tincture of it, prepared with whiskey, is a popular preventive of autumnal fevers, with those who are fond of an excuse for taking alcoholic medicine.

5. LIRIODENDRON. *L. Endl. Gen.* 4740.

[Greek, *Leirion*, a lily, and *Dendron*, a tree; from its lily-like flowers.]

Sepals 3, caducous. *Corolla* campanulate; petals mostly 6. *Anthers* extrorse. *Carpels* samaroid, indehiscent, densely imbricated in a cone, 1 or 2-seeded. A large tree. *Stipules* nearly flat, and applied face to face.

1. *L. TULIPIFERA*, *L.* Leaves dilated, subcordate at base, 3-lobed, the middle lobe broad and emarginately truncate. *Torr. & Gr. Fl. N. A.* 1. p. 41. *DC. Prodr.* 1. p. 82. *Fl. Cestr. p.* 326. *Icon, Mx. Sylva*, 2. tab. 61. [Tulip tree.

TULIP-BEARING LIRIODENDRON. *Vulgò*—Poplar. Tulip Poplar.—*Fr.* Le Tulipier. *Germ.* Der Tulpenbaum.

Tree 80 to 120 feet high, and 2 or 3 to 5 or 6 feet in diameter. *Leaves* 4 to 6 inches long on old trees, and about as wide as long,—the side-lobes often with a sinus making two points. *Petals* greenish-yellow, with tinges of reddish-orange. *Carpels* 2-celled (one cell mostly obliterated, and both seeds often abortive), produced at apex into a lanceolate-oblong wing, and closely imbricated in a cone on the fusiform receptacle. Rich woodlands: Canada to Louisiana. *Fl.* May. *Fr.* October.

Obs. The timber of this magnificent tree is highly valued in many branches of the mechanic arts,—especially the variety called *yellow Poplar*, which is generally to be known by its thicker and more deeply-furrowed bark. The hygrometric properties of the wood—particularly of the *white variety*—render it rather objectionable in cabinet furniture (causing it to swell in damp weather): but the yellow Poplar is much esteemed for its mellowness, lightness and durability. The *bark* of the root, and young tree, is a valuable aromatic bitter. The prevalence of the Tulip-tree, in woodlands, is a pretty sure indication of a good soil.

ORDER XI. PAPAVERACEAE. *Juss.*

Herbs, with a milky or colored juice. *Leaves* alternate, without stipules. *Calyx* of 2 (rarely 3) caducous sepals. *Corolla* of 4 to 6 regular petals. *Stamens* 6 to 24—or numerous, but some multiple of the petals. *Fruit* 1-celled; either pod-

shaped with 2 to 5, or capsular with many, parietal *placentae*, from which the valves often separate. *Seeds* numerous. *Embryo* minute, at the base of fleshy and oily albumen.

The *Poppy*, which is the type of this Family, is the only plant belonging to it, of much importance. The Red-root, or Indian Paint (*Sanguinaria Canadensis*, L.), a common plant in the rich woodlands of the U. States, has been commended for the medicinal properties of its *rhizoma*, or subterraneous stem.

6. PAPAVER. L. *Endl. Gen.* 4823.

[Celtic, *Papa*, pap; from its being added to children's food, to induce sleep.]

Sepals 2. *Petals* 4 (sometimes multiplied). *Stamens* numerous. *Stigmas* 4 to 20, sessile, radiating on the summit of the ovary.—*Capsule* obovoid, opening by chinks or pores under the edge of the crown formed by the stigmas: *placentae* opposite the stigmas! and extending into the cavity so as to form incomplete partitions. Annual or perennial *Herbs*. *Flowers* nodding before opening.

1. *P. DUBIUM*, L. Stem clothed with slender spreading hairs,—the peduncles with bristly appressed hairs; leaves pinnately dissected, the segments often incised, decurrent; sepals hairy; capsules obovoid-oblong, smooth. *Torr. & Gr. Fl. N. A.* 1. p. 60. *DC. Prodr.* 1. p. 118. *Fl. Cestr.* p. 317. *Icon, Fl. Lond.* 2.

DUBIOUS PAPAVER. *Vulgò*—Poppy. Field Poppy.

Fr. Pavot bâtard. *Germ.* Der Saat-Mohn. *Span.* Amapóla.

Root annual. *Stem* 1 to 2 feet high, somewhat branched below. *Leaves* 2 to 5 inches long, hairy. *Peduncles* terminal, 6 to 12 inches long, flexuose, leafless. *Petals* pale red or brick-dust colored. *Stigmas* about 7-rayed, on a convex disk. Cultivated grounds: introduced. Native of Europe. *Fl.* May. *Fr.* July, August.

Obs. This foreigner has found its way into some districts; and, if unattended to, may become a troublesome weed,—as it and the “Corn Poppy” (*P. Rhoeas*, L.) are said to be, in Europe. The common or *Opium Poppy*, (*P. somniferum*, L.—a smooth species with stem-clasping leaves),—which yields the most efficacious and soothing of all anodynes,—is often seen in the flowerbeds of our gardens. I believe there was an attempt made, near New York, some 30 or 40 years ago, to cultivate that species for the purpose of obtaining *Opium*: But it did not succeed,—and perhaps its culture, even if practicable here, is better suited to the Orientals, than to the people of our country. The common *Celandine* (*Chelidonium majus*, L.), an introduced weed, of this natural Order, occurs frequently in waste places on our farms; but it is scarcely of sufficient importance, in any respect, to require a more particular notice in this work. A similar remark may be made of the *Prickly Poppy* (*Argemone Mexicana*, L.), another kindred weed which is occasionally met with.

ORDER XIII. CRUCIFERAE. *Juss.*

Herbs with a pungent or acrid watery juice. *Leaves* alternate, without stipules. *Flowers* in racemes or corymbs; the pedicels without bracts. *Calyx* of 4 sepals, deciduous. *Corolla* of 4 regular unguiculate petals,—their spreading limbs forming a cross. *Stamens* 6, 2 of them shorter (*tetradynamous*). *Fruit* a pod (called a *Siliqua* when much longer than broad, and a *Silicle* when short), which is 2-celled by a membranaceous septum or partition that connects the two marginal *placentae*,—from which the two valves usually fall away. *Seeds* without albumen. *Embryo* curved; *cotyledons* flat or plicate,—either with their edges to the radicle (when they are said to be *accumbent*,—represented by this sign, o=), or with the back of one of them to the radicle (and then termed *incumbent*,—of which this is the sign, o|).

This Order, which comprises upwards of one hundred Genera, is a remarkably *natural* or homogeneous one,—as well in the sensible properties, as in the botanical characters, of the plants belonging to it. There are but few important ones, however, beside those here noticed. The *Woad*, or Dyer's weed (*Isatis tinctoria*, L.), is cultivated, in Europe, for its blue coloring matter; but I believe it is little known or attended to, in the U. States.

DIVISION 1. SILIQUOSAE (the pod a *Siliqua*).

TRIBE I. ARABIDEAE. DC.

Siliqua dehiscent. usually elongated; valves flattish; septum linear. *Seeds* compressed, oval, sometimes margined. *Cotyledons* flat, acuminate (or =), parallel with the septum (i. e. with their edges towards the placentae).

7. NASTURTIUM. R. Br. Endl. Gen. 4850.

[Latin, *Nasus tortus*, a tortured nose; from the pungent effect of the plant.]

Sepals spreading, equal at base. *Stigma* somewhat 2-lobed. *Siliqua* nearly terete, sometimes almost as short as a silicle, usually curved upwards. *Seeds* small, irregularly disposed in a double series, not margined. *Aquatic* or subaquatic *Herbs*. *Leaves* often pinnately dissected.

1. N. OFFICINALE, R. Br. Leaves pinnately divided; segments ovate, subcordate, sinuate-dentate; seeds reticulately rugose. *Torr. & Gr. Fl. N. A.* 1. p. 72. *DC. Prodr.* 1. p. 137. *Icon, Fl. Lond.* 3.

OFFICINAL NASTURTIUM. *Vulgò*—Water Cress.

Fr. Cresson de Fontaine. *Germ.* Die Brunnenkresse. *Span.* Bérro.

Perennial. *Stem* 6 to 12 and 18 inches long, branching. *Leaves* odd-pinnately dissected; segments in 3 or 4 pairs, the terminal one largest. *Petals* white.—Brooks and rivulets: probably introduced from Europe. *Fl.* June. *Fr.* July.

Obs. This plant (well known as the "Water Cress," in England,) was detected in Chester County, Penn. by my friend Mr. JOSHUA HOOPES, since the publication of the *Flora Cestrica*. Although abundant in some rivulets, there is reason to believe it is not a native. It affords an excellent wholesome Salad—antiscorbutic in its properties, as all the *Cruciferae* are; and being easily propagated, is worthy of being introduced into all suitable localities.

8. BARBAREA. R. Br. Endl. Gen. 4851.

[So named, from having been formerly dedicated to *St. Barbara*.]

Siliqua ancipital or somewhat 4-sided, the valves concave-carinate. *Seeds* in a single series. *Leaves* lyrate pinnatifid.

1. B. PRAECOX, R. Br. Lower leaves lyrate, the terminal lobe obovate or rounded, coarsely sinuate-dentate,—upper leaves pinnatifid, with entire linear-oblong segments; siliques linear, elongated, compressed-ancipital; style thick and very short. *Torr. & Gr. Fl. N. A.* 1. p. 75. *DC. Prodr.* 1. p. 140.

EARLY BARBAREA. *Vulgò*—Scurvy-grass. Early Winter Cress.

Fr. Roquette des Jardins. *Germ.* Die Winter-kresse. *Span.* Yerba de Santa Barbara.

Root biennial? *Stem* 9 to 15 inches high, somewhat branching. *Leaves* smooth; lower ones 3 or 4 inches long. *Petals* yellow. *Siliques* 2 or 3 inches long, slender. Gardens: cultivated. *Fl.* May—June. *Fr.* July—Aug.

Obs. This plant,—which is said to be a native of Canada, and the country further north,—is cultivated in the gardens, near Phila-

delphia, under the name of "Scurvy-Grass." The leaves afford a tolerable Salad; but not equal to the common Cress (*Lepidium sativum*, L.), nor to the Water Cress (*Nasturtium officinale*, R. Br.). There is another and stouter species (*B. vulgaris*, R. Br. probably naturalized,) growing along our streams, which is sometimes used as a Salad; but it is bitterish, and inferior in quality to this.

TRIBE II. SISYMBRIEAE. DC.

Siliqua longitudinally dehiscent; valves nearly flat, or somewhat concave and carinate; septum linear. *Seeds* compressed, ovate or oblong, not margined.—*Cotyledons* flat, incumbent (oil), contrary to (i. e. with their edges towards) the septum.

9. SISYMBRIUM. *All. Endl. Gen.* 4906.

[An ancient Greek name; applied to this genus.]

Siliqua somewhat terete, sessile. *Stigmas* 2, somewhat distinct, or connate and capitate. *Cotyledons* sometimes obliquely incumbent. Annual or perennial *Herbs*. *Leaves* various.

1. S. OFFICINALE, *Scop.* Lower leaves runcinate, upper ones subhastate; racemes spike-form, slender and virgate; siliques erect, subulate, appressed to the rachis. *Torr. & Gr. Fl. N. A.* 1. p. 91. *DC. Prodr.* 1. p. 191. *Fl. Cestr.* p. 386. *Icon, Fl. Lond.* 3.

OFFICINAL SISYMBRIUM. *Vulgò*—Hedge Mustard.

Fr. Herbe au Chantre. *Germ.* Der Hederich. *Span.* Jaramágo.

Root annual. *Stem* 1 to 3 or 4 feet high, with spreading branches, pilose.—*Leaves* pilose; lower ones 3 to 6 or 8 inches long. *Petals* small, greenish yellow. *Siliques* terete-subulate or somewhat nerved and angular, tapering at apex.—Cultivated grounds, lanes and road sides: introduced. Native of Europe. *Fl.* May—Aug. *Fr.* Aug.—Octo.

Obs. This foreigner is completely naturalized, and somewhat troublesome as a weed. It was formerly held in some repute, in Europe, as a remedy for coughs, the hoarseness of Singers, &c. (whence its *French* name): but its virtues were doubtless over-rated,—and it is now regarded, by tidy farmers in this country, merely as a plant to be expelled from their premises.

TRIBE III. BRASSICEAE. DC.

Siliqua longitudinally dehiscent. *Style* often enlarged, and with a seed-bearing cell at its base. *Seeds* mostly globose. *Cotyledons* incumbent, longitudinally plicate or doubled, embracing the radicle in the fold or sinus.

10. BRASSICA. *L. Endl. Gen.* 4949.

[Supposed to be from *Bresic*; the Celtic name for the Cabbage.]

Calyx closed or erect. *Siliqua* sub-terete; valves concave, or slightly keeled by a central nerve; style short, obtuse. *Seeds* in a single series, globose. Foreign plants; mostly biennial *Herbs*, with a short stem and long flowering-branches.

1. B. OLERACEA, *L.* Leaves somewhat fleshy, repand or lobed, glabrous and glaucous. *DC. Prodr.* 1. p. 213. *Fl. Cestr.* p. 388.

OLERACEOUS OR POT-HERE BRASSICA. *Vulgò*—Cabbage.

Fr. Chou potager. *Germ.* Der Kohl. *Span.* Berza.

The following *Sub-species*, or *Varieties*, are more or less cultivated, in the Kitchen Garden, or "Truck-patch."

† *Racemes paniculate.*

Sub-species B. ACEPHALA, DC. Stem elongated; leaves expanded. DC. l. c.

Vulgò—Tree Cabbage. Bore-Cole. Headless Cabbage.

Fr. Chou sans tête. *Germ.* Blatt-Kohl.

Sub-species C. BULLATA, DC. Stem somewhat elongated; young leaves subcapitate, finally expanding, bullate or crisped. DC. l. c.

Vulgò—Savoy Cabbage. Curled Cabbage.

Fr. Chou de Savoie. *Germ.* Savoyer Kohl. *Span.* Berza crespia.

Sub-species D. CAPITATA, DC. Stem short; leaves concave, not bullate, densely imbricated in a head before flowering. DC. l. c.

Vulgò—Head Cabbage. York Cabbage.

Fr. Chou en tête. *Germ.* Kopf-Kohl. *Span.* Berza repolluda.

Sub-species E. CAULO RAPA, DC. Stem with an oval or subglobose fleshy enlargement at the origin of the leaves. DC. l. c.

Vulgò—Bulb-stalked Cabbage.

Fr. Chou Rave. *Germ.* Kohl Rabi.

†† *Racemes corymbose.*

Sub-species F. BOTRYTIS, DC. Leaves oblong, connivent, bluish glaucous; peduncles of the racemes corymbose, short fleshy and coalesced in a head before flowering; flowers often abortive. DC. l. c.

Var. a. *Cauliflora*, DC. Stem short; heads thick, compact. DC. l. c.

Vulgò—Cauliflower.

Fr. Chou fleur. *Germ.* Blumenkohl. *Span.* Berza florida.

Var. b. *ASPARAGOIDES*, DC. Stem taller; leaves elongated; heads sub-ramose; branches fleshy at apex, bearing clusters of abortive flower-buds. DC. l. c. *Vulgò*—Broccoli.

Biennial. Stem 6 inches to 1 or 2 feet high, branching the second year from the summit, or head of imbricated leaves. Leaves large (6 to 12 or 18 inches in length), suborbicular or oblong. Racemes long, loose. Petals greenish or citron yellow. Gardens, and Lots: cultivated. Fl. May—June. Fr. July.

Obs. Few plants have undergone greater modifications, by culture, than this esculent herb; and those varieties furthest removed from the original form, are the most esteemed. All the foregoing are occasionally to be met with, under culture; but the *sub-species* B and E are rare. The latter (CAULO RAPA, DC.) is a curious monstrosity—with a turnep-like enlargement or tumor in the stem, near the base,—and was never cultivated in West-Chester, Penna. until introduced by my friend Dr. E. F. RIVINUS—who is a skilful Horticulturist, and a worthy descendant of one of the fathers of Botany. *Sub-species* F is more common; and D is found in abundance in every well-managed Kitchen Garden.

2. B. CAMPESTRIS, L. Leaves slightly fleshy, glaucous,—the young lower leaves lyrate, dentate, somewhat hispid or ciliate,—those above amplexicaul and acuminate. DC. Prodr. 1. p. 214. Fl. Cestr. p. 389.

FIELD BRASSICA.

Sub-species C. NAPO-BRASSICA, DC. Root tumid, turnep-shaped.—*DC. l. c.*

Var. a. communis, DC. Root white or purplish, with the summit and petioles greenish or purplish. *DC. l. c.*

Vulgò—Turnep-rooted Cabbage.

Fr. Chou Navet. *Germ.* Die Kohl-ruebe. *Span.* Nabiza.

Var. b. Ruta бага, DC. Root yellowish, subglobose. *DC. l. c.*

Vulgò—Rutabaga. Swedish Turnep.

Fr. Chou de Suède. Navet jaune.

Biennial or annual. *Root* thick, turnep-shaped, fleshy. *Stem* 1 to 2 feet high, smooth, glaucous, branched above. *Racemes* loose. *Petals* citron-yellow. Gardens, and Lots: cultivated. *Fl.* June. *Fr.* July—August.

Obs. These varieties were cultivated, some years since, to a considerable extent,—chiefly as food for Stock; but I have not seen much of them latterly, in Chester County. The farmers of the U. States, having the advantage of the *Indian Corn* crop, do not much incline to the *Root culture*: perhaps not so much as might be beneficial to Stock, during our long winters.

3. B. RAPA, L. Radical leaves lyrate, hirsutely scabrous, not glaucous,—middle cauline ones incised,—the upper ones entire, smooth. *DC. Prodr. 1. p. 214. Fl. Cestr. p. 390.*

Sub-species A. DEPRESSA, DC. Root tumid below the neck, depressed-globose, abruptly contracted to a slender tapering radicle beneath. *DC. l. c.*

Vulgò—Turnep. Common Turnep.

Fr. Navet. Grosse Rave. *Germ.* Die Ruebe. *Span.* Naba.

Biennial. *Root* fleshy, depressed, orbicular, 3 to 6 or 8 inches in diameter—*Stem* 2 to 4 feet high, branched. *Radical leaves* 6 to 12 inches long. *Racemes* loose, corymbose-paniculate. *Petals* pale greenish yellow. *Seeds* small, reddish brown. Fields, and Gardens: cultivated. *Fl.* May. *Fr.* June—July.

Obs. The *root* is a favorite table vegetable, and is generally cultivated for that purpose. In *Pennsylvania*, the seeds are usually sown about the last of July, and the roots collected in November.

11. SINAPIS. *Tournef. Endl. Gen.* 4950.

[A name of uncertain meaning; derived from the Greek.]

Calyx spreading. *Siliques* sub-terete; valves nerved, smooth or hispid; style short and subulate, or ensiform. *Seeds* in a single series, subglobose. Foreign plants: mostly annual or biennial *Herbs*—nearly allied to *Brassica*. *Lower leaves* usually lyrate, incised or pinnatifid. *Flowers* in elongated racemes.

1. S. NIGRA, L. Lower leaves lyrate and scabrous,—upper ones lanceolate and smooth, pendulous; siliques somewhat 4-angled, smooth, appressed to the rachis; style short, subulate. *Torr. & Gr. Fl. N. A. 1. p. 99. DC. Prodr. 1. p. 218. Fl. Cestr. p. 390.*

BLACK SINAPIS. *Vulgò*—Mustard. Black Mustard.

Fr. Moutarde noire. *Germ.* Schwarzer Senf. *Span.* Mostazo.

Root annual. *Stem* 3 to 6 feet high, much branched, smooth. *Leaves* petiolate, variously lobed and toothed. *Racemes* slender. *Petals* greenish yellow. *Seeds* numerous, small, dark brown. Gardens, and waste places: introduced from Europe. Cultivated in some districts. *Fl.* June—July. *Fr.* August.

Obs. This plant is nearly naturalized in many places; and in some parts of our country (especially in Ohio), is extensively cultivated. The value of its highly acrid *seeds*, in the hands of the Cook, and Physician—as a condiment and rubefacient—is well known.

2. *S. ALBA*, *L.* Leaves lyrate, smoothish; siliques hispid, spreading, scarcely as long as the ensiform beak. *DC. Prodr.* 1. p. 220. *Fl. Cestr.* p. 390. *Icon, Fl. Lond.* 3.

WHITE SINAPIS. *Vulgò*—White Mustard.

Fr. Moutarde blanche. *Germ.* Weisser Senf. *Span.* Mostazo blanco.

Root annual. *Stem* 2 to 5 feet high, rather stout, branched. *Leaves* petiolate, lyrate pseudo-pinnate, the terminal segment large and 3-lobed. *Petals* rather large, yellow. *Seeds* few, larger than in the preceding species, pale brown.—Gardens: cultivated. Native of Europe. *Fl.* June. *Fr.* August.

Obs. This species is often cultivated, on a small scale, for its *seeds*,—which are employed in preparing condiments. They have also been somewhat celebrated as a remedy for nervous complaints, dyspepsia, &c. in which cases they are administered whole—a teaspoonful or more at a dose. The seeds of both species are used in preparing Flour of Mustard.

DIVISION 2. SILICULOSAE (the pod a *Silicle*).

TRIBE V. ALYSSINEAE. *DC.*

Silicle dehiscent; valves flat or convex; septum broadly oval and membranaceous. *Seeds* compressed, often margined. *Cotyledons* flat, accumbent (o=), parallel with the septum.

12. COCHLEARIA. *Tournef. Endl. Gen.* 4882.

[Latin, *Cochleare*, a spoon; from the form of the leaves of some species.]

Silicle ovoid-globose or oblong, sessile; valves ventricose; style very short. *Seeds* numerous, not margined. *Leaves* often somewhat fleshy.

1. *C. ARMORACIA*, *L.* Radical leaves oblong, crenate, petiolate,—stem leaves lanceolate, dentate or incised, sessile; silicle elliptic. *DC. Prodr.* 1. p. 173. *Fl. Cestr.* p. 379.

ARMORICAN COCHLEARIA. *Vulgò*—Horse-Radish. [picante.

Fr. Moutarde des Capucins. *Germ.* Der Meer-Rettig. *Span.* Rábano

Root perennial, long, terete, fleshy, white, very acrid. *Stem* 2 to 3 feet high, angular-striate, smooth, with erect axillary branches. *Radical leaves* large (3 to 15 inches long—somewhat resembling those of a *Dock*, or *Rumex*); *petioles* 4 to 12 inches long. *Racemes* corymbose, elongating. *Petals* white. *Silicles* oval, usually abortive. Gardens: margins of ditches, &c. introduced. Native of Europe. *Fl.* May—June. *Fr.* June—July.

Obs. The pungent *root* of this plant is a favorite condiment,—and one of the most valuable antiscorbutics. It requires little or no culture; but thrives best in a moist rich deep soil. The true or common *Scurvy-Grass*, of Europe, is a species of this genus (*C. officinalis*, *L.*—with leaves whose form suggested the generic name); but I think it is rarely cultivated, in this country.

TRIBE VI. CAMELINEAE. DC.

Silicle dehiscent, obovoid oval or oblong; valves convex or flat, parallel with the septum; septum elliptic or ovate, sometimes incomplete. *Cotyledons* flat, incumbent (o||), contrary to (i. e. their margins towards) the septum.

13. CAMELINA. Crantz. Endl. Gen. 4919.

[Greek, *Chamai*, dwarf, and *Linon*, flax; from a fancied resemblance.]

Silicle obovoid or subglobose; valves ventricose, dehiscent with a part of the style; cells many-seeded. *Style* filiform. *Seeds* oblong, not margined.

1. *C. SATIVA*, Crantz. Leaves sessile, oblong-lanceolate, nearly entire, sagittate at base; silicles inflated, obovoid-pyriform, margined, mucronate with the longish subconical style. Torr. & Gr. Fl. N. A. 1. p. 110. DC. Prodr. 1. p. 201. Fl. Cestr. p. 379.

CULTIVATED CAMELINA. *Vulgò*—Wild Flax. Gold of Pleasure. Fr. Cameline cultivée. Germ. Der Leindötter. Span. Miagro.

Root annual, fusiform, rather slender. *Stem* 18 inches to 2 or 3 feet high, simple, paniculately branching at summit, roughish-pubescent below, smoothish above. *Leaves* 1 to 3 or 4 inches long,—the lower ones longest and often somewhat spatulate or oblanceolate,—those above gradually smaller and smoother, sagittate with acute subamplexicaul lobes at base; *pubescence* of the lower leaves and stem often branched or bifurcate. *Racemes* corymbose-paniculate, elongating; *pedicels* half an inch to an inch long, without braets. *Petals* pale yellow, rather small, cuneate or obovate-oblong, obtuse. *Silicles* about one-fourth of an inch long, with a keel-like margin on each side; *style* about half as long as the silicle, persistent, finally splitting with the dehiscent valves. *Seeds* reddish yellow. Cultivated fields: among Wheat, Flax, &c.: introduced. Native of Europe. Fl. May—June. Fr. July.

Obs. This foreigner was formerly frequent among Flax, when that plant was generally cultivated; and it was one of the vulgar errors of the day, that it was a kind of transmuted or degenerate flax,—caused by burning the soil, in clearings. Since the culture of flax declined, the *Camelina* has become rare, within my observation: but I am informed by H. JONES BROOKE, Esq. an intelligent farmer of Delaware county, Penn. that the plant has become a serious nuisance, in his Wheat fields, within a few years. Being an *annual*, the obvious remedy is to prevent it from maturing its seeds; but it must be confessed, that where it appears in great numbers among grain crops, the remedy is more easily prescribed than administered,—and therefore it may be well for farmers to watch the progress of the plant, and arrest it on its first appearance.

TRIBE VIII. LEPIDINEAE. DC.

Silicle usually dehiscent, compressed contrary to the narrow septum (sometimes 1-celled); valves boat-shaped or rarely ventricose. *Seeds* few, not margined.—*Cotyledons*, flat, mostly incumbent (o||), parallel to the septum.

14. LEPIDIUM. R. Br. Endl. Gen. 4932.

[Greek, *Lepis*, a scale; from the form and size of the silicles.]

Silicle subcordate-ovate or oval; valves keeled or rarely ventricose, often winged at apex and emarginate; cells 1-seeded. *Seeds* compressed or somewhat 3-sided. *Cotyledons* sometimes accumbent (o=).

1. *L. SATIVUM*, L. Leaves oblong, variously incised and pinnatifid; silicles elliptic-ovate, winged and notched at apex. DC. Prodr. 1. p. 204. Fl. Cestr. p. 380.

CULTIVATED LEPIDIUM. *Vulgò*—Pepper-Grass. Tongue-Grass.

Fr. Cresson Alénois. *Germ.* Die Garten-Kresse. *Span.* Lepidio.

Root annual. *Stem* 9 to 18 inches high, smooth, glaucous, corymbosely branched above. *Leaves* 1 to 3 inches long, deeply divided into linear or cuneate segments. *Petals* white. *Seeds* compressed; cotyledons incumbent (o||). Gardens: cultivated. Native of Persia. *Fl.* June—July. *Fr.* August.

Obs. A pleasant antiscorbutic Cress, frequent in Gardens. There is a *native* species (*L. Virginicum*, L.—with cotyledons *accumbent*—separated from this genus by some authors, and called *Cynocardium*: See *Endl. Gen.* 4888.) frequent in lanes and fields, in Pennsylvania. The reddish-brown *seeds* of this are sometimes found among *clover seed*, and excite apprehensions of some pernicious intruder; but, although a worthless little weed, if there be nothing worse, among the clover seed, the farmer need not be alarmed.

15. CAPSELLA. *Vent. Endl. Gen.* 4927.

[Diminutive of the Latin, *Capsa*, a coffer, or case; in allusion to the fruit.]

Siliqua somewhat triangular or obovate-cuneate; valves boat-shaped, coriaceous, not winged; cells many-seeded. *Seeds* oblong; cotyledons incumbent (o||). *Radical leaves* rosulate. *Flowers* small, in elongating racemes.

1. *C. Bursa-pastoris*, *Moench.* Radical leaves mostly pinnatifid; stem-leaves lanceolate, sagittate. *Torr. & Gr. Fl. N. A.* 1. p. 117. *DC. Prodr.* 1. p. 177. *Fl. Cestr.* p. 380.

Thlaspi Bursa-pastoris. *L. Icon, Fl. Lond.* 3.

SHEPHERD'S PURSE CAPSELLA. *Vulgò*—Shepherd's Purse. [*Pastor.* *Fr.* Bourse de Pasteur. *Germ.* Die Hirten-tasche. *Span.* Bolsa de

Root annual. *Stem* 3 or 4 to 18 inches high, more or less hirsute, and often branched. *Radical leaves* 2 or 3 to 6 or 8 inches long. *Racemes* at first corymbose, finally elongated. *Petals* white. Fields, and road-sides: introduced. Native of Europe. *Fl.* April to September. *Fr.* June to October.

Obs. This worthless little intruder is found in almost every field; and is sometimes so abundant as to be rather a nuisance. Such small weeds, however, can generally be suppressed by careful culture, and inducing a vigorous growth of more useful plants. That learned and sagacious observer of Nature—the late Professor DE CANDOLLE—remarks, that “all the plants of a country—all those of any given place—are in a state of war, in relation to each other.—All are endowed with means, more or less efficacious, of reproduction and nutrition. Those which first establish themselves accidentally, in a given locality, have a tendency, from the mere fact that they already occupy the space, to exclude other species from it: the largest ones smother the smallest ones; the longest-lived ones supersede those of shorter duration; the most fruitful gradually take possession of the space which would otherwise have been occupied by those which multiply more slowly.”* The farmer,

* Toutes les plantes d'un pays, toutes celles d'un lieu donne, sont dans un etat de guerre les unes relativement aux autres. Toutes sont douees de moyens de reproduction et de nutrition plus ou moins efficaces. Les premieres qui s'etablissent par hasard dans une localite donnee, tendent, par cela meme qu'elles occupent l'espace, a en exclure les autres especes: les plus grandes etouffent les plus petites; les plus vivaces remplacent celles dont la duree est plus courte; les plus fecondes s'emparent graduellement de l'espace que pourroient occuper celles qui se multiplient plus difficilement *Essai Elementaire de Geographie Botanique.* Par A. P. DE CANDOLLE.

therefore, should avail himself of this principle,—and aid the more valuable plants in their struggle to choke down or expel the worthless ones.

DIVISION 4. LOMENTACEAE (the pod transversely partitioned).

TRIBE XI. RAPHANEEAE. DC.

Siliques or *silicles* indehiscent, transversely separating in 1- (or few-) seeded cells or joints. *Seeds* globose. *Cotyledons* incumbent and conduplicate.

16. RAPHANUS. *Tournef. Endl. Gen.* 4972.

[Greek, *Ra*, easily, and *phainomai*, to appear; from its prompt germination.]

Siliques many-celled, by transverse partitions. *Seeds* in a single series. *Leaves* lyrate. *Flowers* in elongating racemes.

1. *R. SATIVUS*, *L.* Lower leaves lyrate, petiolate; upper ones ovate-oblong, serrate, subhastate-lobed at base, subsessile; siliques terete, torulose, acuminate, scarcely longer than the pedicels. *DC. Prodr.* 1. p. 228. *Fl. Cestr.* p. 391.

CULTIVATED RAPHANUS. *Vulgò*—Radish. Garden Radish.

Fr. Radis. Raifort. *Germ.* Der Rettig. *Span.* Rábano.

Sub-species A. RADICULA. *DC.* Root more or less fleshy, tender, white or red. *DC. l. c.*

Var. a. rotunda. Root subglobose. *Vulgò*—Turnep-Radish.

Var. b. oblonga. Root oblong or fusiform. *Vulgò*—Common Radish.

Sub-species B. NIGER. *DC.* Root fleshy, solid and firm, more or less acrid. *DC. l. c.*

Var. a. vulgaris (also *b. rotundus*). Root black externally, white within, oblong or subglobose.

Vulgò—Black Turnep-Radish. Spanish Radish.

Annual. *Stem* 1 to 3 feet high, sparsely hispid, branched. *Leaves* 8 to 12 or 15 inches long, hispid. *Petals* purple and greenish white. *Siliques* with fungous or suberose partitions. *Seeds* few, large. Gardens, &c.: cultivated. Native of China. *Fl.* June—Sept. *Fr.* July—October.

Obs. The tender fleshy root of this plant is an universal favorite at table, in early spring,—and is found in every garden; where, by successive planting, it may be produced all summer. To produce the root in perfection, a rich mellow soil and a wet season are requisite.*

ORDER XIX. HYPERICACEAE. *Juss. Lindl.*

Herbs or *shrubs*, with a resinous or limpid juice. *Leaves* opposite, entire, without stipules, punctate with black or pellucid dots. *Flowers* regular. *Calyx* of 4 or 5 persistent sepals, the 2 outer ones often smaller. *Petals* 4 or 5, twisted in aestivation, often sprinkled with black dots. *Stamens* usually numerous and polyadelphous. *Capsule* (the fruit rarely *baccate*) with septicidal dehiscence, many-seeded. *Seeds* destitute of albumen.

An Order containing but few genera; and those of little interest to the Agriculturist,—with the exception of the obnoxious species here noticed.

TRIBE I. HYPERICEAE. *Chois.*

Fruit capsular. *Seeds* terete. *Leaves* mostly sessile.

*I learn from my friend, Prof. A. GRAY, that the *R. Raphanistrum, L.* or Wild Radish (a species with simply lyrate leaves, and yellowish flowers), is so far naturalized, in Eastern New England, as to be quite a troublesome Weed. It has not yet found its way, I think, into Pennsylvania.

17. HYPERICUM. *L. Endl. Gen.* 5464.

[A name used by the ancient Greek writers on plants.]

Sepals 5, more or less connected at base, foliaceous. *Petals* 5, *Stamens* mostly numerous,—the filaments united at base in 3 or 5 parcels. *Styles* 3 to 5, persistent, sometimes united. *Capsule* membranaceous, 1-celled with 3 to 5 parietal placentae, or 3 to 5-celled by the placentae meeting at the axis. *Herbaceous* or *shrubby*. *Flowers* solitary or cymose at the summit of the stem and branches.

1. *H. PERFORATUM*, *L.* Herbaceous; stem somewhat ancipital; leaves linear-elliptic, rather obtuse, sessile, pellucid-punctate; flowers in leafy paniculate corymbs; petals and anthers with dark purple dots; styles 3, long, diverging. *Torr. & Gr. Fl. N. A.* 1. p. 160. *DC. Prodr.* 1. p. 549. *Fl. Cestr.* p. 323. *Icon, Fl. Lond.* 3.

PERFORATED HYPERICUM. *Vulgò*—St. John's Wort.

Fr. Millepertuis. *Germ.* Das Johannes kraut. *Span.* Corazoncillo.

Root perennial. *Stem* herbaceous but finally hard, 1 to 2 feet high, often several from the same root, brachiately and corymbosely branched. *Leaves* half an inch to an inch and half long. *Petals* yellow or orange-colored. *Fields*, and *pastures*: introduced. *Native* of Europe. *Fl.* June—Sept. *Fr.* July—October.

Obs. This foreigner is a worthless and rather troublesome weed, on our farms; and ought to be diligently excluded. Some 40 or 50 years ago, it was very common for cattle—especially *white* cows, and horses with *white* feet and noses—to be affected with cutaneous ulcers, during the pasture season; and those sores were universally and confidently attributed to the *St. John's Wort*. In those days, I never doubted the fact, myself: but I must in candor add, that, although the plant continues to be abundant in our pastures, I have not noticed any such sores for a number of years past. Was the affection ascribed to a wrong source? and has the real cause ceased to exist?—The *flowers* and *leaves* are evidently somewhat resinous; and a *tincture* of them has held a place among popular remedies for disorders of the stomach and bowels. It is worthy of remark, that in the year 1812, the *St. John's Wort* totally failed to make its appearance (in Chester County—and I believe throughout Pennsylvania,) even in fields where it had previously abounded. The succeeding year, it was quite rare; but is now (1816) becoming as common as ever, in neglected fields. The *cause* of that total, though temporary, disappearance of a perennial-rooted plant, is as obscure as the fact is curious.

ORDER XXI. CARYOPHYLLACEAE. *Juss. Torr. & Gr.*

Herbs. *Stems* tumid at the nodes or joints. *Leaves* constantly opposite, often comate, entire, without stipules. *Flowers* regular, terminal. *Calyx* of 4 or 5 sepals, distinct or more or less cohering—often united into a tube. *Corolla* of 4 or 5 unguiculate petals—or sometimes wanting. *Stamens* as many—or commonly twice as many—as the petals. *Styles*, or *stigmas*, 2 to 5, distinct. *Capsule* 2 to 5-valved—or opening only at apex by twice as many teeth or valve-joints as stigmas. *Seeds* curved (*campylotropous*), mostly numerous: *embryo* coiled around the outside of mealy albumen.

An Order comprising about 30 genera, and a great number of species.—some of them (such as the *Pinks*) are very pretty and fragrant: but none of Agricultural value.

TRIBE I. SILENEAE. *DC.*

Sepals united into a tube, which is 4 or 5-toothed at summit. *Petals* with a long slender claw, inserted with the stamens on the sipe of the ovary.

18. LYCHNIS. DC. *Endl. Gen.* 5250.

[Greek, *Lychnos*, a lamp; the cottony leaves of some species being used for wicks.]

Calyx 5-toothed or with 5 long segments, without scales at base. *Petals* 5, mostly crowned at throat. *Stamens* 10. *Styles* 5. *Capsule* 1-celled, or 5-celled at base, the stipe sometimes wanting.

1. *L. GITHAGO*, Lam. Hairy; stem dichotomously paniculate above; leaves lance-linear; calyx coriaceous, tube subcampanulate, teeth very long and foliaceous; petals not crowned; stipe of the ovary none. *Torr. & Gr. Fl. N. A.* 1. p. 194. *DC. Prodr.* 1. p. 387.

Agrostemma Githago. *L. Fl. Cestr.* p. 281. *Icon, Fl. Lond.* 2.

Vulgò—Cockle. Corn Cockle.

Fr. La Nielle des Blés. *Germ.* Gemeine Rade. *Span.* Neguillon.

Plant clothed with long appressed hairs. *Root* annual. *Stem* 2 to 4 feet high, branched above. *Leaves* 3 to 5 inches long. *Peduncles* terminal, 4 to 8 or 10 inches long. *Petals* reddish or pale violet-purple. *Capsule* ovoid. *Seeds* numerous, mucicately ribbed, purplish black. Cultivated grounds,—chiefly among Wheat and Rye: introduced. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This well-known foreign weed,—although diligently expelled by all neat farmers,—may be seen in almost every wheat field, at the season of flowering; which is, consequently, the best time for detecting and eradicating it. The *seeds* are of a size to render it difficult to separate them from wheat,—and when abundant, are injurious to the quality and appearance of the flour. Every farmer, therefore, is interested in causing the plant to be carefully extirpated.

ORDER XXIII. PORTULACACEAE. *Juss. Lindl.*

Succulent or fleshy *Herbs*. *Leaves* alternate or opposite, entire, without stipules. *Flowers* axillary or terminal, usually ephemeral. *Calyx* mostly of 2 (rarely 3) sepals, often united below and adhering to the base of the ovary. *Petals* 5, or rarely more numerous. *Stamens* variable in number, opposite the petals when of the same number. *Styles* 2 to 8, united below. *Capsule* 1-celled; placenta central. *Seeds* mostly numerous, curved (*campylotropous*): *embryo* coiled around mealy albumen.

There are some 30 genera in this Order,—of which the plant here noticed is the type. They are, however, of little or no interest to the farmer.

19. PORTULACA. *Tournef. Endl. Gen.* 5174.

[A name of obscure and uncertain derivation.]

Sepals 2, partly united, and adherent to the base of the ovary,—the upper portion finally circumscribed and deciduous. *Petals* mostly 5, inserted on the calyx. *Stamens* 8 to 15 or 20. *Stigmas* 3 to 8. *Capsule* subglobose, circumscribed. *Seeds* on filiform footstalks (or *funiculi*). *Leaves* scattered, often whorled near the flowers,—frequently with a tuft of hair in the axils.

1. *P. OLERACEA*, L. *Leaves* oblong-cuneate, obtuse, fleshy, smooth; axils and nodes naked; flowers sessile. *Torr. & Gr. Fl. N. A.* 1. p. 196. *DC. Prodr.* 3. p. 353. *Fl. Cestr.* p. 314.

POT-HERB PORTULACA. *Vulgò*—Purslane.

Fr. Pourpier potager. *Germ.* Gemeiner Portulak. *Span.* Verdolaga.

Root annual. *Stem* 6 to 12 or 15 inches long, fleshy, smooth, prostrate, branching and radicating. *Leaves* half an inch to an inch long, alternate and opposite. *Petals* pale yellow. Gardens, and cultivated grounds. *Fl.* July—Aug. *Fr.* Sept.

Obs. This plant—though said to be indigenous in the far west—

has every appearance of being a naturalized stranger, in Pennsylvania. It was often used, formerly, as a pot-herb; but is now generally superseded by better ones,—and is, indeed, only entitled to notice, here, as a troublesome weed in gardens.

ORDER XXV. MALVACEÆ. *Juss.*

Herbs, shrubs, or rarely trees. Leaves alternate, palmately veined, furnished with stipules. *Flowers* regular, mostly large, often with an involucl forming a double calyx. *Calyx* mostly of 5 sepals, more or less united at base. *Petals* as many as the sepals, spirally twisted in aestivation. *Stamens* monadelphous, often indefinite; *anthers* reniform, 1-celled. *Styles* as many as the carpels, distinct or united below. *Fruit* capsular, or the carpels separate or separable. *Seeds* with little or no albumen; *cotyledons* foliaceous, plicate and twisted.

An Order comprising about 30 genera, and numerous species,—some of them showy and handsome. They are generally remarkable for their mucilaginous and demulcent properties: But the *Cotton plant* is pre-eminently interesting to the American people,—both as yielding the great staple of the exports from the Southern States, and of the *manufactures* of the Northern States. There are, however, but few other plants of Agricultural importance belonging to the Order.

20. MALVA. *L. Endl. Gen.* 5271.

[Latinized from the Greek, *Malache*, soft; in allusion to its emollient nature.]

Calyx 5-cleft, mostly with an involucl of 3 oblong or setaceous bracts. *Carpels* several, dry, indehiscent, arranged in a circle round the axis.

1. *M. ROTUNDIFOLIA, L.* Stem herbaceous, prostrate; leaves cordate-orbicular, doubly crenate; pedicels axillary, 1-flowered, declined in fruit; carpels wrinkled, 1-seeded. *Torr. & Gr. Fl. N. A.* 1. p. 225. *DC. Prodr.* 1. p. 432. *Fl. Cestr.* p. 395. *Icon, Fl. Lond.* 3.

ROUND-LEAVED MALVA. *Vulgò*—Running Mallows. Low Mallows. *Fr.* Petite Mauve. *Germ.* Rundblatettrige Malve. *Span.* Malva de hoja redonda.

Root perennial. *Stem* 1 to 2 or 3 feet long, branching only at base or from the root. *Leaves* 1 to 2 or 3 inches in diameter, obscurely 5 or 7-lobed; *petioles* 2 to 6 or 8 inches long. *Flowers* small; bracts linear. *Petals* twice as long as the calyx, reddish-white with purple veins. *Yards, Gardens, and Lots*: introduced. Native of Europe. *Fl.* May—Sept. *Fr.* July—Octo.

Obs. This foreigner is extensively naturalized; and although somewhat popular as an ingredient in cataplasms and demulcent drinks, is generally regarded as an unwelcome intruder in yards and gardens. The *Marsh Mallow* (*Althaea officinalis, L.*), a nearly allied plant, has been introduced in many places, on account of its mucilaginous character; but is scarcely to be considered among our cultivated plants.

21. HIBISCUS. *L. (Abelmoschus. Medik. Endl. Gen.* 5281.)

[An ancient Greek name for a plant of the Mallow tribe.]

Calyx 5-toothed or 5-cleft, surrounded by a many- (or sometimes a few-) leaved involucl, the leaflets of which are usually linear and distinct—sometimes more or less united. *Stigmas* 5 to 10. *Carpels* united in a 5 or 10-celled loculicidal capsule; cells mostly many- (rarely 1-) seeded.

1. *H. ESCULENTUS, L.* Herbaceous; leaves somewhat obtusely and palmately 5-lobed, cordate at base, the lobes dentate; involucl

10-leaved, deciduous; calyx bursting lengthwise on one side; fruit 10-angled, pyramidal. *DC. Prodr.* 1. p. 450. *Fl. Cestr.* p. 396.

ESCULENT HIBISCUS. *Vulgò*—Okra.

Root annual. *Stem* 18 inches to 3 feet high, somewhat branched, pilose but not aculeate. *Leaves* 3 to 6 inches long, and wider than long, lobed about half way to the base; *petioles* about as long as the leaves. *Petals* pale greenish yellow, with a dark purple spot at base. *Capsule* 2 or 3 inches long, erect. *Gardens*: cultivated. Native of India. *Fl.* August. *Fr.* Sept.—October.

Obs. This plant is cultivated for its green pods or capsules,—which are remarkably mucilaginous, and much esteemed, by many persons, as an ingredient in soups.

22. GOSSYPIUM. *L. Endl. Gen.* 5286.

[A name supposed to be of Egyptian origin; etymology obscure.]

Calyx cup-shaped, obtusely 5-toothed, surrounded by a 3-leaved involucl,—the leaflets united and cordate at base, deeply incised-dentate. *Styles* united; *stigmas* 3 or sometimes 5. *Capsule* 3 to 5-celled, loculicidal. *Seeds* numerous, enveloped in a long fine wool. *Young branches* and *leaves* more or less covered with black dots; the nerves beneath usually with one or more glands.

1. *G. HERBACEUM, L.* *Stem* smooth; leaves 3 to 5-lobed, with a single gland beneath; lobes rounded, mucronate; involucl serrate; wool white. *Torr. & Gr. Fl. N. A.* 1. p. 230. *DC. Prodr.* 1. p. 456. *Icon, Farmer's Libr.* vol. 1.

HERBACEOUS GOSSYPIUM. *Vulgò*—Cotton. Cotton-plant.

Fr. Le Cottonnier. *Germ.* Die Baumwolle. *Span.* Algodon.

Root annual. *Stem* 2 to 4 feet high, branched. *Leaves* 3 to 5 or 6 inches long; *petioles* 2 to 3 inches long. *Petals* greenish yellow, tinged with purple at base. *Seeds* large, thickly beset with long wool-like cellular or tubular fibres, which, at maturity, are shrunk and contorted so as to render them in some degree adhesive, when pressed together,—and thereby susceptible of being spun or drawn and twisted into delicate threads. Cultivated very largely in the Southern and South-western States. Native of Asia. *Fl.* *Fr.*

Obs. This plant,—as yielding the material for light clothing—and especially in reference to its commercial value,—may be regarded as one of the most important objects of American Agriculture. Although not so essential as the *cereal* tribe, the fibrous envelope of the seeds is scarcely less interesting, as an article of trade,—and as the subject of useful and ingenious industry.* A full and satisfactory history of the Cotton-plant may be found in the first volume of that admirable work, the *Farmer's Library*, edited by JOHN S. SKINNER, Esq.

23. ABUTILON. *Gaertn. Endl. Gen.* 5292.

[An ancient name of a plant, allied to *Althaea*.]

Calyx 5-cleft, without an involucl. *Ovary* 5 or many-celled, with

* Since the above was written, a wonderful discovery has been announced, in reference to *Cotton wool*. It appears that by subjecting Cotton to some Chemical processes, the fibres (without apparent alteration,) may be rendered as *explosive as Gun powder!* To what extent it may be made available, as a substitute for gun-powder, of course, remains to be ascertained. It is also alleged, that *Tow*, or the cortical fibres of flax, and some other minutely divided vegetable substances, can be rendered in like manner explosive, by the same or similar processes.

3 (or rarely more) ovules in each cell. *Capsule* composed of 5, to 15 or more, 2-valved 3 to 6-seeded carpels.

1. *A. AVICENNAE*, *Gaertn.* Leaves orbicular-cordate, acuminate, crenate-dentate, velvety-tomentose; peduncles axillary, shorter than the petiole; carpels about 15, truncate, obliquely birostrate, hairy, 3-seeded. *Torr. & Gr. Fl. N. A.* 1. p. 230.

Sida Abutilon, *L. DC. Prodr.* 1. p. 470. *Fl. Cestr.* p. 397.

AVICENNA'S ABUTILON. *Vulgò*—Indian Mallow. Velvet-leaf.

Root annual. *Stem* 2 to 4 or 5 feet high, branched. *Leaves* 4 to 6 or 8 inches long; *petioles* 3 to 5 inches long. *Petals* yellow. *Carpels* 12 to 15, verticillately arranged in a truncate subcampanulate head. Cultivated Lots, and waste places: introduced. Native of Europe and Asia. *Fl.* July—Sept. *Fr.* Aug.—October.

Obs. This foreigner is a worthless and troublesome intruder,—frequent in Indian-corn fields, Potato patches, and other cultivated lots,—and is of a size sufficient to be a nuisance. It should be always carefully eradicated before it matures its seeds.

ORDER XXVI. TILIACEAE. *Juss.*

Trees or *shrubby* plants. *Leaves* alternate, furnished with deciduous stipules. *Flowers* axillary, small. *Calyx* of 3 to 5 deciduous sepals. *Petals* 3 to 5. *Disk* glandular. *Stamens* often in 3 to 5 clusters, distinct or somewhat united—one of each parcel sometimes transformed into a petaloid scale; *anthers* 2-celled. *Styles* united into one. *Fruit*, either a 2 to 5-celled capsule with several seeds in each cell—or coriaceous, and sometimes drupaceous, 1-celled by abortion, and 1 or 2-seeded. *Seeds* albuminous, with a large embryo; the foliaceous cotyledons usually plicate.

This, like the preceding, is a mucilaginous Family of plants, and comprises about 30 genera. In the U. States, the *Lindens* (which are the representatives of the Order) are the only interesting species: But in the tropical regions, the *Gunny-bags*, of commerce, are manufactured from the fibrous bark of two species of *Corchorus*. The acid drupes of *Grewia sapida*, *Roxb.* are employed in the preparation of the oriental beverage called *Sherbet*: and some other plants of the Order contribute to economical purposes.

24. TILIA. *L. Endl. Gen.* 5373.

[A name of obscure and uncertain derivation.]

Sepals 5, connected at base. *Petals* 5. *Stamens* numerous, more or less cohering in 5 parcels,—the central one of each parcel (in the N. American species) a petaloid scale (nectary, or *staminodium*). *Ovary* globose, villous, 5-celled; cells with 2 ovules. *Fruit* coriaceous or woody, globose, by abortion 1-celled, 1 or 2-seeded. *Trees*, with subcordate serrate leaves, and a tough fibrous bark. *Flowers* in pendulous cymes, with the lower half of the common peduncle adnate to a long membrano-foliaceous bract.

1. *T. PLATYPHYLLA*, *Scop.* Leaves orbicular-cordate, acuminate, puberulent beneath; flowers without staminodia or petaloid scales. *DC. Prodr.* 1. p. 513.

T. Europaea, *L. FL. LOND. ICON*, vol. 2.

[*Linden.*

BROAD-LEAVED TILIA. *Vulgò*—Linden, or Lime tree. European *Fr.* Le Tilleul. *Germ.* Die Linde. *Span.* Tilo.

Stem 20 to 40 or 50 feet high, and 1 to 2 feet in diameter,—the numerous branches forming a handsome symmetrical top. *Leaves* 3 to 5 inches long; *petioles* 1 to 2 inches long. *Flowers* yellowish-white, destitute of the accessory petals (or *staminodia*) which are found in the American species. Cultivated. Native of Europe. *Fl.* Beginning of June. *Fr.* September—October.

Obs. This foreign species has been extensively introduced, as an ornamental shade tree, in our cities and villages. In the beginning of summer it is handsome; but the leaves begin to die, or become diseased (assuming a scorched appearance), soon after midsummer,—and the tree is, moreover, infested by so many loathsome and destructive insects, that it is now being superseded by others less subject to such accidents. The flowers are said to afford to bees a superior quality of honey.

2. *T. AMERICANA*, *L.* Leaves obliquely cordate or truncate at base, abruptly acuminate, subcoriaceous, glabrous; flowers with stamindia, or petaloid scales, connected with the filaments. *Torr. & Gr. Fl. N. A.* 1. p. 239. *Icon, Mx. Sylva*, 3. tab. 131.

T. glabra. *Vent. DC. Prodr.* 1. p. 513. *Fl. Cestr.* p. 312. [wood. AMERICAN TILIA. *Vulgò*—Linden, or Linn. Basswood. White

Stem 40 to 60 or 80 feet high, and 2 to 3 feet in diameter, with spreading branches. *Leaves* 3 to 6 inches long, unequal at base; *petioles* 1 to 2 inches long. *Flowers* yellowish-white or cream-colored,—furnished with an accessory petal (or *staminodium*—scarcely changed from the petal form—) attached to each parcel of stamens. Rich woodlands, and banks of streams; along the mountains, from Canada to Georgia. *Fl.* Latter end of June. *Fr.* Sept.—October.

Obs. The *wood* of this fine tree is light, soft and white,—and is much used in the manufacture of domestic utensils. The inner bark, by maceration, separates into broad thin fibres,—from which a rude cordage, and matting, are sometimes made. It also affords a mucilaginous liniment, which has been highly commended in burns and scalds;—though I suppose it is about as efficacious as most other mild mucilages. This species is sometimes planted as a shade tree; but its branches are more straggling, and less symmetrical, than those of the European Linden. Neither of them, however, is as valuable, for that purpose, as the *Sugar Maple* or the *Horse Chestnut*. There are two or three other species of *Tilia* in the U. States; but they are more local in their *habitat*, and of less general interest, than this one.

ORDER XXVIII. AURANTIACEAE. *Correa.*

Shrubs, or small *trees.* *Leaves* alternate, with articulated petioles, destitute of stipules, dotted with pellucid glands which are replete with a volatile oil.—*Flowers* fragrant. *Calyx* short, urceolate or campanulate. *Petals* 3 to 5 or 8.—*Stamens* inserted in a single series upon a hypogynous disk, as many as the petals or some multiple of their number, often somewhat monadelphous or polyadelphous. *Style* cylindrical; *stigma* thickish. *Fruit* a many-celled berry, with a leathery rind filled with pulp. *Seeds* without albumen.

This small but truly Hesperidian Order (which is chiefly tropical.) affords a few fruits beside those here noticed; but they are little known in the U. States.

25. CITRUS. *L. Endl. Gen.* 5514.

[The etymology of this name has not been ascertained.]

Calyx urceolate, 3 to 5-toothed. *Petals* 5 to 8. *Stamens* numerous, polyadelphous. *Stigma* hemispherical. *Fruit* baccate, 7 to 12-celled; cells pulpy, many-seeded. *Seed-cover (testa or spermoderm)* membranaceous.—*Small trees* or shrubs, often with axillary spines. *Leaves* perennial, compound (i. e. odd-pinnate, with all the leaflets but the terminal one suppressed!); *petiole* sometimes winged.

1. *C. MEDICA*, *Risso*. Petioles not winged; leaves oblong-oval, acute; fruit elliptic-oblong, with a thick rugose coat, and acid pulp. *DC. Prodr.* 1. p. 539.

MEDIAN CITRUS. *Vulgò*—Lemon. Lemon tree.

Fr. Cedrat. *Germ.* Der Citronenbaum. *Span.* Limonero.

A branching *Shrub*, 6 to 12 feet or more in height. *Leaves* 3 to 6 inches long, obsolete serrate, coriaceous; *petioles* half an inch to three quarters in length. *Petals* white, often tinged with purple externally. *Stigma* peltate, broad and thick—when not fully developed, the fruit invariably abortive. *Fruit* elliptic, 2 to 3 inches long,—the rind greenish-yellow, adhering to the pulp. Cultivated.—Native of Media. *Fl.* March, and after. *Fr.* Successively.

Obs. This tender evergreen shrub is often to be seen (under shelter in winter,) even in the middle and northern States; and doubtless succeeds well in those at the southern extreme of the Union. It is usually inserted, by inoculation, upon an *Orange stock*. It appears to flower at different seasons,—and the fruit is a year or more in arriving at maturity; so that the shrub is often charged with both flowers and fruit (the latter in all stages of growth) at the same time. The uses of the fine acid fruit are universally known, and its value appreciated.

2. *C. AURANTIUM*, *Risso*. Petioles more or less winged; leaves ovate-oblong, acute; fruit globose, with a thinish rugose coat, and sweet pulp. *DC. Prodr.* 1. p. 539.

[Sweet Orange.

ORANGE OR GOLDEN CITRUS. *Vulgò*—Orange. China Orange.—*Fr.* L'Oranger. *Germ.* Der Oranienbaum. *Span.* Naranjo.

A branching *shrub*, 5 to 10 feet high. *Leaves* 3 to 5 inches long, coriaceous; *petioles* half an inch to an inch long. *Petals* white. *Fruit* spherical or an oblate spheroid, about 2 inches in diameter, the rind reddish-yellow, and separable from the pulp. Cultivated. Native of Eastern Asia. *Fl.* and *Fr.* as in the preceding.

Obs. The Orange tree was introduced into *Florida* many years ago,—and seems, from accounts, to be pretty well naturalized, there. It may probably be cultivated to advantage, in the more southern districts of our country: but it can only be known as a Green-house plant, in the middle and northern States,—and it is to Green-house specimens that the *size* here mentioned, of this and the preceding species, has reference. In a congenial climate, they no doubt become much larger. The delicious fruit of this species is too well known to require comment.

ORDER XXIX. MELIACEAE. *Juss. DC.*

Trees or shrubs. *Leaves* alternate, usually compound, destitute of stipules. *Calyx* of 3 to 5 sepals, more or less connected. *Petals* 3 to 5. *Stamens* twice as many as the petals, monadelphous, inserted outside of a hypogynous disk; *anthers* sessile in the orifice of the tube of filaments. *Ovary* several-celled, with 1 or 2 ovules in each cell; *styles* and *stigmas* mostly united into one. *Fruit* a drupe, berry, or capsule,—often 1-celled by abortion, and the cell 1-seeded. *Seeds* with little or no albumen, and wingless.

The genus which represents this Order, is the only one belonging to it which is much known in our country,—and that is pretty much confined to the States south of the Potomac.

26. MELIA. *L. Endl. Gen.* 5520.

[The Greek name of a species of Ash,—which this tree resembles.]

Calyx small, 5-cleft. *Petals* 5, linear-oblong, spreading. *Stamen*—

tube 10-cleft at summit, with 10 anthers in the orifice; segments of the tube 2 or 3-parted. *Ovary* seated on a slightly elevated disk; *style* filiform; *stigma* capitate, 5-angled, *Drupe* ovoid, with a 5-celled bony nut; cells 1-seeded. *Embryo* inclosed in thin fleshy albumen; cotyledons flat, foliaceous. *Trees*, with odd-pinnate or bipinnate leaves. *Flowers* in axillary panicles.

1. *M. AZEDARACH*, *L.* Leaves bipinnate; leaflets somewhat in fives, obliquely ovate-lanceolate, acuminate, incised-dentate, smooth. *Torr. & Gr. Fl. N. A.* 1. p. 241. *DC. Prodr.* 1. p. 621. *Icon, Mx. Sylva*, 3. tab. 102.

Vulgò—Pride of India. *Bead-tree*.

Fr. Arbre aux Patenôtres. *Germ.* Der Zederach.

Stem 20 to 40 feet high, and 1 to 2 or 3 feet in diameter, with branches clustered at irregular intervals. *Leaves* deciduous; *leaflets* 1 to 2 or 3 inches long, forming secondary *pinnae* of 2 or 3 pairs, with a terminal odd one. *Flowers* pale violet-purple or lilac-colored. *Drupe* with a soft yellowish pulp, and an obtusely angular nut. Cultivated. Native of Syria, Persia, and the far East. *Fl.* April.—*Fr.* September—October.

Obs. This tree has been introduced into the Southern States, as an ornamental shade tree,—and is now, Mr. ELLIOTT says, perfectly naturalized. It will not endure the winters of Pennsylvania. The most northern point at which I have seen trees of any considerable size, was Norfolk, Virginia; and even there, they are sometimes killed by frost. The *bark* of the root is reputed to be a good vermifuge. In the south of Europe, the *nuts* are often used for *beads*; whence one of its English and French names.

ORDER XXXI. LINACEAE. *DC. Lindl.*

Herbs. *Leaves* alternate opposite or verticillate, entire, sessile, without stipules. *Flowers* regular and symmetrical. *Calyx* of 3 to 5 imbricated persistent sepals. *Petals* as many as the sepals, unguiculate, twisted in aestivation, ephemeral.—*Stamens* as many as the petals (often with intermediate teeth, representing an abortive series), all united at base into a ring. *Ovary* mostly with as many styles and cells as there are sepals,—each cell with 2 suspended ovules. *Capsule* globose, acuminate with the persistent base of the united styles, mostly 5-celled; each cell or carpel more or less perfectly divided by a false dissepiment proceeding from the dorsal suture,—the spurious cells 1-seeded. *Embryo* flat, fleshy and oily, with little or no albumen.

This Order is pretty much limited to the genus which is its type; and consequently, the character of the genus is nearly the same as that of the Order.

27. LINUM. *L. Endl. Gen.* 6056.

[Greek, *Linon*, or Celtic, *Llin*; the name for flax, or thread; in those languages.]

Sepals, *Petals* and *Stamens* 5. *Styles* 5 or rarely 3. *Capsule* with a septicial dehiscence,—the carpels 2-valved at apex.

1. *L. USITATISSIMUM*, *L.* Leaves alternate, lance-linear, very acute; panicle corymbose; sepals ovate, acute, with a membranaceous margin; petals somewhat crenate. *Torr. & Gr. Fl. N. A.* 1. p. 204. *DC. Prodr.* 1. p. 426. *Fl. Cestr.* p. 210. *Icon, Fl. Lond.* vol. 1.

MOST USEFUL (OR COMMON) LINUM. *Vulgò*—Flax.

Fr. Lin. *Germ.* Gemeiner Flachs. *Span.* Lino.

Root annual. *Stem* 2 to 3 feet high, slender, terete, smooth, corymbosely branched at summit. *Leaves* an inch to an inch and half long. *Petals* rather

large, blue, often with a tinge of purple, very caducous. *Seeds* lance-ovate, smooth and shining. Cultivated. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This valuable plant—once considered so indispensable among the crops of our farmers—is now but little cultivated. I have not seen a flax-patch for a number of years: whereas, in the “good old times”—before *Spinning-wheels* were superseded by *Pianos*—every rural family cultivated and manufactured as much flax as was required for domestic purposes. But now, the Cotton-plant of the South has nearly banished the Flax-plant from the Middle and Northern States. Nor is the revolution thus effected a subject of regret, with the farmer. The flax crop is one which involves a good deal of troublesome, disagreeable labor,—and, without being profitable, is generally believed to be injurious to the soil: an opinion as old as the time of *Virgil*—who says

“Urit enim *Lini* campum seges, urit avenae.”—GEORG. 1. 71.

or, as rendered by *Sotheby*,

“Oats and the *Flaxen* harvest burn the ground.”

The *seeds* of this plant, beside yielding a most valuable oil, afford one of the best mucilaginous drinks, for coughs, and dysenteric affections.

ORDER XXXV. TROPÆOLACEÆ. *Juss. A. Gray.*

Herbs, with a pungent watery juice, a straggling or twining *stem*, alternate petiole peltate or palmate *leaves* with radiating nerves, and without stipules.—*Flowers* irregular, large, on long axillary peduncles. *Calyx* of 5 colored united sepals, somewhat bilabiate,—the upper lip produced at base into a hollow spur. *Petals* 5, unequal, inserted on the calyx,—the 2 upper ones sessile, arising from the throat of the spur,—the 3 lower ones unguiculate, smaller and sometimes abortive. *Stamens* 8, unequal, distinct. *Ovary* 3-lobed,—composed of 3 united carpels, which are 1-seeded, indehiscent, and separate from the common axis when mature. *Seeds* without albumen, large; *cotyledons* thick, distinct when young, finally consolidated or soldered together.

A very small Order, and of little interest beyond the genus which represents it.

28. TROPÆOLUM. *L. Endl. Gen.* 6063.

[Latin, a little banner, or *Trophy*: from a fancied similitude in the plant.]

☞ For the character of the *Genus*, see that of the *Order*.

1. *T. MAJUS, L.* Leaves peltate, sub-orbicular, obscurely repand-lobed, the nerves not exerted; petals obtuse. *DC. Prodr.* 1. p. 683. *Fl. Cestr.* p. 243.

GREATER TROPÆOLUM. *Vulgò* Nasturtium. Indian Cress. [china. *Fr.* Grande Capucine. *Germ.* Die Kapuziner kresse. *Span.* Capu-

Root annual. *Stem* 3 to 6 or 8 feet long, fleshy, smooth. *Leaves* 2 to 3 inches in diameter, the nerves which radiate from the centre not projecting beyond the margin (as they do in another species); *petioles* 3 to 6 inches long. *Peduncles* 1-flowered, mostly longer than the petioles. *Petals* yellowish, or reddish orange, with dark purple stripes and spots,—the 3 lower ones fringed at base. *Carpels* sulcate, fleshy, finally suberose or coriaceous. Gardens. Cultivated. Native of South America. *Fl.* June—September. *Fr.* August—October.

Obs. This ornamental stranger is sometimes cultivated for show; but chiefly for the *young fruit*—which is prepared as a condiment, and affords a tolerable substitute for *capers*. The plant is said to be *perennial* in its native country (Peru),—whence it was brought to Europe in the year 1684,

ORDER XXXIX. ANACARDIACEAE. R. Br. Lindl.

Trees or shrubs, with a resinous or milky, often acrid, juice, which turns black in drying. *Leaves* alternate (often compound), without stipules, and not dotted.—*Flowers* small, mostly paniculate, often polygamous or dioicous. *Calyx* of 3 to 5 sepals, more or less connected at base. *Petals*, and usually the *stamens*, as many as the sepals, inserted into the base of the calyx. *Ovary* 1-celled (by abortion), but with 3 styles or stigmas, and a single ovule. *Fruit* indehiscent, usually drupaceous. *Seed* without albumen; *embryo* curved.

In the tropical regions, this Family presents plants of much interest: such as that which yields the celebrated *Mango* fruit (*Mangifera Indica*, L.)—the *Cashew nut* (*Anacardium occidentale*, L.)—and the *Pistacia nut* (*Pistacia vera*, L.); with others which afford various kinds of *Lacquer* and *Varnish*. A species of *Rhus* (*R. Cotinus*, L.) affords the “*young Fustic*,” of commerce.—the “*old Fustic*” being the wood of *Morus tinctoria* L. The *Chian* or *Cyprus Turpentine* is obtained from the *Pistacia Terebinthus*, L.

29. RHUS. L. *Endl. Gen.* 5905.

[Greek, *Rhous*,—or Celtic, *Rhudd*,—red; the prevailing color of the fruit.]

Sepals 5, connected at base, small, persistent. *Petals* 5, ovate, spreading, inserted under the margin of an orbicular disk. *Stamens* 5 (rarely 10—and sometimes wanting), inserted into the disk. *Styles* mostly 3, distinct or united; *stigmas* subcapitate. *Drupe* small, nearly or quite dry; *nut* bony, 1-celled. *Cotyledons* foliaceous, with their commissure to the radicle (*accumbent*).

Shrubs or small trees, sometimes very lactescent. *Leaves* sometimes simple, often compound (odd-pinnate or trifoliolate). *Flowers* (of all the species here given) dioicous by abortion.

† *Leaves* odd-pinnate. * *Branches* villous.

1. R. TYPHINA, L. Young branches and petioles densely villous; leaflets in many pairs, acutely serrate, glaucous and somewhat pilose beneath; drupes densely pubescent. *Torr. & Gr. Fl. N. A.* 1 p. 217. *DC. Prodr.* 2. p. 67. *Fl. Cestr.* p. 205.

TYPHA-LIKE RHUS. *Vulgò*—Staghorn Sumach.

Lactescent. *Stem* 10 to 15 or 20 feet high, and sometimes 4 to 6 inches in diameter, branched. *Leaves* composed of 8 to 15 or 20 pairs of lance-oblong leaflets (2 to 4 inches in length); *common petioles* 1 to 2 feet long. *Flowers* yellowish-green, in thyrsoid panicles,—the *fertile* panicles smaller and more compact. *Ovaries* clothed with a long greyish velvety pubescence—which on the *fruit* becomes a bright purple, and sharply acid. Woodlands, and banks of streams: Canada to Louisiana. *Fl.* June. *Fr.* September—October.

Obs. This is the largest and handsomest species of the genus,—as seen in the Middle States. The fine purple clusters of fruit, on the fertile plant, render it quite ornamental; and, if introduced into the yards and public squares of our cities, would present an almost literal exemplification of the much-admired *R (h) us in urbe!*

* * *Branches* smooth.

2. R. GLABRA, L. Branches and petioles glabrous; leaflets in many pairs, serrate, smooth on both sides, glaucous beneath. *Torr. & Gr. Fl. N. A.* 1. p. 217. *DC. Prodr.* 2. p. 67. *Fl. Cestr.* p. 206.

GLABROUS RHUS. *Vulgò*—Common, or Smooth Sumach.

Very lactescent. *Stem* 3 to 8 or 10 feet high, irregularly branching; young branches stout and thick, with a large pith, somewhat angular or compressed. *Leaves* composed of 8 to 12 or 15 pairs of leaflets (2 to 3 or 4 inches in length); *common petiole* 9 to 18 inches long, often dark purple. *Flowers* yellowish-green;

the *fertile* panicles smaller and more compact than the sterile ones. *Ovaries* clothed with a short greyish silky pubescence, which on the *fruit* becomes bright purple, and contains a sprightly acid. Old fields, fence-rows and thickets: Canada to Louisiana. *Fl.* June. *Fr.* September—October.

Obs. This shrub is apt to be abundant in neglected sterile old fields; and its prevalence, in arable lands, is strong evidence of the occupant being a poor thriftless farmer. The *branches* and *leaves* are said to be useful in the process of tanning morocco leather.

3. *R. VENENATA*, DC. Branches and petioles smooth; leaflets in few pairs, very entire; common petioles not winged; fruit glabrous. *Torr. & Gr. Fl. N. A.* 1. p. 218. DC. *Prodr.* 2. p. 68. *Fl. Cestr.* p. 207.

R. vernix. *L.* and the older authors.

POISONOUS RHUS. *Vulgô*—Poison Sumach. Poison Elder.

Not lactescent. *Stem* 8 to 12 or 15 feet high, branching above, young branches rather slender, terete, smoothish, slightly verrucose or dotted. *Leaves* composed of 3 to 5 or 6 pairs of leaflets (2 to 3 or 4 inches long); common petioles 4 to 10 or 12 inches long. *Flowers* greenish. *Panicles* slender, racemose, on long axillary peduncles. *Drapes* dry, smooth and shining, nearly twice as large as in either of the preceding. Low grounds, along swampy rivulets: Canada to Georgia. *Fl.* June. *Fr.* September.

Obs. This was formerly supposed to be identical with the oriental species which yields the *Japan Varnish*,—and hence the old specific name. It is a shrub to be carefully extirpated from the farm; as it is not only worthless, but exceedingly poisonous to many persons, if they come in contact with it—or even get unawares in its immediate vicinity.

† † *Leaves trifoliolate.*

4. *R. TOXICODENDRON*, *L.* (*vars. a, and b, Torr. & Gr.*) *Stem* erect, decumbent, or climbing by radicles; leaflets in threes, obliquely ovate or rhomboid, acuminate; fruit glabrous. *Torr. & Gr. Fl. N. A.* 1. p. 218.

R. radicans, and *Toxicodendron*. DC. *Prodr.* 2. p. 69.

R. radicans, *L.* *Fl. Cestr.* p. 207.

POISON-TREE RHUS. *Vulgô*—Poison-vine. Poison-oak. Poison-ivy.

Not lactescent. In the *erect variety*, *stem* 2 to 5 or 6 feet high; leaflets larger (4 to 6 or 8 inches long), variously and coarsely toothed or lobed: in the more common *climbing variety*, *stem* 8 or 10 to 30 or 40 feet long, branching, climbing and closely adhering to trees and other objects by means of numerous radicating processes; leaflets smaller, and more commonly entire, than in the other variety: thin or somewhat membranaceous in both. *Flowers* yellowish-green. *Panicles* slender, racemose, on short axillary peduncles. *Drapes* about the size of those in the preceding species, dry, smooth and shining, pale brown. Woodlands, and old fence-rows: Canada to Georgia, and the Rocky Mountains. *Fl.* May—June. *Fr.* September.

Obs. This species (and especially the *climbing variety*—which is by far the most common, in Pennsylvania) is also poisonous,—and should not only be known to the farmer, but diligently expelled from his premises. There are several other species of *Rhus* in the U. States,—interesting to the Botanist—as all plants are,—but not immediately so to the practical Agriculturist.

ORDER XL. XANTHOXYLACEAE. *Nees & Mart. Lindl.*

Trees or *shrubs*. *Leaves* mostly alternate (often compound), without stipules; leaflets mostly pellucid-punctate. *Flowers* polygamous or dioicous. *Calyx* of 3

to 9 sepals, more or less connected at base. *Petals* as many as the sepals (or rarely wanting), convolute in aestivation. *Stamens* as many, or twice as many, as the petals. *Ovaries* 2 or more, borne on the convex or elevated receptacle, united or separate. *Fruit* various,—baccate, drupaceous, or capsular, and sometimes samaroid. *Seeds* 1 or 2 in each cell or carpel, mostly albuminous.

This Order contains several plants possessed of medicinal properties; but few, if any, of Agricultural interest.*

30. AILANTHUS. *Desf. Endl. Gen.* 5980.

[Formed from *Ailanto*,—the name it bears in its native country.]

Calyx 5-toothed. *Petals* 5, convolute at base, inserted under a hypogynous disk. *Stamens* 10, inserted under the disk. *Ovaries* 2 to 5, distinct, compressed. *Carpels* 3 to 5, or fewer by abortion, membranaceous and samaroid, tumid and reticulately veined in the centre, 1-celled, 1-seeded, indehiscent. *Seed* compressed, obliquely ovate, without albumen. *Tall trees*. *Leaves* pinnate, but not punctate. *Flowers* dioicously polygamous. *Fruit* samara-like, somewhat resembling that of the *Ash*.

1. A. GLANDULOSA, *Desf.* Leaves odd-pinnate; leaflets oblong-lanceolate, acuminate, coarsely dentate at base, with a gland on the under side of each tooth. *DC. Prodr.* 2. p. 89.

GLANDULAR AILANTHUS. *Vulgò*—Chinese Sumach. Tree of Heaven.

Stem 30 to 60 feet, or more, in height, much branched; young branches never multiplying during growth, but developed only from the buds of the preceding year. *Leaves* (on young trees, especially) much elongated, and consisting of many pairs (15 to 20) of smooth leaflets, which are 3 to 5 inches in length, and entire, except a pair or two of coarse teeth at base. *Flowers* pale greenish yellow, in terminal open thyrsoid panicles. Cultivated as a shade tree. Native of China. *Fl.* June. *Fr.* Sept.—October.

Obs. This oriental stranger has not been long enough in the country to demonstrate the size to which it may grow,—but quite long enough (25 to 30 years) to convince some who have tried it, that it is one of the most objectionable trees, in and about yards and gardens, which has yet been introduced. It is a real nuisance,—and was appropriately named *Cacodendron* (evil or pernicious tree,) by an eminent Botanist. The roots extend far and wide, and send up myriads of *suckers* which it is almost impossible to keep in subjection,—or to get rid of, even after the tree has been cut down. The sterile flowers are very numerous, and emit a disagreeable odor,—as does also the young plant, when bruised or handled. The tree is of very rapid growth, and might perhaps be worth cultivating, in suitable situations, for the sake of the timber: but I would advise that it be kept away from the vicinity of houses and gardens.—Another recently introduced tree (*Paulownia imperialis*, *Sieb.*) is said to be objectionable for the same troublesome tendency to multiply suckers from the roots.

ORDER. XLI. ACERACEAE. *Juss. Lindl.*

Trees or shrubs. *Leaves* opposite and mostly palmate-lobed, without stipules.—*Flowers* small, regular, disposed in racemes, corymbs or fascicles, often polyga-

*Prof. A. GRAY suggests, that the *Prickly Ash* (*Xanthoxylum Americanum*, *Mill.*—a small tree, or shrub, to be found in many places in the Northern and Western States—) may be worthy the attention of Farmers, for the purpose of *hedging*. I doubt, however, whether it can ever be as eligible, and effective, as the *Cock-spur Thorn*.

mous or dioicous by abortion,—sometimes preceding the leaves. *Calyx* mostly of 5 sepals, more or less united and colored. *Petals* as many as the sepals, or often wanting. *Stamens* varying from 3 to 5, 8, or 12. *Ovary* 2-lobed. *Fruit* composed of 2 indehiscent samaroid carpels, finally separable,—the wing of each thickened on the outer or lower margin. *Seeds* erect, with little or no albumen; *embryo* curved or sometimes nearly straight; *cotyledons* foliaceous, irregularly plicate and convolute.

The importance of this small Order is limited to the genus which is its type. The *Sycamore*, of Europe, is a species of *Acer* (*A. Pseudo-Platanus*, L.).

31. ACER. Moench. Endl. Gen. 5558.

[Latin, *Acer*, sharp; the wood having been used for pikes or lances.]

☞ The character of the *Order* will serve for that of the *Genus*.

1. *A. SACCHARINUM*, L. Leaves broad, subcordate at base, 3 to 5-lobed with the sinuses obtuse,—the lobes acuminate, coarsely and sparingly sinuate-dentate; flowers apetalous, pendulous on long filiform corymbose pedicels; fruit turgid, smooth. *Torr. & Gr. Fl. N. A.* 1. p. 248. *DC. Prodr.* 1. p. 595. *Fl. Cestr.* p. 245. *Icon, Mx. Sylva*, 1. tab. 42.

SACCHARINE ACER. *Vulgò*—Sugar Maple.

Stem 50 to 80 feet or more in height, and 2 to 3 feet in diameter. *Leaves* 3 to 5 inches long, and generally rather wider than long, dark green above, paler beneath; *petioles* 2 to 4 inches long. *Calyx* pale greenish yellow, truncate and cup-like, the limb fringed with long hairs. *Petals* none. *Fruit* ovoid at base, about an inch long (including the wing), slightly diverging. Rich woodlands: Canada to Georgia. *Fl.* April—May. *Fr.* Sept.

Obs. This is one of the most valuable and interesting of our native trees,—particularly in the forests of the North and West—where its *sap*, in early spring, yields an immense quantity of *Sugar* and *Syrup*. The beautiful *wood*, known as *Bird's-eye Maple*—so much admired in cabinet work—is obtained, I believe, from this species; and it is, moreover, rarely surpassed, in any respect, as an ornamental *shade tree*.

2. *A. DASYCARPUM*, Ehrh. Leaves palmately and deeply 5-lobed with the sinuses rather obtuse,—the lobes acute, unequally incised-dentate; flowers apetalous, aggregated on short pedicels; ovary densely tomentose. *Torr. & Gr. Fl. N. A.* 1. p. 248.

A. eriocarpum. *Mx. DC. Prodr.* 1. p. 595. *Fl. Cestr.* p. 245. *Icon, Mx. Sylva*, 1. tab. 40 (the *flowers* inaccurately represented).

HAIRY-FRUITED ACER. *Vulgò*—Silver-leaved Maple. White Maple.

Stem 30 to 60 feet high, and 2 feet or more (“in the western states sometimes 8 or 9”—*Torr. & Gr.*) in diameter, much branched,—the young branches virgate and straggling or drooping. *Leaves* 3 to 6 inches long, bluish white or glaucous beneath; *petioles* 2 to 5 inches long. *Flowers* in fascicles mostly of fives and sevens. *Calyx* pale green, truncate and cup-like. *Petals* none. *Fruit* (including the wing) 2 to 3 inches long, one of the carpels usually abortive; pedicels of the fruit an inch long. *Seed* large; *embryo* nearly straight. Banks of Rivers: Maine to Georgia. *Fl.* April. *Fr.* May—June.

Obs. This has been extensively introduced into our cities and villages, as an ornamental tree,—and is often mistaken for the true *Sugar Maple*. It appears, indeed, from the researches of Prof. A. GRAY, that LINNÆUS established the *A. saccharinum* upon a specimen of this plant: but, as it was done under a misapprehension of its character, the name has been very properly transferred, by all

succeeding Botanists, to the real *sugar-producing* species. The Silver Maple, however—though fashionable at present—is by no means to be compared with the Sugar Maple, even as a shade tree,—and much less for its economical value.

3. *A. RUBRUM*, *L.* Leaves generally 3-lobed with the sinuses acute, subcordate at base,—the lobes acute, spreading, unequally incised-dentate; flowers pentapetalous, aggregated on rather long pedicels; ovary glabrous. *Torr. & Gr. Fl. N. A.* 1. p. 249. *DC. Prodr.* 1. p. 595. *Fl. Cestr.* p. 244. *Icon, Mx. Sylva*, 1. tab. 41.

RED ACER. *Vulgò*—Red Maple. Swamp Maple.

Stem 40 to 60 or 80 feet high, and 1 to 2 feet or more in diameter, branched,—the young branches purplish. *Leaves* 2 to 4 inches long; *petioles* 1 or 2 to 5 inches long. *Flowers* appearing before the leaves, in fascicles of fives. *Calyx* petaloid, and with the petals, bright purple (or often yellowish tawny). *Fruit* (including the wing) near an inch long. Moist low grounds; swampy woodlands: Canada to Florida. *Fl.* March—April. *Fr.* Sept.

Obs. The *variety* with yellowish or tawny flowers, is quite common in Pennsylvania,—and in a pretty extensive examination, I find those flowers generally staminate and sterile (rarely perfect); while the bright purple flowers are constantly perfect. The wood of the Red Maple—especially that variety or form of it, known as *Curled Maple*—is much used in the manufacture of various articles of furniture, &c. and the refuse timber makes excellent fuel. The bark affords a dark purplish-blue dye, and makes a pretty good bluish-black ink. The *sap* of all the species is more or less saccharine.

ORDER XLII. HIPPOCASTANACEAE. *DC. Torr. & Gr.*

Trees or shrubs.—the annual growth of the branches rapid and definite. *Leaves* mostly opposite, compound (digitate by sevens and fives), without stipules; leaflets penninerved. *Flowers* perfect, unsymmetrical, in large showy terminal thyrsoid panicles or racemes. *Calyx* of 5 connected sepals. *Petals* 5 (or sometimes 4, by the suppression of the lower one), unequal. *Stamens* 6 to 8—usually 7—distinct, inserted upon a hypogynous disk. *Ovary* 3-celled (or 3 united carpels, with each 2 ovules); *styles* united into one. *Fruit* a subglobose coriaceous capsule, echinate or unarmed, mostly 1-celled by abortion, 2 or 3-valved with a localidial dehiscence. *Seed* mostly solitary by abortion, large, subglobose, with a smooth shining reddish-brown testa and broad paler hilum, destitute of albumen: *cotyledons* very thick and fleshy, gibbous, cohering or soldered together, remaining under ground in germination.

A very small Order, and little known in Agriculture.

32. AESCULUS. *L. Endl. Gen.* 5641.

[An ancient Latin name of a tree which bore esculent fruit.]:

☞ The generic character is nearly that of the Order.

1. *Æ. HIPPOCASTANUM*, *L.* Leaflets in sevens, obovate-cuneate, acute, dentate; flowers 5-petaled and heptandrous; fruit echinate. *DC. Prodr.* 1. p. 597.

HORSE-CHESNUT AESCULUS. *Vulgò*—Horse Chesnut. [de Indias. *Fr.* Marronnier d' Inde. *Germ.* Die Rosskastanie. *Span.* Castaño

Stem 30 to 50 or 60 feet high, and 1 to 2 feet in diameter, with numerous symmetrical rather erect branches. *Leaflets* 4 to 6 or 8 inches long; *common petioles* 4 to 6 inches long. *Flowers* white or ochroleucous, with red spots and tinges of yellow. Cultivated. Native of Asia. *Fl.* May. *Fr.* October.

Obs. This ornamental tree (which is often called *English Horse Chesnut*, because it came to us by way of England—but which ori-

ginally came from Northern India—) has not been as generally introduced as it deserves to be. It is not only symmetrical and handsome, but also remarkably exempt from the depredations of noisome insects: and although of slower growth than some others, it is, in my opinion, well worth waiting for—on account of its rare beauty, and the perfect shade it affords. The young shoots, or branches of each year, complete their development, and come to a full stop, early in the summer,—the residue of the season being requisite to harden and prepare them to endure the succeeding winter; and no secondary branches are ever put forth during growth. There are several *native* species of *Aesculus* in our mountain forests, from Virginia to Georgia—and along the river banks of the West,—where they bear the name of *Buck-eye*, from a fancied resemblance of the seeds to the eye of that animal. The trees, from their abundance, have become the popular emblem of *Ohio*—which is known throughout the Union as *the Buck-eye State*.

ORDER XLVI. VITACEAE. *Juss. Lindl.*

Shrubby plants, with nodose stems, and generally with a loose stringy bark. *Stems* climbing by tendrils (which are abortive racemes or peduncles). *Leaves* simple or compound,—the lower ones opposite,—upper ones alternate, opposite the racemes which are sometimes partly or wholly changed into tendrils.—*Flowers* mostly in compound racemes, often polygamous or dioicous, small, greenish. *Calyx* very small, entire or 4 or 5-toothed, lined with a perigynous disk. *Petals* 4 or 5, inserted on the outside of the disk, valvate in aestivation, sometimes cohering by the tips, caducous. *Stamens* as many as the petals, and opposite them! *Ovary* 2-celled, with 2 erect collateral ovules in each cell. *Fruit* a berry. *Seeds* with a bony *testa*; *embryo* much shorter than the horny or fleshy albumen.

The interesting genus here given is the only important one of the Order.

33. VITIS. *L. Endl. Gen. 4567.*

[An ancient Latin name; of obscure derivation.]

Calyx obsoletely 5-toothed. *Petals* 5, cohering at apex and speedily falling off (pushed off by the stamens). *Stigma* subsessile, obtuse. *Berry* 2 or 3-celled, 4-seeded,—some of the cells and seeds often abortive. *Perennial climbing shrubs*.

† *Flowers perfect (Foreign species)*.

1. *V. VINIFERA, L.* Leaves lobed, sinuate-dentate, glabrous or tomentose. *DC. Prodr. 1. p. 633. Fl. Cestr. p. 152.*

WINE-PRODUCING VITIS. *Vulgò*—Wine Grape. English Grape, &c. *Fr. La Vigne. Germ. Der Weinstock. Span. La Vid.*

Stem 10 to 20 feet or more in length (but usually kept shorter by lopping). *Leaves* more or less lobed and dentate, generally smaller than in our native species, sometimes very glabrous and shining. *Berries* often large, of various forms and colors. Cultivated. Native of southern Asia. *Fl. June. Fr. Aug. September.*

Obs. Many *varieties* (with names as numerous) of this plant have been produced by long culture in different soils,—and a number of them are cultivated in the U. States, for their delightful *fruit*; but the product is rather uncertain, in this climate, without great care and attention. The manufacture of *wine*, also, seems not yet to have succeeded well, in our country. The excellence of the *fruit* of the Vine—whether fresh, or dried and preserved in the state of

Raisins—is universally known and appreciated; while the fermented juice of the Grape has been the theme of eulogy and song (and the excessive use of it, the cause of, infinite mischief), from the earliest ages down to the establishment of Temperance Societies, in the present day. The *Currants*, of commerce (*Corinths*, or Grapes of Corinth)—often called *Zante Currants*—are believed to be a small-fruited variety of this,—or perhaps a distinct yet nearly allied species.

† † *Flowers often dioicous (Native species).*

2. *V. LAERUSCA, L.* Leaves roundish-cordate, somewhat 3-lobed, acutely dentate, densely whitish-tomentose beneath; fertile racemes mostly simple, short, and few-flowered; berries large. *Torr. & Gr. Fl. N. A. 1. p. 244. DC. Prodr. 1. p. 631. Fl. Cestr. p. 150.*

Vulgò—Fox-Grape, of the Northern States.

Stem 15 to 20 or 30 feet long, straggling over bushes and small trees. *Leaves* 4 to 6 inches in length,—the tomentum beneath hoary, or sometimes a little tawny; *petioles* 2 to 3 inches long. *Berries* globose, large (about half an inch in diameter),—when mature varying in color from nearly black to dark amber and greenish-white,—with a thickish coat, a tough central pulp, and a musky or rancid flavor. Moist thickets, along streams: Canada to Georgia. *Fl.* June. *Fr.* September.

Obs. According to Mr. ELLIOTT, this is one of the largest species of Vine, in the South—"climbing over the loftiest trees" of the forest: But in Pennsylvania, it is usually rather slender, and of moderate extent. The *wild* fruit is not very palatable,—having a disagreeable musky flavor. There are, however, some *varieties* (or perhaps *hybrids*)—improved by long culture—which are much esteemed: such as the "*Isabella*"—the "*Schuylkill*" (called also "*Alexander's*," and "*Tusker's*,")—the "*Catawba*"—and especially the "*Bland's*" Grape. These varieties succeed best, in the Middle States; and, indeed, have nearly superseded all the foreign ones—except among the more curious pains-taking amateurs.

3. *V. AESTIVALIS, Mx.* Leaves broadly cordate, often 3 to 5-lobed or sinuately palmate, coarsely and unequally dentate, loosely ferruginous-tomentose beneath; fertile racemes mostly compound, long, many-flowered; berries small. *Torr. & Gr. Fl. N. A. 1. p. 244. DC. Prodr. 1. p. 634. Fl. Cestr. p. 151.*

SUMMER VITIS. *Vulgò*—Little Grape. Common Wild Grape.

Stem 20 to 40 and sometimes 60 feet or more in length. *Leaves* 4 to 8 inches long, often palmately lobed with rounded sinuses,—the younger ones with a loose cobweb-like russet pubescence beneath, which becomes coarser and more hirsute with age, and sometimes nearly disappears. *Berries* globose, small (generally about one fourth of an inch in diameter), deep blue or bluish black when mature, and covered with a fine glaucous powder,—the skin thinish, and the flavor (especially after a little frost) a sprightly agreeable acid. Rich woodlands, and thickets: Connecticut to Florida. *Fl.* June. *Fr.* October.

Obs. This is the tallest climber of all our Grape-vines, in Pennsylvania; and I have seen an old vine, of this species, 8 to 10 inches in diameter, at base. The *fruit* varies in size and quality,—the best specimens being well worthy of culture. I have cultivated a native of this vicinity, in which the fruit often equals that of the "English Grape" (or Miller's Burgundy) in size; and although somewhat harshly acid, it abounds in a rich purple juice, at maturity,—and makes a fine preserve, for pastry.

4. *V. vulpina*, L. Stem and branches with a close greyish-brown bark; leaves orbicular, coarsely and unequally dentate, cordate at base, glabrous and shining on both sides; fertile racemes compound, umbellulate; berries large. *Torr. & Gr. Fl. N. A.* 1. p. 245.

V. rotundifolia. *Mx. DC. Prodr.* 1. p. 635.

VULPINE OR FOXY VITIS. *Vulgò*—Fox-Grape, of the Southern States; also called “Muscadine,” and “Bullet- or Bull-Grape.”

Stem 20 to 50 feet or more in length, with an adhesive greyish minutely verrucose bark. *Leaves* 2 to 3 inches in diameter. *Berries* globose, large (half an inch to three quarters in diameter), bluish black when mature, with a coriaceous coat and not unpleasant flavor (*vide* ELLIOTT). Woodlands, and banks of streams: Virginia to Florida. *Fl.* May—June. *Fr.* July—August.

Obs. The most striking feature of this vine, is the close even texture of its grey bark,—somewhat resembling that of the Beech-tree, or Hornbeam; while all the other species, so far as I know, have a loose, lamellated, stringy, dark-brown bark, after the first year's growth.* It is quite probable, as suggested by Mr. ELLIOTT, that this is the original “Fox-Grape,” or *V. vulpina*, of LINNÆUS. I have observed it growing in abundance in the vicinity of the village of Suffolk, Virginia; but have not seen the fruit. The inhabitants assured me, however, that the large black berries were quite palatable,—and were uniformly, in that region, known by the name of *Fox-Grapes*. Mr. ELLIOTT thought the species might be, some day, advantageously cultivated.

ORDER XLVII. POLYGALACEAE. *Juss. Lindl.*

Herbaceous (all the N. American species,) or *shrubby* plants. *Leaves* generally alternate, simple, entire, destitute of stipules. *Roots* bitter, and sometimes with a milky juice. *Pedicels* with 3 bracts. *Flowers* perfect, unsymmetrical, usually racemose or spicate. *Calyx* of 5 irregular sepals,—the 2 lateral or inner ones (*wings*) larger, and usually petaloid. *Petals* usually 3, more or less united,—the anterior or lower one (*keel*) larger than the others. *Stamens* 6 to 8, combined in a tube, which is split on the upper side, and united below with the claws of the petals; *anthers* mostly 1-celled, opening by a pore at apex. *Ovary* compound, 2-celled, with a single suspended ovule in each cell; *style* curved and often cucullate. *Capsule* flattened. *Seeds* often pubescent, with an arillus-like *caruncle* at base; *embryo* straight, in fleshy albumen.

A small Order,—and, notwithstanding the promise implied by the name of its type (*Polygala*—*much milk*), of little or no value in Agriculture.

34. POLYGALA. *Tournef. Endl. Gen.* 5647.

[Greek, *Poly*, much, & *Gala*, milk; from its supposed influence on lacteal secretion.]

☞ The character of the *Genus* is essentially that of the *Order*.

1. *P. SENEGA*, L. Stems simple, terete; leaves alternate, elliptic-lanceolate, the upper ones acuminate; raceme terminal, spike-form; wings of the calyx orbicular-obovate, concave, rather longer than the petals. *Torr. & Gr. Fl. N. A.* 1. p. 131. *DC. Prodr.* 1. p. 330. *Fl. Cestr.* p. 403.

Vulgò—Seneka Snake-root. Milk-wort. Mountain Flax.

* ADRIEN DE JUSSIEU accounts for the *usual* phenomenon, by the circumstance that, in the Vine, the *Liber* (or inner fibrous bark) is annually detached or thrown off along with the outer cortical layer. “On n’y trouve pas de liber, qui, dans la Vigne, est chaque année détaché avec la couche corticale tout entière.”—*Cours Elementaire.* p. 531. But this species would seem to be an exception.

Root perennial, thick and somewhat woody, with coarse branches. *Stems* usually several from the same root, 9 to 15 inches high, herbaceous and rather flaccid. *Leaves* 1 or 2 to 4 inches long.—those near the root small, ovate and scale-like. *Flowers* greenish white. *Capsule* orbicular. *Seeds* large, pyriform, hairy, the arillus-like caruncles nearly as long as the seeds. Hilly woodlands; Canada to N. Carolina. *Fl.* May. *Fr.* July.

Obs. The root of this species is so valuable for its medicinal properties—as a stimulating expectorant, in croup, &c.—that although not strictly a plant of Agricultural interest, every farmer ought to know its character, and be able to recognize it when he sees it.

ORDER XLVIII. LEGUMINOSAE. Juss.

Herbs, shrubs, or trees. *Leaves* alternate, stipulate, usually compound (sometimes reduced to a solitary leaflet—and even to a *phyllodium*, or dilated common petiole); *leaflets* mostly entire. *Calyx* usually of 5 sepals, more or less united. *Corolla* of 5 petals,—either papilionaceous or regular. *Ovary* single and simple; *style* proceeding from the upper or ventral suture. *Fruit* a legume. *Seeds* attached to the upper suture, mostly destitute of albumen; *embryo* straight or often with the radicle bent back along the edge of the cotyledons; *cotyledons* either thin and foliaceous or thick and fleshy.

This vast Family—comprising upwards of 400 genera—is as important as it is comprehensive. Among the remarkable plants (or products) belonging to the Order, and not here described, may be mentioned—on account of their value, beauty, or other characteristic—the *Logwood* (*Haematoxylon Campechianum*, L.)—the *Brazilletto* or *Brazil Wood* (*Caesalpinia Brasiliensis*, L.)—the *Rose Wood* (a species of *Mimosa*)—the *Sissoo Wood* of India (*Dalbergia Sissoo*, Roxb.)—the *Red Sandal Wood* (*Pterocarpus santalinus*, L.)—the *Liquorice plant* (*Glycyrrhiza glabra*, L.)—the *Tamarind tree* (*Tamarindus Indica*, L.)—the *Tonka Bean* (*Dipterix odorata*, Willd.)—the *Senna* of the Shops (*Cassia Senna*, L.)—the plants yielding *Gum Arabic* (species of *Acacia*), and various other gums and balsams.—the pretty *Laburnum* (*Cytisus Laburnum*, L.)—and the wonderful *Sensitive plant* (*Mimosa pudica*, L.), &c. &c. The famous Chinese condiment called *Soy*, is also obtained from the seeds of a plant (*Dolichos Soja*, L. or *Soja hispida*, DC.) belonging to this Order; and the bean called “*Gram*,” in Bengal,—so extensively used, there, as food for horses, &c.—is, I believe, the seed of the *Cytisus Cajan*, L. or *Cajanus flavus*, DC.

SUB-ORDER I. PAPILIONACEAE. L.

Leaves simple or compound (mostly pinnate or pinnately trifoliate). *Flowers* usually perfect. *Corolla* butterfly-shaped (*papilionaceous*), or rarely almost regular, with an imbricated aestivation. *Stamens* mostly 10, diadelphous—sometimes monadelphous, or distinct—inserted with the petals upon the base of the calyx.

TRIBE I. VICIEAE. Bronn.

Herbs. *Leaves* mostly even-pinnate (odd in *Cicer*).—the common petiole not articulated with the stem, generally produced at apex into a bristle or tendril. *Stamens* diadelphous (9 and 1). *Legume* continuous (not jointed), usually deliscent. *Radicle* mostly inflexed. *Cotyledons* thick, farnaceous, remaining underground unchanged in germination.

35. CICER. Tournef. Endl. Gen. 6578.

[The Latin name for a species of Vetch; applied to this genus.]

Calyx somewhat gibbous at base, 5-parted; segments acuminate,—the upper ones incumbent on the vexillum. *Legume* turgid, 2-seeded. *Seeds* gibbous.

1. *C. ARIETINUM*, L. *Leaves* odd-pinnate; leaflets cuneate-obovate, serrate; stipules lanceolate, subdenticulate; calyx slightly gibbous,—the segments as long as the wings of the corolla. DC. *Prodr.* 2. p. 354. *Fl. Cestr. p.* 423.

RAM CICER. *Vulgò*—Coffee Pea. Chick Pea. Garavances.

Fr. Le Pois Chiche. *Germ.* Gemeine Kicher. *Span.* Garbanzo.

Whole plant canescent and glandular-pilose, the hairs secreting oxalic acid. *Root* annual. *Stem* 9 to 18 inches high, branching. *Leaflets* about half an inch long, in 4 to 6 pairs (often alternate), with a terminal odd one instead of a tendril. *Flowers* axillary, solitary, white. *Seed* gibbous, pointed,—in form resembling the head of a sheep—and hence the specific name. Gardens: cultivated. Native of Europe, and the East. *Fl.* July—September. *Fr.* August—October.

Obs. This Vetch is occasionally cultivated for the *seeds*,—which are said to afford a tolerable substitute for *coffee*. Coffee-drinkers, however, are not apt to admire *substitutes* for their favorite berry; and it is hardly likely that this plant will ever be of much account, in our country.

36. ARACHIS. *L. Endl. Gen.* 6601.

[An ancient name, of obscure meaning.]

MONOICOUSLY POLYGAMOUS: STERILE FL. *Calyx* with a slender pedicel-like tube; limb bilabiate,—the upper lip 4-toothed, lower one entire. *Corolla* resupinate. *Stamens* monadelphous (9 united, and 1 abortive). *Ovary* minute, abortive. FERTILE FL. *Calyx*, *Corolla*, and *Stamens* none. *Ovary* on a stipitate elongating receptacle, or peduncle, by which it is thrust under ground. *Legume* subterraneous, oblong, terete, obtuse at each end, somewhat torulose, coriaceous, reticulately veined, 2 or 3-seeded, indehiscent. *Seeds* irregularly ovoid; *cotyledons* thick; *radicle* straight!—*Herbaceous*. *Leaves* even-pinnate; *stipules* elongated, adnate to the petiole; *leaflets* in 2 pairs, not stipulate. *Flowers* axillary, pedunculate,—the lower ones subterraneous, solitary and fertile—the upper ones aerial, often several in an axil and all sterile. [This somewhat anomalous plant does not exactly accord with any of the established *Tribes*; but I have acted on a suggestion of Prof. DE CANDOLLE, and placed it among the *Vetches*.]

1. A. HYPOGAEA, *L.* *Stem* procumbent; leaflets obovate,—the common petiole not produced into a tendril. *DC. Prodr.* 2, p, 47½. SUBTERRANEAN ARACHIS. *Vulgo*—Ground-nut. Pea-nut. *Fr.* L' Arachide. *Germ.* Die Erd-nuss. *Span.* Mani.

Root annual. *Stem* 9 to 18 inches long, prostrate, branching, pilose. *Leaflets* an inch to an inch and half long, subsessile, minutely mucronate at apex, entire and bordered by a pilose nerve; *common petioles* 1 to 2 inches long, channelled above, pilose. *Sterile flowers* 1 or 2 to 5 or 7, in the upper axils, on long slender pedicels,—the *corolla* orange-yellow. Cultivated. Native of South America. *Fl.* July—September. *Fr.* September—October.

Obs. The summers are rather short for this plant, in *Pennsylvania*,—where it is sometimes seen in gardens, as a curiosity: But, in the *Southern States*, it is cultivated to a great extent,—and from thence our Nut-Merchants derive their supply. The *seeds*—either raw, or roasted in the legumes—are quite a favorite with children, and others; and large quantities of them are consumed at all public gatherings. The seeds are said, also, to yield a valuable oil.

37. FABA. *Tournef.* [VICIA. *L. Endl. Gen.* 6581.]

[The Latin name for a *Bean*; appropriated to this genus.]

Calyx tubular, 5-cleft,—the 2 upper segments shorter. *Style* bent nearly at a right angle with the ovary; *stigma* villous. *Legume* large, coriaceous, somewhat tumid. *Seeds* oblong, subcompressed, with the hilum at one end. *Stem* erect. Tendrils simple and nearly obsolete.

1. *F. VULGARIS*, *Moench*. Leaflets 2 to 4, oval, mucronate; stipules semi-sagittate, obliquely ovate. *DC. Prodr. 2. p. 354. Fl. Cestr. p. 424.*

COMMON FABA. *Vulgò*—Horse Bean. Windsor Bean.

Fr. Fève de Marais. *Germ.* Die Sau-Bohne. *Span.* Haba.

Root annual. *Stem* 1 to 2 feet high, simple, smooth. *Leaflets* 2 to 3 inches long, entire, smooth; *tendrils* obsolete; *stipules* large. *Flowers* in simple erect axillary racemes. *Corolla* white, with a large black spot on each wing. *Legume* 2 to 3 inches long, torulose. *Gardens*: cultivated. *Fl.* June—July. *Fr.* August.

Obs. This Bean—originally from the shores of the Caspian Sea—is sometimes cultivated for the table,—but is not generally admired. The seeds have a strong and rather unpleasant flavor.

38. *ERVUM*. *Tournef. Endl. Gen. 6580.*

[The Latin name for a species of Vetch or Tare.]

Calyx 5-parted; segments lance-linear, acute, about as long as the corolla. *Style* ascending; stigma glabrous. *Legume* 2 to 4-seeded.

1. *E. LENS*, *L.* Stem erect, branching; leaflets elliptic-oblong, somewhat pilose; stipules obliquely ovate-lanceolate, ciliate; peduncles axillary, 2 or 3-flowered; legumes broad, short, finely reticulated, smooth, 2-seeded; seeds lenticular. *DC. Prodr. 2. p. 366. Fl. Cestr. p. 426.*

Vulgò—Lentil.

Fr. La Lentille. *Germ.* Gemeine Linse. *Span.* Lenteja.

Root annual. *Stem* 6 to 12 inches high. *Leaflets* 3 to 6 or 8 pairs, half an inch long; *tendrils* nearly simple. *Corolla* white or pale purple. *Legume* about half an inch long. *Seeds* 2, orbicular, compressed, white or tawny yellow. *Gardens*: cultivated. *Native of Europe. Fl.* June—July. *Fr.* August.

Obs. This Vetch is cultivated in the old world, chiefly, I believe, as food for Stock,—both herbage and seeds serving that purpose. The plant is sometimes seen in Gardens, here; but it will scarcely command the attention of American Agriculturists.

39. *PISUM*. *Tournef. Endl. Gen. 6579.*

[The Latin name for the common Pea.]

Calyx-segments foliaceous, the 2 upper ones shorter. *Vexillum* large, reflexed. *Style* compressed, keeled, villous on the upper margin. *Legume* oblong. *Seeds* numerous, globose, with an orbicular hilum.

1. *P. SATIVUM*, *L.* Leaflets rhomboid-ovate, rather obtuse, mucronate, entire; stipules very large, ovate, semi-sagittate, crenate-dentate at base; peduncles 2 or many-flowered; legumes subcarnose. *DC. Prodr. 2. p. 368. Fl. Cestr. p. 426.*

CULTIVATED PISUM. *Vulgò*—Pea. Garden Pea.

Fr. Pois cultivé. *Germ.* Gemeine Erbse. *Span.* Guisante.

Plant smooth and glaucous. *Root* annual. *Stem* 1 to 3 or 4 feet long; flaccid, climbing by tendrils. *Leaflets* usually 2 pairs, 1 to 2 or 3 inches long; *tendrils* long and branching; *stipules* larger than the leaflets. *Peduncles* axillary, 1 or 2 to 6 inches long, often with two flowers at summit. *Corolla* white. *Style* reflexed. *Legume* about 2 inches long, subterete. *Gardens* and *Lots*: cultivated. *Native country* unknown. *Fl.* June—July. *Fr.* July—August.

Obs. Several *varieties* of this are cultivated (one or more of them in almost every garden), chiefly for the *young seeds*,—which afford a favorite dish at table. In the Northern States, the *field culture* of Peas (for the mature seeds,) is much attended to; but is rarely seen in Pennsylvania—or, I believe, south of that.

TRIBE II. PHASEOLEAE. *Bronn.*

Herbaceous or *shrubby* plants. *Stem* often twining. *Leaves* compound (usually pinnately trifoliolate—rarely reduced to a single leaflet), stipellate. *Stamens* diadelphous (9 and 1)—or rarely somewhat monadelphous. *Disk* a membranous sheath surrounding the base of the ovary. *Legume* continuous, but often torose and with cellular partitions between the seeds, dehiscent. *Seeds* usually reniform, convex or compressed.

SUB-TRIBE I. EU-PHASEOLEAE. *Benth.*

Inflorescence racemose, the pedicels aggregated on alternate knobs. *Vexillum* with 2 appendages at base. *Ovary* with several ovules; *style* often indurated above the middle. *Cotyledons* thick, nearly unchanged in germination, and often rising out of the ground.

40. PHASEOLUS. *L. Endl. Gen.* 6674.

[Latin. *Phaselus*, a boat; from the keel-like form of the legumes.]

Calyx bibracteate at base, campanulate, somewhat bilabiate,—the upper lip bifid or emarginate, the lower one trifid. *Keel* (of the corolla), together with the *stamens* and *style*, spirally twisted or circinate. *Ovary* stipitate, the stipe sheathed. *Legume* linear or falcate, compressed or subterete, many-seeded. *Seeds* reniform, with an oval-oblong *hilum*. *Leaves* trifoliolate.

☞ *Herbaceous*: *Peduncles* shorter than the leaves.

1. *P. VULGARIS*, *Savi.* Stem mostly volubile; leaflets ovate, acuminate; racemes solitary, pedunculate; bracts as long as the calyx; legumes nearly linear and straight, long-mucronate; seeds reniform. *DC. Prodr.* 2. p. 392. *Fl. Cestr.* p. 429.

COMMON PHASEOLUS. *Vulgè*—Kidney Bean. String Bean. Pole Bean. *Fr.* Haricot. *Germ.* Gemeine Bohne. *Span.* Fasoles.

Root annual. *Stem* 4 to 6 or 8 feet long, slender, volubile and climbing (always twining against the Sun—or W. S. E.)—or short and erect (in the “bunch” variety). *Leaflets* 2 to 4 or 5 inches long; *common petioles* 1 to 5 or 6 inches long. *Racemes* on stout peduncles 1 to 3 or 4 inches long. *Cov'la* mostly white. *Legume* 3 to 6 inches long. *Seeds* more or less reniform, whitish, or of various colors. *Gardens*, and *Lots*: cultivated. *Native* of India. *Fl.* June—August. *Fr.* Sept.

Obs. Very generally cultivated for the table,—both *seeds* and *legumes* being eaten while young; when mature, the seeds only. The *baked Beans*, of New England, constitute a sort of national dish, among the descendants of the Pilgrims.

The *P. nanus*, *L.* Dwarf or *Bunch Bean* (with short erect stem, more acuminate leaflets, and larger bracts), is supposed to be only one of the many *varieties* produced by long culture.

2. *P. LUNATUS*, *L.* Stem volubile, smoothish; leaflets obliquely- or deltoid-ovate, acute; racemes subpedunculate; bracts shorter than the calyx; legumes broad, compressed, scymitar-form or somewhat lunate; seeds much compressed, broad. *DC. Prodr.* 2. p. 393. *Fl. Cestr.* p. 430.


LUNATE PHASEOLUS. *Vulgè*—Lima Bean. Carolina Bean.

Root annual. *Stem* 6 to 8 or 10 feet long, branching, slender, volubile and climbing. *Leaflets* 2 to 4 inches long; *common petioles* 2 to 6 inches long. *Racemes* loose flowered, on peduncles about two thirds of an inch long. *Corolla* greenish white, rather small. *Legumes* 2 to 3 inches long, and about an inch wide. *Seeds* few, large, flattish and mostly white. *Gardens and Lots*: cultivated. *Fl.* July, August. *Fr.* September—October.

Obs. This species (supposed to be a native of *Bengal*—though generally named as if of South America,) affords a favorite dish, in the latter part of summer,—the large *seeds*, only, being used. Both species are tender plants,—impatient of cold, and killed by the slightest frost.

TRIBE III. GALEGEAE. *Bronn. Torr. & Gr.*

Erect herbs, shrubs, or trees. *Leaves* usually odd-pinnate, seldom stipellate. *Inflorescence* racemose or spicate. *Corolla* papilionaceous, or otherwise irregular. *Stamens* diadelphous (9 and 1), or sometimes monadelphous. *Legume* continuous, dehiscent, 1-celled, several-seeded (rarely with transverse cellular partitions); or 1 or 2-seeded and indehiscent.

 *Leaves mostly odd-pinnate: Flowers in racemes: Corolla truly papilionaceous.*

41. ROBINIA. *L. Endl. Gen.* 6546.

[Name in honor of *John and Vespasian Robin*; French Botanists.]

Calyx subcampanulate, 5-cleft,—the 2 upper segments approximate or cohering. *Vexillum* large; *keel* obtuse. *Stamens* diadelphous. *Style* bearded on the side next the free stamen. *Legume* compressed, many-seeded, the upper or seed-bearing suture margined. *Trees, or shrubs.* *Leaflets* petiolulate, stipellate.

1. *R. PSEUD-ACACIA, L.* Branches virgate, armed with stipular prickles; leaflets oblong-ovate; racemes loose, drooping; legumes smooth. *Torr. & Gr. Fl. N. A.* 1. p. 294. *DC. Prodr.* 2. p. 261. *Fl. Cestr.* p. 410. *Icon, Mex. Sylva,* 2. tab. 76.

FALSE-ACACIA ROBINIA. Vulgò—Locust tree.

Stem 30 to 60 or 80 feet high, and 1 to 2 feet in diameter. *Leaflets* 3 or 4 to 8 or 9 pairs, 1 to 2 inches long, each with a small subulate stipelle at base; *common petiole* pinnate nearly to the base, with 2 stout prickles in place of stipules. *Racemes* 3 to 6 inches long. *Corolla* white. *Legume* 2 to 3 inches long. *Mountain forests: Pennsylvania to Arkansas. Fl.* May—June. *Fr.* September.

Obs. The *timber* of this tree is celebrated for its durability,—and is consequently much prized for posts, rail-road ties or sleepers, &c. It is a rather handsome tree,—and is often planted about houses, as a shade tree; but the branches are somewhat liable to be broken by gusts of wind, and the roots are troublesome in sending up suckers. This latter characteristic, however, renders it easy to propagate *Locust groves* (and the tree is worth cultivating, for the timber,) in a suitable soil. The *flowers* are fragrant, but of a rather oppressive odor.—There is another species (*R. viscosa, Vent.*)—inferior to this, both in size and value,—and also a small species (*R. hispida, L.*), which bears a profusion of rich roseate clusters of flowers,—and is one of our most ornamental shrubs, when in bloom.

42. INDIGOFERA. *L. Endl. Gen.* 6530.

[A Latinized name; meaning a plant that produces or brings *Indigo*.]

Calyx 5-cleft; segments acute. *Vexillum* orbicular, emarginate; *keel* with a subulate spur on each side—at length often bent back

elastically. *Stamens* diadelphous. *Style* filiform, glabrous. *Legume* continuous, 1- few- or many-seeded. *Seeds* truncate at both ends, often separated by cellular partitions. *Herbaceous* or *suffruticose* plants. *Leaves* various, usually odd-pinnate; *stipules* small, distinct from the petiole. *Flowers* in axillary racemes.

1. I. TINCTORIA, L. Stem suffruticose, erect; young branches and common petioles clothed with a cinereous pubescence; leaflets in 4 or 5 pairs, with a terminal odd one, oval or obovate-oblong, mucronate, petiolulate, somewhat pubescent beneath with whitish appressed hairs; racemes shorter than the leaves; legumes subterete, torulose, arcuate and deflexed. DC. Prodr. 2. p. 224.

DYER'S INDIGOFERA. *Vulgò*—Indigo. Indigo-plant.

Fr. L' Indigotier. *Germ.* Die Indigopflanze. *Span.* Indigo.

Annual or biennial. *Stem* 2 to 3 feet high, branching. *Leaflets* half an inch to an inch in length; *common petiole* 2 to 3 inches long. *Racemes* 1 to 2 inches long. *Corolla* purplish blue? *Legumes* numerous, half an inch to three quarters in length, deflected on the pedicel, curved upwards. Southern States: cultivated. Native of Asia and Africa. *Fl.* *Fr.*

Obs. This plant—so important in yielding a blue coloring matter—was formerly cultivated to a considerable extent, in Georgia, and some other portions of the South: But the supply from India, and other places abroad, seems to have curtailed that branch of Southern Agriculture,—and has probably turned the attention of the Planters to a more healthful and agreeable, if not a more profitable, employment. The Indigo-plant is said to be *annual*, when subject to inundations,—as on the delta of the Ganges; but is sometimes *fruticose*—yielding one or two *ratoon crops* (i. e. successive growths of suckers, or sprouts), after having been cut off. There is another species (*I. Anil*, L.—nearly allied to this), which is extensively cultivated, in India, for the same object.

TRIBE IV. TRIFOLIÆÆ. Bronn.

Herbaceous or rarely *suffruticose* plants. *Leaves* mostly palmately or pinnately trifoliolate, not stipellate: *leaflets* often dentate or serrulate! *Inflorescence* axillary or terminal, racemose, spicate, capitate or umbellate. *Corolla* papilionaceous. *Stamens* diadelphous (9 and 1). *Legume* continuous, 1-celled, several-seeded and dehiscent,—or 1- or few-seeded and nearly indehiscent.

43. TRIFOLIUM. Tournef. Endl. Gen. 6511.

[Latinized from the Greek, *Triphyllon*; a three-leaved plant.]

Calyx tubular, persistent, 5-cleft; segments subulate. *Corolla* usually marcescent; *petals* more or less united, and mostly free from the stamen-tube; *keel* shorter than the wings and vexillum. *Legume* small, membranaceous, scarcely dehiscent, 1 or 2- (rarely 3 or 4-) seeded, mostly included in the calyx-tube. *Flowers* mostly capitate. *Stipules* adnate to the base of the petiole.

1. T. ARVENSE, L. Stem erect, pilose; leaflets linear-obovate or spatulate, minutely 3-toothed at apex; stipules narrow, subulate-acuminate; heads oblong-cylindric, softly villous; calyx-segments longer than the corolla; petals scarcely united. Torr. & Gr. Fl. N. A. 1. p. 313. DC. Prodr. 2. p. 190. Fl. Cestr. p. 406. Icon, Fl. Lond. 3.

FIELD TRIFOLIUM. *Vulgò*—Stone Clover. Welsh Clover. Rabbit-foot.
Fr. Pied de Lievre. *Germ.* Der Hasen Klee. *Span.* Piè de Liebre.

Whole plant softly pilose. *Root* annual. *Stem* 6 to 12 inches high, slender, generally much branched. *Leaflets* half an inch to an inch long; *common petiole* one fourth of an inch to an inch long. *Corolla* inconspicuous, whitish or pale pink, with a purple spot on the wings. *Legume* 1-seeded. Sterile old fields: Canada to Florida: introduced? Native of Europe. *Fl.* June—Aug. *Fr.* Aug.—Octo.

Obs. This species—which I believe to be a naturalized foreigner—is only intitled to the notice of the farmer on account of its prevalence and its worthlessness. Its presence is a pretty sure indication of a thin soil, and neglected Agriculture: and the appropriate remedy is to improve both. It is then easily superseded by more valuable plants.

2. T. PRATENSE, L. Stems ascending; leaflets oval or ovate-oblong, often retuse or emarginate; stipules broadly lanceolate, membranaceous, nerved, terminating in a subulate point; heads ovoid, obtuse, dense-flowered, subsessile, bracteate at base; calyx-segments scarcely half as long as the corolla, the lower one longer than the others. *Torr. & Gr. Fl. N. A.* 1. p. 313. *DC. Prodr.* 2. p. 195. *Fl. Cestr.* p. 406.

MEADOW TRIFOLIUM. *Vulgò*—Red Clover. Common Clover.
Fr. Trèfle des Prés. *Germ.* Der Wiesen-Klee. *Span.* Trebol.

Root biennial, or perennial? large, fusiform. *Stems* several from the same root, 1 to 2 or 3 feet long, rather weak at base and often decumbent, somewhat branched, striate and pilose. *Leaflets* half an inch to an inch and half long, sessile, hairy beneath; *common petiole* half an inch to 4 or 5 inches long. *Heads* of flowers ovoid or subglobose, an inch or more in diameter. *Corolla* purplish-red (rarely white)—the petals all united into a slender tube about half an inch in length. *Legume* 1-seeded, included in the calyx. *Seed* reniform, greenish-yellow with a shade of reddish-brown. Cultivated fields, meadows, &c. Canada to Florida: introduced. Native of Europe. *Fl.* May—September. *Fr.* July, —October.

Obs. This valuable plant is extensively naturalized; but it is also diligently cultivated by all good farmers. In conjunction with the *Grasses*—especially with *Timothy* (*Phleum pratense*, L.)—it makes the best of *hay*,—though, by itself, it is rather indifferent *pasture*. In the latter part of the season, “*feeding-cattle*” will actually fall away, upon clover, alone. Its culture, however, exerts a most kindly influence on the soil. The *seed* is usually sown (in Pennsylvania) in the month of March, among *Wheat* and *Rye*,—and the crop is ready for the scythe the second year. The *flowers* contain much nectar,—but the tube of the corolla is so long that the *Honey Bee* cannot reach the treasure with its proboscis; and consequently that insect rarely alights on the heads, but leaves them to the more amply provided *Humble Bee*. It seems to be an undetermined question, whether this plant is *biennial* or *perennial*. Certain it is, that a very large portion of that under culture dies at the end of the second year: But my friend, Mr. JOSHUA HOOPES—who is a very acute observer—assures me, he has satisfactorily ascertained that the plant will live *more* than two years. The *perennial Grasses* undoubtedly have a strong tendency to expel or choke out other plants; and it is possible that the disappearance of the Red Clover

from our meadows may be partly owing to that exclusive or monopolizing tendency, in the Grasses. The Red Clover was introduced into general cultivation, in Chester County, Penna., between the years 1790 and 1800. I recollect well, the first large field of it that I ever saw. It was on the farm of the late Mr. JOHN SHARPLESS, of Delaware County—who was one of the pioneers of improved Agriculture, in this State; and the time was about the year 1792. The price of the seed, at that day, was 16 dollars per bushel; whereas now it is usually less than half that sum. *Watson's Annals* of Philadelphia mention, that JOHN BARTRAM had fields of this Clover, prior to the American Revolution.*

3. *T. REPENS*, *L.* Stems creeping, diffuse; leaflets roundish-obovate and emarginate, or almost obovate, denticulate; stipules lanceolate, mucronate, scarious; heads depressed-globose, on very long axillary peduncles; flowers pedicellate, finally reflexed; legumes about 4-seeded. *Torr. & Gr. Fl. N. A.* 1. p. 316. *DC. Prodr.* 2. p. 198. *Fl. Cestr.* p. 407. *Icon, Fl. Lond.* 3.

CREEPING TRIFOLIUM. *Vulgò*—White Clover. Dutch Clover. *Fr.* Triolet. *Trèfle blanche.* *Germ.* Weisscr Klee. *Span.* Trebol blanco.

Root perennial. *Stem* 4 to 12 or 15 inches long, smooth, procumbent, radicating, diffusely branching from the base. *Leaflets* half an inch to an inch long; *common petiole* 1 or 2 to 6 or 8 inches long. *Heads* of flowers on erect sulcate naked peduncles which are from 2 to 8 and 12 inches in length. *Corolla* white, withering and becoming a pale dirty brown. *Legume* $\frac{1}{2}$ to $\frac{1}{3}$ of an inch long, torulose, 2 or 3 to 5-seeded. *Seeds* irregularly ovoid, reddish brown. Pastures, woodlands, &c. throughout the U. States: introduced? Native of Europe. *Fl.* May—Sept. *Fr.* July—Octo.

Obs. The pedicellate florets are somewhat corymbose—forming depressed-globose or vertically flattened heads. The outer or lower florets open first, and are successively reflexed,—so that, during the process of flowering, the heads appear horizontally divided between the withered and the young or opening florets. This species is every where common—and in some years very abundant,—though rarely cultivated. Its flowers are a favorite resort of the Honey Bee; and the plant is esteemed, as affording an excellent pasture, in Pennsylvania,—though Mr. ELLIOTT speaks unfavorably of it, in the South.

* On the 19th September, 1843, I found in my pasture field, two specimens of *Trifolium pratense*, *L.* which finely illustrate GOETHE'S theory of the retrograde metamorphosis of vegetable organs. The florets, in the heads, were on elongated pedicels, varying from one third to three fourths of an inch in length; the usually gamopetalous corolla was, in each floret, substituted by 5 distinct, green, obovate leaflets, on scariously margined petioles; the stamens, within this verticil, were all apparently free, or distinct,—some of them abortive and dilated into scarious narrow petals, or staminodia; the ovary elongated, forming a thin membranaceous tube, dilated above,—the stigma incurved, with a mucronate point on each side terminating the dilated margins of the tube, at summit. [In some instances, since observed—viz: in Sept. 1846—there were 1, 2, or 3 obovate-oblong, green leaflets, proceeding from within the corolla,—giving the florets the appearance of being proliferous. These leaflets, from their position, seemed to be metamorphosed stamens—completely and at once retrograded into foliage!] In consequence of the elongated pedicels of the florets, the head, in each case, was quite open, or loose,—presenting a cluster of small, green, hairy leaves. The whole head was necessarily sterile; but there were other heads on the same stem (on inferior branches,) which were in the usual form and condition. These metamorphosed heads were the terminal ones, in every instance; and I have observed the Peloria (in *Linaria*.) to be constantly at the summit of the stem, or raceme.

Notwithstanding its present general distribution over our country, it is possible that this species, also, may have been introduced. JONATHAN DICKINSON, in 1719 (*vide Watson's Annals*), writing from Pennsylvania, says, "the white clover already tinges the roads as a natural production." KALM, in 1748, spoke of it as being abundant, here.—There are more than 100 other species of this genus, known to the Botanists,—some of which are cultivated, and appear to be esteemed, by the Agriculturists of Europe; but they have not yet commanded the attention of our farmers, and probably are inferior in value to the common Red Clover.

44. MELILOTUS. *Tournef. Endl. Gen.* 6510.

[Greek, *Mel*, honey, and *Lotus*: a Lotus-like plant, attractive of Bees.]

Calyx tubular or campanulate, persistent, 5-toothed. *Corolla* deciduous; *vexillum* free, longer than the wings; *keel*-petals completely united, cohering with the wings, free from the stamen-tube. *Legume* longer than the calyx, coriaceous, globose or ovoid, 1- or few-seeded, scarcely dehiscent. *Herbs. Flowers* mostly in long spicate racemes.

1. *M. LEUCANTHA*, *Koch.* Stem rather erect, striate; leaflets ovate-oblong, somewhat emarginately truncate at apex, mucronate, remotely dentate-serrate; stipules setaceous; racemes loose, elongated; calyx-teeth about as long as the tube; corolla more than twice as long as the calyx; legume ovoid-oblong, wrinkled, 1 or 2-seeded. *Torr. & Gr. Fl. N. A.* 1. p. 321. *DC. Prodr.* 2. p. 187. [Clover.

WHITE-FLOWERED MELILOTUS. *Vulgò*—Tree Clover. *Bokhara Fr.* Le Melilot blanc. *Germ.* Weisser Steinklee. *Span.* Meliloto.

Root biennial? *Stem* at first ascending or oblique, finally erect, 3 to 5 or 6 feet high, stout, striate-ribbed, smooth, paniculately branched. *Leaflets* an inch to an inch and a half long; *common petiole* 1 to 2 inches long. *Racemes* 2 to 4 inches long, on axillary peduncles 1 to 2 inches in length. *Flowers* retrorsely imbricated before opening. *Corolla* white. Introduced, and partially cultivated. Native of Europe. *Fl.* June—Aug. *Fr.* Aug.—September.

Obs. This plant has been introduced by some amateur farmers, and much commended as being specially suited for *soiling* (or cutting, as wanted, for Stock that are kept up): But, without any practical knowledge on my part, I cannot help doubting whether so coarse a plant can be as valuable as the common Red Clover. A former species of this genus (*M. coerulea*, *Lam.*),—but which has been separated, and is now the *Trigonella coerulea*, *DC.* a plant of strong and enduring odor,—is employed, in Switzerland, to give the peculiar flavor to the famous *Schabzieger*, or (as it is usually called in the vernacular) "Sap-sago," Cheese.

45. MEDICAGO. *Tournef. Endl. Gen.* 6507.

[So named by the Greeks, from having been introduced by the *Medes*.]

Calyx somewhat cylindric, 5-cleft. *Keel* of the corolla remote from the vexillum. *Legume* usually many-seeded, of various forms—always more or less falcate, or spirally coiled. Mostly *herbaceous* plants. *Peduncles* axillary, 1, 2, or many-flowered.

1. *M. SATIVA*, *L.* Stem erect; leaflets obovate-oblong or sub-cuneate, dentate, mucronate; stipules lanceolate, subdentate; peduncles racemose; legumes spirally twisted, finely reticulated, several-seeded.

Torr. & Gr. Fl. N. A. 1. p. 321. DC. Prodr. 2. p. 173. Fl. Cestr. p. 405. [Clover.

CULTIVATED MEDICAGO. *Vulgò*—Lucerne. Spanish Trefoil. French *Fr. La Luzerne. Germ. Der Schneckenklee. Span. Alfalfa. Mielga.*

Root perennial. *Stem* 1 to 2 feet high, branched, smoothish. *Leaflets* half an inch to an inch long,—the lateral ones subsessile, the terminal one petiolulate; *common petiole* one-fourth to three-fourths of an inch long. *Racemes* erect, on peduncles half an inch to an inch long. *Corolla* violet-purple, nearly twice as long as the calyx. Introduced: cultivated. Native of Spain. *Fl.* June—July. *Fr.* August.

Obs. This was formerly cultivated on a small scale, as a fodder,—but it did not find favor with our farmers, and is now rarely seen, in Pennsylvania. It might answer, for *soiling*, in suitable situations,—though I think the stem is too ligneous and wiry to become a favorite fodder, where the red clover can be had. The *Saint-foin* (*Hedysarum Onobrychis*, L. or *Onobrychis sativa*, Lam. a plant of the *Hedysarum* tribe, DC. the *sixth* of *Torr. & Gr.*), is much cultivated for fodder, on the calcareous soils of Europe,—and the late Mr. CRAWFORD, of Georgia, interested himself in endeavoring to introduce it into the Southern States: but I do not learn that its culture was adopted to any extent. I have never met with it on any farm; and presume it scarcely belongs to the Agriculture of this country.

TRIBE VIII. SOPHOREAE. *Spreng. DC.*

Leaves either simple, palmately foliolate, or odd-pinnate,—the leaflets not stipellate. *Corolla* mostly papilionaceous. *Stamens* 10, distinct; *anthers* uniform. *Legume* continuous, or sometimes moniliform, but not jointed. *Cotyledons* flat, foliaceous: *radicle* inflexed, or often straight.

46. CERCIS. L. *Endl. Gen. 6750.*

[Greek, *Kerkis*, a weaver's shuttle; from the form of the legume.]

Calyx campanulate, 5-toothed, gibbous at base. *Corolla* scarcely papilionaceous; petals all distinct, unguiculate,—the vexillum smaller than the wings, and the keel-petals larger. *Stamens* unequal. *Legume* oblong, acute at each end, much compressed, 1-celled, many-seeded,—the upper suture margined. *Seeds* obovate; *radicle* straight. Small trees, with simple entire leaves, and membranaceous caducous stipules. *Flowers* fasciculate along the branches, appearing before the leaves.

1. C. CANADENSIS, L. Leaves orbicular-cordate, acuminate, villous in the axils of the nerves beneath. *Torr. & Gr. Fl. N. A. 1. p. 392. DC. Prodr. 2. p. 518. Fl. Cestr. p. 433.*

CANADIAN CERCIS. *Vulgò*—Red-bud. Judas-tree.

Stem 15 to 20 or 30 feet high and 6 to 12 inches in diameter, with somewhat geniculate branches. *Leaves* 3 or 4 inches long; *petioles* 1 to 2 inches long. *Flowers* bright purple, acid, on filiform *pedicels* which are clustered (4 to 6 or 8 from a bud) on the naked branches. *Legumes* about 3 inches long, subcoriaceous, smooth. Banks of streams: Canada to Louisiana. *Fl.* April. *Fr.* June.

Obs. This little tree is admired, in early spring, for its clusters of small flowers, which clothe the branches in purple before the leaves appear. Although not of agricultural importance, it deserves to be known, and to have a place among ornamental shrubbery and trees, around the mansion of the tasteful farmer.

TRIBE IX. CASSIEAE. *Bronn.*

Trees, shrubs, or herbs. Leaves usually even-pinnate, or bipinnate; leaflets not stipellate. Corolla regular,—or more commonly irregular, but not papilionaceous. Stamens 10, or sometimes fewer, distinct; anthers sometimes of two forms. Legume continuous, 1-celled, often intercepted between the seeds, dehiscent. Seeds sometimes with a small quantity of albumen; cotyledons foliaceous or rarely fleshy; radicle straight.

47. GLEDITSCHIA. *L. Endl. Gen.* 6756.

[Named in honor of *John Gottlieb Gleditsch*; a German Botanist.]

FLOWERS POLYGAMOUS: Sepals 3 to 5; equal, united at base. Petals as many as the sepals,—or fewer by abortion— or by the union of the two lower ones. Stamens as many as the sepals and opposite them, or by abortion fewer. Legume stipitate, often intercepted internally between the seeds, dry or with sweet pulp around the seeds. Seeds oval: embryo with a small quantity of albumen. Trees: the super-axillary branchlets often converted into simple or branched spines. Leaves even-pinnate or bipinnate (often both forms on the same tree); leaflets somewhat serrate. Flowers small, somewhat spicate.

1. *G. TRIACANTHOS, L.* Spines stout, mostly triple; leaflets linear or lance-oblong; legumes oblong, much compressed, somewhat falcate and undulate; many-seeded,—the intervals filled with sweet pulp. *Torr. & Gr. Fl. N. A.* 1 p. 398. *DC. Prodr.* 2. p. 479. *Icon, Mx. Sylva,* 2. tab. 79. [ed *Acacia.*

THREE-THORNED GLEDITSCHIA. *Vulgò*—Honey-Locust. Three-thorn-*Fr.* Le Fevier á trois Epines. *Germ.* Der Honigdorn.

Stem 30 to 50 or 60 feet high, and 2 to 3 or 4 feet in diameter. Leaflets about an inch or inch and half long. Flowers yellowish green. Legumes 6 to 12 or 15 inches long, and an inch or more in width, thin and wavy, or somewhat twisted. Pennsylvania to Louisiana: often cultivated. *Fl.* July. *Fr.* September—Octo.

Obs. This is occasionally seen about houses, in Pennsylvania, as a shade or ornamental tree,—and further South it has been used, while young, for hedging: But, although the thorns are very formidable, I believe it does not make a close, effective hedge. *Dr. GRAY* informs me, however, since the foregoing was written, that it is used considerably, and successfully, near *Cambridge, Mass.*

ORDER XLIX. ROSACEAE. *Juss.*

Trees, shrubs, or herbs. Leaves alternate, usually furnished with conspicuous stipules. Flowers regular, sometimes polygamous or dioicous. Sepals 5 (rarely 3 or 4), more or less united, and often with as many bracts. Petals as many as the sepals (rarely none), inserted on the edge of a thin disk which lines the tube of the calyx (*perigynous*). Stamens indefinite or sometimes few, distinct, inserted on the disk just within the petals. Ovaries with solitary or few ovules; styles often lateral. Seeds mostly destitute of albumen; cotyledons flat or plano-convex; radicle straight.

This Order—comprising about sixty Genera—is remarkable for the amount and variety of its esculent products. Many of the fruits are valuable, and some of them eminently delicious,—while the type of the Order (*Rosa*) is by universal consent regarded as the queen of beauty, among flowers. A few of the drupaceous species of the Order contain a dangerous quantity of Prussic acid, in the nuts and leaves; but the fleshy or succulent fruits are, almost without exception, innocent and wholesome.

SUB-ORDER II. AMYGDALAEAE. *Juss.*

Ovary solitary, free from the deciduous calyx, with 2 suspended collateral ovules,

and a terminal style. *Fruit* a drupe, mostly 1-seeded by abortion. *Trees* or *shrubs*, with simple leaves: *stipules* free.

48. PERSICA. *Tournef.* [AMYGDALUS. L. *Endl. Gen.* 6405.]

[A name derived from *Persia*,—its native country.]

Calyx tubular, with 5 spreading segments. *Drupe* oval, tomentose or smooth, very fleshy and succulent; *nut* with the surface rugosely furrowed, and perforated. *Small trees.* *Leaves* lanceolate, serrate, conduplicate in veneration. *Flowers* subsessile, solitary or in pairs, preceding the leaves.

1. P. VULGARIS, *Mill.* Fruit densely tomentose. *DC. Prodr.* 2. p. 531. *Fl. Cestr.* p. 284.

COMMON PERSICA. *Vulgò*—Peach. Peach tree.

Fr. Le Pêcher. *Germ.* Der Pfirschenbaum. *Span.* El Melocotón.

Stem 8 to 12 or 15 feet high, branching. *Leaves* 3 to 5 inches long; *petioles* half an inch long, channeled above and glandular near the leaf. *Petals* pale red or purplish. *Drupe* with the flesh white, yellow, or reddish,—either adhering to the nut (and then called *Clingstone*)—or separable from it (when it is termed *Freestone*). Cultivated. Native of *Persia*. *Fl.* April. *Fr.* August—September.

Obs. The *varieties* of delicious *fruit*, afforded by this tree, are very numerous; and although the tree is short-lived, the culture is managed with great spirit and success, in the Middle States,—particularly in *Maryland*, *Delaware*, and *New Jersey*. A succession of trees is kept up, by raising young *stocks* from the seeds, and inserting on them *buds*, or *scions*, from the most approved varieties.*

2. P. LAEVIS, *DC.* Fruit smooth. *DC. Prodr.* 2. p. 531. *Fl. Cestr.* p. 285.

SMOOTH PERSICA. *Vulgò*—Nectarine.

Fr. Le Brugnon. *Germ.* Der Nektar-pfirschenbaum. *Span.* Abridór.

Obs. This small tree is scarcely to be distinguished from the preceding, except by its *smooth-fruit*,—which presents the same varieties, of *Clingstone* and *Freestone*. It is more rare than the Peach, and generally smaller.

The *Almond* (*Amygdalus communis*, L.—which is nearly related to the Peach,—except that the *Drupe* is dry and fibrous, instead of succulent—and the *seed* is the eatable portion,) has not yet, I believe, been much cultivated within the U. States: but it may probably be successfully introduced into *Florida*,—and perhaps some other Southern States. The *hard-shelled* or *bitter Almond* has succeeded, even in *Pennsylvania*.

49. ARMENIACA. *Tournef.* [PRUNUS. L. *Endl. Gen.* 6406.]

[A name derived from *Armenia*,—its native country.]

Calyx campanulate, with 5 reflexed segments. *Drupe* roundish-oval,

*This process, for changing the character of the tree, is alluded to by the great English Bard with his usual felicity:

“You see,——We marry
 “A gentler *scion* to the wildest *stock*;
 “And make conceive a *bark* of baser kind
 “By *bud* of nobler race: This is an art
 “Which does mend nature,—change it rather: but
 “The art itself is nature.” [Winter's Tale. Act 4.]

fleshy, clothed with a soft velvety pubescence; *nut* compressed, the surface even and not rugosely sulcate,—one margin obtuse, the other acute, both grooved. Small *trees*. *Leaves* subcordate or ovate, convolute in veneration. *Flowers* subsessile, solitary or few, preceding the leaves.

1. *A. VULGARIS*, *Lam.* Leaves orbicular-ovate, acuminate, dentate, subcordate at base; flowers sessile. *DC. Prodr.* 2. p. 532. *Fl. Cestr.* p. 285.

COMMON ARMENIACA. *Vulgò*—Common Apricot. Moor-park Apricot. *Fr.* L'Abriocotier. *Germ.* Der Aprikosenbaum. *Span.* Albaricoque.

Stem 10 to 15 or 20 feet high, with rather stout spreading branches. *Leaves* 2 to 3 inches long; *petioles* an inch to an inch and half long, mostly with cup-like glands near the base of the leaf. *Petals* white. *Drupe* oval, yellowish when mature. Cultivated: Native of Armenia. *Fl.* April. *Fr.* July.

Obs. This tree yields a luscious and favorite fruit; and, in propitious seasons, the branches are so loaded as to remind one of the admonitory passage in SHAKESPEARE:

“Go bind thou up yon’ dangling *Apricocks*,

“Which, like unruly children, make their sire

“Stoop with oppression of their prodigal weight:

“Give some supportance to the bending twigs.”

King Richard II.

It is melancholy to reflect how thoughtless and negligent mankind generally are, with respect to providing *fruit* for themselves. There are few persons who do not own or occupy sufficient ground to admit of 3 or 4 choice fruit-trees and a grape-vine;—such, for example, as an *Apricot*, a *Peach*, a *May-duke Cherry*, a *Catharine Pear*, and a *Catawba grape*: yet the great majority seem never to think of planting such trees,—while they are ready enough to run after the rare fruit which some provident neighbor may have taken the pains to cultivate. It is high time that such disreputable negligence should cease; and that people should be more attentive to duties which are enjoined by every consideration of comfort and good taste,—nay, even of *sheer justice* to those around them, who are now annually plundered of the fruits of their own care and labors.

2. *A. DASYCARPA*, *Pers.* Leaves ovate or oval, somewhat acuminate, doubly serrate; flowers pedicellate. *DC. Prodr.* 2. p. 532. *Fl. Cestr.* p. 286.

HAIKY-FRUITED ARMENIACA. *Vulgò*—Black Apricot.

Stem 10 to 15 feet high; branches rather slender and virgate. *Leaves* 1½ to near 3 inches long; *petioles* about an inch long. *Petals* white. *Drupe* subglobose, hairy, dark purplish color when mature. Cultivated: Native country unknown. *Fl.* April. *Fr.* July.

Obs. This species has more of the habit of a *Prunus* or Plum tree, than the preceding,—and is reputed to be a more certain fruit-bearer; but I have not found it so. It flowers freely; but the young fruit is soon stung by an insect, and nearly all falls off before it is half grown.

50. PRUNUS. *Tournef. Endl. Gen.* 6406.

[The Latin name for the Plum.]

Drupe ovoid or oblong, fleshy, very smooth and mostly covered with a fine glaucous powder or bloom; *nut* compressed, the surface even,

with both margins acute and slightly grooved. Small trees. Leaves convolute in veneration. Pedicels 1-flowered, often in umbellate fascicles; flowers preceding—or sometimes succeeding—the leaves.

1. *P. DOMESTICA*, L. Branches unarmed; leaves lance-ovate or oval, mostly acute, serrate; pedicels sub-solitary. DC. *Prodr.* 2. p. 532. *Fl. Cestr.* p. 286.

DOMESTIC PRUNUS. *Vulgò*—Common Plum. Damascene, Gage, &c. *Fr.* Prunier. *Germ.* Der Pflaumenbaum. *Span.* Ciruélo.

Stem 8 to 12 or 15 feet high, branching. *Leaves* 1 to 3 inches long; *petioles* half an inch to an inch or more in length. *Flowers* rather preceding the leaves, solitary or in pairs; *pedicels* about half an inch long. *Petals* white. *Drupe* oval, ovoid or obovoid, of various colors from black to pale greenish-yellow, covered with bloom, the flesh rather firm. Cultivated: Native of Southern Europe. *Fl.* April. *Fr.* August.

Obs. Several varieties of this are cultivated,—some of them of a large size; but the depredations of insects render the fruit an uncertain crop—at least in the country. In cities, the insects seem to be less destructive.

2. *P. AMERICANA*, Marsh. Branches subspinose; leaves oval and obovate, conspicuously acuminate, sharply and often doubly serrate; umbels subsessile, 2 to 5-flowered. Torr. & Gr. *Fl. N. A.* 1. p. 407. *Fl. Cestr.* p. 287. *Icon, Annals N. Y. Lyceum, vol. 3.*

Cerasus nigra, & *hyemalis*. DC. *Prodr.* 2. p. 538.

AMERICAN PRUNUS. *Vulgò*—Red Plum. Yellow Plum.

Stem 8 to 12 or 15 feet high, much branched.—the young branches virgate, the old ones rugged and somewhat thorny. *Leaves* 2 to 3 inches long; *petioles* one fourth to half an inch long. *Flowers* preceding the leaves, in numerous fascicles of threes or fours; *pedicels* one third to half an inch long. *Petals* white. *Drupe* oval or subglobose, mostly reddish-orange-colored, nearly destitute of bloom, with a rich succulent yellow pulp, and a thick tough skin. Thickets, fence-rows, and banks of streams: Canada to Texas. *Fl.* April. *Fr.* August.

Obs. This Plum—about which foreign Botanists have been so bewildered—is extensively diffused through our country. In its wild state, the flowers are apt to be abortive,—and the fruit is small and rather acerb; but by long culture, the drupe sometimes becomes as large as a common Apricot. Although of a pleasant flavor, when fully mature, it is not adapted to culinary purposes; and is scarcely to be enumerated among our cultivated plants.

3. *P. CHICASA*, Mx. Branches subspinose; leaves narrow, oblong-lanceolate or oblanceolate, acute, finely serrulate with glandular-pointed teeth; umbels sessile, 2 to 3-flowered. Torr. & Gr. *Fl. N. A.* 1. p. 407. *Fl. Cestr.* p. 287.

Cerasus Chicasa. DC. *Prodr.* 2. p. 538.

CHICASA PRUNUS. *Vulgò*—Chickasaw Plum. Mountain Cherry.

Stem 6 to 10 or 12 feet high, much branched.—the young branches virgate, dark purple, smooth and shining,—the old ones crooked or geniculate, and somewhat thorny. *Leaves* 1 to 2 inches long, smooth; *petioles* slender, one fourth to three fourths of an inch long. *Flowers* appearing with the leaves (*coarctaneous*), in sessile fascicles of threes; *pedicels* about half an inch long, slender and smooth. *Drupe* globose, red or yellowish-red, nearly or quite destitute of bloom, with a tender pulp, and a thin skin. Cultivated. *Fl.* April. *Fr.* July.

Obs. This little tree (which is believed to be a native of our South-

western territory,—where it is a small shrub, in its wild state,—) by long culture produces a very pleasant fruit,—worthy of more attention than it has yet received. It approaches the *Cherry*, in character and appearance, and may be considered as a connecting link between the Plum & Cherry; but is unquestionably, I think, a *true Plum*.

51. CERASUS. *Juss.* [PRUNUS. *L. Endl. Gen.* 6406.]

[The name of an Asiatic town,—whence the tree was obtained.]

Drupe globose or roundish-ovoid, often umbilicate at base, fleshy and succulent, very smooth, destitute of bloom; *nut* subglobose, the surface even. *Trees or shrubs.* *Leaves* from terminal buds, conduplicate in vernation. *Pedicels* either in umbellate fascicles from lateral leafless buds, and then rather preceding the leaves,—or in racemes terminating leafy branches, and coming after the leaves.

† *Flowers in umbellate fascicles.*

1. *C. AVIUM*, *Moench.* Branches erect or ascending, rather stout; leaves oval or obovate-oblong, acuminate, coarsely serrate, pilose and somewhat glaucous beneath; umbels sessile; flowers scarcely preceding the leaves; pedicels rather long; drupe roundish-ovoid or subcordate at base. *DC. Prodr.* 2. p. 535. *Fl. Cestr.* p. 289.

BIRDS' CERASUS. *Vulgò*—English Cherry. Bleeding-heart, &c.

Fr. Le Cerisier. *Germ.* Der Kirschbaum. *Span.* Cerézo.

Stem 30 to 60 feet or more in height, and often 2 to 3 feet in diameter, at base,—branching regularly, and somewhat verticillately, so as to form an oblong conical top. *Leaves* 3 to 5 or 6 inches long; *petioles* an inch to an inch and half long. *Pedicels* slender, an inch to an inch and half long, usually 3 (often 2) in a fascicle. *Petals* white. *Drupe*s of various size and color, tender and often very succulent, sweet or bitterish-sweet. Cultivated. *Fl.* April. *Fr.* June—July.

Obs. Cherries are said to have been originally brought to Rome from *Cerasus*, a city of Pontus, by the Roman Consul and General, LUCULLUS, some 60 or 70 years before the Christian era; and from Rome they have been distributed over the rest of the civilized world. Our cultivated Cherry trees seem obviously to consist of at least *two* original species,—viz. the sweet "*English Cherry*," so called,—and the common *Sour Cherry*. The numerous *varieties*—produced by culture (and possibly some *hybrids*)—may perhaps be all referred to one or the other of those two; though Prof. DE CANDOLLE admits of no less than *five species*. I am not sure that I perfectly comprehend the Professor's views—nor that I am acquainted with the trees on which he has founded those species. There are, undoubtedly, several very distinct sorts of *fruit*; but I incline to think the general habit and aspect of the trees commonly seen in this country, warrant the reduction of them all to the two above referred to: and I shall so consider them in this work.

2. *C. VULGARIS*, *Mill.* Branches spreading, slender and flexible; leaves obovate and ovate-lanceolate, mostly narrowed at base, acuminate or acute, serrate, smoothish; umbels subsessile; flowers rather preceding the leaves; pedicels rather short; drupe globose. *Fl. Cestr.* p. 288.

C. Caproniana? *DC. Prodr.* 2. p. 536.

COMMON CERASUS. *Vulgò*—Red or Sour Cherry. Morello Cherry, &c.

Stem 10 to 20 feet high, irregularly branched; branches rather slender and flaccid, spreading nearly horizontally and forming a roundish bushy top. *Leaves* 1½ to 3 inches long; *petioles* half an inch to an inch long. *Pedicels* half an inch to an inch in length, 2, or more frequently 3, in a fascicle. *Petals* white. *Drapes* fleshy, more or less acid, red or dark purple when mature. Cultivated. *Fl.* April. *Fr.* July.

Obs. The "*Sour Cherry*" is the most common and, for culinary purposes, the most valuable of the genus. The *Morello Cherry* (*var. Griotta?* DC.) is a remarkably fine fruit, with a rich purple juice,—and in the days of "*Cherry Bounce*," was a great favorite: But, for the last 30 years it has almost entirely disappeared from Pennsylvania, in consequence of the ravages of an insect, causing large warty excrescences on the branches of the tree. The *fruit* first failed,—and now (1846) the *tree itself* has become very scarce.

† † *Flowers in racemes.*

3. *C. SEROTINA*, DC. *Leaves* oval, oblong, or lance-oblong, acuminate, smooth, shining above, finely serrate with appressed or incurved callous teeth; *racemes* elongated; *drupes* globose, small. *Torr. & Gr. Fl. N. A.* 1. p. 410. *DC. Prodr.* 2. p. 540.

C. Virginiana. *Fl. Cestr.* p. 289. *Icon, Mx. Sylva*, 2. tab. 88.

LATE CERASUS. *Vulgò*—Wild Cherry.

Stem 40 to 60 or 80 feet high, and 2 to 3 feet in diameter at base, with large irregular spreading branches. *Leaves* 2 to 4 or 5 inches long, subcoriaceous; *petioles* half an inch to three quarters in length. *Racemes* simple, rather erect, 3 to 4 or 5 inches long. *Petals* white. *Drapes* dark purple or purplish black when mature, succulent, bitter and mawkish to the taste. Banks of streams; fences, &c.: Canada to Florida. *Fl.* May. *Fr.* August.

Obs. It seems that this is not the *true C. Virginiana* (*Prunus Virginiana*, L.),—although it has *passed for it*, among the Botanists, for many years. The specific name, *Virginiana* (as we learn from TORREY & GRAY), was given, by LINNÆUS, to the small species called *Prunus obovata*, by BIGELOW,—the *Cerasus obovata* of BECK, and the *Flora Cestricea*; and must therefore be continued to that species. The *wood* of the *Wild Cherry* is a pale reddish brown, close-grained and hard,—taking a good polish (a sort of indigenous *Mahogany*),—and was formerly much used by cabinet makers. The *bark*—though a rather unpalatable bitter—is a valuable tonic. The *leaves* are a favorite food of caterpillars,—the young trees being often completely stript by those voracious animals; and the ripe *fruit* is greedily sought by birds.

SUB-ORDER III. ROSACEAE PROPER. *Torr. & Gr.*

Ovaries numerous or several, rarely solitary, free from the calyx (which is often bracteolate, as if double), but sometimes inclosed in its persistent tube,—in *fruit* becoming either follicles, akenes, or little drupes. *Styles* terminal or lateral. *Herb, shrubs, or very rarely trees.* *Leaves* simple or compound.

TRIBE II. DRYADEAE. *Vent. Torr. & Gr.*

Ovaries in fruit becoming akenes, or sometimes little drupes.—and when numerous, collected on a conical or hemispherical *torus* or receptacle.

SUB-TRIBE 5. FRAGARIEAE. *Torr. & Gr.*

Ovaries numerous, becoming akenes in fruit: *style* mostly lateral.

52. POTENTILLA. *L. Endl. Gen.* 6363.

[Latin, *potens*, powerful; in reference to supposed medical properties.]

Calyx concave at bottom; *limb* mostly 5-cleft, with an external

bract at each cleft. *Petals* mostly 5. *Stamens* numerous. *Style* sometimes nearly terminal. *Akenes* numerous, often rugose, capitate on a dry persistent villous receptacle. *Seed* suspended: *radicle* always superior. *Herbaceous* or *suffruticose*. *Leaves* pinnately or palmately compound.

1. *P. NORVEGICA*, L. Hirsute; stem erect, dichotomous above; leaves palmately 3-foliolate, the cauline ones on short petioles; leaflets obovate-oblong, the uppermost lanceolate, coarsely and incisely serrate; peduncles axillary, cymose at summit and leafy; petals shorter than the calyx; akenes rugosely ribbed or striate. *Torr. & Gr. Fl. N. A.* 1. p. 436. *DC. Prodr.* 2. p. 573. *Fl. Cestr.* p. 303.

NORWEGIAN POTENTILLA.

Root annual. *Stem* 1 to 2 feet high, rather stout. *Leaflets* 1 to 3 inches long; *common petioles* 1 to 4 inches long; *stipules* large (often an inch or more in length). *Flowers* often numerous, in leafy cymes at summit, and on long solitary peduncles below,—the lower peduncles often opposite the leaves. *Petals* yellow. Pastures, and road sides: Northern States. Native of Lapland, Norway, and Northern America. *Fl.* July—Aug. *Fr.* September.

Obs. This is said to be native in the Northern States, and British America,—but it has very much the appearance of an introduced plant, in *Pennsylvania*,—and has not yet, so far as I know, acquired a *common name*.

It is only intitled to the notice of the farmer, as being a coarse, homely, worthless intruder in his pasture fields.

2. *P. CANADENSIS*, L. Villous; stems sarmentose, procumbent and ascending; leaves palmately 5-foliolate; leaflets cuneate-obovate, incisely serrate-dentate near the apex; peduncles axillary, solitary, elongated; petals longer than the calyx; akenes somewhat rugose. *Torr. & Gr. Fl. N. A.* 1. p. 443. *DC. Prodr.* 2. p. 575. *Fl. Cestr.* p. 303.

Also, *P. simplex*. *Mx. DC. l. c. Fl. Cestr.* p. 304.

CANADIAN POTENTILLA. *Vulgò*—Cinquefoil. Five-finger.

Root perennial. *Stem* 2 or 3 to 12 and 18 inches long, slender, somewhat branched, often several from the same root. *Radical leaves* on petioles 2 to 6 or 8 inches long; *stem leaves* nearly sessile: *leaflets* half an inch to 1 or 2 inches long. *Peduncles* about as long as the leaves. *Petals* yellow. Old neglected fields; borders of woodlands, &c. Canada to Georgia. *Fl.* April—June. *Fr.* June—August.

Obs. The *P. simplex*, of authors, is no doubt properly regarded as only a *variety* of this. *Both* varieties are rather harmless, though worthless; and are merely indicative of a poor soil, or a thriftless farmer. Some lands, when kept as pasture fields, seem to have an almost incurable tendency to lose the valuable Grasses, and to become speedily overrun with *Cinquefoil*. *Lime* and *manure*, however, will work wonders in the worst of soils.

53. FRAGARIA. *Tournef. Endl. Gen.* 6361.

[Latin, *fragrans*, odorous; in reference to its fragrant fruit.]

Calyx, *Corolla*, and *Stamens*, the same as in *Potentilla*. *Style* deeply lateral. *Akenes* numerous, smooth, scattered on the enlarged succulent or pulpy *receptacle*—which often finally separates from the conical central portion of the *torus*. Perennial stoloniferous *Herbs*.

Leaves 3-foliolate; leaflets coarsely dentate. *Flowers* several, cymose on a scape-like peduncle; sometimes *dioicous* by abortion.

1. *F. VESCA*, *L.* Peduncles usually longer than the leaves; calyx^x of the fruit reflexed; fruit conical or hemispherical,—the akenes^s superficial. *Torr. & Gr. Fl. N. A.* 1. p. 448. *DC. Prodr.* 2. p. 569.

EATABLE FRAGARIA. *Vulgò*—English Strawberry. Garden Strawberry.

Fr. Le Fraisier. *Germ.* Die Erdbeerpflanze. *Span.* Fresera.

Whole plant hairy. *Root* perennial, and the leaves often green through the winter. *Stem* very short,—but several slender prostrate radicaing runners, 1 to 2 feet long, are thrown out from the crown of the root. *Leaves* mostly radical; *common petioles* 3 to 8 or 9 inches long; *leaflets* ovate or cuneate-obovate, plicate, 1 to 3 or 4 inches long. *Cymes* 5 to 12 or 15-flowered, with 2 or 3 foliaceous bracts at base, on peduncles 4 or 5 to 10 or 12 inches in length. *Flowers* sometimes abortive. * *Petals* white. *Receptacle* (commonly regarded as the *fruit*) red or yellowish white, bearing the akenes superficially and rather prominently on the even surface. Gardens: cultivated. Native of Europe. *Fl.* April. *Fr.* May—June.

Obs. Several *varieties* are cultivated in the Gardens,—and probably some which are specifically distinct;—as the *Hautboy* (*F. elatior*, *Ehrh.*), and the *Chili Strawberry* (*F. Chilensis*, *Ehrh.*). A variety of extraordinary size, called “*Hovey’s Seedling*,” has been recently obtained,—which, although not equal in flavor to some of the smaller ones, is a magnificent product, and well worthy of universal culture.—The Gardeners announce, also, some other fine seedling varieties.—Although the *true fruit* of this plant consists of mere dry specks, or bony particles (i. e. the minute *akenes*), scattered over the surface of the enlarged receptacle,—yet the *receptacle itself* furnishes a pulpy *substitute* of the most delicious character. SHAKESPEARE has the following allusion to the *habitat*, or associates of the plant, to illustrate a moral sentiment:

“The *Strawberry* grows underneath the Nettle;

“And wholesome berries thrive and ripen best,

“Neighbor’d by fruit of baser quality.”

King Henry V.

2. *F. VIRGINIANA*, *Ehrh.* Peduncles commonly shorter than the leaves; calyx of the fruit spreading; fruit ovoid, nodding,—the akenes imbedded in the pitted surface of the receptacle. *Torr. & Gr. Fl. N. A.* 1. p. 447. *DC. Prodr.* 2. p. 570. *Fl. Cestr.* p. 304.

VIRGINIAN FRAGARIA. *Vulgò*—Wild Strawberry.

Obs. This native species is usually a smaller plant (perhaps for want of culture), but has a close general resemblance to the preced-

* Individual plants are frequently to be found, in Strawberry beds, in which the flowers are all abortive,—the *stamens* having the appearance of coarse blighted monstrosities—the *pistils* abortive—and the *receptacle* failing to enlarge. The *Gardeners* call these *male* plants,—and insist that their presence is absolutely indispensable, to insure a crop of fruit: But the flowers in question, so far as I have observed, are palpably *neutral*, and nothing more than *blights*. The *Gardeners*, indeed, are very positive in their opinions (as merely practical operatives—and all others, who take things for granted—are somewhat apt to be); but I confess I cannot comprehend how the vicinity of such abortions can be essential to the perfection of the fruit in other plants. The organs of plants are undoubtedly subject to great modifications, by long culture; but the precise mode in which their productiveness is affected, is probably not yet thoroughly understood.

ing,—and is frequent in old fields, and meadows, throughout the U. States. Drs. TORREY & GRAY remark, that “the *deeply pitted fruit* affords the only character for this species that can be wholly relied upon;” and even *that*, I fear, is not unexceptionable. It is a deep purple, when mature,—and in its wild state, of a more sprightly (sub-acid) flavor than the cultivated sorts.

SUB-TRIBE VI. DALIBARDEAE. *Torr. & Gr.*

Ovaries numerous or rarely few, becoming succulent little *drupes* in fruit: *style* terminal or nearly so.

51. RUBUS. *Tournef. Endl. Gen.* 6360.

[Latin, *Ruber*,—or Celtic, *Rub*,—red; from the color of the fruit, or branches.] *Calyx* flattish at base, 5-parted, without bracts at the clefts. *Petals* 5. *Stamens* numerous, inserted on the border of the disk which lines the calyx. *Carpels* mostly numerous, capitate on a protuberant spongy receptacle, becoming succulent and drupaceous, cohering and forming a compound berry, either deciduous or persistent. *Perennial* and mostly *suffruticose* plants. *Stems* erect or procumbent, usually biennial and armed with prickles. *Leaves* pinnately or pedately compound, sometimes simple.

§ 1. CARPELS forming a hemispherical fruit, concave beneath, and deciduous or falling away from the dry receptacle when ripe (RASPBERRY).

† *Leaves* simple.

1. R. ODORATUS, *L.* Stem fruticose, erect, unarmed, hispid with glandular hairs; leaves palmately 3 or 5-lobed, unequally serrate; stipules nearly free, deciduous; corymbs terminal, spreading, glandular-pilose and viscid; flowers large; sepals with a long acumination. *Torr. & Gr. Fl. N. A.* 1. p. 449. *DC. Prodr.* 2. p. 566. *Fl. Cestr.* p. 309.

ODOROUS RUBUS. *Vulgò*—Rose-flowering Raspberry.

Root creeping. *Stem* perennial, 3 to 5 feet high, branching. *Leaves* 4 to 8 inches long, and nearly as wide as long, cordate at base; *petioles* 2 to 4 or 6 inches long. *Flowers* corymbose; peduncles and sepals clothed with a purplish clammy glandular pubescence. *Petals* mostly purplish rose-color. *Fruit* broad, on a large receptacle, of a palish bright red or scarlet when mature.—often abortive. Rocky woodlands, and mountains: Canada to Georgia. *Fl.* June—July. *Fr.* July—August.

Obs. The *fruit* of this is pleasantly flavored,—but is rarely perfected under cultivation; and indeed is often abortive in its native localities. I have seen it, on the mountains, in August, bearing flowers and ripe fruit at the same time. It is rather a troublesome plant, when introduced into yards and gardens,—sending up numerous suckers.

† † *Leaves* (pinnately or pedately) 3-5-foliolate.

2. R. IDAEUS, *L.* Stem suffruticose, erect, terete, not glaucous, hispid at base and somewhat prickly above; leaves pinnately 3- or 5-foliolate; leaflets rhomboid-ovate; flowers in paniculate corymbs; petals entire; carpels slightly rugose, finely pubescent, not pitted in drying. *DC. Prodr.* 2. p. 558. *Fl. Cestr.* p. 305.

IDA RUBUS. *Vulgò*—Antwerp Raspberry. Garden Raspberry.

Fr. Framboisier. *Germ.* Die Himbeerstaude. *Span.* Frambuésio.

Root creeping. *Stem* 3 to 5 feet high, branching, mostly hispid when young, especially towards the base—smoothish (or sometimes pubescent) and armed with slender recurved prickles above,—the hispid bark, below, exfoliating the second year. *Lower leaves* odd-pinnate by fives, the upper ones by threes; *common petioles* 1 to 3 or 4 inches long; *leaflets* 2 to 4 inches long, acuminate, unequally incised-serrate, smoothish and green above, clothed with a dense white cottony tomentum beneath. *Petals* white. *Carpels* incurved at apex, clothed with a very fine short dense pubescence, whitish, amber-colored, or purple, when mature. *Gardens*: cultivated. *Native of Europe.* *Fl.* May. *Fr.* July.

Obs. This species is much cultivated for its favorite *fruit*. The plant presents some *varieties*—particularly in the size and complexion of the fruit; and I am not sure that a nearly allied *native* species with red fruit (*R. strigosus*, *Mx. Torr. & Gr.*), which is found on our mountains, is not sometimes seen, and mistaken for it, in the gardens. It requires some attention to keep the plant from spreading unduly, in a mellow soil, by means of its rambling roots.

3. *R. OCCIDENTALIS*, *L.* *Stem* suffruticose, rather flaccid and leaning or arched, terete, smooth, and glaucous, armed with recurved prickles; leaves pinnately 3- (rarely 5-) foliolate; leaflets lance-ovate; flowers in subumbellate corymbs; petals often emarginate; carpels smoothish, pitted in drying. *Torr. & Gr. Fl. N. A. 1. p. 453. DC. Prodr. 2. p. 558. Fl. Cestr. p. 306.*

WESTERN RUBUS. *Vulgò*—Wild or Black Raspberry. Thimble-berry.

Stem 5 to 8 or 10 feet long, sparingly branched, limber and often arching over so that the summit comes to the ground and takes root, mostly purplish and pruinose or covered with a fine bluish-white powder. *Leaflets* mostly in threes, 2 to 4 or 5 inches long, often with a long acumination and subcordate at base, smoothish above, clothed with a dense glaucous tomentum beneath. *Petals* white. *Fruit* dark purple, or nearly black (rarely whitish—*alboque simillima Graculo!*) when mature. *Canada to Georgia and Missouri*: Borders of woodlands, fence-rows, &c. *Fl.* May. *Fr.* July.

Obs. The *fruit* of this is smaller and less esteemed than that of the preceding,—but is nevertheless sweet and agreeable. The plant, however, is generally treated as a *weed*, on all neat farms.

§ 2. *CARPELS forming an ovoid or oblong fruit, persistent on the somewhat juicy receptacle (BLACKBERRY).*

4. *R. CANADENSIS*, *L.* *Stem* fruticose, procumbent, armed with numerous short recurved prickles; branches assurgent, sparingly aculeate; leaves mostly 3-foliolate; stipules linear-lanceolate; leaflets rhomboid-oval; pedicels subsolitary, axillary or in terminal corymbs on the short leafy flowering-branches. *Torr. & Gr. Fl. N. A. 1. p. 455.*

R. trivialis. Pursh. Fl. Cestr. p. 308. not of Mx. (fide Torr. & Gr.)

CANADIAN RUBUS. *Vulgò*—Dewberry. Running Brier.

Stem 4 to 8 or 10 feet long, slender, trailing, smoothish,—often several from the same root running in different directions, and giving out numerous leafy pubescent flowering-branches, which are nearly erect, and 2 to 4 or 6 inches long. *Leaflets* mostly in threes (sometimes pedately in fives), three fourths of an inch to an inch and half long. *Flowers* terminal and subterminal on the short branches, few and rather large, somewhat corymbose by the elongation of the lower axillary pedicels. *Corolla* white. *Fruit* oblong, obtuse or often roundish, large (half an inch to near an inch in diameter), black when mature, very succulent and sweet. *Rocky sterile soils, old fields, &c. Canada to Virginia.* *Fl.* May. *Fr.* July.

Obs. Our *Dewberry* is a fine fruit, and is generally preferred before all the other *Blackberries proper*; but it is not the "Dewberry" of England,—which is the *R. caesius*, *L.* There has been some confusion respecting our plant, among the Botanists,—and Prof. DE CANDOLLE seems not to have had a clear conception of the species: But there is scarcely a farmer's boy, in Pennsylvania, who is not well acquainted with it,—from having often encountered its prickly trailing stems with his naked ankles, while heedlessly traversing the old fields where it abounds. On well-managed farms, however, the plant is becoming somewhat rare.

5. *R. VILLOSUS*, *Ait.* Stem fruticose, erect, angular, branching, armed with stout curved prickles; young branches and peduncles glandular-villous; leaves 3-foliolate or pedately 5-foliolate; stipules subulate; leaflets ovate or lance-oblong, villous beneath, the petioles and midribs aculeate; racemes elongated, many-flowered. *Torr. & Gr. Fl. N. A.* 1. p. 454. *DC. Prodr.* 2. p. 563. *Fl. Cestr.* p. 307.

VILLOUS RUBUS. *Vulgò*—Blackberry. Common Brier. Bramble. *Fr.* La Roncée. *Germ.* Der Brombeerstrauch. *Span.* Zarza.

Root creeping. *Stem* 3 to 6 or 8 feet high, stout, ridged or angular and somewhat furrowed. *Leaflets* 2 to 3 or 4 inches long, mostly acute. *Racemes* rather large, sometimes leafy. *Petals* white. *Fruit* ovoid-oblong or cylindrical—sometimes near an inch long,—changing from green to red or purplish, and finally black when mature. Old fields, thickets, and borders of woods: throughout the U. States. *Fl.* May. *Fr.* July—August.

Obs. Every one knows the common Brier. The *root*, both of this and the preceding, being moderately astringent, is a popular remedy for diarrhoea and mild dysentery. The ripe *fruit* affords a pleasant *jam*, which is also considered salutary in such cases. Even the *knots* which are formed on the branches, from the puncture of insects, were formerly carried by credulous simpletons, as a sort of *amulet*, or charm against the tooth-ache! The plant, nevertheless, is often something of a nuisance on our farms, from its tendency to spread, and take possession of neglected fields. There are several other species of *Rubus* in the U. States; but the foregoing are the chief of those which in any degree interest, or interfere much with the operations of the farmer.

TRIBE III. ROSEAE. *Juss.*

Calyx urceolate,—the *tube* contracted at the orifice, including the numerous distinct ovaries, at length becoming fleshy or baccate; the *segments* somewhat spirally imbricated in aestivation, often foliaceous at apex. *Akenes* numerous, crustaceous, hispid, included in and attached to the inner surface of the calyx-tube. *Styles* terminal or subterminal, somewhat exserted. *Shrubby* and prickly plants. *Leaves* alternate, mostly odd-pinnate (rarely reduced to a single leaflet); *stipules* usually adnate to the petiole.

55. ROSA. *Tournef. Endl. Gen.* 6357.

[Supposed from the Celtic, *Rhos*, red; the prevailing color of the flowers]

☞ The *Generic* character is the same as that of the *Tribe*.

1. *R. CAROLINA*, *L.* Stem smooth, armed with stout recurved stipular prickles; leaflets mostly 5 or 7, oblong-oval or elliptic-lanceolate, finely serrate, somewhat glaucous beneath; flowers corymbose. *Torr. & Gr. Fl. N. A.* 1. p. 458. *DC. Prodr.* 2. p. 605. *Fl. Cestr.* p. 311.

CAROLINA ROSA. *Vulgò*—Swamp Rose.

Stem 4 to 6 feet high, with numerous purple branches. *Leaflets* 1 to 2 inches long. *Flowers* mostly in terminal corymbs of 3 to 6 or 7 in a cluster. *Petals* red or purplish. *Fruit* (i. e. the fleshy *calyx-tube*) depressed-globose, a little glandular-hispid, dark red and shining when mature. Low swampy grounds, and thickets: Northern and Middle States. *Fl.* June—July. *Fr.* September.

Obs. This is often a troublesome plant, in wet meadows and low grounds,—forming unsightly thickets with other weeds, if neglected.

The *native* Roses of *Pennsylvania* are few in number, and not particularly handsome: but many beautiful species and varieties are every where *cultivated*, by persons of taste, for ornament. The *R. setigera*, *Mx.* sometimes called “*Prairie Rose*”—introduced from the West—is a fine showy species, and well adapted to train along walls, palisades, &c.—In the Southern States—especially in *South Carolina*—an introduced species—probably a native of *China*, though known by the name of the “*Cherokee Rose*” (*R. laevigata*, *Mx. Torr. & Gr.* with long flexible branches, and bearing large white flowers), is highly commended by Mr. ELLIOTT. “In our rural economy,” he says, “this plant will one day become very important. For the purpose of forming *hedges*, there is perhaps no plant which unites so many advantages.” This Rose, however, will not stand our northern winters.

SUB-ORDER IV. POMEAE. *Juss.*

Ovaries 2 to 5 (rarely solitary), cohering with each other and with the thickened fleshy or pulpy *calyx-tube*,—each with one or few ascending seeds. *Trees* or *shrubs*. *Leaves* mostly simple, rarely pinnate.

56. CRATAEGUS. *L. Endl. Gen.* 6353.

[Greek, *Kratos*, strength; in allusion to the strength or firmness of the wood.]

Calyx-tube urceolate; *limb* 5-cleft. *Petals* 5. *Stamens* numerous. *Styles* 1 or 2 to 5. *Pome* fleshy or somewhat farinaceous, containing 1 to 5 bony 1-seeded carpels. Thorny *shrubs* or *small trees*. *Leaves* alternate, simple, often incised or lobed. *Flowers* mostly in terminal corymbs.

1. *C. CRUS-GALLI*, *L.* Leaves obovate-cuneate or lance-oblong, serrate, coriaceous, smooth and shining, subsessile; styles 2 or often solitary; fruit somewhat pyriform. *Torr. & Gr. Fl. N. A.* 1. p. 463. *DC. Prodr.* 2. p. 626. *Fl. Cestr.* p. 290. [Thorn.

COCK-SPUR CRATAEGUS. *Vulgò*—Cockspur Thorn. New Castle

Stem 10 to 15 or 20 feet high, much branched, and armed with sharp tapering thorns 2 to near 3 inches in length. *Leaves* 1 to 2½ inches long, on short petioles. *Corymbs* terminal on short rigid spurs. *Petals* white. *Fruit* middling sized, reddish brown when mature. Thickets, fence-rows, hedges, &c. Canada to Florida. *Fl.* June. *Fr.* October.

Obs. This shrub—of which there are two or three pretty distinct *varieties*—is, in my opinion, the best adapted for *hedging*, of any of the genus. It has been long used for that purpose, in the vicinity of *New Castle, Del.*—but I do not think they have heretofore managed it in the best mode. It should be well *laid*, or *plashed*, at the proper age, and kept neatly trimmed to a convenient size,—instead of permitting it to grow at random, and occupy so much space, as the old ones around *New Castle* have done.

2. *C. CORDATA*, *Ait.* Leaves deltoid-ovate and sub-cordate, acu-

minate, incised-serrate and somewhat 3-lobed, smooth, on slender and rather long petioles; styles 5; fruit depressed-globose. *Torr. & Gr. Fl. N. A. 1. p. 467. DC. Prodr. 2. p. 628. Fl. Cestr. p. 293.*
 CORDATE CRATAEGUS. *Vulgò*—Washington Thorn. Virginia Thorn.

Stem 15 to 20 feet high, much branched, and armed with slender tapering sharp thorns 1 to near 3 inches in length. *Leaves* 2 to 3 inches long, often 3-lobed like a leaf of the Red Maple. *Corymbs* terminating the young slender short branches. *Petals* white. *Styles* more or less united. *Fruit* small, bright reddish purple when mature. Banks of streams: Virginia to Georgia. *Fl.* June. *Fr.* October.

Obs. This species is the one which has been chiefly cultivated for *hedging*, in Pennsylvania,—where it was introduced, from the vicinity of Washington City, about the commencement of the present century. It makes a handsome hedge, but not a very substantial one; and, in my opinion, is decidedly inferior to the *Cockspur Thorn*, for that purpose. I have used it extensively; but have found it so subject to be broken into gaps, by thoughtless or reckless trespassers, that my hedges have been rather a source of vexation, than of satisfaction.

57. PYRUS. *L. Endl. Gen. 6342.*

[The Latin name for the Pear.]

Calyx-tube urceolate; *limb* 5-lobed. *Styles* mostly 5, often united at base. *Pome* fleshy,—containing 2 to 5 cartilaginous or nearly membranaceous carpels. *Seeds* 2 in each carpel or cell; *testa* chartaceous or cartilaginous. *Trees* or *shrubs*. Leaves alternate, simple or pinnate. *Flowers* in terminal spreading cymes or corymbs.

1. *P. COMMUNIS, L.* Leaves simple, lance-ovate, slightly serrate, the upper surface smooth; peduncles corymbose; styles distinct; fruit turbinate, not umbilicate at base. *DC. Prodr. 2. p. 633. Fl. Cestr. p. 297.*

COMMON PYRUS. *Vulgò*—Pear. Pear-tree.

Fr. Le Poirier. *Germ.* Der Birnbaum. *Span.* El Peral.

Stem 15 to 30 feet high, branching; branches virgate, rather erect, forming an oblong or conical top. *Leaves* 2 to 3 inches long; *petioles* 1 to 2 inches in length. *Petals* white. *Fruit* of various size (1 to 2 or 3 inches in diameter), fleshy or succulent, umbilicate at apex, obovoid, tapering to the peduncle, often somewhat curved or oblique: cultivated. Native of Europe. *Fl.* May. *Fr.* August—November.

Obs. Many *varieties* of this luscious fruit have been obtained, by long culture,—in which the *French* seem particularly to excel.

2. *P. MALUS, L.* Leaves simple, ovate-oblong, serrate, the upper surface pubescent; peduncles subumbellate; styles subconnate; fruit depressed-globose or oblong, umbilicate at base. *DC. Prodr. 2. p. 635. Fl. Cestr. p. 297.*

APPLE PYRUS. *Vulgò*—Common Apple. Apple-tree.

Fr. Le Pommier. *Germ.* Der Apfelbaum. *Span.* Manzáno.

Stem 15 to 25 or 30 feet high, branching; branches mostly spreading and often geniculate, forming a broad bushy top. *Leaves* 2 to 3 inches long; *petioles* an inch or more in length. *Petals* mostly pale red. *Fruit* of various size (1 to 3 or 4 inches in diameter), fleshy, umbilicate at both ends. Cultivated. Native of Europe. *Fl.* May. *Fr.* July—November.

Obs. The *varieties* of this valuable fruit are almost innumerable,—and every farmer provides more or less of an Orchard: but there is

far too little attention paid to the selection of the best. It is really wonderful to observe, how many worthless trees are permitted to cumber the ground, which might just as readily, and far better, be occupied by those which bear the choicest fruit.

3. *P. coronaria*, *L.* Leaves simple, broad-ovate, rounded or subcordate at base, incised-serrate and somewhat angulate-lobed, smoothish; peduncles corymbose; styles subconnate; fruit depressed-globose, umbilicate at base. *Torr. & Gr. Fl. N. A.* 1. p. 470. *DC. Prodr.* 2. p. 635. *Fl. Cestr.* p. 296.

Malus coronaria. *Mill. Mx. Sylva*, 2. p. 67. *Icon, tab.* 65.

CROWN PYRUS. *Vulgò*—Crab Apple. Sweet-scented Crab-tree.

Stem 10 to 15 feet high, branching; branches spreading, rugged with short spurs, forming a rather bushy top. *Leaves* 2 to 3 inches long; *petioles* half an inch to an inch and half in length. *Flowers* large and fragrant; *petals* pale rose red. *Fruit* rather small (about an inch in diameter), umbilicate at both ends, fleshy but firm and hard, smooth, pale greenish yellow and very fragrant when mature—yet extremely acid. Borders of woodlands, road-sides, &c. New York to Louisiana. *Fl.* May. *Fr.* September.

Obs. This native Apple is now becoming scarce, in the older settlements of Pennsylvania. In former times, the ripe *fruit* was sought after, by notable Housewives, for the purpose of making *Preserves*.

58. CYDONIA. *Tournef. Endl. Gen.* 6341.

[The name of a city of Crete,—whence it was obtained.]

Calyx-tube subturbinate; *limb* 5-lobed,—the lobes sometimes foliaceous. *Styles* 5. *Pome* fleshy, containing 5 cartilaginous carpels. *Seeds* several in each carpel or cell, covered with mucilaginous pulp. *Small trees or shrubs.* *Leaves* alternate, simple, entire or serrate. *Flowers* large, solitary or subumbellate.

1. *C. vulgaris*, *Pers.* Leaves oblong-ovate, obtuse at base, very entire, tomentose beneath; fruit sub-turbinate, tomentose. *DC. Prodr.* 2. p. 638. *Fl. Cestr.* p. 298.

COMMON CYDONIA. *Vulgò*—Quince. Quince-tree.

Fr. Le Cognassier. *Germ.* Der Quittenbaum. *Span.* Membrilléro.

Stem 8 to 12 or 15 feet high, with spreading branches. *Leaves* 2 to 3 inches long; *petioles* about half an inch long. *Flowers* terminal, solitary. *Petals* reddish white. *Stamens* in a single series. *Fruit* 2 inches or more in diameter, somewhat obovoid, umbilicate at apex, abruptly tapering or produced at base, yellow when mature. Cultivated. Native of Southern Europe. *Fl.* May. *Fr.* September—October.

Obs. The *fruit* of this is chiefly used for making *preserves*,—for which it is excellent. It is supposed to be the golden apple of the *Hesperides*, so celebrated in ancient fable; but if the *Orange* had then been known, it would doubtless have been esteemed a more precious fruit, by “the Western Maidens.” The *C. Japonica*, *Pers.* (*Pyrus Japonica*, *Willd.*) is well known for its beauty as a *flowering shrub*, in the gardens; but the *fruit*—though remarkably fragrant—is very hard and acerb, and of little value.

ORDER LIV. ONAGRACEAE. *Juss. Lindl.*

Herbs, or rarely *shrubby plants.* *Leaves* alternate or opposite, not dotted nor stipulate. *Flowers* usually tetramerous (i. e. composed of 4 pieces or parts), showy.

Calyx tubular.—the tube adherent to the ovary, and usually produced beyond it. *Petals* 4 (rarely 3 or 6—occasionally wanting), and the *Stamens* as many or twice as many, inserted into the throat of the calyx. *Ovary* commonly 4-celled; *styles* united; *stigmas* 4, or united in one. *Fruit* mostly capsular, with a loculicidal dehiscence,—sometimes baccate. *Seeds* destitute of albumen.

An Order containing some plants (such as the *Fuchsias*) which are interesting for their beauty,—but none of Agricultural value.

TRIBE I. ONAGREAE. DC.

Petals as many (sometimes wanting), and *Stamens* mostly twice as many, as the lobes of the calyx (which are usually 4), regular. *Pollen* connected by cobweb-like threads. *Ovules* mostly indefinite. *Fruit* capsular, or rarely dry and indehiscent. *Herbs* or *suffruticose* plants.

SUB-TRIBE 2. OENOTHERAE. Torr. & Gr.

Calyx deciduous from the summit of the ovary after flowering. The *Stamens* opposite the petals, sometimes imperfect. *Seeds* naked (i. e. not comose). *Leaves* alternate.

59. OENOTHERA. L. Endl. Gen. 6115.

[Greek, *Oinos*, wine, and *thereuo*, to hunt; the roots being incentives to wine-drinking.]

Calyx of 4 membranaceous sepals, partially cohering above, and united below into a long 4-sided or 8-ribbed tube; *limb* reflexed, and, with a portion of the tube, deciduous. *Petals* 4. *Stamens* 8, erect or declined. *Ovary* 4-celled; *stigma* 4-lobed (rarely spherical). *Capsule* more or less oblong and quadrangular, 4-valved, many-seeded,—the *placenta* either persistent in the axis or cohering with the dissepiments. *Flowers* axillary, solitary or in terminal spikes—often vespertine.

1. OE. BIENNIS, L. Stem erect, somewhat branched, pilose and roughish; leaves ovate-lanceolate, repand-dentate; capsule obtusely 4-angled, sessile. Torr. & Gr. *Fl. N. A.* 1. p. 492. DC. *Prodr.* 3. p. 46. *Fl. Cestr.* p. 240. [herb.]

BIENNIAL OENOTHERA. *Vulgò*—Evening Primrose. Night Willow-

Root biennial. *Stem* 2 to 5 or 6 feet high, rather stout, hairy and usually greenish. *Leaves* 2 to 6 inches long, sessile or subsessile. *Flowers* large, in a terminal leafy spike. *Calyx* colored.—the tube much longer than the ovary. *Petals* yellow. *Ovary* oblong; *style* rather longer than the corolla; *stigmas* 4, cruciate, elongated, linear. *Capsule* obscurely 4-sided, an inch to an inch and half long, smoothish, splitting into 4 sub-linear valves, with the dissepiments in the middle (loculicidal), and the placenta persistent in the axis. Fields, fence-rows, &c. throughout the U. States. *Fl.* June—Sept. *Fr.* Aug.—Octo.

Obs. This coarse plant is intitled to the notice of the farmer, merely in consequence of being a common, rather conspicuous, and worthless weed, in pastures, and on the borders of cultivated fields. A *variety*, of yet stouter growth, and very large flowers (*Oe. grandiflora*, of some authors), is often tolerated in Gardens. There is another species (*Oe. fruticosa*, L. of smaller size, with more slender yet more rigid stems), which is quite common in old fields; but is scarcely of sufficient importance—even as a *weed*—to claim a place in this work.

ORDER LIX. GROSSULACEAE. DC. Mirb.

Small *shrubs*, often spinose or prickly. *Leaves* alternate, somewhat in fascicles, palmately lobed and veined, often sprinkled with resinous dots. *Flowers* in racemes or small clusters. *Calyx-tube* adherent to the ovary, and more or less produced beyond it,—the *limb* 5-lobed, sometimes colored. *Petals* 5, small. *Stamens* 5. *Ovary* with 2 parietal placentae; *styles* more or less united. *Fruit*

a berry, crowned with the shrivelled remains of the flower. *Seeds* mostly numerous; *embryo* minute, in hard albumen.

A small Order,—and of little or no interest beyond the genus here noticed.

60. RIBES. *L. Endl. Gen.* 4682.

[An ancient Arabic name,—of obscure meaning.]

☞ The *Generic* character the same as that of the *Order*.

† *Stems more or less aculeate.*

1. *R. UVA-CRISPA, L.* Leaves obtusely 3 to 5-lobed, somewhat villous beneath and on the petiole; peduncles mostly 1-flowered, bracteate; sepals reflexed; ovary and style villous; berry hairy or smooth. *DC. Prodr.* 3. p. 478. *Fl. Cestr.* p. 161.

Var. sativum, DC. l. c. Vulg.—Goose-berry.

Fr. Vrai Groseillier. *Germ.* Die Stachelbeere. *Span.* Uva espina.

Stem 2 to 3 feet high, diffusely branching. *Leaves* $\frac{3}{4}$ of an inch to an inch and half in length, and as wide as long, incisely lobed and dentate; *petioles* generally much shorter than the leaves, often margined. *Peduncles* solitary or in pairs, often bracteate near the middle. *Petals* pale greenish-yellow. *Berries* solitary, pendulous, large, oval, of a greenish amber color when mature. *Gardens*: cultivated. *Native* of Europe. *Fl.* April. *Fr.* July.

Obs. This species is much cultivated, for its fine *fruit*: but (in Pennsylvania, at least) it often fails to perfect the fruit, from some cause not well understood. Judging from specimens which I have seen, it appears to succeed much better, in England,—and the fruit attains to a much larger size, in that country.

†† *Stems not aculeate.*

2. *R. RUBRUM, L.* Leaves obtusely 3 to 5-lobed, smooth above, pubescent beneath; racemes pendulous, nearly smooth; calyx rotate, the segments rounded. *Torr. & Gr. Fl. N. A.* 1. p. 550. *DC. Prodr.* 3. p. 481. *Fl. Cestr.* p. 161.

RED RIBES. *Vulg.*—Red Currant.

[roja.

Fr. Groseillier rouge. *Germ.* Gemeine Johannisbeere. *Span.* Ribes

Stems numerous, slender, sparingly branched, 2 to 4 feet high. *Leaves* 1 to 2 or 3 inches long, and rather wider than long, unequally incised-dentate; *petioles* about as long as the leaves. *Racemes* produced from lateral buds distinct from the leaves; *bracts* ovate. *Petals* greenish yellow, minute. *Berries* globose, red (rarely whitish or pearl-color) when mature. *Gardens*: cultivated. *Native* of Europe and the northern regions of America. *Fl.* April. *Fr.* June—July.

Obs. This is so easily cultivated, and is so constantly productive, that it is to be found in almost every garden. The fine acid *fruit* yields a favorite jelly, for the table; and even the green berries are much used by the pastry cook.

3. *R. NIGRUM, L.* Leaves 3 to 5-lobed, sprinkled with yellow resinous dots beneath; racemes loose, pilose; calyx tubular-campanulate. *DC. Prodr.* 3. p. 481. *Fl. Cestr.* p. 161.

BLACK RIBES. *Vulg.*—Black Currant.

Fr. Cassis. *Germ.* Schwarze Johannisbeere. *Span.* Ribes negra.

Stems numerous, slender, 3 to 5 feet high. *Leaves* 2 to 3 inches long, and nearly as wide as long, dentate-serrate, pubescent beneath; *petioles* shorter than the leaves. *Racemes* somewhat pendulous, generally with a distinct single-flowered peduncle at base; *bracts* subulate. *Petals* pale yellowish green (sometimes

changed into stamens or *staminodia*). *Berries* roundish-ovoid, purplish black when mature. *Gardens*: cultivated. Native of Northern Europe. *Fl.* April. *Fr.* June—July.

Obs. This is sometimes found in gardens; but the fruit being of a rather insipid or flat sweetish taste, it is not much esteemed. It however affords a jelly, which is a popular and useful remedy for sore throat, colds, &c. There are numerous other species of this genus; but, so far as I know, the foregoing are all that are cultivated (and perhaps all that are worth cultivating) for the sake of the *fruit*. The *R. aureum*, *Pursh*, or "Missouri Currant"—a species of modern discovery, with a long tubular calyx—is much admired for the clove-like fragrance of its early flowers,—and is now very common among the ornamental shrubbery of yards and gardens.

ORDER LXIII. CUCURBITACEAE. *Juss.*

Herbs, with succulent stems, and climbing by means of tendrils. *Leaves* alternate, palmately veined or lobed. *Flowers* monoicous or dioicous (rarely perfect). *Calyx* of 4 or 5 (rarely 6) sepals, united into a tube, and in the fertile flowers adherent to the ovary. *Petals* as many as the sepals, more or less united, and cohering with the calyx. *Stamens* 5 or 3, inserted into the base of the corolla or calyx, distinct or variously united by their filaments and long, mostly *tortuous*, *anthers*. *Ovary* usually 2 to 5-celled,—the thick fleshy *placentae* often filling the cells, or carried back so as to reach the walls of the pericarp; the dissepiments often disappearing during its growth: *stigmas* thick, dilated or fringed. *Fruit* usually fleshy, with a firm (sometimes a ligneous and occasionally a membranous) rind. *Seeds* flat, often arillate, destitute of albumen; *cotyledons* foliaceous.

This Order—so well known for its *culinary* products—contains some which are possessed of active medicinal properties (such as the *Colocynth*, of the shops—*Cucumis Colocynthis*, *L.*); but few, if any, of Agricultural interest, beyond those here mentioned.

TRIBE II. CUCURBITACEAE. *DC.*

Tendrils lateral, stipular (supposed to be transformed stipules.)

☞ *Flowers* monoicous (rarely dioicous or perfect).

61. LAGENARIA. *Ser. Endl. Gen.* 5136.

[Greek, *Lagenos*, a flagon or bottle; from the shape of the fruit.]

Calyx campanulate or subturbinata, 5-toothed,—the segments subulate-lanceolate, shorter than the tube. *Petals* 5, obovate, inserted within and beneath the margin of the calyx. *Stamens* 5, triadelphous, the fifth one free. *Stigmas* 3, sessile, thick, 2-lobed, granular. *Fruit* at first fleshy and pubescent, finally with a smooth ligneous rind. *Seeds* compressed, obovate, somewhat 2-lobed at apex, the margin tumid.

1. *L. VULGARIS*, *Ser.* Softly pubescent; stem climbing; leaves roundish-cordate, acuminate, denticulate, with 2 glands at base; fruit clavate-ventricose. *Torr. & Gr. Fl. N. A.* 1. p. 543. *DC. Prodr.* 3. p. 299. *Fl. Cestr.* p. 551.

COMMON LAGENARIA. *Vulgò*—Calabash. Bottle Gourd.

Fr. Calabasse. *Germ.* Der Kuerbiss. *Span.* Calabaza.

Whole plant somewhat viscid, and emitting a fetid musky odor. *Stem* 10 to 15 or 20 feet long, slender, branching, climbing by *tendrils* which are 2 to 4-cleft. *Leaves* 4 to 6 or 8 inches long; *petioles* 2 to 6 inches long. *Flowers* axillary, on long peduncles; *corolla* white, with green nerves and veins. *Fruit* 12 to 18 inches long, and 4 to 6 or 8 inches in diameter, unequally bi-ventricose, finally nearly hollow or partially filled with the loose dry suberose *placentae*.—the *rind* yellowish or pale brown, thin and hard. *Seeds* in a dry membranous *arillus*. *Gardens*, and *Lots*: cultivated. Native of the tropical regions. *Fl.* July—August. *Fr.* September—October.

Obs. The thin firm woody shell, of the *fruit*, affords a very convenient kitchen utensil,—and the plant is sometimes cultivated for the sake of that fruit, by cottagers and farmers who cannot afford, or do not choose, to purchase more costly utensils.*

62. CUCUMIS. *L. Endl. Gen.* 5137.

[Derived from the Celtic, *Cucc*, a hollow vessel,—according to *De Theis*.]

Calyx tubular-campanulate, 5-toothed,—the teeth subulate, scarcely as long as the tube. *Petals* 5, nearly distinct and but slightly adnate to the calyx. *Stamens* 5, triadelphous. *Stigmas* 3, sessile, thick, 2-lobed. *Fruit* fleshy, indehiscent. *Seeds* white, lance-oblong, compressed, acute at base and on the margin.

1. *C. MELO, L.* Stem prostrate; leaves subcordate, obtuse, somewhat angled, the angles rounded; fertile flowers perfect; fruit oval or subglobose, torulose. *DC. Prodr.* 3. p. 300. *Fl. Cestr.* p. 552.

MELON CUCUMIS. *Vulgò*—Musk Melon. Cantaloupe.

Fr. Melon. *Germ.* Die Melone. *Span.* Melon almizcleño.

Hirsute and roughish. *Root* annual. *Stem* 5 to 8 or 10 feet long, sparingly branched; *tendrils* simple. *Leaves* 3 or 4 inches long, and rather wider than long; *petioles* 2 to 3 inches in length. *Flowers* axillary, on short peduncles. *Corolla* yellow. *Fruit* 4 to 6 or 8 inches in diameter, often longitudinally ridged (torulose),—the flesh, when mature, yellowish, succulent, and of a saccharine spicy flavor. Gardens, and Lots: cultivated. Native of Asia. *Fl.* June—July. *Fr.* August.

Obs. The *fruit* of this—of which there are several *varieties*—is a great favorite with many persons,—and it is often cultivated, in Pennsylvania; but the best specimens are grown in the warm sandy soil of New Jersey, and the Southern States.

2. *C. SATIVUS, L.* Stem procumbent; leaves subcordate and angulate-lobed, the terminal lobe prominent; fruit oblong, obscurely and obtusely trigonous, scabrous when young, finally smoothish. *DC. Prodr.* 3. p. 300. *Fl. Cestr.* p. 552.

CULTIVATED CUCUMIS. *Vulgò*—Cucumber.

Fr. Le Concombre. *Germ.* Die Gurke. *Span.* Pepino.

Rough and hispid. *Root* annual. *Stem* 6 to 12 or 15 feet long, somewhat branching; *tendrils* simple. *Leaves* 3 to 5 or 6 inches long, and nearly as wide as long, somewhat 5-angled and lobed; *petioles* 2 to 4 inches in length. *Flowers* axillary, on short peduncles; *corolla* yellow. *Fruit* 6 to 12 inches long and 2 to 3 inches in diameter, rough with bristle-pointed tubercles when young, smoothish and tawny yellow when mature. Gardens, and Lots: cultivated. Native of Tartary and the East. *Fl.* June—September. *Fr.* August—October.

Obs. Known to every one,—and universally cultivated for the *young* or *green fruit*. The young fruit (sometimes called *Gherkins*) is much used for *Pickles*. In the Middle States, the popular time for planting the seeds, is “the first day of May, before sunrise.”

3. *C. ANGUIA, L.* Stem prostrate, slender; leaves palmate-lobed and sinuate, cordate at base; fruit sub-globose or oval, echinate. *DC. Prodr.* 3. p. 301. *Fl. Cestr.* p. 553.

Vulgò—Prickly Cucumber. Jerusalem Cucumber.

*WILDENOW seems to have had a high opinion of its value, in domestic economy. Under the head of “*Usus*,” he mentions “*Lagenae, cochlearia, infundibula, pilei, innumeraque alia utensilia.*” It might serve all these purposes, in a primitive state of society; but our people have generally got rather past that.

Hirsute. *Root* annual. *Stem* 3 to 6 feet long, branching; *tendrils* simple. *Leaves* 3 or 4 inches in length, deeply sinuate-lobed; *petioles* 1 or 2 inches long. *Flowers* greenish yellow, on short axillary peduncles. *Fruit* usually about an inch and half long, oval, muricate, green. Gardens: cultivated. Native of Jamaica. *Fl.* July—August. *Fr.* September.

Obs. Occasionally cultivated for the *young fruit*,—which is used for *Pickles*.

63. CITRULLUS. *Neck. Endl. Gen.* 5131.

[From *Citrus*, an Orange; the pulp being of an Orange red.]

Calyx deeply 5-cleft,—the segments linear-lanceolate. *Petals* 5, connected at base, adnate to the bottom of the calyx. *Stamens* 5, inserted on the base of the corolla, triadelphous. *Style* cylindric, trifid; *stigmas* convex, reniform-cordate. *Fruit* sub-globose, fleshy, the placentae mostly very succulent. *Seeds* numerous, colored, obovate-oblong, compressed, truncate at base and obtuse on the margin.

1. *C. VULGARIS*, *Schrad.* *Stem* prostrate, rather slender; leaves somewhat 5-lobed, the lobes obtusely sinuate-pinnatifid, bluish glaucous beneath; flowers solitary, pedunculate, with a single bract; fruit globose or oval, very smooth, stellate-maculate. *Walp. Repert.* 2. p. 199.

Cucumis Citrullus, *Ser. DC. Prodr.* 3. p. 301. *Fl. Cestr.* p. 553.

COMMON CITRULLUS. *Vulgò*—Water Melon.

Fr. Melon d'eau. *Germ.* Die Wasser Melone. *Span.* Sandia.

Plant hairy. *Root* annual. *Stem* 8 to 12 or 15 feet long, angular, somewhat branching; *tendrils* branched. *Leaves* 3 to 5 or 6 inches long, ovate in their outline; *petioles* 2 to 3 inches long, generally erect. *Flowers* axillary, on hairy peduncles an inch or more in length. *Corolla* pale greenish yellow. *Fruit* 10 to 20 inches long, globose or oval, with a firm fleshy rind, and, when mature, with a tender sweet watery pulp within which is usually purple or reddish orange-colored (sometimes nearly white). *Seeds* black or purplish brown. Gardens, and fields: cultivated. Native of India, and Africa. *Fl.* June—Aug. *Fr.* August—September.

Obs. This plant—so well known for its delicious *fruit*—is extensively cultivated,—but succeeds best in the sandy soils along the Atlantic coast, or on the alluvial banks of our Western waters.—There is a nearly allied plant, often seen in gardens, which bears a considerably different fruit—known by the name of “*Citron*,” the *firm rind* of which is used in making “*Sweet meats*” or *Preserves*. The flesh is very firm, and the centre does not become red, tender nor watery, like the common Water Melon: yet the whole aspect of the plant, and external appearance of the fruit, so closely resemble this species, that I suppose it may be nothing more than a *variety*: perhaps the *var. Pasteca*, *Ser. DC.*

64. CUCURBITA. *L. Endl. Gen.* 5138.

[The Latinized Celtic name for a Gourd or hollow vessel; applied to this genus.]

Corolla campanulate,—the petals coalesced with each other and with the calyx. STAMINATE FL. *Calyx* hemispherical-campanulate. *Stamens* 5, triadelphous and syngenesious; *anthers* straight and parallel, with the base and apex abruptly curved. PISTILLATE FL. *Calyx* obovoid-clavate, contracted to a neck above the ovary, always circumscissed below the limb after flowering. *Stigmas* 3, thick,

2-lobed. *Fruit* fleshy, or sometimes becoming subligneous. *Seeds* white, convexly compressed, obovate, the margin scarcely tumid. *Stems* procumbent. *Leaves* cordate.

1. *C. PEPO*, *L.* Leaves obtusely cordate, somewhat 5-lobed; fruit subglobose oblong or clavate, smooth, always fleshy. *DC. Prodr.* 3. p. 317. *Fl. Cestr.* p. 555.

Vulgò—Pumpkin. *Fr.* La grosse Citrouille. Potiron.

Rough and hispid. *Root* annual. *Stem* 10 to 20 or 30 feet long, sparingly branched; *tendrils* branched. *Leaves* 9 to 15 or 18 inches in length; *petioles* 3 to 6 or 8 inches long. *Flowers* yellow, large, axillary,—the staminate ones often solitary on a long peduncle. *Fruit* of various forms, sizes and colors,—the flesh of the rind usually yellow, the cavity loosely filled with a yellow stringy pulp.—*Fields*, and *Lots*: cultivated (usually with Indian Corn, in Pennsylvania). *Native of the East.* *Fl.* July. *Fr.* October.

Obs. Extensively cultivated for its fruit,—of which there are many *varieties*; some of them attaining to an enormous size (2 feet or more in diameter),—but these are not so valuable. The better sorts are often used at table,—affording the celebrated *Pumpkin Pie* of New England; and the coarser varieties are esteemed for feeding Stock. When growing in the immediate vicinity of *Squashes*, the *fruit* of this species is liable to be converted into a *Hybrid*, of little or no value. I have had a crop of Pumpkins totally spoiled, by inadvertently planting Squashes among them,—the fruit becoming very hard and warty—unfit for the table, and unsafe to give to cattle.

2. *C. MELOPEPO*, *L.* Leaves subcordate, somewhat 5-angled; fruit mostly orbicular and much depressed, or clypeate, with the margin often tumid and torulose, at first fleshy, finally subligneous. *DC. Prodr.* 3. p. 317. *Fl. Cestr.* p. 555.

Vulgò—Round Squash. Cynling. *Fr.* Bonnet de Prêtre. Patisson.

Hirsute. *Root* annual. *Stem* 8 to 12 or 15 feet long, somewhat branching; *tendrils* branched,—sometimes transformed or developed into imperfect leaves. *Leaves* 6 or 8 inches long; *petioles* as long as the leaves. *Flowers* yellow, rather large, pedunculate. *Fruit* of various colors (mostly yellow, pale green, or mottled), smooth or sometimes warty,—the rind finally hard and woody, containing a loose stringy pulp. *Fields*, and *Gardens*: cultivated. *Native country* uncertain. *Fl.* July. *Fr.* October.

Obs. Cultivated for the *young fruit*,—which is generally esteemed, as a vegetable sauce. There are numerous *varieties* of the fruit—and of various qualities. There is also a kind of stunted variety of the plant, with a short bushy stem, which is often a prolific bearer.

3. *C. VERRUCOSA*, *L.* Leaves deeply 5-lobed, the middle lobe narrowed at base; fruit elliptic-oblong, or clavate and often arcuate, verrucose. *DC. Prodr.* 3. p. 317. *Fl. Cestr.* p. 556. *Also?* *C. subverrucosa.* *Willd. DC. l. c.*

WARTY CUCURBITA. *Vulgò*—Warted Squash. Long-necked Squash.

Hirsute. *Root* annual. *Stem* 10 to 15 feet long, somewhat branching; *tendrils* branched. *Leaves* 8 to 10 inches long; *petioles* nearly as long as the leaves. *Flowers* yellow, rather large. *Fruit* varying from oblong to obovoid and clavate, often much elongated and curved, rough with warts or obtuse tubercles, and of various colors, or shades, from yellow to green and white, finally hard and subligneous or bony. *Lots*, and *Gardens*: cultivated. *Native country* unknown. *Fl.* July. *Fr.* October.

Obs. Cultivated as the preceding (to which it is nearly allied),—and for the same purposes. Both species are apt to produce worthless *Hybrids* among *Pumpkins*, when growing near them; and therefore should never be planted in their immediate vicinity.

ORDER LXV. SAXIFRAGACEAE. *Juss. DC.*

Herbs or *shrubs*. *Leaves* alternate or opposite, sometimes stipulate. *Inflorescence* various, often cymose. *Sepals* 4 or 5, persistent, more or less connected with each other, and often more or less adherent to the ovary. *Petals* as many as the sepals—rarely wanting. *Stamens* as many—or more commonly twice as many (rarely fewer, or 3 or 4 times as many)—as the petals, and inserted with them into the throat of the calyx. *Ovaries* mostly 2 (sometimes 3 or 4), usually cohering at base and distinct at summit. *Fruit* capsular, mostly with septical dehiscence. *Seeds* numerous; *embryo* straight, in the axis of fleshy albumen.

An unimportant Order, to the Agriculturist,—though some species of *Hydrangea* and *Philadelphus* are admired, and cultivated, as Ornamental Shrubs.

SUB-ORDER I. SAXIFRAGEAE. *DC. Torr. & Gr.*

Herbs. *Petals* imbricated in aestivation. *Capsule* (when the carpels are united) either 2-celled with the placentae in the axis, or 1-celled with parietal placentae.

65. SAXIFRAGA. *L. Endl. Gen.* 4634.

[Latin, *Saxum*, a rock, and *frangere*, to break; the plant often growing in clefts of rocks.]

Calyx 5-parted, often adnate to the base of the ovary. *Petals* 5, entire. *Stamens* mostly 10 (rarely 5). *Capsule* usually 2-beaked,—or rather consisting of 2 acuminate connate carpels, opening between the diverging beaks. *Radical leaves* usually rosulate; *cauline* ones mostly alternate.

1. *S. PENNSYLVANICA, L.* *Leaves* all radical, oblanceolate or oval, rather acute, obsolete denticulate, tapering at base to a broad margined petiole; scape leafless, striate, pubescent; cymes in an oblong panicle; flowers pedicellate; petals linear-lanceolate, scarcely twice as long as the calyx; ovary nearly free. *Torr. & Gr. Fl. N. A.* 1. p. 571. *DC. Prodr.* 4. p. 39. *Fl. Cestr.* p. 270.

PENNSYLVANIAN SAXIFRAGE. *Vulgò*—Tall Saxifrage.

Root perennial, with coarse fibres. *Leaves* 4 to 6 or 8 inches long, thin and smoothish, somewhat ciliate. *Scape* 2 to 3 (occasionally 4 or 5) feet high, rather stout, sulcate-striate. *Cymes* at first in conglomerate heads—finally rather loose, in an oblong open panicle 12 to 18 inches in length,—the branches glandular-pubescent and somewhat viscid. *Petals* greenish yellow, small. *Stamens* persistent; *anthers* orange-colored with a tinge of purple. *Seeds* angular, dark brown. Swampy meadows, and low grounds: Canada to Virginia and Ohio. *Fl.* May. *Fr.* July.

Obs. There are numerous species of *Saxifrage* on this continent (a white-flowered one,—viz. *S. Virginienensis, Mx.* is very common on rocky banks, in the wood-lands of the middle States): But this is the only one which, by its size, and frequent occurrence in wet meadows, is likely to attract the notice of the farmer. It is a mere weed; but not difficult to get rid of, by draining and proper attention.

The *Heuchera Americana, L.* or *Alum-root*—a plant belonging to this order—is frequent along fence-rows and borders of rich wood-lands,—and its astringent root has been of some notoriety as an *Indian remedy* for cancerous sores: But it is scarcely of sufficient prominence, on the farm, to command the attention of the Agriculturist.

ORDER LXVII. UMBELLIFERAE. *Juss.*

Herbs. *Stems* often fistular and furrowed. *Leaves* alternate, simple but generally much dissected,—the *petioles* more or less sheathing or dilated at base. *Flowers* in umbels; *umbels* mostly compound and involucrate. *Calyx* intirely adherent to the surface of the 2-carpelled ovary; the *limb* reduced to a mere border or to 5 small teeth. *Petals* 5, distinct, with inflected points, inserted together with the 5 *stamens* on a disk which crowns the ovary. *Ovary* 2-celled, with a solitary suspended ovule in each cell or carpel: *Styles* 2,—their bases often united and thickened (forming a *Stylopodium*). *Fruit* dry, consisting of 2 single-seeded indehiscent akene-like *carpels* (called *Mericarps*, by *DC.*), which adhere by their faces (or *commissure*) to a slender common axis (*Carpophore*),—at length separating from each other, and suspended from the summit of the axis or *Carpophore*: the *Carpels* are usually marked with a definite number of longitudinal *ribs* (*juga*), which are sometimes dilated into wings; the intervals or *channels* between the ribs—as also the *commissure*—often contain, within the pericarp and parallel with the ribs, one or more linear receptacles of aromatic oil,—which receptacles are called *Vittae* or filets. *Seed* usually coherent with the carpel; *embryo* minute, at the base of horny albumen.*

This large and important Order comprises about 200 genera,—and is remarkable for the aromatic and generally harmless character of the *fruit*—while the *herbage* (including root, stem and leaves,) is often highly deleterious. The species best known on the farm, and in the kitchen-garden, are here noticed. Some medicinal gums are furnished by this Order,—such as *Asafoetida*, *Galbanum*, and perhaps *Ammoniac*.

SUB-ORDER I. ORTHOSPERMAE. *DC.*

Inner face of the seed and albumen straight and flat or plane (i. e. neither involute at the sides, nor incurved from base to apex).

A. Carpels few-ribbed: i. e. with primary ribs only.

TRIBE IV. AMMINEAE. *Koch.*

Fruit laterally compressed and didymous. *Carpels* with 5 equal filiform or sometimes slightly winged ribs,—the lateral ones marginal. *Vittae* various.

† *Calyx* with the limb dentate.

66. CICUTA. *L. Endl. Gen.* 4391.

[A Latin name for the hollow stem, or internodes, of plants; applied to this genus.]

Calyx with 5 acuminate segments. *Petals* roundish-obcordate by the inflection of the apex. *Fruit* roundish. *Stylopodium* depressed. *Carpels* with 5 flattish equal ribs. *Channels* filled with single *vittae*. *Commissure* with 2 *vittae*. *Carpophore* 2-parted. *Involucre* 0 or few-leaved. *Involucels* many-leaved. Sub-aquatic *herbs*. *Stem* terete, smooth, fistular. *Leaves* tripinnately or triternately dissected.

1. *C. MACULATA*, *L.* Stem spotted or streaked; leaves bi- or triternately divided,—the segments lanceolate, mucronately serrate; umbels terminal and axillary. *Torr. & Gr. Fl. N. A.* 1. p. 610. *DC. Prodr.* 4. p. 99. *Fl. Cestr.* p. 185.

SPOTTED CICUTA. *Vulgò*—Spotted Cow-bane. Water Hemlock.

* The longitudinal *ribs*, on the carpels, are distinguished into *primary* and *secondary*. The *primary* ones (10 in number on the 2 carpels—or 5 on each,) are pretty constant and more or less conspicuous,—representing the *midribs* and *sutures* (or lines of junction) of the 5 sepals, which, by their union, form the tube of the calyx and coat of the fruit. The 5 ribs which correspond with the *midribs* of the 5 sepals, are termed *carinal* ribs, and their extension at apex forms the 5 calyx-teeth: the 5 which represent the *sutures* of the sepals, are called *sutural* ribs,—and they, of course, terminate at the sinuses between the calyx-teeth. Alternating with these primary ribs, there is sometimes a development of *secondary* ones,—which Prof. DE CANDOLLE regards as representing *lateral nerves* (i. e. one on each side of the midrib) of the united sepals. These *ribs* and *vittae*, together with the form or manner of *compression* of the fruit, afford important aid in determining the *generic character* of the plants of this remarkably natural family.

Root perennial with thick oblong fleshy fibres. Stem 4 to 6 feet high, branching, dark purple, or striate with green and purple or brown. Leaves smooth,—the lower ones on rather long petioles, tripartately dissected with the terminal division mostly in fives; segments or leaflets 2 to 3 inches long, petiolulate, penninerved,—the nerves (as remarked by Dr. BIGELOW,) running to the notches of the serratures instead of the points. Umbels spreading; rays slender. Involucre 0 or 1 or 2 linear leaflets. Involucels of 5 or 6 small lance-linear leaflets. Petals white. Fruit nearly round; ribs rather broad; channels reddish brown or dark purple, filled with aromatic oily matter. Swampy grounds, and margins of rivulets: throughout the U. States. Fl. July. Fr. September.

Obs. The mature fruit of this plant has a strong anisate odor. The root is an active poison; and the lives of children, and others, are often endangered and sometimes destroyed by eating it, in mistake for that of the Sweet Cicely (*Osmorhiza longistylis*, DC.)—an aromatic plant of the same natural family. The herbage is also said to be destructive to Cattle, when eaten by them: all which goes to show the propriety of possessing sufficient Botanical knowledge to be able to identify the plant—and likewise the necessity of extirpating it from all meadows and pastures.

† † Calyx with the limb obsolete.

67. APIUM. Hoffm. Endl. Gen. 4393.

[From the Celtic, *Apon*, water; near which it naturally grows.]

Petals roundish, with a small inflexed apex. Fruit roundish. Stylopodium depressed. Carpels with 5 filiform equal ribs. Channels with single vittae, the outer ones often with 2 or 3 vittae. Carpophore undivided. Involucre 0. Involucels 0. Stems sulcate. Leaves pinnately dissected.

1. A. GRAVEOLENS, *L. var. dulce*, DC. Lower leaves on very long petioles; segments cuneate, lobed and incised-dentate at apex. DC. Prodr. 4. p. 101. Fl. Cestr. p. 187.

STRONG-SCENTED APIUM. *Vulgò*—Celery.

Fr. Céléri. Germ. Der Celeri. Span. Apio hortense.

Whole plant glabrous. Root biennial, fusiform. Stem 2 to 3 feet high, branching. Radical leaves on stout succulent channelled petioles 6 to 12 inches or more in length, and which are green, or often purplish, when not artificially blanched; stem leaves on short petioles. Umbels terminal and axillary,—the axillary ones often subsessile; rays unequal, spreading. Petals greenish white. Fruit nearly orbicular. Gardens: cultivated. Native of Europe. Fl. July. Fr. September.

Obs. This is much cultivated for the sake of the succulent spicy petioles of the radical leaves,—which are used as a salad: But in order to be rendered palatable—or even eatable—they require to be blanched or etiolated by the exclusion of light,—which is usually effected by planting in trenches and covering them with earth. The var. rapaceum, DC. or Turnep-rooted Celery, is also cultivated,—though not so commonly.

68. PETROSELINUM. Hoffm. Endl. Gen. 4394.

[Greek, *Petra*, rock, and *Selinum*; Rock Selinum,—from its native habitat.]

Petals roundish, incurved, scarcely emarginate by the inflection of the narrow apex. Fruit ovate. Stylopodium conical, short. Carpels with 5 equal ribs. Channels with single vittae. Commissure with 2 vittae. Carpophore 2-parted. Involucre few-leaved. Involucels many-leaved. Stems somewhat angular. Leaves decom-
pound.

1. *P. SATIVUM*, *Hoffm.* Segments of the lower leaves cuneate-ovate, trifid and incised-dentate,—of the upper ones linear-lanceolate and nearly entire; involucels subulate. *DC. Prodr.* 4. p. 102. *Fl. Cestr.* p. 188.

CULTIVATED PETROSELINUM. *Vulgò*—Parsley.

Fr. Persil. *Germ.* Die Petersilie. *Span.* Perexil.

Plant smooth. *Root* biennial. *Stem* 2 to 4 feet high, striate with green and yellowish stripes, branched. *Leaves* shining green, the lower ones much dissected. *Umbels* terminal and axillary, pedunculate. *Involucre* of a single leaflet (or sometimes 2 or 3), linear. *Involucels* of 5 or 6 short subulate leaflets. *Petals* greenish white. *Fruit* ovate. *Gardens*: cultivated. *Native* of Eastern Europe. *Fl.* June. *Fr.* August.

Obs. Cultivated for the pleasant-flavored *leaves* which are used in culinary processes. The *root* has long been a popular diuretic. The *var. crispum*, or Curled Parsley—with the segments of the lower leaves broader, and curled on the margin—is also frequent in kitchen gardens.

69. CARUM. *Koch. Endl. Gen.* 4406.

[Said to be derived from *Caria*,—the native country of the plant.]

Petals regular, obovate, emarginate by the inflection of the apex. *Stylopodium* depressed; *styles* deflected. *Fruit* ovate or oblong. *Carpels* with 5 filiform equal ribs. *Channels* with single *vittae*. *Commissure* with 2 *vittae*. *Carpophore* free, bifid at apex. *Involucre* and *Involucels* various—sometimes 0. *Stems* striate, smooth. *Leaves* pinnately dissected; segments multifid.

1. *C. CARUI*, *L.* Leaves somewhat bipinnatifid, the segments linear; involucre 1-leaved or 0; involucels 0. *DC. Prodr.* 4. p. 115. *Fl. Cestr.* p. 188.

CARIAN CARUM. *Vulgò*—Common Caraway.

Fr. Carvi. *Germ.* Gemeiner Kuemmel. *Span.* Alcaravéa.

Root biennial? (perennial, *DC.*), fusiform. *Stem* about 2 feet high, branched. *Radical leaves* rather large; *stem leaves* multifid, the segments filiform. *Petals* white. *Fruit* oblong or elliptic, often oblique at apex. *Gardens*: cultivated. *Native* of Europe. *Fl.* June. *Fr.* August.

Obs. This is sometimes cultivated for its highly aromatic *fruit*,—which is used to impart a flavor to cakes, and other articles of cookery.

TRIBE V. SESELINEAE. *Koch.*

Fruit terete—i. e. a transverse section of it nearly orbicular. *Carpels* with 5 filiform or winged ribs,—of which the lateral ones are marginal, and equal with, or a little broader than, the others.

70. FOENICULUM. *Adans. Endl. Gen.* 4425.

[Latin, diminutive of *Foenum*, hay; from a resemblance in its odor.]

Calyx with the limb a little tumid, the teeth obsolete. *Petals* oval, entire, involute, with a broadish retuse apex. *Fruit* elliptic-oblong, subterete. *Stylopodium*-conical. *Carpels* with 5 obtuse keeled ribs,—of which the lateral ones are marginal, and often a little broader. *Channels* with single *vittae*. *Commissure* with 2 *vittae*. *Involucre* and *Involucels* 0. *Biennial* or *perennial*. *Stems* terete, striate. *Leaves* decomposed, pinnately dissected, the segments linear.

1. *F. VULGARE*, Gaertn. Segments of the leaves subulate-linear, elongated; umbels many-rayed. *DC. Prodr.* 4. p. 142. *Fl. Cestr.* p. 191.

COMMON FOENICULUM. *Vulgò*—Fennel. Garden Fennel.

Fr. Fenouil. *Germ.* Der Fenchel. *Span.* Hinojo.

Plant smooth. *Root* perennial? (biennial, *DC.*). *Stem* 4 to 5 or 6 feet high, branching, striate-grooved, purplish-green and somewhat glaucous. *Leaves* large, finely and somewhat biternately dissected; *segments* an inch to an inch and half long, almost filiform,—the subdivisions often dichotomous; *common petioles* much dilated, sheathing, produced into 2 marginal lobes at summit. *Umbels* of 15 to 20 or 30 unequal rays. *Petals* yellow. *Carpels* semi-terete, striately ribbed and grooved. *Gardens*: cultivated. *Native* of Europe. *Fl.* July. *Fr.* September.

Obs. The whole plant is highly aromatic. Those who kept *Bees*, in former years, were much in the practice, when those insects swarmed, of rubbing the inside of the Bee-hive with this fragrant herb,—under the impression that the odor would attach them to their new domicil. It is chiefly cultivated for its aromatic *fruit*,—which is occasionally used in domestic economy; and is sometimes *smoked*, like tobacco, as a popular remedy for cholice.

TRIBE VII. PEUCEDANEAE. *DC.*

Fruit dorsally and more or less flatly compressed, surrounded with a single dilated entire smooth *margin*.—which is flattened or slightly convex, but not thickened at the edge. *Carpels* with 5 filiform (or rarely winged) ribs,—of which the lateral ones are contiguous to the dilated margin or united with it.

71. ARCHEMORA. *DC. Endl. Gen.* 4472.

[Named from *Archemorus*,—who died from eating Parsley. *DC.*]

Calyx 5-toothed. *Petals* obcordate by the inflection of the acuminate apex. *Fruit* elliptic-ovate, convex or lenticularly compressed. *Stylopodium* conical, broad at base. *Carpels* with 5 equidistant obtuse ribs,—the lateral ones dilated into a flattish thin-edged margin. *Channels* filled by single *vittae*. *Commissure* with 2 or more *vittae*. *Carpophore* 2-parted. *Involucre* 0 or few-leaved. *Involucels* many-leaved. *Stem* terete, striate. *Leaves* pinnately or ternately dissected,—the *segments* or leaflets entire or sparingly toothed near the apex.

1. *A. RIGIDA*, *DC.* Leaves pinnately dissected,—the segments in 3 to 5 pairs with a terminal odd one, sessile, oblong-lanceolate, very entire or remotely incised-dentate near the apex; umbels terminal and subterminal, on long peduncles. *Torr. & Gr. Fl. N. A.* 1. p. 631. *DC. Prodr.* 4. p. 188. *Fl. Cestr.* p. 195.

RIGID OR STIFF ARCHEMORA. *Vulgò*—Cow-bane. Wild Parsnep.

Whole plant smooth. *Root* perennial. *Stem* 2 to 4 or 5 feet high, rather slender, sparingly branched above. *Leaves* all simply pseudo-pinnate: *common petioles* 1 to 5 or 6 inches long, channelled and somewhat margined; *leaflets* or segments 2 to 3 or 4 inches long,—varying from linear to ovate-lanceolate and cuneate-oblong, often a little falcate. *Umbels* about 3, on rather long sulcate-striate peduncles. *Involucre* 0, or sometimes of 2 or 3 lance-linear leaflets. *Involucels* of 6 or 8 subulate-linear leaflets. *Petals* white. *Channels* filled to convexity by the dark purple *vittae*. *Commissure* a little concave, lined with a white suberose coat. *Swampy meadows*, and low grounds: *New York* to *Louisiana*. *Fl.* August. *Fr.* October.

Obs. This is reputed to be an active poison,—particularly to horned Cattle, when eaten by them; and therefore every farmer is interested in knowing the plant, and causing it to be eradicated from his meadows and pastures. It *varies* somewhat in its features; but the above is a description of its usual form, in Pennsylvania.

72. PASTINACA. *Tournef. Endl. Gen.* 4473.

[Latin, *Pastus*, a repast or nourishment; from the use made of the root.]

Calyx-teeth minute or obsolete. *Petals* orbicular, involute, retuse by the inflection of the broadish apex. *Fruit* oval, flatly compressed, with a dilated flat margin. *Stylopodium* depressed, peltate. *Carpels* with 5 very slender ribs,—3 of them dorsal and equidistant—the other 2 remote, contiguous to the margins. *Channels* with single conspicuous *vittae*. *Commissure* with 2 or more *vittae*. *Carpophore* 2-parted. *Involucre* mostly 0. *Involucels* 0, or few-leaved. *Stem* sulcate, smooth. *Leaves* pinnately dissected,—the *leaflets* incised-dentate or lobed.

1. P. SATIVA, L. Leaves minutely pubescent; leaflets in 3 or 4 pairs with a terminal odd one, ovate-oblong, rather obtuse, incised-dentate, sessile,—the terminal one 3-lobed and petiolulate; umbels large, spreading, fastigiate; fruit emarginate. *Torr. & Gr. Fl. N. A.* 1. p. 632. *DC. Prodr.* 4. p. 188. *Fl. Cestr.* p. 196.

CULTIVATED PASTINACA. *Vulgò*—Parsnep. Garden parsnep. *Fr.* Panais potager. *Germ.* Die Pastinake. *Span.* Chirivia.

Plant yellowish green. *Root* biennial, fusiform, large and fleshy. *Stem* 3 to 5 feet high, rather stout, furrowed and fistular, somewhat branching. *Leaflets* 2 to 4 inches long (the primary leaves, of the young plant, orbicular-cordate and incisely crenate). *Umbels* nearly level on the top. *Calyx-teeth* obsolete. *Petals* yellow, small, with the apex incurved or rolled in. *Fruit* thin or very flatly compressed on the back. *Ribs* filiform; *channels* greenish yellow; *vittae* dark purple, generally linear, sometimes a little clavate. *Gardens*: cultivated. *Native* of Europe. *Fl.* June—August. *Fr.* August—October.

Obs. Generally cultivated for its fine esculent *root*,—which, in the best *varieties* (such as that called the “Guernsey Parsnep”), is remarkably rich and marrow-like. The plant produces many seeds, and is apt to stray from the garden into the fields,—where it speedily degenerates, and, if neglected, becomes a troublesome unsightly *weed*.

B. *Carpels* many-ribbed: *i. e.* with the secondary ribs prominently developed.

TRIBE XII. DAUCINEAE. Koch.

Fruit lenticularly compressed on the back, or sometimes nearly orbicular on a transverse section. *Carpels* with the 5 primary ribs filiform and bristly—the lateral ones on the commissure,—the 4 intervening secondary ribs more prominent, extended into prickles, which are either distinct or united at base into a wing.

73. DAUCUS. *Tournef. Endl. Gen.* 4497.

[*Daukos*, the ancient Greek name of the Carrot.]

Calyx 5-toothed. *Petals* obovate, emarginate by the inflection of the acuminate apex,—those on the margin of the umbel often larger than the others, and obcordate or bifid. *Fruit* ovoid-oblong, somewhat dorsally compressed. *Stylopodium* depressed, thickish. *Carpels* with the 5 primary ribs filiform and minutely bristly,—of which

ribs 3 are on the back of the carpel, and 2 on the commissure: the 4 *secondary ribs* equal, prominently winged, and each pectinately cleft into a single row of prickles. *Channels* with single *vittae* under the secondary ribs. *Carpophore* free, entire. *Involucre* many-leaved; leaflets pinnatifid. *Involucels* many-leaved; leaflets trifold or entire. *Leaves* bi- or tri-pinnately dissected.

1. D. CAROTA, L. Stem hispid; leaves 2- 3-pinnatifid; segments pinnatifid, the lobes lanceolate and cuspidate; leaflets of the involucre nearly as long as the umbel; prickles about equal to the diameter of the oblong-oval fruit. *Torr. & Gr. Fl. N. A.* 1. p. 635. *DC. Prodr.* 4. p. 211. *Fl. Cestr.* p. 197.

CAROT DAUCUS. *Vulgò*—Carrot. Wild Carrot.

Fr. Carotte. *Germ.* Die Moehre. *Span.* Zanahoria.

Plant greyish green, hispidly pilose. *Root* biennial, fusiform, yellowish or orange-colored. *Stem* 2 to 3 or 4 feet high, rather slender, terete, sulcate-striate, branching. *Leaves* twice or thrice pinnatifid; *segments* half an inch to an inch long, much incised. *Umbels* on long peduncles or naked branches, nearly level on the top when in flower—concave when in fruit. *Petals* white or ochroleucous—occasionally with a purplish tinge,—the central floret of the umbel often abortive, with fleshy dark purple petals. *Fruit* very hispid,—the prickles on the secondary ribs somewhat barbed. Gardens, fields and road sides: introduced. Native of Europe, and the East. *Fl.* July—September. *Fr.* September—October.

Obs. The *var. sativa*, DC. or common Garden Carrot,—with a large fleshy yellow or reddish orange-colored root,—is much cultivated as a culinary vegetable, for soups, &c. In Europe, it is highly esteemed as a food for Milk Cows, and other stock, during winter; but in this country, the *root culture*, for such objects, is but little attended to,—probably less than it ought to be. The *wild variety* is extensively naturalized,—and threatens to become a troublesome pest, on our farms. When it gets on the premises of a careless slovenly farmer, it soon multiplies so as to become a source of annoyance to the whole neighborhood. It should be diligently eradicated before it matures its seeds.

SUB-ORDER II. CAMPYLOSPERMAE. DC.

Inner face of the seed and albumen involute at the sides—forming a longitudinal groove.

☞ *Fruit* with primary ribs only.

TRIBE XVI. SMYRNIEAE. Koch.

Fruit turgid, often laterally compressed or contracted. *Carpels* with 5 ribs,—the lateral ones marginal, or placed in front of or opposite the margin—sometimes nearly obliterated.

74. CONIUM. L. *Endl. Gen.* 4532.

[An ancient name, of obscure etymology.]

Calyx with the limb obsolete. *Petals* obcordate by the inflection of the short acuminate apex. *Fruit* ovate, compressed or contracted at the sides. *Stylopodium* dilated at base. *Carpels* with 5 prominent equal ribs which are undulate-crenulate when immature,—the lateral ones marginal. *Channels* striate, without *vittae*. *Carpophore* bifid at apex. *Seed* with a deep narrow longitudinal groove on its face. *Involucre* few-leaved. *Involucels* dimidiate or one-sided, about 3-leaved.

1. *C. MACULATUM*, *L.* Stem terete, spotted; leaves tripinnately dissected,—segments lanceolate, pinnatifid, the lobes acute and often incised; leaflets of the involuclers lanceolate, shorter than the umbellets. *Torr. & Gr. Fl. N. A.* 1. p. 640. *DC. Prodr.* 4. p. 242. *Fl. Cestr.* p. 201. *Icon. Fl. Lond.* 1.

SPOTTED CONIUM. *Vulgò*—Common Hemlock.

Fr. Ciguë ordinaire. *Germ.* Der Schierling. *Span.* Ceguda.

Plant smooth, deep bluish green, and sometimes glaucous. *Root* biennial, fusiform, whitish and fleshy. *Stem* 2 to 4 (sometimes 6 or 8) feet high, fistular, branched, somewhat sulcate, streaked with green and yellow and often spotted with dark purple. *Common petioles* dilated, nerved, with scarious margins. *Petals* white. *Fruit* somewhat gibbous. *Carpels* with the ribs wavy, especially while young,—the faces inclining to separate between the base and apex (i. e. somewhat *coelosperruous*), when mature. Waste places: introduced. Native of Europe. *Fl.* June—July. *Fr.* September.

Obs. This foreigner is partially naturalized in many places,—and being a powerful narcotic poison, it ought to be known by every person on whose premises it may occur. The plant when bruised emits a disagreeable odor. The *extract* was formerly celebrated as a remedy in scrophulous disease; and, like the generality of poisons, it may no doubt prove medicinal, when judiciously and skilfully employed.

SUB-ORDER III. COELOSPERMAE. *DC.*

Inner face of the seed and albumen transversely concave—or with the base and apex curved towards each other.

TRIBE XVII. CORIANDREAE. *Koch.*

Fruit globose,—or the carpels subglobose and didymous: *primary ribs* depressed and flexuous or nearly obsolete; the *secondary* ones more prominent; all wingless.

75. CORIANDRUM. *Hoffm. Endl. Gen.* 4549.

[Greek, *Koris*, a bug; the bruised leaves having the odor of a bed-bug.]

Calyx 5-toothed,—the teeth conspicuous, unequal, persistent. *Petals* orbicordate by the inflexion of the acuminate apex,—those on the margin of the umbel larger and bifid. *Stylopodium* conical. *Carpels* cohering, scarcely separating,—each with 5 undulate depressed *primary ribs*, of which the lateral ones are placed in front of an accessory margin; the 4 *secondary ribs* more prominent and keeled. *Channels* without *vittae*. *Commissure* with 2 *vittae*. *Carpophore* free in the middle, semibifid, adnate at base and apex. *Involucre* 1-leaved or 0. *Involucels* dimidiate, about 3-leaved.

1. *C. SATIVUM*, *L.* Leaves bipinnately dissected,—segments of the lower ones broad-cuneate, incised-dentate,—of the upper ones narrow and linear; carpels hemispherical. *DC. Prodr.* 4. p. 250. *Fl. Cestr.* p. 202.

CULTIVATED CORIANDRUM. *Vulgò*—Coriander.

Fr. Coriandre. *Germ.* Der Koriander. *Span.* Cilantro.

Plant smooth. *Root* annual (sometimes biennial, *DC.*). *Stem* 1 to 2 feet high, slender, striate, somewhat branched at summit. *Umbels* 3 to 5-rayed. *Umbellets* of numerous short unequal rays. *Petals* white—tinged with red before expanding. *Carpels* very concave on the face, cohering by their margins so as to form apparently a simple globose fruit. *Commissure* with 2 linear-lanceolate *vittae* in a loose membrane which covers the face of the seed. Gardens: cultivated. Native of Tartary and the East. *Fl.* June—July. *Fr.* August—September.

Obs. Occasionally cultivated for its aromatic *fruit*,—which is used by the pastry Cook and the Confectioner; and also to impart a flavor to Tinctures, &c. It is said that the *Tartars* prepare a favorite potage, from the fresh *herb*.*

ORDER LXVIII. ARALIACEAE. *Juss. Richard.*

Perennial *herbs, shrubs* or *trees*. *Leaves* alternate, mostly compound, destitute of stipules; *petioles* long, thickened and dilated at base. *Flowers* mostly umbellate,—the umbels often paniculate. *Calyx* adherent to the ovary,—the *limb* usually very small, toothed or entire. *Petals* 5 to 10, valvate in aestivation. *Stamens* as many as the petals and alternate with them, inserted under the margin of an epigynous disk. *Ovary* 2 to 15-celled (i. e. composed of so many united carpels), with a solitary suspended ovule in each cell; *styles* as many as the cells—sometimes united; *stigmas* simple. *Fruit* baccate or drupaceous,—sometimes nearly dry, but the carpels not separating. *Embryo* short, at the base of the copious fleshy albumen.

A small Order, and of little interest to the farmer. The *Ivy* (*Hedera Helix, L.*) is perhaps the only plant belonging to it, worth mentioning—in addition to those here noticed.

76. ARALIA. *L. Endl. Gen. 4558.*

[A name of unknown derivation: supposed to be of Canadian origin.]

Flowers mostly perfect. *Calyx* 5-toothed, or with the limb entire. *Petals* 5, spreading. *Stamens* 5, on short filaments. *Styles* 5, divaricately spreading, persistent. *Berry* 5-celled, often torose or somewhat 5-lobed. *Herbs* or *shrubs*,—sometimes prickly. *Leaves* mostly decomposed.

1. *A. RACEMOSA, L.* Stem herbaceous, smooth, divaricately branched; leaves ternately and quinately decomposed; leaflets cordate-ovate, acuminate, doubly serrate; racemes axillary, compound, paniculately umbellulate; involuclers small. *Torr. & Gr. Fl. N. A. 1. p. 646. DC. Prodr. 4. p. 258. Fl. Cestr. p. 209.*

RACEMOSE ARALIA. *Vulgê*—Spikenard.

Root perennial, thick, aromatic. *Stem* 3 to 5 feet high, with spreading and somewhat dichotomous branches. *Leaflets* 3 to 6 or 8 inches long, slightly hairy, mostly petiolulate. *Flowers* in large umbellulate panicles; peduncles pubescent. *Involuclers* of several short subulate leaflets. *Calyx* with 5 small acute teeth. *Petals* greenish white. *Styles* united below; *stigmas* diverging or recurved.—*Berries* small, not torose, dark purple when mature. Rich woodlands: Canada to Georgia; and in Gardens, cultivated. *Fl.* July. *Fr.* September.

Obs. This plant is native in our rich woodlands; but has been long introduced into Gardens, as a popular medicine. The *root*, and *berries*, infused in alcohol, made a favorite Tincture, in times past, for those who indulged in the perilous habit of taking such stomachics. There is another species in our woodlands—known by the name of *Sarsaparilla* (*A. nudicaulis, L.*)—which is also a popular medicine,—and often substituted for the *Sarsaparilla* of the shops. Neither of them has much connection with *Agriculture*: but the intelligent farmer would doubtless like to know them,—or at least the usually cultivated species.

77. PANAX. *L. Endl. Gen. 4551.*

[Greek, *Pan*, all, and *akos*, a remedy: an imaginary *Panacea*, or universal medicine.]

FLOWERS POLYGAMOUS: *Calyx* turbinate, 5-toothed or the limb

* "Herba recens in deliciis habetur et ex eâ *jusculum* conficitur, undè ubiquè in hortis Tataricis culta." *DC. l. c.* It would probably require a *Tartar palate* to relish soup, prepared with herbage which has the "odor of a bed-bug"!

nearly entire. *Petals* 5. *Stamens* alternate with and as many as the petals, inserted with them under the margin of the disk. *Styles* 2 or 3 (rarely 1). *Fruit* fleshy, drupaceous or subcoriaceous, didymous and reniform or trigonous-ovoid, 2 or 3-celled. *Flowers* mostly in a simple pedunculate terminal umbel.

1. *P. QUINQUEFOLIUM*, *L.* Root fusiform, often branched; leaves in threes, compound; leaflets mostly in fives, obovate, acuminate, unequally serrate, petiolulate; peduncle of the umbel rather shorter than the common petioles; styles 2; fruit succulent, 2-celled, 2-seeded. *Torr. & Gr. Fl. N. A.* 1. p. 647. *DC. Prodr.* 4. p. 252. *Fl. Cestr.* p. 181.

FIVE-LEAVED PANAX. *Vulgò*—Ginseng.

Root perennial, 3 to 6 inches long, and about half an inch in diameter, often forked downwards, whitish, transversely rugose. *Stem* 9 to 18 inches high, herbaceous, angular, smooth, with a verticil of 3 (rarely 4) petiolate compound leaves at summit, and a simple erect pedunculate umbel in the centre. *Common petioles* 3 or 4 inches long. *Leaflets* unequal,—the 3 principal ones 3 to 5 inches long, the lateral ones much smaller. *Umbel* many-flowered,—the central flowers often abortive. *Petals* yellowish green. *Ovary* compressed, cordate-ovate or gibbous at base on each side. *Fruit* a fleshy drupaceous reniform berry, crowned with the persistent calyx-teeth and styles, smooth, bright crimson when mature. Rich woodlands: Northern and Western States. *Fl.* July. *Fr.* September.

Obs. The *root* of this plant is slightly stimulant, and rather pleasantly aromatic. It has long been, and continues to be, an article of some importance in our commerce with China: and although it has but little to do with *Agriculture*, it is presumed that a brief description of a native plant, so abundantly produced in our Western forests—and so highly prized in the “Celestial Empire”—will not be unacceptable.

ORDER. LXIX. CORNACEAE. *DC. Lindl.*

Chiefly *small trees or shrubs*. *Leaves* mostly opposite, entire, and destitute of stipules. *Flowers* in cymes, sometimes clustered into heads and surrounded by a large petaloid involucre. *Calyx* adherent to the 2-celled ovary,—the limb 4-toothed. *Petals* 4, valvate in aestivation. *Stamens* as many as the petals, and alternate with them. *Styles* united into 1. *Fruit* a 2-celled drupe, crowned with the persistent calyx-teeth. *Seeds* solitary, pendulous; *embryo* nearly the length of the fleshy albumen.

The genus which gives the name to this small Order, is the only one intitled to notice, here.

78. CORNUS. *Tournef. Endl. Gen.* 4574.

[Latin, *Cornu*, a horn; from the horny toughness of the wood.]

Calyx 4-toothed,—the teeth minute. *Petals* oblong, spreading. *Stamens* longer than the corolla. *Style* sub-clavate; *stigma* obtuse or capitate. *Drupe* oval or subglobose, with a 2 or 3-celled nut.

☞ *Flowers capitate, with a 4-leaved Involucre.*

1. *C. FLORIDA*, *L.* Arborescent; leaves ovate-oblong, acuminate; involucre large,—the petaloid leaves obcordate or with a callous notch at apex; drupes oval. *Torr. & Gr. Fl. N. A.* 1. p. 652. *DC. Prodr.* 4. p. 273. *Fl. Cestr.* p. 106. *ICON, Mx. Sylva*, 1. tab. 48.

FLOWERING CORNUS. *Vulgò*—Dogwood. Common Dogwood.

Stem 15 to 20 (sometimes 30 or 40) feet high, and 3 or 4 to 6 or 8 inches in diameter, much branched,—the young branches opposite or often verticillate in fours.

Leaves 3 to 5 inches long, pilose with short appressed hairs, glaucous beneath. *Flowers* in terminal capitate clusters; *involucre* about 3 inches in diameter,—the leaves in opposite pairs, white or sometimes tinged with purple. *Corolla* greenish yellow. *Drupe* bright red when mature. Woodlands: Canada to Louisiana. *Fl.* May. *Fr.* October.

Obs. The wood of this small tree is very close-grained and firm, and valuable for many purposes in Mechanics. The woodman selects it as the best material for wooden wedges. The young straight stems make good hoops, for the cooper; and the slender *verticillate branches* once furnished distaffs for *Spinsters*,—when that description of females had a practical existence in the community. The *bark* is an excellent tonic—almost equaling the *Peruvian*, in efficacy. Altogether, it is a valuable, as well as ornamental, little tree. Observing farmers have remarked, that the proper time to plant *Indian Corn* (*Zea Mays*, L.) is when the *Involucres* of the Dogwood are first developed.

MONOPETALOUS EXOGENS.

ORDER LXXI. CAPRIFOLIACEAE. *Juss. Richard.*

Mostly *shrubs*, often twining. *Leaves* opposite, mostly without stipules. *Calyx* adherent to the ovary,—the limb 5- (rarely 4-) toothed. *Corolla* tubular or rotate, regular or irregular. *Stamens* as many as the lobes of the corolla, and alternate with them—or rarely 1 fewer—inserted into the tube. *Ovary* mostly 3-celled; *style* long and filiform with a capitate stigma—or 3 to 5 sessile stigmas. *Fruit* baccate, or sometimes dry, often 1-celled by abortion. *Embryo* in the axis of fleshy albumen.

An Order of small importance in Agriculture; but it contains the favorite tribe of *Honeysuckles* (*Lonicera*.) so much admired by the cultivators of flowers.

TRIBE II. SAMBUCEAE. *Kunth.*

Corolla regular, sub-rotate or rarely somewhat tubular. *Stigmas* 3 to 5, sessile. *Testa* of the seed membranaceous.

79. SAMBUCUS. *Tournef. Endl. Gen.* 3341.

[Greek, *Sambuke*, a musical instrument; said to have been made of this shrub.]

Calyx with the limb small, mostly 5-cleft. *Corolla* sub-rotate, mostly 5-lobed; lobes obtuse. *Stamens* 5, shorter than the corolla. *Stigmas* 3, sessile. *Fruit* subglobose, baccate, scarcely crowned; *nucules* 3 (rarely 5), crustaceous, rugulose, each containing a suspended seed. *Shrubs* or perennial *herbs*. *Leaves* odd-pinnately dissected. *Inflorescence* cymose or thyrsoid.

1. S. CANADENSIS, L. Stem suffruticose; leaflets oblong-oval, acuminate, serrate; flowers in 5-parted spreading cymes. *Torr. & Gr. Fl. N. A.* 2. p. 13. *DC. Prodr.* 4. p. 322. *Fl. Cestr.* p. 205.

CANADIAN SAMBUCUS. *Vulgò*—Elder bush. Common Elder.

Stem 5 to 8 or 10 feet high, finally shrubby, filled with a large pith, branching, nodose—the young branches tumid at the nodes. *Leaflets* usually in 3 pairs with a terminal odd one, 2 to 4 inches long, petiolulate. *Cymes* broad, terminating young branches, on peduncles 4 to 6 inches long. *Corolla* white. *Berries* numerous, small, juicy, dark purple or nearly black when mature. Thickets, and Fence-rows: throughout the U. States. *Fl.* June. *Fr.* August.

Obs. This is a rather troublesome plant, on our farms,—the long roots being very tenaceous of life, and inclined to spread extensively along fence-rows and hedges. If neglected, it soon gives the farm a very slovenly appearance. The *Viburnums* (*Black Haw*, *Snow-Ball*, *Tall Cranberry*, &c.) belong here; but they are scarcely of sufficient importance, in any respect, to intitle them to a place in this work.

ORDER LXXII. RUBIACEAE. Juss.

Herbs, shrubs or trees. Leaves opposite or verticillate, entire, and furnished with stipules—which sometimes resemble true leaves. Flowers regular. Calyx-tube adherent to the ovary, or sometimes almost free,—the limb 4 or 5-cleft or toothed—occasionally obsolete. Corolla inserted on the summit of the calyx-tube,—the lobes as many as those of the calyx. Stamens as many as the lobes of the corolla, and alternate with them. Ovary mostly 2-celled; styles mostly 2, more or less united; stigmas mostly 2, distinct or concrete. Fruit various.—baccate, drupaceous, capsular, or separable into indehiscent carpels. Seeds solitary, few, or numerous, in each cell: embryo in the axis, or at the extremity, of copious fleshy or horny albumen.

This Order—comprising various Tribes, and nearly 250 Genera—contains many plants of great value,—though but few of them immediately concern the North American farmer. Among the most important, may be mentioned the *Coffee plant* (*Coffea Arabica*, L. which may yet, possibly, be advantageously cultivated in Florida, and some other places on our Southern borders)—the *Peruvian Bark* (*Cinchona officinalis*, L.)—and the *Ipecacuanha* (*Cephaelis Ipecacuanha*, Rich.). The popular vermifuge called *Carolina Pink* (*Spigelia Marilandica*, L.), and the well-known beautiful and fragrant *Cape Jessamine* (*Gardenia florida*, L.), are also referred to this large Natural Family.

SUB-ORDER I. STELLATAE. R. Br.

Herbs. Leaves apparently verticillate—but probably really opposite,—all except a single pair being regarded as stipules, because they never have axillary buds. Fruit of 2 united indehiscent 1-seeded carpels, baccate or dry.

80. RUBIA. Tournef. Endl. Gen. 3101.

[Latin, *Ruber*, red,—the color produced by its roots.]

Calyx-tube ovoid-globose,—the limb 4-toothed or obsolete. *Corolla* subrotate, 4 or 5-parted. *Stamens* short. *Styles* 2, united at base. *Fruit* didymous, subglobose, baccate, smooth. *Herbaceous* or *suffruticosc.* *Stems* 4-angled, diffusely branching. *Leaves* opposite—with 2 or 3 intermediate stipules resembling leaves,—constituting a 4 to 6 or 8-leaved verticil.

1. R. TINCTORUM, L. Stem herbaceous, flaccid, aculeate on the angles; leaves mostly in apparent verticils of six, lanceolate, subpetiolate; peduncles axillary, trichotomous; lobes of the corolla with a callous acumination, but not cuspidate. DC. Prodr. 4. p. 589. Fl. Cestr. p. 103.

DYERS' RUBIA. *Vulgò*—Madder. Dyers' Madder.

Fr. La Garance. Germ. Die Faerber-Roethe. Span. Rubia.

Root perennial, large, reddish brown. *Stems* procumbent, 3 or 4 feet long, much branched, pubescent at the joints; angles prominent, sometimes more than 4, aculeate with short retrorsely curved prickles. *Leaves* and *stipules* similar, 1 to 2 inches long,—the midrib and margins retrorsely aculeate—*Flower-bearing branches* axillary, opposite. *Corolla* brownish yellow, often 5-lobed. Gardens, and Lots; cultivated. Native of the East. Fl. July. Fr. September.

Obs. This is sometimes cultivated, on a small scale, in *Pennsylvania*, for the sake of the roots,—which are well known to yield a valuable red coloring matter: and I understand that a more extended culture has been tried, and found profitable, in *Ohio*—and perhaps in some other States.

There is a Genus (*Galium*) very nearly allied to this,—of which one of the numerous species (*G. Aparine*, *L.* perhaps a foreigner,)—known by the name of *Cleavers* or *Goose-grass*—occurs frequently about gardens, and along fences, &c. on the farm: But it is scarcely of sufficient importance—even as a *weed*—to require notice, here.

ORDER LXXIV. DIPSACEAE. *Vaill. Juss.*

Herbs. Leaves opposite or rarely verticillate, sessile, destitute of stipules. *Flowers* aggregated—mostly in dense involucre *heads. Calyx-tube* wholly (or sometimes at summit only) adherent to the ovary,—the *limb* cup-shaped and entire, or toothed—or forming a bristly or plumose *pappus. Corolla* tubular,—the *limb* 4 or 5-lobed—sometimes ringent or irregular. *Stamens* mostly 4, distinct or rarely united in pairs—often unequal. *Ovary* 1-celled, with a single suspended ovule; *style* filiform. *Fruit* membranaceous or akene-like, indehiscent, crowned with the limb of the calyx, 1-celled, 1-seeded. *Embryo* nearly the length of the fleshy albumen.

The Genus which is the type of this small Order, is the only one entitled to notice, in this work.

TRIBE II. SCABIOSEAE. *DC.*

Corolla 4 or 5-lobed, not ringent. *Stamens* 4 or 5, free and nearly equal. *Flowers* aggregated on a conic receptacle, with a *general Involucre* at base,—each floret embraced by a calyx-like *Involucel*, and with a chaffy bract on the lower side.

81. DIPSACUS. *Tournef. Endl. Gen.* 2191.

[Greek, *Dipsao*, to thirst; the stem-leaves holding water at their junction.]

Involucre many-leaved, longer than the acuminate subfoliaceous chaff of the receptacle. *Involucel* 4-sided, 8-furrowed, closely investing the ovary and fruit. *Calyx-tube* adherent to the ovary,—the *limb* minute, cup-shaped or discoid, entire. *Corolla* with 4 erect lobes. *Stamens* 4. *Stigma* longitudinal. Stout biennials. *Stems* angular and prickly. *Leaves* opposite and often connate at base. *Heads* large, oblong,—the *florets* commencing to expand in a ring about the *middle* of the head, and gradually extending the process towards base and apex!

1. *D. SYLVESTRIS, Mill.* Leaves lanceolate-oblong, crenate-dentate and serrate, prickly on the midrib; involucre curved upwards, longer than the head; chaff of the receptacle straight and flexible. *Torr. & Gr. Fl. N. A.* 2. p. 54. *DC. Prodr.* 4. p. 645. *Fl. Cestr.* p. 98. *Icon, Fl. Lond. vol.* 1.

WILD DIPSACUS. Vulgò—Teasel. Wild Teasel.

Root biennial. *Stem* 3 to 5 or 6 feet high, branched. *Radical leaves* 8 to 12 inches long; *stem-leaves* sessile, subconnate,—those of the branches lanceolate and often nearly entire. Leaflets of the *Involucre* lance-linear, pungent at apex, unequal in length. *Heads* of flowers ovoid-oblong; *corolla* pale purple. *Bracts* or *Chaff* of the receptacle oblong-cuneate, keeled, abruptly tapering into a straight flexible awn-like acumination, longer than the flowers,—those at the top of the head longest. Borders of fields, roadsides, &c. Northern and Middle States: introduced. Native of Europe. *Fl.* July. *Fr.* September.

Obs. This coarse plant is completely naturalized, in some localities,—and is not only worthless, but threatens to become something of a nuisance to the farms, if not attended to. A little timely care, however, would soon subdue it.

2. *D. FULLONUM, Mill.* Leaves obovate and oblong-lanceolate, smoothish, serrate,—the upper ones entire; involucre spreading or

reflexed, shorter than the head; chaff of the receptacle recurved, rigid. *DC. Prodr.* 4, p. 645. *Fl. Cestr.* p. 99.

FULLERS' DIPSACUS. *Vulgò*—Fuller's Teasel. [dencha.
Fr. Chardon à Foulon. *Germ.* Aechte Kartendistel. *Span.* Car-

Root biennial. *Stem* 4 or 5 feet high, branched. *Radical leaves* obovate, narrowed to a petiole at base; *stem-leaves* connate-perfoliate. Leaflets of the *Involucre* lanceolate, mucronate, rigid. *Heads* of flowers cylindric or elliptical; *corolla* pale purple. *Bracts* or Chaff of the receptacle cuneate-oblong, keeled, bristly-ciliate on the margin, terminating in a rigid subulate recurved acumination. *Lots:* cultivated. Native of Europe. *Fl.* July. *Fr.* September.

Obs. This species is cultivated by some Cloth Manufacturers, for the sake of the *Heads*,—the rigid recurved points of the chaffy bracts, on the mature heads, serving as a kind of card, to raise the nap on woollen cloth.

ORDER LXXV. COMPOSITAE. *Vaill.*

Herbs, or sometimes *shrubs*. *Leaves* alternate and opposite, often lobed or dissected, but never compound, and not stipulate. *Flowers* in heads, crowded on a common receptacle, and surrounded by one or more series of small leaves (*bracts* or *scales*) which form an *Involucre*.—the several florets often furnished with each an accompanying bract (*chaff* or *palea*). *Calyx-tube* closely adherent to the ovary,—the *limb* (called *pappus*) consisting of scales, bristles, hairs, &c. or sometimes obsolete. *Corolla* of 5 united petals, tubular or ligulate. *Stamens* as many as the petals or lobes of the corolla,—the *anthers* united into a tube around the style (*syngenesious*). *Ovary* 1-celled, with a single erect ovule; *style* 2-cleft,—the *branches* mostly flattish on the inner or upper side and furnished with *pollen-collecting hairs*.—the proper *stigmas* (*stigmatic glands*) occupying the inner surface, near the margins, in the form of glandular slightly prominent *lines*. *Fruit* an akene, either crowned with the pappus, or naked at summit. *Seed* destitute of albumen; *cotyledons* flat or plano-convex.

This immense Order—containing between 800 and 900 Genera, or about *one tenth* of all the flowering plants—presents but few of much interest to the American farmer, beside what are here noticed. Some possess medicinal properties—and others are remarkable for their beauty; but the general character of the Order is that of mere *Weeds*.—of which many species are found in all our fields, meadows, and woodlands; though the greater portion may be readily kept in tolerable subjection by care and attention.

SUB-ORDER I. TUBULIFLORAE. *DC.*

Corolla of the perfect or disk florets tubular, and mostly 5-lobed.

TRIBE I. VERNONIACEAE. *Lessing.*

Heads discoid, with the florets all tubular and perfect (*homogamous*), or rarely radiate. *Style* cylindric above; the *branches* mostly subulate and elongated, equally hispid,—the *stigmatic lines* terminating below or near their middle, not confluent.

SUB-TRIBE I. VERNONIEAE. *Cassini.*

Heads discoid, homogamous. *Branches* of the style elongated, acuminate.

82. VERNONIA. *Schreb. Endl. Gen.* 2204.

[Named in honor of *William Vernon*; an English Botanist.]

Heads many-flowered; *florets* all equal and tubular. *Involucre* imbricate, shorter than the flowers,—the inner scales longest. *Receptacle* mostly naked. *Corolla* regular—the lobes about the length of the tube. *Filaments* smooth. *Akenes* mostly striate or ribbed, with a cartilaginous callus at base, and the epigynous disk large. *Pappus* usually double,—the inner series of numerous bristles—the

outer mostly short, minute, often dilated and scale-like. Mostly perennial *Herbs*, with alternate leaves.

1. *V. NOVEBORACENSIS*, Willd. Stem striate-sulcate, roughish pubescent, leafy; leaves lanceolate, serrulate, roughish; heads numerous, in a terminal corymb; scales of the involucre ovate, acute or often with a long filiform flexuous point. *Torr. & Gr. Fl. N. A. 2. p. 57. DC. Prodr. 5. p. 63.*

V. praealta. Willd. *Fl. Cestr. p. 448.* not of *DC.*

NEW-YORK VERNONIA. *Vulgò*—Iron-weed.

Stem 2 or 3 to 6 or 7 feet high, somewhat branching at summit, finally firm and subglabrous. *Leaves* 3 to 6 or 8 inches long, subsessile, thickish or subcoriaceous. *Florets* bright deep purple. *Akenes* turbinate-oblong, sulcate, scabrous with short hairs; *pappus* a dirty white, or often purplish, scabrous,—the outer series consisting of short chaffy or scale-like bristles. Moist meadows, and low grounds: throughout the U. States. *Fl.* August. *Fr.* September.

Obs. This plant is quite common in moist low grounds, and along fence-rows. Its worthless character and coarse hard stem cause it to be regarded as a rather obnoxious weed, in our meadows; and of course it is carefully eradicated, by all neat farmers.

TRIBE II. EUPATORIACEAE. Less.

Heads mostly discoid, with the flowers all tubular and perfect (*homogamous*). *Style* cylindric above; the *branches* usually much elongated, subterete and obtuse or clavate, puberulent or papillose externally towards the summit,—the *stigmatic lines* inconspicuous, terminating near the middle of the branches (rarely reaching the apex), not confluent at their termination. *Anthers* never caudate.

SUB-TRIBE I. EUPATORIEAE. DC.

Heads discoid,—the flowers all perfect and similar (*homogamous*), usually white, rose-color or purple—never yellow.

DIVISION 2. ADENOSTYLEAE. DC.

Pappus composed of slender hair-like bristles in one or more series, scabrous or plumose. *Branches of the style* more or less papillose or glandular above.

☞ *Akenes* 5-angled, not striate. *Pappus* scabrous.

83. EUPATORIUM. Tournef. Endl. Gen. 2280.

[Named from *Eupator*, King of Pontus; who, it is said, first used the plant.]

Heads 3 to many-flowered. *Involucre* oblong, cylindric or campanulate,—the *scales* imbricated in 2, 3, or more series—or sometimes nearly equal in a single series. *Receptacle* flat, naked. *Corolla* funnel-form, or often with a campanulate limb. *Anthers* included. *Branches of the style* much exerted, terete or slightly flattened, obtuse. *Pappus* a single series of very slender bristles, rough or minutely serrulate. Perennial *Herbs*, with leaves mostly opposite or verticillate.

1. *E. PERFOLIATUM*, L. Stem rigid, hirsutely villous, corymbosely branched above; leaves opposite and decussate, connate-perfoliate, oblong-lanceolate, crenate-serrate, reticulately veined and rugose, very pubescent beneath; heads about 10-flowered. *Torr. & Gr. Fl. N. A. 2. p. 88. DC. Prodr. 5. p. 151. Fl. Cestr. p. 451.*

PERFOLIATE EUPATORIUM. *Vulgò*—Thorough-stem. Bone-set,—Indian Sage.

Stem 2 to 4 feet high, the branches whitish and very pubescent. *Leaves* 4 to 6 or 8 inches long, opposite and completely united at base—or sometimes contracted at base and scarcely connate (rarely verticillate in threes, and connate), tapering gradually to a slender point, sprinkled with resinous particles beneath. *Heads* of flowers crowded, in large corymbs. *Scales* of the involucre lance-linear, rather acute. *Florets* white. *Akenes* smoothish. Low swampy grounds: throughout the U. States. *Fl.* July—August. *Fr.* September.

Obs. This species is so common in wet meadows, and low grounds, as to be regarded rather as an objectionable *weed*: But it is chiefly intitled to notice for its medicinal properties,—being either emetic, cathartic, or tonic—according to the dose, or mode of exhibition.

There are several other species of this genus, which meet the eye of the farmer, in his meadows and along the borders of woods and thickets—particularly a tall stout one, with verticillate leaves and purple flowers (*E. purpureum*, L.); but they are scarcely of sufficient importance to claim a place in this work.

TRIBE III. ASTEROIDEAE. Less.

Heads mostly heterogamous, and often radiate. *Style* (in the perfect florets) cylindric above; the *branches* flattish, linear or lanceolate, externally pubescent above—the conspicuous *stigmatic lines* terminating opposite to where the external pubescence commences, not confluent. Perennial *Herbs*. *Leaves* mostly alternate.

SUB-TRIBE I. ASTERINEAE. DC.


Heads mostly heterogamous and radiate—never dioicous. *Receptacle* seldom chaffy. *Anthers* not caudate.

DIV. 1. ASTEREAÆ. DC.

Heads heterogamous and radiate.—the *rays* varying in color from blue to purple and white, but never yellow,—the *disk-florets* yellowish, but finally becoming purplish.

SUB-DIV. 1. EU-ASTEREAÆ. DC.

Pappus composed of capillary—or rarely subulate—bristles. *Akenes* more or less compressed.

 *Rays* fertile. *Pappus* of the *Ray* and *Disk* mostly similar,—the *inner series* capillary.

81. ASTER. Tournef. Endl. Gen. 2301.

[Greek, *Aster*, a star; the radiated heads of flowers resembling stars]

Heads many-flowered—the ray-florets in a single series, pistillate,—those of the disk tubular and perfect. *Scales* of the involucre more or less imbricated, usually whitish below and green or foliaceous at apex. *Receptacle* flat, mostly alveolate (or pitted). *Akenes* usually compressed. *Leaves* alternate, entire or serrate. *Heads* corymbose, paniculate, or racemose.

1. *A. ERICOIDES*, L. Smoothish, much branched,—the simple leafy branchlets or peduncles racemose and mostly unilateral on the virgate spreading branches; leaves rather rigid,—the radical and lower cauline ones oblanceolate or oblong-spatulate, tapering to a margined petiole, often serrate,—the others linear-lanceolate and linear-subulate, entire, acute at each end; heads small, numerous, solitary on the branchlets; involucre hemispherical or subturbinate,—the scales loosely imbricated, linear-oblong, acute, spreading at apex. *Torr. & Gr. Fl. N. A.* 2. p. 123. *DC. Prodr.* 5. p. 211.

A. tenuifolius. *Fl. Cestr.* p. 467. not of L.

ERICA—OR HEATH-LIKE ASTER.

Stem 1 to 2 or 3 feet high, often branched from the base. *Radical leaves* 1 to 3 or 4 inches long, sparingly serrate, ciliate, tapering to a petiole nearly as long as the leaf; *stem-leaves* 1 to 3 inches long,—those on the branchlets smaller, subulate-linear. *Rays* white, or often tinged with pale purple,—the *disk* often becoming reddish-purple. Sterile soils; old fields, pastures, &c. throughout the U. States. *Fl.* August—September. *Fr.* October.

Obs. Many species of this genus meet the eye of the farmer, in the latter part of summer, in his woodlands, low grounds, borders of thickets, &c. some of which species are quite ornamental: but the little bushy one here described (which, I believe, has not acquired a *common name*), is almost the only one which invades our pastures to any material extent. In thinnish old fields, it sometimes becomes an abundant—as it is always a very worthless—*weed*. Good culture, and enriching the soil, soon cause it to disappear.

85. ERIGERON. *L. Endl. Gen.* 2333.

[Greek, *Er.* spring, and *Geron*, an old man; the plant being hoary in spring.]

Heads many-flowered, somewhat hemispherical; *ray florets* very numerous and usually in more than one series, pistillate,—those of the disk tubular, perfect—or some of the outer ones (perhaps transformed ray-florets) filiform-tubular, truncate, and pistillate only. *Scales* of the involucre mostly equal, narrow, in a nearly single series. *Receptacle* flat, naked, punctate. *Branches of the style* very short, obtuse. *Akenes* compressed, usually pubescent. *Pappus* a single series of capillary scabrous bristles, often with minute ones intermixed,—or sometimes with an exterior coroniform pappus of subulate scales. *Heads* solitary, corymbose or paniculate.

1. *E. CANADENSE, L.* Stem hirsute, paniculately branched; leaves lance-linear, mostly entire, hispidly ciliate; heads of flowers small, numerous, racemose on the branches; rays minute. *Torr. & Gr. Fl. N. A.* 2. p. 167. *DC. Prodr.* 5. p. 259. *Fl. Cestr.* p. 471.

CANADIAN ERIGERON. *Vulgò*—Horse-weed. Butter-weed.

Root annual. *Stem* 6 inches to 5 or 6 feet high. *Leaves* 1 to 3 or 4 inches long, sessile,—the lower ones sparingly dentate. *Rays* white, very narrow, scarcely longer than the straw-colored pappus. *Akenes* oblong, sparsely hispid. Fields, road sides, and waste places: throughout the U. States. *Fl.* August—September. *Fr.* September—October.

Obs. This plant varies very much in size, according to the soil in which it grows. On dry sterile banks, it is a very dwarf. It has disseminated itself, more or less abundantly, all over our country,—and, it is said, all over Europe; and is a worthless *weed*, wherever found. Good farming is the mode for smothering out such intruders.

2. *E. ANNUM, Pers.* Stem sparsely hirsute, corymbosely branched above; leaves coarsely and sharply dentate-serrate,—the radical and lower ones ovate, obtuse, tapering into a margined petiole,—the others sessile, lanceolate, acute, entire near each end; rays very narrow, about as long as the sparsely setose involucre. *Torr. & Gr. Fl. N. A.* 2. p. 175.

E. heterophyllus, Muhl. Fl. Cestr. p. 472.

Stenactis annua, and *S. strigosa*. (*excl. syn.*). *DC. Prodr.* 5. p. 298. (*vide Torr. & Gr.*).

ANNUAL ERIGERON. *Vulgò*—Flea-bane. Daisy.

Root biennial? (annual, DC.). *Stem* 2 to 3 or 4 feet high, rather stout, striate and often angular. *Radical leaves* 2 to 4 inches long, roughish and hairy, with narrow-margined *petioles* nearly twice as long as the leaves; *stem-leaves* gradually smaller as they ascend. *Heads* of florets rather small; *rays* white, or sometimes tinged with purple. *Akenes* oblong, somewhat compressed, hirsute; *pappus* whitish,—the ray-florets destitute of pappus, except a few short coroniform teeth at or near the summit of the akene. Pastures, and waste places: Northern, Middle and Western States. *Fl.* June—July. *Fr.* August.

Obs. A frequent worthless *weed*, in our pastures: not particularly injurious,—but conspicuous enough to attract the notice of the observing farmer; and therefore worthy to be known by him.

3. *E. strigosum*, *Muhl.* *Stem* more or less strigosely hairy, corymbosely paniculate above; leaves lanceolate, narrowed at base, dentate or entire,—the radical ones spatulate-lanceolate, tapering into a margined petiole; rays narrow, nearly twice as long as the minutely hispid involucre. *Torr. & Gr. Fl. N. A. 2. p. 176. Fl. Cestr. p. 471.*

Phalacrolooma obtusifolium. *Cass. DC. Prodr. 5. p. 298. (excl. syn.) fide Torr. & Gr. Also, Stenactis ambigua, DC. Prodr. 5. p. 299.*

STRIGOSE ERIGERON. *Vulgò*—Flea-bane. Daisy.

Root biennial? *Stem* 2 to 4 feet high, sulcate-striate and angular, rather slender, and often sparingly branched. *Leaves* 1 to 3 inches long. *Heads* of florets rather larger than in the preceding; *rays* white. *Akenes* oblong, angular or ribbed, sparsely pilose; “*inner pappus* in the disk, of about 15 slender fragile and deciduous bristles; in the ray none, or sometimes of one or two caducous bristles: the *exterior* a small setaceous-squamellate crown, similar in the ray and disk.” *Torr. & Gr.* Pastures, and upland meadows: Canada to Florida. *Fl.* June—Aug. *Fr.* July—September.

Obs. This plant has a strong general resemblance to the preceding, but is more common,—though they are usually both confounded under the same popular names. This one is apt to be very abundant in the first crop of our upland meadows, in Pennsylvania, after a course of Grain crops. After that—especially in good land—it becomes more rare,—being probably choked down by the *Grasses*. All three of the species are equally worthless unwelcome weeds.

DIV. 2. CHRYSOCOMEAE. DC.

Heads either heterogamous and radiate, or homogamous and discoid (both forms sometimes occurring in the same genus); the *rays* and *disk-florets* yellow (the latter unchanging). *Receptacle* never chaffy.

SUB-DIV. 3. SOLIDAGINEAE. DC.

Rays in a single series—sometimes wanting. *Pappus* of the disk and ray-florets similar, simple, capillary or bristle-like,—rarely chaffy or scale-like.—*Akenes* sub-terete, ribbed.

86. SOLIDAGO. L. *Endl. Gen. 2376.*

[Latin, *Solidare*, to unite, or make firm; from its supposed healing virtues.]

Heads few- or sometimes many-flowered; *ray-florets* few, pistillate—sometimes wanting; *disk-florets* tubular, perfect. *Scales* of the oblong *involucre* imbricated, appressed, not green or foliaceous at apex. *Receptacle* narrow, mostly alveolate. *Branches of the style* lanceolate. *Akenes* many-ribbed, somewhat terete. *Pappus* simple, consisting of numerous scabrous capillary bristles, mostly equal. *Heads* in terminal or axillary racemes, with the pedicels often unilateral,—sometimes corymbose.

1. *S. NEMORALIS*, *Ait.* Stem simple or corymbosely branched above, clothed with a very short velvety cinereous pubescence; radical leaves obovate-cuneate or spatulate, tapering into a petiole, sparingly crenate-serrate,—cauline ones oblanceolate, nearly entire, roughish-pubescent; racemes numerous, short, dense, unilateral, at length recurved-spreading, often corymbose-paniculate; scales of the involucre lance-oblong, obtuse, appressed; akenes pubescent with white appressed hairs. *Torr. & Gr. Fl. N. A.* 2. p. 220. *DC. Prodr.* 5. p. 333. *Fl. Cestr.* p. 456.

WOOD OR GROVE SOLIDAGO. *Vulg.*—Golden Rod.

Whole plant of an ash-colored or greyish aspect, by reason of its short cinereous pubescence. *Stem* 1 to 2 or 3 feet high, sometimes branched from near the root. *Radical leaves* 1 to 4 or 5 inches long, with *petioles* 1 to 3 inches long. *Heads* with 3 to 6 disk-florets, and 6 to 9 ray-florets, in secund racemes—or (in stunted branched specimens) often in small axillary clusters; *rays* rather short, spatulate-oblong. Sterile, neglected old fields; borders of woods, &c.: throughout the U. States. *Fl.* August—September. *Fr.* October.

Obs. Several species of *Solidago* (or *Golden Rod*, as they are all named, in the vernacular tongue)—some of them much larger than this—occur along fence-rows, borders of woods and thickets, &c. They are all no better than *weeds*, on a farm: But this is the one which mostly intrudes upon neglected pasture grounds,—and has therefore been selected for description, as a sample of the genus. It is speedily banished by *good farming*,—as most of our native weeds are, or may be.

TRIBE IV. SENECONIDEAE. *Less.*

Heads homogamous, heterogamous, or heterocephalous (*monoicous* or *dioicous*). *Style* (in the perfect florets) cylindrical above,—the *branches* linear, somewhat convex externally, penicillate or hairy at the apex, either truncate or produced into a cone, or a more or less elongated and hispid appendage; the *stigmatic lines* terminating at the base of the cone or appendage, not confluent.

SUB-TRIBE 1. MELAMPODINEAE. *DC.*

Flowers all unisexual,—the pistillate and staminate florets either on different plants (*dioicous*), or in different heads on the same plants (*heterocephalous*), or distinct in the same heads (*monoicous*). *Anthers* not caudate at base. *Pappus* none, or coroniform, or consisting of awns—never of hairs or bristles. *Receptacle* almost always chaffy.

DIV. 6. AMBROSIEAE. *DC.*

Heads heterocephalous—*i. e.* staminate and pistillate florets in distinct heads on the same plant.—the pistillate ones often apetalous—the staminate ones tubular. *Scales* of the *involucre*, in the fertile heads, united into an ovoid or oblong persistent covering, including or closely investing the florets and fruit, often prickly or spinose. *Pappus* none. *Anthers* distinct or cohering but slightly.

87. AMBROSIA. *Tournef. Endl. Gen.* 2182.

[Poetically, *Food of the Gods*: in this case something like *Lucus*, a *non lucendo*.]

Staminate heads in terminal racemes or spikes,—the *pistillate* ones at their base or in the axils of the upper leaves. **STAMINATE FL.** *Involucre* flattish, hemispherical, or subturbinate, composed of several united scales, 5 to 20-flowered. *Corolla* funnel-form, 5-toothed. *Anthers* tipped with a bristle-like inflexed appendage. *Ovary* none,—the abortive *style* included, minutely fringed at summit. *Receptacle* flattish, usually with filiform chaff among the

florets. **PISTILLATE FL.** *Involucre* globose-ovoid or turbinate, closed, acuminate, usually with 4 to 8 pointed tubercles near the summit, 1-flowered. *Corolla* none. *Stamens* none. *Branches of the style* filiform, elongated. *Akene* subglobose or obovoid. Annual *Herbs*. *Leaves* lobed, or pinnatifidly dissected.

1. **A. TRIFIDA, L.** Stem tall and stout, hairy and rough; leaves mostly opposite, palmately 3 or 5-lobed, hairy, scabrous,—the lobes oval lanceolate, acuminate; petioles narrowly winged, ciliate; racemes elongated, paniculate. *Torr. & Gr. Fl. N. A. 2. p. 290. DC. Prodr. 5. p. 527. Fl. Cestr. p. 478.*

TRIFID AMBROSIA.

Stem 3 to 6 or 8 feet high, branched. *Leaves* 4 to 6 or 8 inches long; *petioles* 1 to 2 inches long. *Staminate heads* small, numerous, in long terminal paniculate racemes; *florets* whitish. *Pistillate heads* at the base of the racemes; the *involucre* turbinate-obovoid, with a conical apex, 6-ribbed, the ribs terminating in so many pointed tubercles round the base of the conical acumination. Low grounds, and waste places: Canada to Georgia. *Fl.* August. *Fr.* October.

Obs. This coarse ugly *weed* has not acquired any popular name, that I know of; and yet it is sufficiently common, and worthless, to intitle it to the notice of every farmer who desires to keep his premises clear of such nuisances.

2. **A. ARTEMISIAEFOLIA, L.** Stem paniculately branched, villous; leaves bipinnatifid, smoothish above, somewhat canescent beneath,—the uppermost simply pinnatifid; petioles ciliate with long hairs; racemes somewhat spicate, paniculate. *Torr. & Gr. Fl. N. A. 2. p. 291. DC. Prodr. 5. p. 526.*

A. elatior. L. Fl. Cestr. p. 479. Also, DC. l. c.

ARTEMISIA-LEAVED AMBROSIA. *Vulgò*—Bitter-weed. Rag-weed.

Stem 1 to 3 or 4 feet high, usually much branched or bushy. *Leaves* 2 to 4 or 5 inches long; *petioles* half an inch to an inch and half long. *Staminate heads* small, numerous, in terminal slender spicate racemes. *Pistillate heads* solitary or clustered along the lower part of the staminate racemes and bracteate, or in the axils of the upper leaves: sometimes the heads are *dioicous*,—specimens occurring in which the *terminal racemes* (or rather spikes), as well as the clusters beneath, are *all pistillate*, and the flowers in small sessile bracteate clusters. Cultivated fields, and pastures: Canada to Florida. *Fl.* Aug.—Sept. *Fr.* Octo.

Obs. This worthless *weed* occurs in most cultivated grounds,—and is usually very abundant among the stubble, after a crop of wheat: but, if the land be good, the plant seems to be smothered or choked out, the next season, by the crop of clover and timothy. It is always ready, however—like several other coarse weeds—to make its appearance whenever the grassy turf is broken up. The curious anomaly above mentioned,—of the flowers on the terminal spikes being *all pistillate*,—has been also observed by my friend, Mr. DANIEL B. SMITH, of Haverford School, near Philadelphia.

88. XANTHIUM. *Tournef. Endl. Gen. 2480.*

[Greek, *Xanthos*, yellow; a color said to be produced by the plant.]

Heads glomerate-spicate,—the sterile spikes at the summit. **STAMINATE FL.** numerous, in subglobose heads; *scales* of the *involucre* distinct, in a single series. *Corolla* tubular, clavate, somewhat hairy. *Anthers* connivent but distinct. *Style* abortive, undivided. *Receptacle* oblong, torete, chaffy. **PISTILLATE FL.** 2, inclosed in a

2-celled oblong coriaceous closed *involucre*, which is armed with hooked prickles and terminated by 1 or 2 stout beaks. *Corolla* filiform. *Stamens* 0. *Branches of the style* linear-filiform. *Akenes* solitary in each cell of the involucre, oblong, flat. Annual *Herbs*. *Leaves* alternate, lobed or dentate.

1. *X. STRUMARIUM*, *L.* Leaves broad-ovate, mostly somewhat 3-lobed, dentate, unarmed at base; involucre of the fruit oval, with 2 straight beaks. *Torr. & Gr. Fl. N. A. 2. p. 294. DC. Prodr. 5. p. 523. Fl. Cestr. p. 478.*

SCROPHULOUS XANTHIUM. *Vulgò*—Clot Bur. Cockle Bur.

Fr. Lampourde. *Germ.* Die Spitzklette. *Span.* Lampazo pequeño.

Stem 1 to 3 feet high, roughish-pubescent, branching. *Leaves* 3 to 6 inches in length, and nearly as wide as long, subcordate at base, but cuneately produced at the union of the 3 principal nerves. *Heads* of flowers in axillary clusters. *Involucre* of the fruit persistent, becoming an oblong bur, with rigid uncinate prickles. Road-sides, and waste places: Northern and Middle States: Introduced? *Fl.* August—September. *Fr.* October.

Obs. This has the appearance of a naturalized stranger, in Pennsylvania, and is an obnoxious weed,—though not much inclined to spread; and with a little attention, is easily kept in subjection. The *burs* are a great annoyance in the fleeces of sheep. There is another species (*X. echinatum*, *Murr.*),—described by TORREY & GRAY as being naturalized along the atlantic coast,—which has considerable general resemblance to this.

2. *X. SPINOSUM*, *L.* Leaves ovate-lanceolate, entire or somewhat 3-lobed, armed at base with slender 3-parted spines; involucre of the fruit cylindric-oblong, with an inconspicuous beak. *Torr. & Gr. Fl. N. A. 2. p. 295. DC. Prodr. 5. p. 523. Fl. Cestr. p. 478.*

SPINOSE XANTHIUM. *Vulgò*—Thorny Clot-Bur.

Stem 2 to 3 or 4 feet high, branched. *Leaves* 1 to 3 inches long, and one fourth to three fourths of an inch wide, entire or with a lobe-like tooth on each side,—the upper surface pale green, pubescent on the midrib—the under surface clothed with a short cinereous tomentum.—the base narrowed to a short *petiole*—on each side of which is a triple or 3-forked *spine*, the branches about an inch long, very sharp, yellowish or pale straw color. *Heads* of flowers axillary, solitary.—Farm yards; road sides, &c.: Massachusetts to Georgia: introduced. Native of Europe. *Fl.* September. *Fr.* October.

Obs. This execrable foreign *weed* is becoming naturalized in many portions of our country,—particularly in the Southern States. It may be frequently seen along the side-walks, and waste places, in the suburbs of our northern sea-port towns,—and is a vile nuisance wherever found. I have understood that the authorities of one of our cities, a few years since, enacted an *Ordinance* against the plant,—in which enactment it was denounced by the name of the *Canada Thistle!* The misnomer probably did not impair the efficacy of the Ordinance: Yet I cannot help thinking it would be decidedly preferable that both Lawgivers and Farmers should avoid confounding objects which are essentially distinct,—and learn to designate even *weeds* by their proper names.

SUB-TRIBE 2. HELIANTHEAE. *Less.*

Heads heterogamous and radiate—rarely homogamous and discoid; disk-florets perfect. *Receptacle* chaffy. *Corolla* of the perfect florets with the lobes often thickened and papillose. *Anthers* blackish, not caudate at base. *Pappus* either

wanting or coroniform, or consisting of awns which are sometimes chaffy or with chaffy scales intermixed,—never of capillary bristles nor of uniform and distinct chaffy scales.

DIV. 2. EU-HELIANTHEAE. Torr. & Gr.

Rays sterile (neutral or imperfectly styliferous), ligulate. *Akenes* often compressed, but never obcompressed. *Pappus* coroniform, toothed, or of 1 to 4 awns or chaffy scales, or wanting.

89. HELIANTHUS. L. *Endl. Gen.* 2538.

[Greek, *Hēlios*, the sun, and *Anthos*, a flower; from the resemblance of the flowers.]

Heads many-flowered; ray-florets numerous, neutral. *Involucre* imbricated in 3 or more series,—the *scales* often foliaceous and spreading at apex. *Receptacle* usually flat and large,—the persistent chaff embracing the akenes. *Corolla* of the disk commonly 10-nerved, with a short proper tube. *Branches of the style* hispid, subulate-conical at apex. *Akenes* laterally compressed or sometimes rather 4-sided, not winged or margined. *Pappus* of 2 chaffy or awn-like scales arising from the principal angles of the akenes, and often with 2 or more intermediate smaller scales, very deciduous. *Herbs*, annual or perennial, mostly stout and rough. *Leaves* sometimes scattered, but usually opposite or with only the upper ones alternate. *Heads* somewhat corymbose, sometimes few or solitary and very broad: rays bright yellow; disk-florets yellowish or sometimes purplish at summit.

1. II. TUBEROSUS, L. Root bearing oblong tubers; stem erect, branching, scabrous; leaves ovate, acuminate, serrate, 3-nerved, scabrous, petiolate,—the lower ones subcordate at base; petioles ciliate; scales of the involucre lanceolate, hispid and ciliate. Torr. & Gr. *Fl. N. A.* 2. p. 332. DC. *Prodr.* 5. p. 590. *Fl. Cestr.* p. 484.

TUBEROUS HELIANTHUS. *Vulgè*—Jerusalem Artichoke.

Pr. Topinambour. *Germ.* Die Erdartichoke. *Span.* Cotúfa.

Root perennial? (or rather *appearing* perennial, by the annual production of *tuberos rhizomas*?) *Stem* 4 to 6 or 8 feet high, stout, branching, terete, hispid. *Leaves* 4 to 6 or 8 inches long, very scabrous on the upper surface, abruptly contracted at base to a narrow cuneately-tapering margined *petiole*, which is 1 to 2 or 3 inches long,—the lower leaves opposite (or rarely ternate), the upper ones alternate. *Heads* rather large. *Akenes* somewhat compressed and 4 sided, cuneate-oblong, smooth; *pappus* 1 to 4 (usually 2) subulate chaffy scales. Gardens, and Lots: cultivated. Native of Brazil. *Fl.* August–September. *Fr.* October.

Obs. This Sunflower is often cultivated for the firm fleshy tubers, or *rhizomas*, found at its roots. These tubers are pickled, and used as a condiment. They have been commended, also, for feeding Stock. It may be remarked, here, that in a rich mellow soil, they multiply so rapidly as to make the plant rather troublesome, and difficult to keep within bounds. The large *Garden Sunflower* (*H. annuus*, L. with a fibrous root, and alternate broad-cordate or ovate leaves) is said to be worth cultivating, for the *oil* afforded by the *seeds*. There are several native species of *Helianthus*,—but none of Agricultural interest.

DIV. 4. BIDENTIDEAE. Less.

Rays neutral, ligulate—sometimes wanting. *Akenes* obcompressed, or often 4-sided; and sometimes terete, beaked at apex. *Pappus* consisting of 2 to 4 (rarely 5 or 6) barbed or retrorsely hispid awns.

90. BIDENS. *L. Endl. Gen.* 2541.

[Latin, *Bi-dens*, having 2 teeth; in allusion to the awns of the akenes.]

Heads many-flowered; *ray-florets* neutral, often inconspicuous and sometimes wanting,—those of the *disk* tubular and perfect. *Involucre* double,—the outer scales larger and often foliaceous. *Receptacle* flattish,—the *chaff* deciduous with the fruit. *Corolla* of the disk-florets funnel-form, with a slender tube. *Branches of the style* hairy at summit, terminated by a subulate cone. *Akenes* obcompressed, or sometimes slender and more or less 4-sided, often attenuate or beaked at summit, crowned with 2 or 4 (rarely 5 or 6) retrorsely hispid awns. Annual or sometimes perennial *Herbs*. *Leaves* opposite, incised-serrate or pinnatifidly dissected. *Flowers* mostly yellow.

† *Akenes flat and broadish, not beaked at summit, ciliate on the margins.*

1. *B. FRONDOSA, L.* Leaves odd-pinnately divided,—the lower ones with 5 divisions, the upper with 3; divisions distinct and mostly petiolulate, lanceolate, serrate; heads discoid, on slender axillary peduncles; outer scales of the involucre foliaceous, narrowed and ciliate at base, much longer than the head; akenes obovate-cuneate, 2-awned, pubescent and ciliate with erect hairs. *Torr. & Gr. Fl. N. A. 2. p. 351. DC. Prodr. 5. p. 594. Fl. Cestr. p. 486.*

FRONDLOSE BIDENS. *Vulgò*—Bur-Marigold.

Root annual. *Stem* 2 to 4 or 5 feet high, somewhat hairy, often dark purple, branched. *Leaflets* or segments 2 to 4 or 5 inches long, pilose beneath, abruptly narrowed at base to a short margined ciliate *petiolule*,—the *common petiole* 1 to 3 inches long. *Heads* rather small, on long slender naked peduncles. *Involucre* double,—the 8 or 10 outer scales lanceolate, leaf-like, unequal, 2 or 3 to 5 or 6 times as long as the head, ovate-lanceolate, with a scarious margin. *Florets* yellowish. *Chaff* of the receptacle linear-lanceolate, about as long as the akenes. Gardens, fence-rows, Indian-Corn fields, &c.: throughout the U. States. *Fl.* Aug.—September. *F.* October.

Obs. All the species, here enumerated, are very worthless, and particularly disagreeable *weeds*,—on account of the barbed awns of the fruit, which cause it to adhere in great numbers to clothing. This one is apt to be quite abundant in gardens, Indian-corn fields, &c. and if permitted to mature its fruit, becomes very annoying, in the latter part of summer.

2. *B. CHRYSANTHEMOIDES, Mx.* Leaves oblong-lanceolate, tapering at each end, serrate, sessile, and connate at base; heads conspicuously radiate, often somewhat nodding; outer scales of the involucre foliaceous, mostly shorter than the rays; akenes oblong-cuneate, 2 to 4-awned, retrorsely aculate-ciliate on the margins. *Torr. & Gr. Fl. N. A. 2. p. 352. DC. Prodr. 5. p. 595. Fl. Cestr. p. 485.*

Also? *B. quadriaristata. DC. l. c.*

CHRYSANTHEMUM-LIKE BIDENS. *Vulgò*—Beggarticks.

Plant glabrous. *Root* annual. *Stem* 6 inches to 2 feet high, erect or often declined at base, branching, the branches opposite and axillary. *Leaves* 3 to 6 inches long. *Heads* rather large, solitary, terminating the branches. Outer scales of the *involucre* about 8, linear-lanceolate, ciliate-serrulate, spreading, the largest sometimes nearly as long as the rays; the inner scales membranaceous, elliptic or ovate-oblong, nearly equal, about as long as the disk-florets. *Rays* bright yellow, numerous, near an inch long. *Akenes* striate-ribbed and somewhat keeled on the flattened sides; *awns* usually 4. *Chaff* of the receptacle spatulate-linear,

scarious, 3-nerved, yellow, or sometimes purplish at summit. Low grounds; along swampy rivulets: generally throughout the U. States. *Fl.* Aug.—Sept. *Fr.* Octo.

Obs. This species is rather showy, when in flower,—and is less inclined than either the preceding or the following to invade cultivated grounds. It is, however, quite an objectionable *weed*, on account of the vast quantity of its adhesive fruit, in autumn. There appear to be several *varieties* of the plant,—noticed in TORREY & GRAY'S N. A. Flora.

† † *Akenes slender, linear, 4-sided, beaked at summit, mostly smooth.*

3. *B. BIPINNATA, L.* Leaves bipinnately dissected, petiolate,—the segments lanceolate or oblong-ovate, mucronate, usually narrowed at base; heads few-rayed, small, on slender angular-sulcate terminal and axillary peduncles; outer scales of the involucre scarcely as long as the inner ones; akenes long and slender, 4-angled and grooved, 3 or 4-awned. *Torr. & Gr. Fl. N. A. 2. p. 354. DC. Prodr. 5. p. 603. Fl. Cestr. p. 487.*

BIPINNATE BIDENS. *Vulgò*—Spanish Needles.

Plant glabrous. *Root* annual. *Stem* 2 to 4 feet high, quadrangular, branched. *Leaves* 2 to 4 or 5 inches long, deltoid-ovate in the outline; *petioles* 1 to 3 or 4 inches long. *Heads* oblong, slender; *rays* 3 or 4, obovate, small, yellow with dark veins; *disk-florets* about 20, yellow. *Akenes* about three fourths of an inch long, somewhat scabrous with short erect hairs. *Chaff* of the receptacle lance-linear, shorter than the akenes. Gardens, and cultivated Lots: New England to Florida. *Fl.* August—September. *Fr.* October.

Obs. This, like the *B. frondosa*—if not carefully watched and eradicated—is a great pest in cultivated Lots,—especially in Kitchen Gardens and Indian-corn fields. One or two other species, equally worthless as the preceding, are frequently to be met with, in low grounds: but those here given are the most common, and the most annoying,—and therefore most intitled to the notice of the farmer.

SUB-TRIBE 6. ANTHEMIDEAE. *Cass.*

Heads mostly heterogamous, never dioicous; *ray-florets* in one or more series, pistillate or rarely neutral, ligulate or tubular; *disk-florets* perfect or sometimes staminate. *Receptacle* naked or chaffy. *Anthers* not caudate. *Branches of the style* truncate and mostly bearded at apex—rarely produced into a short cone. *Pappus* none, or small and coroniform. *Leaves* mostly alternate, often much dissected.

DIV. 1. EU-ANTHEMIDEAE. *DC.*

Receptacle chaffy. *Heads* mostly radiate,—the rays ligulate, in a single series; *disk-florets* perfect.

91. MARUTA. *Cass. Endl. Gen. 2640.*

[*Heads* many-flowered; *rays* mostly neutral, continuous or obscurely articulated with the abortive ovary. *Involucre* hemispherical,—the *scales* imbricated in few series, shorter than the disk. *Receptacle* prominently convex or oblong-conical, chaffy all over or only at summit. *Akenes* obovoid or obconic, ribbed, destitute of pappus. Annual *Herbs*. *Leaves* bi- or tri-pinnately dissected.]

1. *M. COTULA, DC.* Scales of the involucre with whitish scarious margins; receptacle conical, chaffy at summit only; chaff subulate. *Torr. & Gr. Fl. N. A. 2. p. 408. DC. Prodr. 6. p. 13.*

Anthemis Cotula, L. Fl. Cestr. p. 489. Icon, Fl. Lond. vol. 3.

Vulgò—Stinking Chamomile. Dog's Fennel. May-Weed. [fetida. *Fr.* Maroute. *Germ.* Stinkende Kamille. *Span.* Manzanilla

Plant strongly fetid. *Stem* 6 to 12 inches high, mostly erect, somewhat pilose, leafy and much branched. *Leaves* 1 to 2 or 3 inches long, bi- and tri-pinnately dissected,—the segments short, flat, linear, acute. *Heads* terminal on elongated pubescent peduncles; *rays* white, sometimes imperfectly pistillate; *disk* yellow, prominently convex or subcylindric. *Akenes* oblong or obconic, striate-ribbed, mostly tuberculate in lines, with a minute disk at summit, but no sort of pappus. Farm yards, and waste places; throughout the U. States: introduced. Native of Europe. *Fl.* June—Sept. *Fr.* August—October.

Obs. This disagreeable little *weed* has become extensively naturalized; and although not apt to spread to an injurious extent over cultivated grounds, it is often quite abundant in lanes and farm-yards, and not easily expelled.

92. ANTHEMIS. *L. Endl. Gen.* 2639.

[Greek, *Anthemon*, a flower; in allusion to the great number it bears.]

Heads many-flowered; *rays* pistillate. *Scales* of the involucre imbricated in few series. *Receptacle* conical, with membranaceous chaff among the florets. *Akenes* terete or obtusely quadrangular; *pappus* minute, coroniform, or sometimes wanting. Annual or perennial *Herbs*. *Leaves* bipinnately dissected.

1. *A. NOBILIS, L.* Stems simple, numerous, spreading and decumbent, villous; leaves pinnately dissected, subvillous,—the segments multifid with the sub-divisions linear-subulate; chaff of the receptacle scarious, lanceolate, not awned at apex, a little shorter than the florets. *DC. Prodr.* 6. p. 6. *Fl. Cestr.* p. 488.

NOBLE ANTHEMIS. *Vulgò*—Chamomile. Garden Chamomile.

Fr. Camomille Romaine. *Germ.* Die Kamille. *Span.* Manzanilla.

Root perennial, woody. *Stems* simple, but numerous from the root, 4 to 8 or 10 inches long. *Leaves* 1 to 2 inches long, sessile. *Heads* terminal on elongated leafless pubescent peduncles; *rays* white, finally reflexed; *disk* yellow, convex and at length conical. *Akenes* with a nearly obsolete crown-form pappus. Gardens: cultivated. Native of Europe. *Fl.* July. *Fr.* September.

Obs. The whole plant (and particularly the heads of flowers) is a fine aromatic bitter, and deservedly popular as a tonic medicine,—for which purpose it is generally cultivated. It is an old and still prevalent opinion, that this plant thrives better for being trampled upon or kept prostrate,—which is thus incidentally noticed by SHAKESPEARE, in the first part of his *King Henry IV.*—“For though the *Camomile*, the more it is trodden on the faster it grows—yet youth, the more it is wasted the sooner it wears.” There is another species (*A. arvensis, L.*) which is partially naturalized,—and appears as a *weed* in the cultivated grounds of some of the middle and northern States: but it is not of sufficient importance to call for a more extended notice, here. There are no native species.

93. ACHILLEA. *L. Endl. Gen.* 2649.

[Named after *Achilles*, a disciple of Chiron,—who first used the plant.]

Heads many- or several-flowered; *rays* few and short, pistillate; *tube* of the *disk-florets* obcompressed. *Involucre* ovoid-oblong,—the *scales* imbricated, unequal. *Receptacle* flat or sometimes elongated.

gated, chaffy. *Akenes* oblong, obcompressed, somewhat margined, destitute of pappus. Perennial *Herbs*. *Leaves* alternate, mostly pinnatifid. *Heads* small, corymbose.

1. *A. MILLEFOLIUM*, *L.* Stem sulcate-striate, somewhat villous; leaves bipinnately dissected,—the segments linear, incised-serrate, acute; corymb compound, fastigiate; rays about 5, roundish-obovate. *Torr. & Gr. Fl. N. A. 2. p. 409. DC. Prodr. 6. p. 24. Fl. Cestr. p. 489. Icon, Fl. Lond. vol. 3.*

THOUSAND-LEAF *ACHILLEA*. *Vulgò*—Yarrow. Milfoil.

Fr. La Millefeuille. *Germ.* Die Schafgarbe. *Span.* Milenrama.

Stem 2 to 3 feet high, hairy and somewhat lanuginous, mostly simple, corymbose at summit. *Leaves* 2 or 3 to 6 inches long (the radical ones still longer), nearly sessile, much and finely dissected. *Heads* small, numerous, in a dense terminal fastigiate corymb; rays white or often tinged with purple, crenate-dentate at apex; *disk-florets* whitish,—the tube sprinkled with resinous particles. *Akenes* obcompressed, slightly margined near the summit, smooth. *Receptacle* small, flat; *chaff* lance-oblong, acute. Pastures: fence-rows, &c.: throughout the U. States: introduced. Native of Europe. *Fl.* June—Sept. *Fr.* Aug.—Octo.

Obs. This foreigner has become completely naturalized. It is an aromatic bitter, and somewhat astringent,—quite popular as a tonic. The English agricultural writers speak of it as a plant of some value, in their pastures; but I believe it is universally regarded, here, as a mere weed. Certainly it is far inferior to our usual pasture plants,—and I think our cattle rarely eat it.

DIV. 2. CHRYSANTHEMEAE. DC.

Receptacle not chaffy. *Heads* mostly radiate,—the rays ligulate, pistillate or rarely neutral, in a single series; *disk-florets* perfect.

94. LEUCANTHEMUM. *Tournef. Endl. Gen. 2667.*

[Greek, *Leukos*, white, and *Anthemon*, a flower; in reference to its white rays.] *Heads* many-flowered; rays pistillate, numerous. *Involucre* spreading or broad-campanulate,—the scales imbricated, with scarious margins. *Receptacle* flat or somewhat convex, naked. *Tube* of the *disk-florets* fleshy, obcompressed and slightly 2-winged. *Akenes* of the disk and ray similar, subterete, striate, mostly destitute of pappus. Perennial *Herbs*. *Leaves* alternate, mostly pinnatifid or incised-dentate. *Heads* rather large, solitary and terminal.

1. *L. VULGARE*, *Lam.* Stem erect, somewhat branched; leaves laciniately incised or pinnatifid-dentate,—the cauline ones sessile and somewhat clasping—the radical ones obovate-spatulate, petiolate; scales of the involucre with narrow russet-brown margins. *Torr. & Gr. Fl. N. A. 2. p. 412. DC. Prodr. 6. p. 46.*

Chrysanthemum leucanthemum. L. Fl. Cestr. p. 490. Icon, Fl. Lond. vol. 3. [weed.

COMMON LEUCANTHEMUM. *Vulgò*—Daisy. Ox-eye Daisy. White *Fr.* L'oeil de Beuf. *Germ.* Die Wucherblume. *Span.* Margarita mayor.

Stem 1 to near 2 feet high, erect or subdecumbent, angular and striate, somewhat hairy, simple or sparingly branched, but often several from the same root. *Leaves* 1 or 2 inches long,—the upper stem-leaves oblong—the lower ones cuneate-spatulate—and the radical ones obovate or orbicular-spatulate. *Heads* broad; rays very white—in length about equal to the diameter of the disk; *disk-*

florets yellow. *Akenes* subterete, ribbed, smooth, dark purple between the ribs, destitute of pappus. *Receptacle* slightly convex, dotted. Fields and meadows, more or less throughout the U. States: introduced. Native of Europe. *Fl.* June—Aug. *Fr.* July—Sept.

Obs. This vile intruder is becoming a great nuisance in our country. In some districts, the careless slovenly farmers have permitted it to get almost exclusive possession of their pasture fields,—rendering them quite white, when the plant is in bloom. Cows will occasionally crop a portion of the weed, in our pastures,—and I have heard it alleged, that it contributes to the making of good Butter: but my own observations induce me to regard it as utterly worthless. It is propagated rapidly,—and is, moreover, exceedingly difficult to get rid of, when once fully established: so that one negligent sloven may be the source of a grievous annoyance to a whole community. I have understood that annual ploughing and cropping, for a few years, is the most effectual remedy for the evil: but then the fence-rows and neighboring fields must be well watched, to prevent the formation and introduction of fresh seed. The *Corn Marygold* (*Chrysanthemum segetum*, L. a kindred plant)—which is said to be such a pest to the agriculture of Europe—does not appear to have found its way, as yet, to the U. States.

DIV. 3. ARTEMISIEAE. DC.

Receptacle naked (i. e. not chaffy). *Heads* discoid, homogamous or heterogamous; *florets* all tubular,—the central ones perfect—one or more series of the marginal ones sometimes pistillate.

95. TANACETUM. L. *Endl. Gen.* 2696.

[Corrupted from *Athanasia*, Gr. *a*, not, and *Thanatos*, death: from its durable flowers.]

Heads homogamous with the *florets* all perfect, or heterogamous with the marginal ones pistillate in a single series. *Scales* of the *involucre* imbricated, dry. *Receptacle* more or less convex. *Akenes* angled or ribbed, with a large epigynous disk. *Pappus* none or minute, coroniform, entire or toothed, often unequal. Perennial *Herbs*, or *suffruticose* plants. *Leaves* alternate, variously dissected. *Heads* solitary or corymbose.

1. T. VULGARE, L. Stem herbaceous, smoothish; leaves bipinnately parted,—the rachis and lobes incised-serrate; heads heterogamous, numerous, in a dense fastigate corymb; pappus coroniform, of 5 equal lobes. *Torr. & Gr. Fl. N. A. 2. p.* 414. *DC. Prodr.* 6. *p.* 128. *Fl. Cestr. p.* 492.

COMMON TANACETUM. *Vulgò*—Tansey.

Fr. Tanaisie. *Germ.* Der Rainfarn. *Span.* Tanaceto.

Stems 2 to 4 feet high, somewhat branched above, often growing in clusters. *Leaves* 2 or 3 to 6 or 8 inches long, interruptedly pseudo-pinnate,—the segments pinnatifid, unequally incised-serrate. *Heads* depressed-hemispherical; *involucre* smoothish,—the outer scales lanceolate, acuminate—the inner ones oblong, obtuse; *florets* deep yellow, numerous and densely crowded,—the marginal ones trifid, obsoletely radiate. *Receptacle* nearly flat. Gardens, fence-rows, waysides, &c.: introduced. Native of Europe. *Fl.* July—Aug. *Fr.* September.

Obs. This was originally introduced as a garden plant, and generally cultivated for its aromatic bitter properties,—which have rendered it a prominent article in the popular *Materia Medica*. It has

now escaped from the gardens, and is becoming naturalized—and something of a *weed*—in many places.

96. ARTEMISIA. *L. Endl. Gen.* 2694.

[Said to be so called from *Artemis*,—one of the names of Diana.]

Heads discoid, few- or many-flowered, heterogamous,—the central florets perfect (yet sometimes abortive), 5-lobed—the marginal ones pistillate in a single series, and 3-lobed,—or sometimes the heads are homogamous, with the florets all perfect. *Scales* of the involucre imbricated, mostly dry and with scarios margins. *Receptacle* flat-tish or convex, naked or villous. *Akenes* obovoid, with a small epigynous disk, destitute of pappus. *Herbaceous* or *fruticose*—mostly perennial plants. *Leaves* alternate, usually pinnatifid.—*Heads* small, racemose or paniculately spicate.

§. 1. *Receptacle naked: Heads heterogamous,—the central or disk-florets apparently perfect, but sterile by the abortion of the ovary.*

1. A. DRACUNCULUS, *L. var. sativa, Bess.* Herbaceous, green and glabrous; stem erect, branching; radical leaves trifid at apex,—stem-leaves linear-lanceolate, sub-dentate or entire; heads subglobose, racemose-paniculate; scales of the involucre with scarios margins,—the outer ones oblong—the inner ones broadly elliptic. *DC. Prodr.* 6. p. 97.

LITTLE-DRAGON ARTEMISIA. *Vulgò*—Tarragon.

Fr. Estragon. *Germ.* Esdragon. *Span.* Estragon.

Root perennial. *Stem* 2 to 3 feet high. *Leaves* 1 to 2 or 3 inches long, mostly entire sessile, narrowed at each end, those on the branches smaller. *Heads* small. *Florets* yellowish. Gardens: cultivated. Native of Russia and Siberia. *Fl.* August. *Fr.* September.

Obs. This species is sometimes cultivated, in the kitchen gardens of the curious, for the sake of its aromatic *herbage*. It is said to impart a fine flavor to *vinegar*, by steeping a bunch of the green Herb in that liquid.

§. 6. *Receptacle villous or hairy: Heads heterogamous,—the florets all fertile.*

2. A. ABSINTHIUM, *L.* Silky-canescient; stem suffruticose, angular-sulcate, paniculately branched above; leaves bipinnatifid,—the segments lanceolate, often incised; heads hemispherical, racemose-paniculate, nodding; outer scales of the involucre linear—the inner ones rounded, scarios. *Torr. & Gr. Fl. N. A.* 2. p. 424. *DC. Prodr.* 6. p. 125. *Fl. Cestr.* p. 491.

Vulgò—Worm-wood.

Fr. L'Absinthe. *Germ.* Der Wermuth. *Span.* Axenjo.

Plant hoary with a short and rather dense silky pubescence. *Root* perennial. *Stems* 2 to 4 feet high, clustered or numerous from the root. *Leaves* 1 to 2 or 3 inches long, petiolate, multifid or irregularly bipinnatifid,—the principal segments often trifid, and cuneate at base—the subdivisions elliptic-oblong, obtuse, entire. *Heads* numerous, in leafy paniculate racemes; *florets* yellowish. *Akenes* obovate-oblong, smooth. Gardens: cultivated. Native of Europe. *Fl.* August. *Fr.* September—October.

Obs. This plant—proverbial for its bitterness—is generally kept in gardens; and is valuable for its medicinal properties, as a tonic, vermifuge, &c.

There is another species (*A. Abrotanum*, L.), commonly known by the name of "Southern-wood," or "Old Man," frequent in gardens; and a fourth (*A. vulgaris*, L.), called "Mug-wort," is occasionally met with: But these are of less importance,—and scarcely intitled to a place, here.

SUB-TRIBE 7. GNAPHALIEAE. Less.

Heads discoid, homogamous or heterogamous, sometimes dioicous; *florets* all tubular,—the pistillate ones filiform, or very rarely ligulate. *Anthers* caudate at base! *Style*, in the perfect florets, with the branches not appendiculate,—in the staminate ones mostly undivided. *Pappus* capillary or setaceous—rarely wanting. *Leaves* mostly alternate.

☞ *Receptacle not chaffy.*

97. GNAPHALIUM. L. Endl. Gen. 2746.

[Greek, *Gnaphalon*, soft down or wool,—with which the plants are clothed.]

Heads many-flowered, heterogamous; *florets* all tubular,—the outer ones pistillate, very slender, mostly in several series—the central ones perfect. *Involucre* ovoid; *scales* imbricated, appressed, scarious or hyaline. *Receptacle* flat. *Akenes* subterete, or sometimes obcompressed. *Pappus* in a single series, capillary and scabrous. *Herbaceous* or rarely *suffruticose* plants, mostly woolly or tomentous. *Leaves* sessile or decurrent. *Heads* corymbose, glomerate, or spicate; *scales* of the *involucre* variously colored.

1. G. POLYCEPHALUM, Mx. Stem herbaceous, erect, paniculately branched; leaves linear-oblongate, acute, sessile and not decurrent, smoothish above, tomentose beneath; heads numerous, in terminal corymbose clusters. Torr. & Gr. Fl. N. A. 2. p. 427. DC. Prodr. 6. p. 227. Fl. Cestr. p. 494.

MANY-HEADED GNAPHALIUM. *Vulgò*—Life-everlasting.

Root annual. *Stem* 1 to 2 feet high, hoary-tomentose and generally much branched. *Leaves* 1 to 3 inches long, somewhat undulate on the margins, green and nearly smooth on the upper surface—whitish and densely tomentose beneath. *Heads* rather small, oblong-ovoid, ochroleucous, aggregated in dense terminal clusters, very fragrant. *Florets* slender, yellowish. *Akenes* oblong, subterete, smooth. *Pappus* somewhat tawny. Old fields, and Pastures: Canada to Texas. Fl. Aug.—Sept. Fr. October.

Obs. This is often quite abundant in old pasture fields; and although not a pernicious plant, it is altogether valueless to the farmer, and must be regarded as a mere *weed*.

SUB-TRIBE 8. SENECEONEAE. Cass.

Heads homogamous or heterogamous (never dioicous), discoid or radiate; *rays* (when present) ligulate, in a single series. *Receptacle* very rarely chaffy. *Anthers* not caudate. *Pappus* capillary—sometimes wanting on the outer akenes. *Leaves* alternate.

DIV. 1. ERECHTITEAE. DC.

Heads discoid, heterogamous; *florets* all tubular,—the marginal ones pistillate.

98. ERECHTITES. Rafin. Endl. Gen. 2790.

[One of the names given, by *Dioscorides*, to the *Senecio*.]

Heads many-flowered, discoid; *marginal florets* pistillate, very slender, 2 or 3-toothed,—the others perfect, 4 or 5-toothed. *Involucre* cylindrical,—the *scales* in a single series, linear, acute, bracte-

olate. *Receptacle* naked, somewhat papillose. *Branches of the style* tipped with a pubescent cone. *Akenes* oblong, striate, somewhat attenuated at apex. *Pappus* copious and smoothish, of very fine capillary bristles in several series. Annual *Herbs*. *Heads* corymbose.

1. E. HIERACIFOLIA. *Raf.* Stem simple, or paniculate at summit; leaves lance-oblong, narrowed at base, acute, unequally incised-dentate, sessile,—the upper ones often sagittate-auriculate and somewhat amplexicaul; involucre sub-cylindric, smooth, with subulate-linear bracteoles at base. *Torr. & Gr. Fl. N. A. 2. p. 434. DC. Prodr. 6. p. 294.*

Senecio hieracifolius. *L. Fl. Cestr. p. 498.*

HIERACIUM-LEAVED ERECHTITES. *Vulgò*—Fire-weed.

Stem 2 to 4 or 5 feet high, rather large, succulent and tender when young, striate-sulcate, more or less hairy, sometimes nearly smooth. *Leaves* 3 to 6 or 8 inches long. *Heads* middle-sized, often numerous, in small cymose corymbs terminating the paniculate branches; involucre terete-oblong, slightly ventricose; florets whitish or ochroleucous, very slender and numerous. *Pappus* very white, of numerous fine and almost silky hairs. *Receptacle* flat, roughish-dotted. Moist grounds; recent clearings, &c.: throughout the U. States. *Fl.* July—August. *Fr.* September.

Obs. This plant (which has much the aspect of a *Sonchus*, or Sow-thistle) is remarkable for its prevalence in newly-cleared grounds,—especially in and around the spots where brush-wood has been burnt; whence its common name, “*Fire-weed*.” It is a coarse worthless weed, and often very abundant in new grounds; but it is not apt to be troublesome in cultivated fields.

DIV. 2. EU-SENECIONEAE. DC.

Heads either homogamous and discoid, or heterogamous and radiate,—the ray-florets pistillate.

99. SENECIO. *L. Endl. Gen. 2811.*

[Latin, *Senex*, an old man; the pappus resembling a white beard.]

Heads many-flowered,—either discoid with the florets all tubular and perfect—or radiate with the ray-florets pistillate. *Scales* of the involucre in a single series, or calyculate with a few accessory scales. *Receptacle* naked or alveolate, not chaffy. *Branches of the style*, in the perfect florets, truncate,—the apex only minutely penicillate. *Akenes* not beaked nor winged—often grooved or ribbed. *Pappus* of numerous very slender caducous hairs. *Herbs*, or sometimes shrubby plants. *Leaves* alternate. *Heads* solitary, paniculate or corymbose.

☞ *Perennial*: *Heads* mostly radiate, corymbose. *Radical leaves* undivided.

1. S. AUREUS, *L.* Smooth, or often somewhat arachnoid-woolly when young; radical leaves roundish-ovate and subcordate, or varying to obovate and oblong-lanceolate, crenate-serrate, petiolate; lower stem-leaves lyrate,—the upper ones lanceolate, pinnatifid, sessile or partly clasping; corymb subumbellate. *Torr. & Gr. Fl. N. A. 2. p. 442. DC. Prodr. 6. p. 432. Fl. Cestr. p. 496.*

Also, *S. obovatus*, and *Balsamitae*. *Muhl. DC. l. c. Fl. Cestr. p.*

GOLDEN SENECIO. *Vulgò*—Groundsel. Squaw-weed. [497.

Stem 1 to 2 feet high, corymbosely branched,—the lower branches elongated, axillary and distant—the upper ones crowded or subumbellate at the summit of the stem. *Leaves* 1 to 3 inches long, varying in form on the different varieties; *petioles* of the radical leaves 1 or 2 to 6 or 8 inches long. *Heads* terminal on the fastigate branches; *rays* and *disk* yellow. *Akenes* linear-oblong, striate-ribbed; *pappus* white. Banks of streams; moist sterile fields, and meadows: throughout the U. States. *Fl.* April—June. *Fr.* June—July.

Obs. TORREY AND GRAY have reduced MUHLENBERG'S two species (viz. *obovatus*, and *Balsamitae*,) to varieties of the *S. aureus*, L. The *var. Balsamitae*—with a nearly simple stem, and elliptic or lance-oblong radical leaves—is a frequent weed in poor moist meadows and pastures,—where the farmer may often see patches, in the spring, made conspicuous by its yellow rays. The *var. obovatus* (called "*Squaw-weed*") has been denounced, by an Agricultural writer in New York, as being poisonous to sheep; but I know not how correctly,—and am rather inclined to doubt the accuracy of the statement. The *Senecios* are a multitudinous family. Prof. DE CANDOLLE describes nearly 600 species,—of which about 40 are enumerated by TORREY & GRAY as inhabitants of North America. Although the species are so numerous—and, I believe, altogether worthless,—I do not know that they have been found very troublesome, on the farm. Our *native* ones, certainly, have not. The common *Groundsel*, of Europe (*S. vulgaris*, L.—a homely little weed, with discoid heads and pinnatifid leaves)—which DE CANDOLLE says migrates almost every where with European men—has been introduced about the sea-ports of the northern States; but it does not appear to extend itself very rapidly.*

TRIBE V. CYNAREAE. Less.

Heads homogamous or heterogamous, sometimes dioicous. *Style*, in the perfect florets, often nodose-thickened near the summit (sometimes penicillate at the node): the *branches* either distinct or concrete, puberulent externally,—the *stigmatic lines* extending to their apex, and there confluent.

SUB-TRIBE 2. CENTAURIEAE. DC.

Heads discoid, many-flowered.—the marginal florets usually neutral, irregular and much larger than the central ones. *Scales* of the involucre imbricated, variously appendiculate. *Akenes* with an *arcola* (or small cavity) at base which is more or less lateral. *Pappus* capillary, bristly, or chaffy—never plumose,—sometimes wanting.

100. CENTAUREA. L. Endl. Gen. 2871.

[From the *Centaur*, Chiron,—who, it is said, cured his wound with the plant.]

Heads many-flowered; florets unequal,—the marginal ones larger and neutral, or sometimes wanting,—the central ones perfect. *Involucre* imbricated, the *scales* various. *Receptacle* bristly-paleaceous. *Akenes* compressed. *Pappus* usually composed of scabrous filiform bristles in one or more series,—the inner series often smaller and somewhat connivent. *Polymorphous Herbs.* *Leaves* alternate. *Heads* solitary, large.

* Since the above was written, the *S. vulgaris* has been detected in the streets of West Chester, Pa. by Mr. PENNOCK PASSMORE—a gentleman who is at once a practical farmer and an acute observer, with the eye of a Botanist. It is possible the plant may yet become generally disseminated,—though I had only noticed it in the vicinity of Philadelphia, before Mr. PASSMORE pointed it out to me in my own village.

1. *C. CYANUS*, *L.* Floccose-tomentose; stem erect, much branched; leaves lance-linear, sessile, entire,—the lower ones broader, tapering into a kind of petiole, toothed or pinnatifid at base; pappus shorter than the akene. *Torr. & Gr. Fl. N. A. 2. p. 454. DC. Prodr. 6. p. 578. Fl. Cestr. p. 435. Icon, Fl. Lond. vol. 3.*

BLUE CENTAUREA. *Vulgò*—Blue-bottle. Ragged Robin. Blue Bonnets, *of the Scotch.*

Fr. Bluet. *Germ.* Die Korn-blume. *Span.* Ciáno.

Root annual. *Stem* 1 to 2 or 3 feet high. *Leaves* 2 to 6 inches long, hoary-villose or lanuginous—especially on the under side. *Heads* roundish-ovoid, pedunculate, not bracteate; outer scales of the involucre ovate, serrate,—the inner ones longer, lanceolate, scarious and entire below, serrate near the apex. *Florets* of the centre regular, with a slender tube, mostly violet-purple,—the marginal ones obsoletely pistillate, larger, spreading or recurved, funnel-form with a long tube, blue, or sometimes purplish or white. *Akenes* oblong, compressed, striate, pilose, with a cavity (*areola*) on one side of the base: pappus composed of numerous russet scabrous hairs of unequal length. Gardens, and cultivated fields: Northern and Middle States: introduced. Native of Europe. *Fl.* July. *Fr.* August.

Obs. This plant is often seen in Gardens,—and in some places is gradually straggling into the cultivated fields. As it is considered a troublesome weed, among the grain crops of Europe, it may be well to watch and arrest its progress, here. Every worthless intruder should be regarded with a jealous eye, by the farmer.

SUB-TRIBE 3. CARDUINEAE. *Less.*

Heads discoid, homogamous, many-flowered; florets all similar, perfect or dioicous. Scales of the involucre imbricated in several series, often spinose at apex. *Corolla* usually curved outwards,—the exterior lobe often more deeply separated than the others. *Anthers* slightly or not at all caudate. *Akenes* not beaked, glabrous, with a terminal areola. Pappus composed of slender scabrous or plumose bristles, which are often united into a ring at the base.

101. CYNARA. *Vaill. Endl. Gen. 2882.*

[Greek, *Kyon*, *lynos*, a dog; the spines of the involucre resembling dog's teeth.]

Heads homogamous, many-flowered; florets all equal. *Involucre* ovoid,—the scales imbricated, coriaceous, produced into a lanceolate appendage which is spinose at apex. *Receptacle* flat, fimbriate or bristly-paleaceous. *Corolla* 5-cleft,—the limb thick at base, half as long as the tube, the lobes very unequal. *Anthers* with a very obtuse appendage; filaments papillose, somewhat barbed.—*Branches of the style* concrete. *Akenes* obovate compressed or 4-sided, smooth; areola broad, somewhat oblique. Pappus in several series, long, plumose,—the bristles free at base, but attached to a deciduous ring. Perennial spinose *Herbs.* Leaves alternate, pinnatifidly lobed, not decurrent. *Heads* large, with a thick fleshy receptacle.

1. *C. SCOLYMUS*, *L.* Stem branching; leaves subspinose, bipinnatifid and sometimes undivided, tomentose beneath; scales of the involucre ovate, thick and fleshy at base, obtuse at apex and somewhat emarginate,—rarely subspinescent, straight or slightly divergent. *DC. Prodr. 6. p. 620.*

Vulgò—Artichoke.

Fr. Artichaud. *Germ.* Die Artischoke. *Span.* Alcachofa.

Root perennial. *Stem* 3 to 5 feet high, stout, striate and tomentose. *Leaves* large, entire or lobed and spinose. *Heads* ovoid, 2 to 3 inches in diameter; florets blue or violet-purple. Gardens: cultivated. Native country uncertain. *Fl.* Aug. *Fr.* September.

Obs. The thick *receptacle*—together with the *fleshy bases* of the scales of the involucre—affords a favorite vegetable dish,—for which this plant is cultivated, by those who are curious in such matters. I have seen magnificent specimens from the Garden of Mrs. LATIMER (near Wilmington, Del.),—a Lady who excels in the culture of rare plants, choice fruits, and beautiful flowers.

Another species, called *Cardoon* (*C. Cardunculus*, L.),—with the leaves all bipinnately lobed, and more spinose,—to which the foregoing is nearly allied (if, indeed, it be not, as Prof. DE CANDOLLE suggests, a mere *variety* produced by long culture)—is also cultivated for the thick fleshy *petioles* and *ribs* of the leaves,—which are rendered delicate and white by *etiolation*, or blanching, after the manner practiced with Celery.

102. CIRSIUM. *Tournef. Endl. Gen.* 2887.

[Greek, *Kirsos*, a varix, or enlarged vein; for which the plant was a supposed remedy.]

Heads many-flowered; florets all similar and perfect, or rarely dioicous. *Involucre* subglobose; scales imbricated in numerous series, mostly cuspidate or tipped with a spine. *Receptacle* fimbriate. *Corolla* with the limb regularly, or sometimes unequally, 5-cleft,—the tube rather short. *Anthers* more or less produced and lacerate at base; *filaments* often hairy. *Branches of the style* concrete nearly or quite to the apex. *Akenes* oblong, compressed, not ribbed, glabrous; *areola* terminal. *Pappus* of many series,—the hairs united into a deciduous ring at base, plumose, merely denticulate (the stouter ones slightly clavellate) at apex. Biennial or perennial *Herbs*. *Leaves* alternate, sessile or decurrent, often pinnatifid with the margins and segments spinose,—the radical ones much larger than the cauline—as is usual with *biennials*.

1. *C. LANCEOLATUM*, Scop. Leaves decurrent on the stem and forming a spinose lobed wing, pinnatifid, prickly hispid on the upper surface, arachnoid-lanuginous beneath,—the segments lanceolate, bifid, divaricate, spinose; involucre ovoid, nearly bractless; scales linear-lanceolate, tipped with a spine, the outer ones spreading. *Torr. & Gr. Fl. N. A.* 2. p. 456. *DC. Prodr.* 6. p. 636.

Carduus lanceolatus, L. *Fl. Cestr.* p. 436.

LANCEOLATE CIRSIUM. *Vulgò*—Common Thistle.

Fr. Chardon lanceolé. *Germ.* Die Kratzdistel. *Span.* Cardo.

Root biennial. *Stem* 2 to 4 feet high, branched, striate-sulcate, hairy, winged by the decurrent leaves. *Leaves* 4 to 8 or 12 inches long. *Heads* terminal, erect, about an inch in diameter; *scales* of the *involucre* connected by a cobweb-like villus. *Florets* purple, with yellowish anthers. *Akenes* small, obovate-oblong; *pappus* about an inch long, silky. Pastures, fence-rows, way-sides, &c. Northern and Middle States: introduced. Native of Europe. *Fl.* June—July. *Fr.* July—August.

Obs. This foreigner—which delights in a rich soil—is abundantly naturalized in Pennsylvania, and the Northern States, generally.—Though not so repulsive and ugly as some of the spinose Compositae of Europe (such as *Onopordon*, *Carlina*, *Kentrophyllum*, &c.), it is nevertheless a very objectionable *weed*, on our farm,—and requires constant vigilance and attention to exclude it, or keep it in subjection. If permitted to mature its fruit, the spreading pappus may be

seen, by hundreds, floating the akenes through the air, and disseminating the noxious intruder far and wide.

2. *C. DISCOLOR*, *Spreng.* Leaves sessile, more or less deeply pinnatifid, sparsely hairy and green above, densely hoary-tomentose beneath,—the segments linear-lanceolate, cuspidate and spinulose-ciliate; involucre ovoid-oblong; scales appressed, tipped with a slender prickle,—the outer or lower scales lance-ovate, the inner or upper ones linear-lanceolate. *Torr. & Gr. Fl. N. A. 2. p. 457. DC. Prodr. 6. p. 640.*

Carduus discolor. *Nutt. Fl. Cestr. p. 437.*

TWO-COLORED CIRSIIUM.

Root biennial. *Stem* 2 to 5 feet high, with rather slender spreading leafy branches, striate, pubescent with crisped membranous hairs. *Leaves* 3 or 4 to 12 or 15 inches long (those on the branches small), the under surface bluish-white with a soft dense tomentum. *Heads* 1 to 2 inches long, and an inch or more in diameter; *scales* somewhat arachnoid-villous, all appressed, terminating in a slender spreading spine. *Florets* reddish-purple, with whitish anthers. *Fields, and borders of thickets: Northern and Western States. Fl. Aug.—Sept. Fr. Sept.—October.*

Obs. Like all others of the genus, this is a worthless, obnoxious weed,—but is much easier kept in subjection, than the preceding.

3. *C. PUMILUM*, *Spreng.* Leaves semi-amplexicaul, pinnatifid, green on both sides,—the segments short, irregularly lobed, spinulose-ciliate and pointed with strong sharp spines; heads few and large, roundish-ovoid, bracteate; scales of the involucre appressed,—the outer ones ovate-lanceolate, acuminate, tipped with a short spine, the inner ones lance-linear with acuminate scarious serrulate tips. *Torr. & Gr. Fl. N. A. 2. p. 459. DC. Prodr. 6. p. 651.*

Carduus pumilus. *Nutt. Fl. Cestr. p. 437.*

LOW OR DWARF CIRSIIUM.

Plant pale greyish green. *Root* biennial. *Stem* 1 to 2 feet high, stout, sparingly branched, striate, retrorsely pilose. *Leaves* 4 to 12 inches long, very prickly, more or less hairy, densely pilose on the midrib beneath. *Heads* few (1 to 3), often near 2 inches in diameter, mostly with large pinnatifid spinose bracts at base. *Florets* often 2 inches in length, usually of a pale reddish-purple, with whitish anthers. *Neglected old fields, and low grounds: Middle and Northern States. Fl. July. Fr. August.*

Obs. The flowers of this species are quite fragrant, and the heads somewhat showy or conspicuous,—being larger than those of any other native thistle. It does not disseminate rapidly; and is therefore easily kept in subjection, by proper attention.

4. *C. HORRIDULUM*, *Mx.* Leaves semi-amplexicaul, pinnatifid, lanuginous beneath,—the short segments toothed or incised, strongly spinose; involucre ovoid, large, with a verticil of pectinately spinose bracts at base; scales loosely imbricated, linear-lanceolate, tapering to a subulate point, but scarcely spinose. *Torr. & Gr. Fl. N. A. 2. p. 460. DC. Prodr. 6. p. 651.*

Carduus spinosissimus. *Walt. Fl. Cestr. p. 438.*

SOMEWHAT RUGGED CIRSIIUM. *Vulgò*—Yellow Thistle.

Root biennial? (perennial, *DC.*). *Stem* 18 inches to 2 or 3 feet high, rather stout, simple or sparingly branched, arachnoid-lanuginous when young, finally

smoothish. *Leaves* 4 to 12 inches long, hairy on the upper surface, lanuginous beneath,—the segments pointed with short rigid spines. *Heads* terminal, few, (often but one), nearly as large as in the preceding species, surrounded at base by a whorl of numerous (10 to 20 or 30) linear-lanceolate bracts, about as long as the involucre,—the bracts subpinnatifid or sinuate-dentate, pectinately spinose, with the spines somewhat in pairs, or fascicled. *Florets* an inch to an inch and half long, pale yellow (sometimes purple? or becoming purple in drying?). Pastures, and waste places: Sea coast, from Massachusetts to Louisiana: introduced? *Fl.* July. *Fr.* August.

Obs. This rugged repulsive plant has, to me, the appearance of a foreigner, in our soil. I have only met with it on the sandy coast of New Jersey,—and in a single locality in Chester County, Penna., where it was evidently a stranger. It is very desirable that it should continue to be a stranger, to our farms.

5. *C. ARVENSE*, Scop. *Rhizoma* creeping; stem rather slender, striate-angled, paniculately branched at summit; leaves sessile, lance-oblong, sinuate-pinnatifid and dentate, undulate, ciliate-spinose; heads numerous, small, sometimes dioicous; involucre oblong-ovoid; scales appressed, lance-ovate, mucronate,—a few of the outer ones cuspidate-spinose. *Torr. & Gr. Fl. N. A. 2. p. 460. DC. Prodr. 6. p. 643.*

Carduus arvensis. Sm. Fl. Cestr. p. 439.

Cnicus arvensis, Hoffm. Fl. Lond. Icon, vol. 3.

FIELD CIRSIUM. *Vulgò*—Canada Thistle. Cursed Thistle.

Fr. Chardon aux Anes. Germ. Die Acker Kratzdistel.

Rhizoma perennial,—creeping horizontally 6 or 8 inches below the surface of the ground, and giving off numerous erect biennial branches. *Stem* 18 inches to 3 feet high, slender and smoothish,—the branches slender and lanuginous. *Leaves* 4 to 8 or 10 inches long, sessile and slightly decurrent, smoothish on the upper surface, sometimes arachnoid-lanuginous beneath,—the radical ones curled or wavy. *Heads* half an inch to two thirds of an inch in diameter, terminal, sub-pedunculate; *scales* smoothish, minutely ciliate. *Florets* palish lilac-purple, with whitish anthers, perfect or the heads dioicous by abortion. *Akenes* linear-oblong, slightly 4-cornered; *pappus* finally longer than the florets. Fields, and way-sides: Northern and Middle States: introduced. Native of Europe. *Fl.* July. *Fr.* August.

Obs. This foreigner is, perhaps, the most execrable *weed* that has yet invaded the farms of our Country. The *rhizoma*, or subterranean stem (which is perennial and very tenacious of life,) lies rather below the usual depth of furrows,—and hence the plant is not destroyed by common ploughing. This *rhizoma* ramifies and extends itself horizontally in all directions,—sending up branches to the surface, where radical leaves are developed the first year—and aerial stems the second year. The plant appears to die, at the end of the second summer; but it only dies down to the horizontal subterranean stem. The numerous branches, sent up from the *rhizoma*, soon cover the ground with the prickly radical leaves of the plant,—and thus prevent cattle from feeding where they are. Nothing short of destroying the perennial portion of the plant will rid the ground of this pest; and this, I believe, has been accomplished by a few years of *continued culture* (or annual cropping of other plants, that require frequent ploughing, or dressing with the hoe,)—so as to prevent the development of radical leaves, and deprive the *rhizoma* of all connection or communication with the atmosphere.

The following notice of this annoying weed, from CURTIS' *Flora Londinensis*, may not be uninteresting to the American farmer :

"*Vitium agrorum apud nos primum est* [it is the greatest pest of our fields], LINNÆUS observes in his *Flora Lapponica*. The same may be said with us : and we have bestowed on this plant the harsh name of *cursed*, with a view to awaken the attention of the Agriculturists of our country to its nature and pernicious effects.

"Repeated observation has convinced us that many husbandmen are ignorant of its economy,—and while they remain so, they will not be likely to get rid of one of the greatest pests which can affect their corn fields and pastures. Of the Thistle tribe the greatest part are annual or biennial, and hence easily destroyed. Some few are not only perennial, but have powerfully creeping roots,—and none so much as the present. In pulling this plant out of the ground, we draw up a long slender root which many are apt to consider as the whole of it ; but if those employed in such business examine the roots so drawn up, they will find every one of them broken off at the end : for the root passes perpendicularly to a great depth, and then branches out horizontally under ground.

"To give an idea of its astonishing increase, we shall subjoin from the memoirs of the Bath Agricultural Society an experiment made for the very purpose of ascertaining it.* When this paper was delivered to the Society, from experiments then made, I was of opinion that repeated mowing or spudding would not destroy this Thistle. I have since had cause, from further observation and experiments, to think differently : so deep, however, does it penetrate, that these operations are the only ones which can well be applied to its destruction,—and if they do not effectually overcome, they will greatly enfeeble it."

Two or three other species of *Cirsium* are frequently to be met with (viz : *C. muticum*, *Me.* with the heads not spinose,—and *C. altissimum*, *Spreng.* with the stem-leaves not pinnatifid) : But, as they do not incline much to infest the open grounds or farm land, I have not judged it necessary to notice them more particularly, here.

103. LAPPA. *Tournef. Endl. Gen.* 2892.

[Celtic, *Llap*, a hand—or Greek, *labrin*, to seize ; from its adhesive involucre.] *Heads* many-flowered ; *florets* all perfect and similar. *Involucre* subglobose ; *scales* imbricated, coriaceous, appressed at base, spreading and subulate above, with the rigid apex uncinately incurved. *Receptacle* somewhat fleshy, bristly-paleaceous. *Corolla* regularly 5-cleft, 10-nerved. *Anthers* tipped with filiform appendages, and caudate at base ; *filaments* papillose. *Branches of the*

* "April 1st, 1778, I planted in a garden a piece of the root of this Thistle, about the size of a goose quill, and 2 inches long, with a small head of leaves, cut off from the main root just as it was springing out of the ground. By the 2nd of the November following, this small root had thrown out shoots, several of which had extended themselves to the distance of 8 feet,—some had even thrown up leaves 5 feet from the original root : most of the shoots, which had thus far extended themselves, were about 6 inches under ground,—others had penetrated to the depth of 2 feet and a half : the whole together, when dug up and washed from the earth, weighed 4 pounds. In the spring of 1779, contrary to my expectation, this Thistle again made its appearance on and about the spot where the small piece was originally planted. There were between 50 and 60 young heads, which must have sprung from the roots which had eluded the gardener's search,—though he was particularly careful in extracting them."

style free and divergent at apex. *Akenes* oblong, compressed, transversely rugose. *Pappus* in several series, short, filiform, scabrous, not united into a ring at base, caducous. Biennial *Herbs*, coarse and branching. *Leaves* alternate, subcordate, petiolate, large. *Heads* rather small, solitary or somewhat corymbose.

1. *L. MAJOR*, Gaertn. Lower leaves cordate-oblong, upper ones ovate; scales of the involucre all subulate with uncinat tips, smooth or loosely arachnoid. *Torr. & Gr. Fl. N. A.* 2 p. 463. *DC. Prodr.* 6. p. 661.

Arctium Lappa. *L. Fl. Cestr.* p. 436. *Icon, Fl. Lond.* 3.

GREATER LAPPA. *Vulgò*—Bur-dock.

Fr. Glouteron. *Germ.* Die Klette. *Span.* Bardána Lampazo.

Root biennial. *Stem* 2 to 4 or 6 feet high, paniculately branching, striate-sulcate, roughish-pubescent. *Leaves* green and roughish-pubescent above, paler and arachnoid-tomentose beneath,—the radical ones 1 to 2 feet long, erosely dentate and undulate on the margin (sometimes pinnatifid, or coarsely and deeply dentate); *petioles* 9 to 18 inches long; *stem-leaves* smaller, and more or less ovate. *Heads* roundish-ovoid, on short peduncles, terminal and axillary; scales of the involucre subulate-lanceolate, keeled, minutely serrulate, smoothish, spreading, with the point incurved and hooked. *Florets* purple, with bluish anthers. *Akenes* compressed, angular, rugose. *Receptacle* fimbriate,—the bristly chaff smooth, longer than the akenes. Fence-rows, and waste places: introduced. Native of Europe. *Fl.* July—Sept. *Fr.* Sept.—October.

Obs. Every body knows this coarse homely weed, wherever it has gained admittance,—but every body does not take care to keep it in due subjection. One of the earliest and surest evidences of slovenly negligence, about a farm-yard, is the prevalence of huge Bur-docks. The plant is considerably bitter; and the leaves are a favorite external application in fevers, head-ache, &c.

SUB-ORDER III.* LIGULAEFLORAE. DC.

Florets all ligulate and perfect, disposed in a homogenous radiatiform head.

TRIBE VIII. CICHORACEAE. Vaill.

Style cylindric above,—the summit, as well as the rather obtuse branches, equally or uniformly pubescent; *stigmatic lines* terminating below or near the middle of the branches. Plants with a milky juice! *Leaves* alternate.

SUB-TRIBE 2. HYOSERIDEAE. Less.

Pappus coroniform or of numerous small chaffy scales, in one or two series. *Receptacle* not chaffy.

104. CICHORIUM. Tournef. Endl. Gen. 2978.

[Etymology obscure: perhaps from *Chicouryeh*, the Arabic name of the plant.]

Heads usually many-flowered. *Involucre* double,—the outer one of about 5 short spreading scales—the inner one of 8 or 10 scales. *Akenes* turbinate, somewhat compressed and angular, striate, glabrous. *Pappus* of numerous very small chaffy scales. Branching *Herbs*.

1. *C. INTYBUS*, L. Radical leaves runcinate, hispidly scabrous on the midrib,—the cauline ones small, oblong or lanceolate, partly

* SUB-ORDER II. LABIATIFLORAE, contains no plant of Agricultural interest.

clasping, sinuate-dentate or entire—those of the branches inconspicuous; heads axillary, subsessile, mostly in pairs. *Torr. & Gr. Fl. N. A.* 2. p. 472. *DC. Prodr.* 7. p. 81. *Fl. Cestr.* p. 440. *Icon, Fl. Lond.* 3.

Vulgò—Wild Succory. Chicory.

Fr. La Chicoree sauvage. *Germ.* Der Wegewart. *Span.* Achicoria.

Root perennial, somewhat fusiform. *Stem* 2 to 4 feet high, angular-striate, roughish-pubescent, with numerous and somewhat virgate scabrous branches. *Radical leaves* 4 to 8 or 10 inches long, numerous. *Heads* axillary on the side of the stem and branches, in pairs or often solitary. *Florets* blue, or sometimes purplish—and not unfrequently white.—all ligulate and radiating towards the circumference. *Pappus* of minute chaffy scales, oblong, obtuse or emarginate, in a double series. *Fields, and meadows: Northern and Middle States: introduced.* *Native of Europe.* *Fl.* August. *Fr.* Sept.—October.

Obs. This foreigner is becoming extensively naturalized. Some European Agriculturists recommend it as a valuable forage plant,—though they admit that it gives a bad taste to the milk of Cows which feed upon it. In this country, it is generally—and I believe justly—regarded as an objectionable *weed*, which ought to be expelled from our pastures. The roasted *root* has been used, on the continent of Europe, as a substitute for the *Coffee-berry*; but those who delight in the aromatic beverage, are not likely to take much interest in this or any other *substitute* for the genuine article.

2. *C. ENDIVIA*, *Willd. var. sativa, DC.* *Radical leaves* somewhat erect, obovate-oblong, sinuate-dentate, and often pinnatifid, smoothish,—the cauline ones auriculate dilated at base; heads sessile and aggregated in twos and fours in the axils of the upper leaves, or solitary on elongated branches. *DC. Prodr.* 7. p. 81.

Vulgò—Endive. Garden Succory.

Fr. La Scarole. *Germ.* Die Endivie. *Span.* Endibia.

Root biennial—or sometimes annual. *Stem* 2 to 3 feet high, terete, fistular, somewhat branched, smoothish, or often sparsely hirsute. *Radical leaves* 6 to 12 inches long, sinuate-dentate with the teeth varying from large to very small and numerous, sometimes pinnatifid with the margin curled and lacerate, slender and tapering to the base. *Outer scales of the involucre* hispid-ciliate. *Florets* violet-purple, or sometimes white,—the ligules at first involute. *Akenes* turbinate or obconic, somewhat compressed, angular and ribbed; *pappus* of minute chaffy scales in a double series. *Gardens: cultivated.* *Native of India.* *Fl.* July—August. *Fr.* September.

Obs. Cultivated for the young *radical leaves*,—which are *etiolated* or blanched by the exclusion of light, and used as a salad.

SUB-TRIBE 3. SCORZONEREAÆ. *Less.*

Pappus of narrow semi-lanceolate chaffy scales or bristles,—the inner ones, and those on the interior akenes, mostly plumose. *Receptacle* not chaffy.

105. TRAGOPOGON. *Tournef. Endl. Gen.* 2995.

[Greek, *Tragos*, a goat, and *Pogon*, a beard; in allusion to the pappus.]

Heads many-flowered. *Involucre* in a nearly single series; *scales* 8 to 16, somewhat united at base, finally reflexed. *Akenes* sessile, with a lateral *areola* at base, scabrous, terminating in a long continuous beak. *Pappus* in several series,—all plumose except the 5 outer ones, which are longer than the rest. *Biennial or perennial Herbs.* *Leaves* sublinear, with parallel nerves.

1. *T. PORRIFOLIUM*, L. Glabrous; leaves lance-linear, acuminate, very entire; peduncles somewhat obconical, fistular; scales of the involucre about 8, lanceolate, acute, longer than the florets. *DC. Prodr.* 7. p. 113. *Fl. Cestr.* p. 442.

LEEK-LEAVED TRAGOPOGON. *Vulgò*—Oyster-Plant. Salsify.
Fr. Salsifis. *Germ.* Der Bock-bart. *Span.* Barba cabruna.

Plant glabrous and somewhat glaucous. *Root* biennial? (annual, *DC.*), fleshy and fusiform. *Stem* 3 to 4 or 5 feet high, sparingly and somewhat dichotomously branched. *Leaves* 6 to 12 or 15 inches long, ovately dilated at base, and tapering to a long narrow acumination, keeled, sessile and semi-amplexicaul, somewhat distichous. *Heads* terminal, on enlarged clavate hollow peduncles.—*Florets* violet-purple with a fuscous tinge. *Akenes* lance-oblong, striate-sulcate, scabrous, tapering to a smooth slender beak, about an inch in length, and supporting the pappus at summit. Gardens; cultivated. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This is frequently cultivated for its fleshy *root*,—which, when properly cooked, has something of the flavor of fried *Oysters*; whence one of its common names.

SUB-TRIBE 4. LATUCEAE. *Cass.*

Pappus capillary,—the bristles mostly soft or fragile—not dilated nor thickened at base, nor plumose. *Receptacle* not chaffy.

☞ *Pappus* bright white.

† *Akenes* terete, ribbed or angled.

106. TARAXACUM. *Haller. Endl. Gen.* 3010.

[Greek, *Tarasso*, to stir or disturb; in allusion to its supposed active properties.]

Heads many-flowered. *Involucre* double,—the outer scales small, appressed, spreading, or reflexed—the inner ones erect, in a single series,—all of them sometimes callous-corniculate at apex. *Akenes* oblong, striate-ribbed or angled, minutely muricate on the ribs, often spinulose at summit,—the apex abruptly produced into a long slender beak. *Pappus* in many series, capillary, very white. Perennial stemless Herbs: *Leaves*, consequently, all radical. *Heads* of flowers mostly solitary, on simple fistular naked *scapes*.

1. *T. DENS-LEONIS*, *Desf.* Leaves lance-oblong, unqually and acutely runcinate,—the lobes triangular, dentate anteriorly; scales of the involucre not corniculate at apex, the outer ones reflexed; akenes spinulose at summit. *Torr. & Gr. Fl. N. A.* 2. p. 494. *DC. Prodr.* 7. p. 145.

Leontodon *Taraxacum*. L. *Fl. Cestr.* p. 443. *Icon, Fl. Lond.* 3.

LION-TOOTH TARAXACUM. *Vulgò*—Dandelion.

Fr. Dent de Lion. *Germ.* Der Loewenzahn. *Span.* Amargon.

Plant at first somewhat pubescent, at length smooth. *Root* perennial. *Leaves* 4 to 10 or 12 inches long. *Scapes* several from the same root, 4 to 12 or 15 inches long (elongating), terete, each bearing a single head. *Involucre* oblong,—the inner scales lance-linear, appressed, with scarious margins—the outer ones reflexed, slightly ciliate,—finally the entire involucre reflexed. *Florets* yellow. *Akenes* terminating in a beak, which is short at first, then suddenly elongating to about three fourths of an inch in length, filiform, bearing the pappus at summit, diverging so as to form a globose head. Pastures, &c.: nearly throughout the U. States: introduced. Native of Europe. *Fl.* April—Aug. *Fr.* May—Sept.

Obs. This foreigner—although not a very obnoxious plant—has become so thoroughly naturalized as to be more abundant than wel-

come, in our pasture-grounds and meadows: and yet, if it cannot be repressed or smothered out by better plants, it will be a difficult task to extirpate it,—as myriads of seeds are annually wafted over the country by means of the pappus. The plant is reputed to be medicinal; and the young *radical leaves*, when blanched, are said to make a good substitute for *Endive*.

† † *Akenes flattened, compressed or obcompressed.*

107. LACTUCA. *Tournef. Endl. Gen.* 3008.

[Latin, *Lac*, milk; in reference to its milky juice.]

Heads few- or several-flowered. *Involucre* cylindrical, calyculate-imbriate; *scales* in 2 to 4 series,—the outer ones shorter and broader. *Akenes* flatly obcompressed, wingless, abruptly produced into a filiform beak. *Pappus* in several series of soft white hairs. *Cauliscent Herbs*. *Heads* of flowers paniculate or corymbose.

1. L. SATIVA, L. Stem corymbosely branching, leafy; radical leaves erect, oval, narrowed at base, wavy,—the cauline ones cordate, amplexicaul. *DC. Prodr.* 7. p. 138. *Fl. Cestr.* p. 442.

CULTIVATED LACTUCA. *Vulgò*—Garden Lettuce. Salad.

Fr. La Laitue. *Germ.* Der Salat. *Span.* Lechuga.

Plant smooth, mostly yellowish green and glaucous,—sometimes fuscous and tinged with dark purple. *Root* annual. *Stem* 2 to 4 feet high; branches clothed with numerous small leaves. *Heads* numerous, terminal, small. Inner *scales* of the *involucre* lanceolate,—the outer or lower ones ovate. *Florets* yellow. *Akenes* lance-obovate, striate-ribbed, about half as long as the filiform beak. Gardens: cultivated. Native country uncertain,—probably India. *Fl.* July. *Fr.* August.

Obs. This plant—called *Salad*, *par excellence*—is almost universally known, and cultivated. Those forms known as *Curled*, and *Head Salad* (*L. crispa*, and *L. capitata*), are considered as distinct species, by Prof. DE CANDOLLE, l. c. There is a *native species* (*L. elongata*, *Muhl.*) frequently to be met with, on the farm; but it is scarcely of sufficient importance to be intitled to notice, here.

Some species of *Sonchus*, and *Mulgedium*,—plants belonging to *Lactuceae*, but with *akenes not beaked*,—are often to be found on farms (the *Sonchus* or Sow-thistle, in Gardens,—and 2 or 3 species of *Mulgedium*—coarse, brittle plants—along fence-rows, and borders of thickets): But, although they are worthless weeds, they are neither very troublesome, nor difficult to manage,—and are therefore omitted.

ORDER LXXVI. LOBELIACEAE. *Juss.*

Herbs, or somewhat *shrubby* plants, often lactescent. *Leaves* alternate, without stipules. *Flowers* mostly solitary, axillary, and racemose. *Calyx* 5-parted, more or less adherent to the ovary. *Corolla* irregularly 5-lobed, usually somewhat bilabiate, cleft on one side nearly or quite to the base. *Stamens* 5, coherent into a tube. *Style* 1; *stigma* mostly 2-lobed, fringed with a pilose ring. *Fruit* capsular, 2 or 3- (rarely 1-) celled, many-seeded. *Seeds* with a fleshy albumen.

The genus which represents this Order, is the most important one, on account of its acrid and narcotic properties. Some of the species are remarkable for the showy brilliance of the flowers.

TRIBE IV. LOBELIEAE. *Presl.*

Capsule 2-celled, opening at apex by 2 valves which are septiferous in the middle (*loculicidal*), or rarely by 2 pores.

108. LOBELIA. *L. Endl. Gen. 3058.*[Named in honor of *Mathias de Lobel*,—a Flemish Botanist.]

Calyx 5-lobed; tube obconic, ovoid, or hemispherical. *Corolla* tubular,—the tube cylindric or funnel-form, cleft on the upper side nearly to the base; *limb* somewhat bilabiate,—the upper lip mostly smaller and erect—the lower one broader, spreading, 3-cleft or 3-toothed. *Anthers* coherent in a tube,—the 2 lower ones (rarely all) bearded at apex. *Ovary* more or less adherent to the calyx, sometimes nearly free. Mostly *Herbs*. *Flowers* racemose-spicate, of various colors—usually blue or red.

1. *L. INFLATA*, *L.* Stem erect, hirsute, paniculately branched; leaves sessile, lance-ovate, crenate-dentate, pilose; racemes leafy; flowers small, axillary; calyx-tube ovoid, smoothish, the segments as long as the corolla; capsule ovoid or oval, inflated. *DC. Prodr. 7. p. 380. Fl. Cestr. p. 155.*

INFLATED LOBELIA. *Vulgè*—Eye-bright. Indian Tobacco.

Root annual. *Stem* 9 to 18 inches high, sometimes angled or slightly winged by the decurrence of the leaves, often very hairy; branches axillary. *Leaves* 1 to 3 inches long, more or less ovate, unequally sinuate-dentate or crenate. *Peduncles* one fourth to half an inch long. *Corolla* pale blue, rather inconspicuous. *Capsule* thin and membranaceous, smoothish. *Seeds* minute, elliptic-oblong, rough with ferruginous reticulated ridges. Pastures, roadsides, &c.: Canada to S. Carolina. *Fl.* July—Sept. *Fr.* Aug.—October.

Obs. This is an acrid plant,—possessing emetic, cathartic and narcotic properties; and is somewhat notorious for the use made of it by a tribe of reckless modern Empirics. It is frequent in our pastures, in the latter part of summer,—and has been suspected of causing the ptyalism or slabbering of Horses, so often observable at that season. I cannot, however, help doubting the correctness of the opinion; for the Horse is a dainty animal in the selection of his food. I have often remarked the care and dexterity with which he separates the palatable herbage from that which is not so; and have never seen him eat, nor even crop, so acrid and offensive a weed as this *Lobelia*. We have two species, in Pennsylvania, which are admired for the beauty of their blue and red flowers,—particularly the crimson *Cardinal-flower* (*L. cardinalis*, *L.*): but they are not intrusive on the farm.

ORDER LXXVIII. ERICACEAE. *Juss. Endl.*

Shrubs. or sometimes *Herbs*. *Leaves* mostly alternate and entire, without stipules. *Flowers* regular, or nearly so. *Calyx* either adherent to the ovary, with a 4 to 6 (usually 5-) parted epigynous limb,—or entirely free, 4 or 5-parted and persistent. *Corolla* 4 to 6 (usually 5-) lobed, epigynous or hypogynous,—rarely with the petals almost or quite distinct. *Stamens* definite, as many, or twice as many, as the petals or lobes of the corolla, mostly distinct; *anthers* 2-celled, often with awn-like appendages. *Styles* and *stigmas* united into 1. *Fruit* baccate or capsular. *Seeds* with fleshy albumen.

An interesting Order, mostly of *shrubs*.—some of them medicinal, and others very beautiful—especially the *Azaleas*, *Rhododendrons*, *Kalmias*, and many species of the genus (*Erica*) which is the type of the Order. The medicinal plant called *Uva Ursi* (*Arctostaphylos Uva-Ursi*, *Spreng.* indigenous in the Pine forests of New Jersey), also belongs here.

SUB-ORDER I. VACCINIEAE. *Endl. A. Gray.*

Ovary adnate to the tube of the calyx, becoming a *berry* or a *drupe-like* fruit. *Stamens* epigynous,—twice as many as the lobes of the corolla; *anthers* 2-parted, mostly awned on the back.

109. VACCINIUM. *L. Endl. Gen.* 4332.

[An ancient classical name; etymology obscure.]

Calyx adherent to the ovary, but mostly with a free 5-toothed limb. *Corolla* either campanulate, urceolate, or cylindrical,—the limb 4 or 5-cleft, and often reflexed. *Stamens* twice as many as the lobes of the corolla, inserted on the limb of the calyx, often included; *anthers* with 2 tubular horns at summit, and sometimes with 2 bristle-like awns on the back, near the base. *Berry* globose, umbilicate at apex by reason of the persistent calyx-teeth, 4 or 5-celled,—the cells several-seeded. *Seeds* angular,—the *testa* membranaceous and reticulate rugose. *Shrubs* and *undershrubs*. *Leaves* scattered, mostly entire, often sempervirent, and never sprinkled with resinous atoms.

☞ *Anthers* not awned on the back.

1. *V. CORYMBOSUM, L.* Flower-bearing branches nearly leafless; leaves oblong-oval, acute at each end, pubescent when young, deciduous; racemes short, subcorymbose, bracteate,—the bracts scale-like; corolla tubular, ovoid-cylindric. *DC. Prodr.* 7. p. 571. *Fl. Cestr.* p. 256. [Blue-berry.]

CORYMBOSE VACCINIUM. *Vulgò*—Swamp, or Tall Huckleberry.

Stem 5 to 8 or 10 feet high, often stout, with irregular straggling branches.—the young leafing branches pubescent—the flower-bearing ones somewhat angular, naked, and inclining to a greenish bronze color. *Leaves* 1 to 2 inches long, generally elliptic, entire, and always with a short obtuse callous *muco*, or point, at apex, pubescent when young—especially on the nerves and under surface,—finally smoothish; *petioles* very short. *Racemes* half an inch to an inch long, 6 to 10 or 12-flowered, proceeding from lateral buds, and unaccompanied with leaves; *pedicels* 1 fourth to 1 third of an inch long, with purplish *bracts*, at base, which resemble bud-scales. *Corolla* white, mostly tinged with purple, nearly cylindrical, somewhat contracted at the orifice,—the lobes short and tooth-like. *Stamens* included; *filaments* pubescent; *anthers* not awned on the back,—the terminal parallel tubes opening laterally, and becoming flat, linear, acute membranes. *Style* longer than the stamens, but scarcely as long as the corolla (rarely exerted). *Berries* rather large, black with a bluish bloom when mature, very agreeable to the taste. Swamps, and moist woods: Canada to Georgia. *Fl.* May. *Fr.* July—August.

Obs. Not being personally familiar with the localities, in New Jersey, which supply the Philadelphia market so abundantly with the favorite *blue Huckleberries*, I have heretofore been under the impression (received from others), that those delightful Berries were the product of the *V. frondosum, L.*: But, my friend Prof. A. GRAY—who has recently examined the whole matter—assures me that we are indebted, for them, to the plant above described. It seems, moreover, that several Shrubs, hitherto considered as species of *Vaccinium*, do not, in fact, accord with the essential character of that genus,—but must be separated from it, “on account of their remarkable *ten-celled ovaries*, and *drupaceous ten-seeded fruit*.” Of these, may be mentioned, the aforesaid *V. frondosum, L.* the *V. resinotum, Ait.* and the *V. dumosum, Andr.* (all with “*resinot-dotted leaves*”),—which are now to be transferred to the genus GAY-LUSSACIA, of *H. B. K.* [so named in honor of the distinguished French Chemist and Philosopher, GAY-LUSSAC]—as will more fully appear in the forthcoming *North American Flora*, by TORREY and

GRAY.* Several species, however, of this new Genus—as well as a number of the true *Vacciniums*—afford esculent fruit; but none so much admired as the *Blue-berry*, of the Jersey swamps.

110. OXYCOCCUS. *Tournef. Endl. Gen. 4331.*

[Greek, *Oxys*, sharp or acid, and *kokkos*, a berry; in allusion to the acid fruit.] *Calyx* adherent to the ovary, with the limb 4-toothed. *Corolla* deeply 4-parted,—the lobes lance-linear, revolute. *Filaments* 8, connivent; *anthers* 2-parted, tubular, opening by oblique pores. *Berry* 4-celled; cells many-seeded. *Suffruticose*, slender and mostly trailing plants. *Peduncles* solitary, axillary, bibracteate near the flower. *Fruit* rather large.

1. O. MACROCARPUS, *Pers.* Creeping; branches ascending, filiform; leaves oblong, obtuse, entire, nearly flat, glaucous beneath; peduncles lateral, elongated. *DC. Prodr. 7. p. 577. Fl. Cestr. p. 211.*

LARGE-FRUITED OXYCOCCUS. *Vulgò*—Cranberry, or Crane-berry.

Stem 1 to 2 or 3 feet long, very slender, prostrate, creeping, throwing up short branches. *Leaves* about half an inch long, entire or with distant obsolete serratures, slightly revolute on the margin, glabrous,—the young ones pubescent-ciliate at apex; *petioles* very short. *Flowers* nodding: *corolla* pale purple. *Berry* subglobose, about half an inch in diameter, bright red or crimson when mature. Sandy swamps, and wet grounds: Northern and Middle States. *Fl.* May—June. *Fr.* October.

Obs. The acid *fruit* of this slender vine-like shrub is highly prized, when prepared for the table. It is said to be successfully and advantageously *cultivated*, in the Northern States; and it certainly merits that attention, wherever a suitable situation for it can be obtained.

SUB-ORDER II. ERICINEAE. *Desv. A. Gray.*

Ovary free from the calyx. *Fruit* capsular, or sometimes baccate or drupaceous. *Stamens* as many, or twice as many, as the lobes of the corolla; *anthers* 2-celled, opening by terminal pores. *Testa* conformed to the nucleus of the seed. *Shrubs, or small trees.* *Leaves* often acerose and evergreen. *Petals* sometimes distinct.

TRIBE II. ANDROMEDEAE. *DC.*

Fruit capsular, localicidal. *Corolla* deciduous.

111. ANDROMEDA. *L. Endl. Gen. 4318.*

[Named in allusion to the exposure of *Andromeda*; from its place of growth.] *Calyx* 5-parted, persistent. *Corolla* hypogynous, tubular, campanulate, or globose,—the limb 5-cleft, reflexed. *Stamens* 10; *anthers* often 2-horned at summit, and sometimes awned on the back. *Capsule* ovoid or subglobose, 5-celled, 5-valved,—the valves septiferous in the middle (*loculicidal*), entire or finally bifid.

1. A. MARIANA, *L.* Glabrous; leaves oval, mostly acute at each end, very entire, sub-coriaceous, paler and punctulate beneath,

*Dr. GRAY designates the fruit of the *Gaylussacias* by the popular name of *Huckleberries*,—and distinguishes that of the true *Vacciniums* by the name of *Blue-berries*. The “Huckleberry” of the Boston market, he informs me, is the product of *Gaylussacia resinosa*.—while the fruit of *G. frondosa* is little known, there. He further states, that the “Blue-berries,” of the same market, are chiefly afforded by the *Vaccinium corymbosum*, *V. virgatum*, and *V. Pennsylvanicum*.

deciduous; flowering branches nearly leafless; pedicels fasciculate, bracteate; calyx naked at base; corolla ovoid-cylindric; anthers awnless at summit. *Fl. Cestr. p.* 260.

Leucothoë Mariana. *DC. Prodr.* 7. *p.* 602.

MARYLAND ANDROMEDA. *Vulgò*—Stagger-bush.

Stem 1 or 2 to 3 or 4 feet high, with erect branches. *Leaves* 2 to 3 inches long; *petioles* about one fourth of an inch long. *Flowers* in racemose fascicles on the old branches. *Corolla* white, or reddish-white. *Capsule* pentangular-ovoid, truncate at apex. *Seeds* numerous, small, clavate. Woodlands, and sandy plains: New England to Florida. *Fl.* June. *Fr.* Aug.—Sept.

Obs. This shrub is very abundant in the sandy districts of *New Jersey*; and the farmers, there, allege that it is injurious to *sheep*, when the leaves are eaten by them,—producing a disease called the *staggers*. I believe the evidence is not conclusive, on this point: but it may be well to know the plant, against which such a charge is made.

SUB-ORDER III. PYROLEAE. *DC. A. Gray.*

Ovary free from the calyx. *Petal's* distinct! or nearly so. *Fruit* a capsule. *Testa* of the seed loose and cellular, not conformed to the nucleus.

112. CHIMAPHILA. *Pursk. Endl. Gen.* 4348.

[Greek, *Cheima*, winter, and *Philos*, a lover; from its green appearance in winter.]

Calyx 5-cleft. *Petals* 5, orbicular, spreading, deciduous. *Stamens* 10,—2 in front of each petal; *filaments* dilated in the middle; *anthers* 2-celled, opening by 2 pores. *Ovary* obtusely conic, or depressed-globose, umbilicate at apex; *style* very short, immersed in the ovary; *stigma* orbicular, peltate. *Capsule* depressed, obtusely pentagonal, 5-celled, 5-valved, loculicidal at base and apex. *Seeds* very minute, reticulate-striate. *Humble suffruticose evergreens. Peduncles* terminal, somewhat corymbose.

1. *C. UMBELLATA*, *Nutt.* *Leaves* cuneate-oblong, acute at base, serrate, uniform-green; flowers in a terminal subumbellate corymb; filaments glabrous. *DC. Prodr.* 7. *p.* 775.

Pyrola umbellata. *L. Fl. Cestr. p.* 266. *

UMBELLATE CHIMAPHILA. *Vulgò*—Pipsissawa. Winter-green.

Root creeping. *Stem* ascending, 3 to 6 inches long, leafy at summit. *Leaves* 1 to 2 inches long, subverticillate (often in 2 or 3 distinct verticils), coriaceous, glabrous. *Corymb* 4 to 6 flowered. *Petals* reddish-white. Hilly woodlands—particularly of Northern exposure: Northern and Middle States. *Fl.* June. *Fr.* September.

Obs. This half-shrubby little Evergreen possesses some astringency and bitterness, so as to be moderately tonic,—though doubtless much over-rated in popular estimation. It has been so long and so generally noted, as an *Indian* medicine, under the name of *Pipsissawa*, that every one who resides in the country ought to be able to identify it.

ORDER LXXX. EBENACEAE. *Vent.*

Trees or shrubs, destitute of milky juice,—the wood often black. *Leaves* mostly alternate and entire, without stipules. *Flowers* often polygamous. *Calyx* 3- to 5-cleft, free from the ovary. *Corolla* 3 to 6-cleft, subcoriaceous, often pubescent

externally. *Stamens* twice to four times as many as the lobes of the corolla. *Ovary* 3- to several-celled,—the *style* with as many divisions. *Fruit* baccate. *Seeds* pendulous, bony, with cartilaginous albumen.

A small Order; and the genus here given is the only one of any considerable importance,—some of the species of which furnish the well-known hard black wood, called *Ebony*.

113. DIOSPYROS. *L. Endl. Gen.* 4249.

[Greek, *Dis*, *Dios*, Jupiter, and *Pyros*, fruit; a rather fanciful name for such fruit.]
DIOICIOUSLY POLYGAMOUS: *Calyx* 4 to 6-parted. *Corolla* tubular, somewhat urceolate, 4 to 6-cleft. STERILE FL. *Stamens* twice or many times (usually 4 times) as numerous as the lobes of the corolla; *anthers* linear-lanceolate. *Ovary* abortive. FERTILE FL. *Stamens* 8 to 12, mostly abortive. *Ovary* 4 to 8- (rarely 10 or 12-) celled; *styles* 2, 4, or several, more or less connate at base. *Berry* ovoid or subglobose, with the persistent calyx often adhering to the base, 8 to 12-seeded. *Seeds* oblong, compressed. *Trees*, or rarely *shrubs*. *Leaves* alternate—rarely sub-opposite—entire, on short petioles. Flowers axillary, subsessile,—the fertile ones solitary—the sterile ones mostly in threes.

1. *D. VIRGINIANA, L.* Leaves elliptical or ovate-oblong, obtusely acuminate, reticulately veined, pubescent on the petiole, nerves and margin; calyx 4-parted, silky-pubescent within at base; corolla 4-lobed, obtusely 4-angled, contracted above, glabrous. *DC. Prodr.* 8. p. 228. *Fl. Cestr.* p. 244. *Icon, Mx. Sylva*, 2. tab. 93.

VIRGINIAN DIOSPYROS. *Vulgò*—Persimmon. Date Plum.

Fr. Le Plaquemier. *Germ.* Der Pseudo-Lotus.

Stem 20 to 50 or 60 feet high, and 10 to 15 or 20 inches in diameter, irregularly branched. *Leaves* 2 or 3 to 5 inches long, subcoriaceous, green above, paler or somewhat glaucous beneath; *petioles* half an inch to near an inch long. *Calyx* of the fertile flower spreading and persistent at the base of the fruit. *Corolla* ochroleucous or pale greenish yellow, of a thick leathery texture. *Berry* about an inch in diameter, reddish-orange color when mature,—soft and pulpy after frost. *Seeds* large, flatish. Rich bottom-lands, along streams: Middle and Southern States. *Fl.* June. *Fr.* Octo.—November.

Obs. The ripe fruit of this tree is sweet and luscious, after being subjected to the action of frost,—but is remarkably harsh and astringent, in a green state. The bark is astringent and tonic.

ORDER LXXXIV. PLANTAGINACEAE. *Juss. Lindl.*

Chiefly low, apparently stemless, perennial *Herbs*. *Leaves* radical, rosulate, strongly ribbed. *Flowers* small, spicate, on axillary or interfoliate *scapes*. *Calyx* mostly 4-cleft, persistent. *Corolla* tubular or urceolate, membranaceous and persistent,—the limb 4-cleft. *Stamens* 4, inserted on the tube of the corolla alternately with the lobes; *filaments* very long, flaccid, persistent. *Ovary* 2-celled; *style* single. *Capsule* membranaceous, circumscribed; cells 1 to several-seeded. *Seeds* sessile, peltate or erect; *embryo* in the axis of fleshy albumen.

An Order consisting chiefly of the genus whose name it bears; and the species here described are those of chief interest, to the Agriculturist.

114. PLANTAGO. *L. Endl. Gen.* 2170.

[A name of obscure and uncertain derivation.]

Calyx 4- (rarely 3-) parted,—the segments nearly equal. *Corolla* tubular, scarious, marcescent; *limb* 4-cleft, reflexed. *Stamens* 4, much exerted. *Ovary* free, 2-celled; *ovules* peltately affixed to the dissepiment. *Style* simple,—the summit or stigma pubescent,

exserted before the florets open. *Capsule* ovoid, 2-celled, transversely dehiscent; *dissepiment* finally free, bearing the seeds on its faces. *Flowers* spicate or capitate, bracteolate.

1. P. MAJOR, *L.* Leaves ovate or oval, smoothish, obscurely dentate, on long petioles; scape terete, smooth; spike nearly cylindrical, rather slender and very long; flowers somewhat imbricated; capsule about 6-seeded. *Willd. Sp. Pl.* 1. p. 641. *Fl. Cestr.* p. 110. *Icon, Fl. Lond.* 1.

GREATER PLANTAGO. *Vulgò*—Common Plantain. Way-bread.
Fr. Plantain ordinaire. *Germ.* Der grosse Wegetritt. *Span.* Llanten.

Root perennial. *Leaves* 3 to 6 or 8 inches long, strongly 5 to 7-nerved with an elastic filament in each nerve, generally smoothish (sometimes quite pilose), abruptly contracted at base to a channelled *petiole* about as long as the leaf. *Scapes* several, 6 to 18 inches high (including the *spike* of flowers, which varies from 2 to 12 or 15 inches in length). *Bracteoles* lanceolate, keeled, appressed, shorter than the calyx. *Corolla* whitish, inconspicuous, ventricose below, contracted into a neck above, shrivelling and persistent. *Stamens* about twice as long as the corolla. Moist rich grounds; along foot paths, &c.: throughout the U. States: introduced. Native of Europe and Japan. *Fl.* June—September. *Fr.* August—October.

Obs. This foreigner is very generally naturalized; and is remarkable for accompanying civilized man,—growing along his footpaths, and flourishing around his settlements. It is said our Aborigines call it “the white man’s foot,” from this circumstance. Perhaps the *generic name* (*Plantago*) may be expressive of a similar idea,—viz. *Planta*, the sole of the foot, and *ago*, to act, or exercise. It is rather a worthless *weed*,—but is not much inclined to spread, or be troublesome, on farm lands. The *leaves* are a convenient and popular dressing for blisters, and other sores; a fact which seems to have been known in the time of SHAKESPEARE,—as we may learn from his *Romeo & Juliet*, *Act* 1. *Se.* 2.

“*Rom.* Your *Plantain leaf* is excellent for that.

“*Ben.* For what, I pray thee?

“*Rom.* For your broken shin.”

The Plantain leaf continued in vogue, for that purpose, until a *substitute* was furnished by modern Experimenters, in their empirical attempts to regulate the national *currency*!

2. P. LANCEOLATA, *L.* Leaves lanceolate, acute at each end; scape sulcate-angled, long and slender; spike ovoid-cylindric, short; calyx deeply 3-parted; capsule 2-seeded. *Willd. Sp. Pl.* 1. p. 643. *Fl. Cestr.* p. 110. *Icon, Fl. Lond.* 1. [Plantain.

LANCEOLATE PLANTAGO. *Vulgò*—English Plantain. Buckhorn

Root perennial. *Leaves* 4 to 8 or 10 inches long, hairy, narrowed gradually at base to a *petiole* 2 to 5 or 6 inches in length. *Scapes* several, 1 to 2 feet high, somewhat pilose with appressed hairs. *Spike* 1 to 2 inches long,—at first ovoid-oblong, finally nearly cylindrical, dense-flowered. *Bracteoles* ovate, acuminate, scarious on the margins and at apex,—the slender point at length reflexed. *Calyx* deeply 3-parted (or rather of 3 sepals).—the outer or lower segment or sepal oval, truncate, emarginate, with 2 green keel-like lines—the lateral segments or sepals rather longer, boat-shaped, acute, keel green, fringed with hairs near the apex. *Corolla* dirty white. *Stamens* several times longer than the corolla; *anthers* greenish-white. *Seeds* oblong, convex on one side, concave on the other, shining, brown or amber-colored. Pastures, and upland meadows: introduced. Native of Europe. *Fl.* May—August. *Fr.* July—September.

Obs. This species, also, is extensively naturalized, and is becoming particularly abundant in the upland meadows, or clover grounds, of Pennsylvania. The seeds being nearly the same size and weight as those of the red clover, they cannot readily be separated,—and thus the two plants are disseminated together, in the culture of clover. Nearly all kinds of Stock eat this Plantain freely,—and it has even been *cultivated* expressly for a Sheep-pasture: but it is generally much disliked, in Pennsylvania. I do not, however, perceive any mode of getting rid of it—or even of arresting its progress,—unless it can be choked down by heavy crops of Clover and the valuable Grasses.

ORDER LXXXVIII. BIGNONIACEAE. *Juss. R. Br.*

Mostly *trees*, or climbing *shrubby* plants. *Leaves* usually opposite, sometimes simple but generally pinnately compound. *Flowers* large and showy. *Calyx* 5-parted, 2-parted or bilabiate, often spathaceous. *Corolla* with a large open throat.—the *limb* irregular, 5-lobed or somewhat bilabiate. *Stamens* 5.—of which 1, and often 3, are reduced to sterile filaments or rudiments; when 4 are fertile they are *didynamous*. *Ovary* 2-celled, with the placentae in the axis,—the base surrounded by a fleshy ring or disk. *Capsule* woody or coriaceous, pod-shaped, 2-valved, many-seeded. *Seeds* commonly winged, destitute of albumen.

An Order of which there are but few species known in the U. States. They are chiefly remarkable for their large showy flowers; though some of the South American *Bignonias* are said to furnish valuable ship-timber.

TRIBE I. BIGNONIEAE. *Bojer.*

Fruit capsular, dehiscent. *Seeds* with a membranaceous margin.

SUB-TRIBE 2. CATALPEAE. *DC.*

Septum of the mature capsule opposite to the flat or convex valves; i. e. the valves septiferous, and therefore the dehiscence loculicidal.

115. CATALPA. *Scop. Endl. Gen.* 4113.

[A name said to be derived from our Southern Indians.]

Calyx bilabiate 2-lobed. *Corolla* campanulate,—the tube ventricose—the limb unequally 5-lobed, sub-bilabiate. *Stamens* 2 fertile and 3 sterile or abortive (rarely didynamous). *Style* filiform; *stigma* bilamellate. *Capsule* silique-form, cylindric, long, 2-valved; *septum* thickish, opposite the valves. *Seeds* numerous, transverse, compressed, produced at each end into a membranous wing, which is fringed or comose at apex. *Trees*. *Leaves* simple, opposite or ternately verticillate, petiolate, without stipules. *Flowers* in terminal panicles.

1. *C. BIGNONIODES*, *Walt.* Leaves cordate, acuminate, entire, pubescent beneath; panicles pyramidal, trichotomously branched; calyx-segments with a single mucronation. *DC. Prodr.* 9. p. 226.

C. cordifolia. *Duham. Fl. Cestr.* p. 363.

Bignonia Catalpa. *L. Mx. Sylva*, 2. p. 63. *Icon, tab.* 64.

BIGNONIA-LIKE CATALPA. *Vulgò*—Catawba. Bean-tree.

Stem 15 to 25 feet high, with irregular spreading branches. *Leaves* 4 to 8 or 10 inches in length; *petioles* 2 to 6 inches long, terete, smoothish. *Corolla* whitish, tinged with violet-purple, the throat spotted with purple and yellow,—the lobes unequal, crenate and wavy. *Capsule* 6 to 12 or 15 inches long, and about half an inch in diameter, pendulous, persistent. *Seeds* lance-oblong, about half an inch in length,—apparently of 2 flat oval divaricate lobes, connate at base, with

a membranous covering which is extended at the margin, and especially at the apex.—each apex terminating in a slender filamentous tuft or coma. About farm-houses, and along streams: Southern, Western and Middle States. *Fl.* June—July. *Fr.* October.

Obs. This small tree is said to be indigenous in the South and West,—though it has the appearance of an introduced plant, in Eastern Pennsylvania. It is not of much value,—and has been cultivated chiefly as an ornamental *shade tree*: but it is rather objectionable, on account of the numerous *suckers* from its roots.

ORDER LXXXIX. PEDALIACEAE. *R. Br. Lindl.*

Herbs, often viscid. *Leaves* opposite, or nearly so. *Flowers* axillary, bibracteate. *Calyx* with 5 nearly equal segments. *Corolla* irregular.—the throat ventricose—the limb somewhat bilabiate. *Stamens* 4, didynamous, with the rudiment of a fifth. *Ovary* seated in a glandular disk; *style* 1; *stigma* divided. *Fruit* capsular or drupaceous, valvular or indehiscent, with 2 to 8 cells. *Seeds* rarely winged, destitute of albumen.

A small Order, and of little interest to the Agriculturist.

TRIBE II. PEDALINEAE. *R. Br.*

Fruit indehiscent or imperfectly dehiscent at apex, drupaceous or a hard woody capsule. *Seeds* few, never winged.

116. MARTYNIA. *L. Endl. Gen.* 4175.

[Named in honor of *John Martyn*, Prof. of Botany at Cambridge, England.]

Calyx nearly equally 5-cleft, with 2 or 3 small bracts at base. *Corolla* irregular, campanulate, gibbous at base,—the limb unequally 5-lobed. *Stamens* mostly 4, didynamous, with a fifth rudimentary one,—sometimes all, sometimes 2 only, bearing anthers. *Capsule* somewhat 4-celled, 2-valved, woody with a coriaceous and finally deciduous coat, ovoid-oblong, terminating in a curved beak at apex,—the beak parting into 2 horns, but the capsule scarcely dehiscent. *Seeds* few in each cell, arranged in a single series along the septum, somewhat baccate, finally tuberculate-rugose.

1. *M. PROBOSCIDEA*, *Glox.* Stem branching; leaves orbicular-cordate, entire, petiolate,—the upper ones alternate; beaks longer than the pericarp. *DC. Prodr.* 9. p. 253.

LONG-BEAKED MARTYNIA. *Vulgô*—Unicorn Plant.

Plant pale green, viscid-pubescent and fetid. *Root* annual. *Stem* leaning or procumbent, 1 to 2 feet long, branching, fistular. *Leaves* 2 to 5 inches long; petioles 2 to 6 inches long. *Flowers* axillary; *peduncles* 1 to 3 inches long. *Calyx* slit on one side to its base. *Corolla* large, pale greenish-yellow or ochroleucous, with orange-colored or brownish spots within. *Capsule* 2 to 3 inches long, somewhat sulcate in front, with a bipartite crest-like fringe along the suture in the broad shallow groove, tapering to a *beak* which is 2 to 3 or 4 inches long, and finally split into two rigid horns, which are incurved like claws. South Western States: Gardens: cultivated. *Fl.* July—August. *Fr.* Sept.—Octo.

Obs. This plant—a native of the valley of the Mississippi, and the plains of Mexico—is much cultivated, of late, for its singular *fruit*,—which, in its young state—before it becomes hard and woody—is used for making that kind of condiment called *pickles*.

The *Benni* plant (*Sesamum Indicum*, *L.*)—which belongs to this natural Order—is cultivated, in the Southern States, for the sake of its oily *seeds*,—and also for the bland mucilage afforded by the *fresh leaves*, when macerated in water.

ORDER XCI. SCROPHULARIACEAE. *Juss. Lindl.*

Herbs, or sometimes *shrubby* plants. *Leaves* alternate, opposite or verticillate, without stipules. *Calyx* of 4 or 5 more or less united sepals, persistent. *Corolla* more or less irregular, bilabiate or personate,—the lobes imbricated in aestivation. *Stamens* either 4 and didynamous—the fifth stamen sometimes appearing in the form of a sterile filament, or very rarely antheriferous,—or often only 2—one pair being either suppressed or reduced to sterile filaments. *Ovary* 2-celled, with the placentae united in the axis. *Capsule* 2-valved. *Seeds* indefinite, albuminous.

An Order of nearly 150 genera,—affording many curious and rather handsome flowers,—some troublesome weeds,—and a few plants of considerable medicinal powers—especially the purple *Fox-glove* (*Digitalis purpurea*, L.).

TRIBE I. VERBASCEAE. *Benth.*

Corolla with the tube short or subglobose,—the limb flat or spreading, 4 or 5-cleft, or bilabiate, not ringent. *Stamens* 2 to 5 fertile, often declinate. *Capsule* 2-valved, septicidal,—the valves often bifid.

117. VERBASCUM. L. *Endl. Gen.* 3878.

[Quasi *Barbascum*: Latin, *Barba*, beard; from its bearded or woolly habit.]

Calyx 5-parted, the segments nearly equal. *Corolla* with a very short tube; limb sub-rotate, 5-lobed,—the lobes nearly equal or the front one larger. *Stamens* 5, unequal, inserted on the tube of the corolla, declinate, exserted,—the *filaments* (or some of them) bearded. *Capsule* ovoid or globose, 2-celled, 2-valved, septicidal,—the valves inflected, bifid at apex. *Placentae* adnate to the septum. *Seeds* numerous, rugose-pitted. *Herbaceous* or *suffruticose* plants. *Flowers* in dense spikes, or paniculate racemes.

1. V. THAPSUS, L. Stem simple, erect, tomentose; leaves oval-lanceolate or oblong, very woolly on both sides,—the cauline ones decurrent; flowers in a dense terminal spike. *DC. Prodr.* 10. p. 225. *Fl. Cestr.* p. 134.

THAPSUS VERBASCUM. *Vulgò*—Mullein. Common Mullein.

Fr. Bouillon blanc. *Germ.* Das Wollkraut. *Span.* Gordolóbo.

Whole plant pale greyish-green or hoary-tomentose,—the pubescence much branched. *Root* biennial. *Stem* 3 to 6 feet high, rather stout, leafy, rarely branching unless injured. *Radical leaves* 6 to 12 inches long,—the cauline ones smaller. *Spike* cylindrical, 6 to 12 or 15 inches long; flowers bracteate. *Corolla* bright yellow. *Stamens* unequal,—the two lower ones longer, with smooth filaments. Neglected fields; road-sides, &c.: introduced. Native of Europe. *Fl.* June—July. *Fr.* Aug.—September.

Obs. This plant, although abundant in all the older settlements, is undoubtedly, in my opinion, a naturalized foreigner. It is a worthless unseemly intruder, in our pastures and cultivated grounds. There is no surer evidence of a slovenly, negligent farmer, than to see his fields over-run with *Mulleins*. As the plant produces a vast number of seeds, it can only be kept in subjection by a careful eradication while young—or at least before the fruit is mature. When neglected, the soil soon becomes so full of seeds, that the young plants will be found springing up, in great numbers, for a long succession of years. There is a slender smoothish species, called *Moth Mullein* (*V. Blattaria*, L.), which is frequent in pasture fields, and altogether worthless; but it is not so much of a nuisance as the one here described.

TRIBE III. ANTIRRHINEAE. *Chav.*

Corolla tubular,—the limb personate or ringent, bilabiate or rarely equally lobed. *Stamens* 4, didynamous; *anthers* approximated in pairs. *Capsule* 2-celled, opening with teeth or lids, rarely of several valves—sometimes irregularly ruptured.

118. LINARIA. *Tournef. Endl. Gen.* 3891.

[Latin, *Linum*, flax; from the resemblance of the leaves.]

Calyx 5-parted. *Corolla* with the limb personate,—the upper lip bifid with the lobes folded back—the lower lip trifid, closing the throat by its prominent palate; tube inflated, spurred at base. *Stamens* 4, didynamous,—usually with a minute abortive rudiment of a fifth. *Capsule* ovoid or globose, chartaceous or membranaceous, 2-celled, opening with several valves at apex, or sometimes with a lid. *Seeds* numerous, margined. Mostly *Herbs*, annual or perennial. *Leaves* alternate, rarely opposite or verticillate. *Flowers* usually racemose.

1. *L. VULGARIS*, *Mill.* Stem erect, simple; leaves lance-linear, acute, alternate, numerous; flowers imbricated, in a terminal raceme; spur of the corolla acute, about as long as the tube. *DC. Prodr.* 10. p. 273. *Fl. Cestr.* p. 368. *ICON, Fl. Lond.* 3. [Eggs. COMMON LINARIA. *Vulgò*—Toad-flax. Ranstead-weed. Butter and Fr. Muffier linaire. *Germ.* Das Flachskraut. *Span.* Linaria.]

Plant smooth and somewhat glaucous. *Root* perennial, creeping, subliguous. *Stem* 1 to 2 or 3 feet high, slender, terete, leafy, sometimes branched at summit and bearing several racemes, generally growing in bunches or small patches. *Leaves* 1 to 2 inches long, narrow, irregularly scattered on the stem, but very numerous. *Flowers* pedunculate, in a dense bracteate raceme—the peduncles shorter than the bracts. *Corolla* pale greenish-yellow, smooth,—the palate of the lower lip bright orange-color, villous in the throat; spur subulate, about half an inch long. *Style* shorter than the longest stamens; *stigma* obliquely truncate. *Capsule* ovoid-oblong, thin, smooth, longer than the calyx. *Seeds* with a dilated orbicular margin, roughish-dotted in the centre. *Pastures*; fence-rows, &c.: introduced. Native of Europe. *Fl.* June—Sept. *Fr.* Aug.—October.

Obs. This foreigner is extensively naturalized,—and has become a vile nuisance in our pastures and upland meadows. Mr. WATSON, in his annals of Philadelphia, says it was introduced from Wales, as a garden flower, by a Mr. *Ranstead*, a Welsh resident of that city; and hence one of its common names. It inclines to form large patches, by means of its creeping roots,—and as far as it extends, takes almost exclusive possession of the soil. Although the flowers are somewhat showy, it is a fetid, worthless and very objectionable weed,—the roots very tenacious of life—and requiring much persevering effort to extirpate them. The remarkable variety called *Peloria*—with a regular 5-lobed ventricose corolla, 5 spurs, and 5 perfect stamens—is occasionally to be observed. Sometimes these *Pelorias* are tetramerous; *i. e.* the corolla 4-lobed, with 4 spurs, &c. They are frequently, if not always, late flowers,—situated at the summit of the raceme of full grown capsules, and apparently the latest floral developments of the plant.

ORDER XCII. VERBENACEAE. *Juss.*

Herbs, shrubs, and even *trees* within the tropics. *Leaves* mostly opposite, without stipules. *Flowers* variously arranged. *Calyx* tubular, 4 or 5-toothed, persistent. *Corolla* tubular,—the limb 4 or 5-lobed, mostly irregular, sometimes bilabiate. *Stamens* mostly 4 and didynamous, occasionally only 2. *Ovary* free, entire, 2 to

4-celled. *Fruit* drupaceous, baccate, or dry and splitting into 2 or 4 indehiscent 1-seeded *nucules* (or little nuts). *Seeds* with little or no albumen.

An Order of but little importance to the farmer,—though containing a number of plants interesting to the florist. The tree which furnishes the “ever-during *Teak*” of India (*Tectona grandis*, L.)—so celebrated in ship-building—belongs to this Order.

119. VERBENA. L. *Endl. Gen.* 3685.

[Celtic, *Farfæn*, to remove stone; from its supposed medical virtues.]

Calyx tubular, 5-toothed,—one of the teeth often shorter. *Corolla* tubular, somewhat funnel-form, with the limb rather unequally 5-lobed. *Stamens* mostly 4, didynamous, inserted on the tube of the corolla and included. *Ovary* 2 to 4-celled, with 1 ovule in each cell. *Fruit* dry, with a thin evanescent pericarp, separable into 2 or 4 *nucules*. *Herbaceous* or *suffruticose* plants. *Leaves* opposite. *Flowers* mostly in terminal spikes, bracteate.

1. V. URTICAEFOLIA, L. *Leaves* ovate and lance-ovate, acute, serrate, petiolate; spikes filiform, terminal and axillary, somewhat paniculate; flowers distinct. *Willd. Sp. Pl.* 1. p. 119. *Fl. Cestr.* p. 373.

NETTLE-LEAVED VERBENA. *Vulgò*—Common Vervain.

Root perennial. *Stem* erect, 2 to 3 or 4 feet high, obtusely quadrangular, hirsutely pubescent, with slender axillary spreading branches above. *Leaves* 2 to 4 inches long, abruptly narrowed at base to a short petiole. *Spikes* 1 or 2 to 5 or 6 inches long, green, very slender. *Flowers* distinct and finally a little distant, small, sessile, with a minute bract at base. *Corolla* white,—the throat closed by a delicate white villus. *Fruit* separating into 4 *nucules*, which are oblong and triquetrous, with the outer side convex. Pastures; road-sides, &c.: throughout the U. States. *Fl.* July—Aug. *Fr.* September.

Obs. This is not a very pernicious nor troublesome weed: but as it is altogether worthless, and often so abundant in pasture fields as necessarily to attract the notice of the observing farmer, I thought it might be admitted into the present work.

ORDER XCH. LABIATAE. *Juss.*

Herbs, or *suffruticose* plants, with quadrangular stems and opposite branches. *Leaves* opposite or sometimes verticillate, simple, without stipules, replete with receptacles of volatile oil. *Flowers* in axillary opposite *Cymules* (each pair forming what BENTHAM calls a *verticillaster* or imperfect verticil), rarely solitary. *Calyx* tubular, 5-toothed or 5-cleft, or often bilabiate, persistent. *Corolla* bilabiate. *Stamens* 4, didynamous (the lower pair usually longer), inserted on the corolla.—or sometimes *diandrous*—the 2 upper ones being wanting: *anthers* 2-celled; the *cells* either parallel, or diverging, or completely divaricate,—sometimes distinct and remote from each other by means of the thickened or elongated filiform *connective*. *Ovary* deeply 4-lobed,—the *style* proceeding from the base of the lobes. *Fruit* consisting of 4 (or by abortion fewer) little nuts (*nucules* or *akenes*), at the bottom of the persistent calyx. *Seeds* with little or no albumen.

A highly interesting and valuable Order, containing upwards of 100 genera,—and particularly remarkable for the aromatic fragrance, and stomachic properties, of many of the species. The most important, however,—being generally cultivated,—are here inserted.

TRIBE I. OCIMOIDEAE. *Benth.*

Stamens declinate. *Corolla* sub-bilabiate,—the 4 upper lobes flat and nearly equal,—the lower one declinate and mostly of a different form—flat or often concave, boat-shaped or saccate.

120. OCIMUM. L. *Endl. Gen.* 3569.

[Supposed from the Greek, *Ozo*, to smell; in reference to its fragrance.]

Calyx 5-cleft,—the upper segment dilated, orbicular-ovate. *Corolla*

with the upper lip 4-cleft,—the lower lip scarcely longer, declinate, entire, flattish. *Stamens* 4, declinate, the lower pair longer,—the upper filaments often toothed at base. *Akenes* compressed, elliptic-ovate, smoothish.

1. *O. BASILICUM*, *L.* Stem herbaceous; leaves ovate-oblong, subdentate, smooth, petiolate; racemes simple. *Benth. Lab. p. 4. Fl. Cestr. p. 338.*

ROYAL OCIMUM. *Vulgò*—Sweet Basil.

Fr. Basilic. *Germ.* Gemeines Basilienkraut. *Span.* Albalhaca.

Root annual. *Stem* 6 to 12 inches high, often much branched, smoothish at base, pubescent above with short reflexed hairs. *Leaves* half an inch to an inch long; *petioles* one third to two thirds of an inch long, somewhat ciliate. *Flowers* in simple terminal interrupted racemes. *Bracts* ovate, acuminate, petiolate, ciliate. *Calyx* inflated-campanulate, reflexed after flowering. *Corolla* whitish or bluish-white. *Akenes* minutely punctate. Gardens: cultivated. Native of India. *Fl.* July. *Fr.* September.

Obs. This fragrant little plant is one of the numerous kitchen-garden *Herbs*, usually cultivated for culinary purposes.

121. LAVANDULA. *L. Endl. Gen. 3585.*

[Latin, *lavare*, to wash,—the distilled water being used for that purpose.]

Calyx tubular, ovoid-cylindric, ribbed, with 5 short teeth, the upper one sometimes dilated and produced at apex. *Corolla* with the upper lip 2-lobed, the lower one 3-lobed; lobes all nearly equal, spreading; tube exserted. *Stamens* 4, included, declinate; *filaments* smooth, not toothed; *anthers* ovoid-reniform, confluent, 1-celled. *Style* bifid at summit,—the branches flattened, subconnate, stigmatiferous on the margin. *Disk* concave, with 4 fleshy scales on the margin opposite the akenes. *Akenes* smooth and even, adnate to the scales of the disk. Perennial *Herbs*, or *suffruticose* plants,—the stems leafy near the base, but often naked below the spike. *Flowers* in terminal spikes.

1. *L. VERA*, *DC.* Leaves oblong-linear or lanceolate, entire, revolute on the margin, the younger ones hoary; spikes interrupted; cymules 3 to 5-flowered; floral leaves (or bracts) rhomboid-ovate, acuminate, membranaceous, the upper ones shorter than the calyx; bracteoles obsolete. *Benth. Lab. p. 148.*

L. Spica. DC. Fl. Cestr. p. 338.

TRUE LAVANDULA. *Vulgò*—Lavender. Garden Lavender.

Fr. La Lavande. *Germ.* Der Lavandel. *Span.* Espliego.

Plant clothed with a short hoary tomentum. *Root* perennial. *Stem* suffruticose, branching from the base; branches erect, 12 to 18 inches high. *Leaves* 1 to 2 inches long, crowded near the base of the branches,—often with fascicles of young leaves in the axils. *Flowers* in a terminal imbricated spike about an inch in length, with 1 or 2 distant cymules below. *Corolla* blue, pubescent, nearly twice as long as the calyx. Gardens: cultivated. Native of Southern Europe and shores of the Mediterranean. *Fl.* July. *Fr.* September.

Obs. The compound *tincture* of this herb (or, as the good ladies term it, "*Lavander Compound*") is deservedly popular, for its cordial and stomachic properties. The distilled water is also highly esteemed for its pungent and grateful fragrance.


TRIBE II. MENTHOIDEÆ. *Benth.*

Corolla campanulate or funnel-form; tube scarcely longer than the calyx; limb 4 or 5-cleft,—the lobes nearly equal. *Stamens* mostly 4, not approximated in pairs, but distant, upright or diverging.

122. MENTHA. *L. Endl. Gen.* 3594.

[From *Minthe*, a daughter of Coecytus,—fabled to have been changed into this plant.]

Calyx campanulate or tubular, 5-toothed, equal or subbilabiate,—the orifice naked or rarely villous. *Corolla* 4-cleft, nearly regular,—the upper lobe broader and usually emarginate. *Stamens* 4, nearly equal, erect, distant; *filaments* glabrous, naked; *anthers* with 2 parallel cells. *Style* bifid,—the branches stigmatiferous at apex. *Herbs.* *Cymules* often many-flowered, axillary or terminal.

 *Cymules* interruptedly spicate,—the spikes terminal.

1. *M. VIRIDIS*, *L.* Stem erect; leaves oblong-lanceolate, acutely incised-serrate, subsessile; spikes terete, slender, elongated, tapering at summit,—the cymules mostly distant. *Benth. Lab. p.* 173. *Fl. Cestr. p.* 339.

GREEN MENTHA. *Vulgò*—Spear-mint. Common Mint.

Fr. Baume verte. *Germ.* Die Spitzmuenze. *Span.* Menta puntiaguda.

Plant smoothish and rather pale green. *Root* perennial, creeping. *Stem* 1 to 2 feet high, branching, mostly green. *Leaves* 1 to 2 or 3 inches long, very acute, palish green. *Spikes* of cymules terminal, often numerous and somewhat paniculate. 2 to 4 inches long. *Corolla* pale purple. Moist grounds; waste places, &c.: introduced. Native of Europe. *Fl.* July—August. *Fr.* September.

Obs. This pleasantly aromatic herb has been so generally introduced into all the older settlements of this country, that it is now very extensively naturalized. It is deservedly popular as a domestic medicine, in relieving nausea, &c. and it is the species employed in preparing that most seductive beverage, known as the “*Mint Julcp*” of old Virginia.

2. *M. PIPERITA*, *L.* Stem procumbent at base, ascending; leaves ovate-lanceolate, serrate, petiolate; spikes cylindric, rather short, obtuse,—the cymules loosely approximated. *Benth. Lab. p.* 175. *Fl. Cestr. p.* 339.

PEPPER MENTHA. *Vulgò*—Pepper-mint.

Fr. La Menthe. *Germ.* Pfeffer-muenze. *Span.* Menta piperita.

Plant smoothish and purplish. *Root* perennia creeping. *Stem* 1 to 2 feet long, branching, mostly dark purple, sometimes pubescent. *Leaves* 1 to 2 inches long, more or less ovate and rounded a base, dark green, on *petioles* one fourth to half an inch in length. *Spikes* of cymules half an inch to an inch or more in length, terminal, solitary,—the cymules crowded—except the lower pair which are often a little distant. *Corolla* purple, larger than in the preceding species. Moist low grounds; Gardens, &c.: introduced. Native of Europe. *Fl.* Aug. *Fr.* Sept.—October.

Obs. This most grateful aromatic is generally allowed a place in gardens, or about houses,—and is apparently naturalized, in many localities. The essential oil, and distilled water, are well known for their stomachic properties, and deservedly held in high esteem.

TRIBE III. MONARDEAE. *Benth.*

Corolla bilabiate. *Stamens* 2 fertile, ascending,—the upper pair abortive; *anthers* 2-celled, the *cells* either contiguous or separated by a long linear *connective*,—one of the cells often empty.

123. SALVIA. *L. Endl. Gen. 3597.*

[Latin, *salvare*, to save; on account of supposed medicinal virtues.]

Calyx subcampanulate, bilabiate,—the upper lip mostly 3-toothed—the lower one bifid; throat naked. *Corolla* ringent,—the upper lip erect, straight or falcate. *Stamens* 2; *anthers* halved,—the cells separated by the long linear *connective*, which is transversely articulated with the filament.

1. *S. OFFICINALIS* *L.* Stem shrubby at base, leafy, hoary-tomentose; leaves lance-oblong, crenulate, rugose; upper lip of the corolla as long as the lower one, somewhat vaulted. *Benth. Lab. p. 208. Fl. Cestr. p. 342.*

OFFICINAL SALVIA. *Vulgò*—Sage. Garden Sage.

Fr. La Sauge. *Germ.* Die Salbei. *Span.* Salvia.

Root perennial. *Stems* 1 to 2 feet high, growing in bunches, branching from the base. *Leaves* 1 to 2 or 3 inches long, rather obtuse, sometimes lobed near the base, clothed with a short pubescence, greyish-green,—the upper or floral leaves sessile—the others on petioles about an inch long. *Cymes* 5 to 10-flowered, in interrupted terminal racemes. *Corolla* mostly violet-purple. *Stamens* ascending,—the 2 lower ones fertile—the 2 upper ones minute abortive rudiments. Gardens: cultivated. Native of Southern Europe. *Fl.* May—June. *Fr.* July—August.

Obs. Generally cultivated in kitchen gardens, for culinary purposes. The infusion makes a good gargle,—and is otherwise moderately medicinal.

The plant would seem to have been once considered as a kind of *panacea*,—if we may judge from the following monkish lines:

“Cur moriatur homo cui *Salvia* erescit in horto?

“Contra vim mortis non est medicamen in hortis.

“*Salvia* salvatrix, Naturae consiliatrix.

“*Salvia* cum *Ruta* faciunt tibi pocula tuta.”

There is now, however, but little confidence placed in the virtues thus imputed or implied: and in these *temperance* times, the doctrine of the concluding line would be denounced as rank heresy,—even though the charm be fortified “with *Rue*”—that “herb of grace o’ Sundays,” as SHAKESPEARE terms it—which is here appropriately enough associated with an indulgence in *cups!* We often find, on dry sterile meadow banks, a *native* species of this genus (*S. lyrata*, *L.*), which is a mere *wced*; but scarcely of sufficient importance to require a description, here.

TRIBE IV. SATUREINEAE. *Benth.*

Calyx 5-toothed and equal, or bilabiate with the upper lip 3-toothed and the lower one bifid. *Corolla* sub-bilabiate,—the upper lip erect, flat, entire or bifidly emarginate—the lower lip spreading, trifid, with the lobes nearly equal; tube about as long as the calyx. *Stamens* 4, (or the 2 upper ones sometimes abortive), distant, straight, diverging.

124. MAJORANA. *Moench. Endl. Gen. 3609.*

[A name derived from the Arabic.]

Calyx sub-bilabiate, deeply divided—the upper lip flat, dilated and

rounded at apex, entire or 3-toothed, contracted and involute at base—the lower lip very small. *Corolla* sub-bilabiate,—the upper lip rather erect, emarginate—the lower lip spreading, 3-lobed, lobes nearly equal; tube about as long as the calyx. *Stamens* 4, exserted, distant; *anthers* 2-celled; cells parallel, diverging, or finally divaricate. *Flowers* in short dense 4-sided spikelets, imbricated with orbicular bracts.

1. *M. HORTENSIS*, *Moench.* Branches smoothish, racemose-paniculate; leaves elliptic-obovate or spatulate, obtuse, entire, petiolate, downy and canescent on both sides; spikelets oblong, compact, clustered at the ends of the branches. *Benth. Lab. p.* 338. *Fl. Cestr. p.* 347.

GARDEN MAJORANA. *Vulgò*—Sweet Marjoram.

Fr. La Marjolaine. *Germ.* Der Majoran. *Span.* Majorana.

Root annual. *Stem* 9 to 12 or 18 inches high, subterete, somewhat branched. *Leaves* one third of an inch to an inch long, varying from ovate to obovate and spatulate. *Spikelets* one fourth to half an inch long, obtusely 4-cornered, hoary-pubescent, in sessile terminal clusters of threes, or on short axillary branches; *bracts* very obtuse or rounded, ciliate-pubescent, quadrifariouly and densely imbricated,—the margins at base involute. *Calyx* with the upper lip free, like a distinct sepal, dilated, obtuse, ciliate-pilose and mostly 3-toothed at apex, narrowed below with the margins folded in,—the lower lip or division ovate, smooth, very small. *Corolla* white, or tinged with purple. *Gardens*: cultivated. Native of Africa and Asia. *Fl.* July—Aug. *Fr.* September.

Obs. One of the fragrant culinary Herbs, generally cultivated.

125. THYMUS. *L. Endl. Gen.* 3610.

[Greek, *Thymos*, courage; in allusion to its cordial qualities.]

Calyx tubular-campanulate, 10-ribbed, bilabiate,—the upper lip trifid—the lower one bifid; throat villous. *Corolla* with the upper lip erect, nearly flat, emarginate,—the lower lip spreading, 3-lobed, middle lobe longer. *Anthers* 2-celled; cells parallel or finally diverging. Humble shrubby or suffruticose plants. *Leaves* small, entire. *Cymules* few-flowered,—sometimes all remote,—sometimes in loose terminal heads, or interrupted spikes.

1. *T. VULGARIS*, *L.* Stems erect or procumbent at base; leaves oblong-ovate or lance-ovate, revolute on the margin, fasciculate in the axils; cymules in terminal interrupted leafy spikes. *Benth. Lab. p.* 342. *Fl. Cestr. p.* 347.

COMMON THYMUS. *Vulgò*—Garden Thyme. Standing Thyme.

Fr. Serpolet. *Germ.* Der Thymian. *Span.* Tomillo.

Root perennial, woody. *Stems* 4 to 6 inches high, numerous, slender, rather erect, much branched and matted together at base, suffruticose, clothed with a short cinereous pubescence. *Leaves* one fourth to half an inch long, abruptly narrowed to a petiole, punctate, slightly pubescent beneath, fasciculate in the axils by reason of abortive branches. *Calyx* hirsute, strongly ribbed, punctate; segments of the lower lip sinuate, pectinately ciliate. *Corolla* pale purple. *Gardens*: cultivated. Native of Southern Europe. *Fl.* June—Aug. *Fr.* Aug.—September.

Obs. A favorite condiment in culinary processes,—and generally cultivated, in kitchen gardens. The creeping Thyme (*T. Serpyllum*, *L.*)—a species nearly allied in properties and appearance—is naturalized in many places.

126. SATUREJA. *L. Endl. Gen.* 3611.

[A name supposed to be derived from the Arabic.]

Calyx tubular-campanulate, 10-nerved, deeply and nearly equally 5-toothed, or obscurely bilabiate; throat naked, or nearly so. *Corolla* bilabiate,—the upper lip erect, flat—the lower one spreading, 3-lobed, lobes nearly equal. *Stamens* 4, diverging; anthers 2-celled,—the cells parallel or diverging. *Herbs* or *suffruticose* plants. *Leaves* small, entire, often fasciculate in the axils. *Cymules* sometimes few-flowered and scarcely bracteate—sometimes many-flowered or aggregated in heads, and supported by bracts.

1. *S. HORTENSIS*, *L.* Stem erect, much branched, pubescent; leaves oblong-linear, acute; cymules axillary, pedunculate, few-flowered, somewhat secund, remote or the upper ones somewhat spiked. *Benth. Lab. p.* 352. *Fl. Cestr. p.* 348.

GARDEN SATUREJA. *Vulgò.*—Summer Savory.

Fr. La Sarriette. *Germ.* Die Saturey. *Span.* Ajedrea.

Root annual. *Stem* 6 to 12 inches high, obscurely 4-angled, branched so as to appear bushy, suffruticose at base, roughish-pubescent, mostly dark purple. *Leaves* half an inch to an inch long, narrowed at base to a very short petiole. *Cymules* about 3-flowered,—the upper ones crowded into a leafy spike. *Corolla* pale violet-purple, somewhat pubescent, scarcely longer than the hispid-ciliate calyx-teeth. Gardens: cultivated. Native of Southern Europe. *Fl.* July—Aug. *Fr.* September.

Obs. Cultivated as a culinary Herb.

127. HYSSOPUS. *L. Endl. Gen.* 3612.[Latinized from *Ezob*,—an ancient Hebrew name.]

Calyx tubular, 15-nerved, equally 5-toothed; throat naked. *Corolla* bilabiate,—the upper lip erect, flat, emarginate—the lower lip spreading, 3-lobed, middle lobe larger. *Stamens* 4, exserted, diverging; *anthers* 2-celled,—the cells linear, divaricate. *Style* bifid,—the branches equal, subulate, stigmatiferous at apex.

1. *H. OFFICINALIS*, *L.* Leaves linear-lanceolate, rather acute, very entire, sessile; cymules secund, racemose,—the upper ones approximate. *Benth. Lab. p.* 356. *Fl. Cestr. p.* 348.

OFFICINAL HYSSOPUS. *Vulgo.*—Hyssop. Garden Hyssop.

Fr. Hysope. *Germ.* Der Isop. *Span.* Hisopo.

Root perennial. *Stem* 18 inches to 2 or 3 feet high, subterete, shrubby at base and much branched. *Leaves* three fourths of an inch to an inch and half long. *Cymules* rather crowded in a one-sided terminal raceme or spike, with a few distant ones below. *Corolla* bright blue, or sometimes purplish. Gardens: cultivated. Native of Southern Europe, and Asia. *Fl.* July—Aug. *Fr.* Sept.

Obs. Cultivated as a medicinal Herb. The infusion has long been a popular febrifuge. The *Dittany* (*Cunila Mariana*, *L.*)—which belongs to this Tribe—is also a well known article in the popular *Materia Medica*: but as it grows wild—and is usually confined to dry hilly woodlands—it is scarcely intitled to a place among Agricultural plants.

TRIBE V. MELISSINEAE. *Benth.*

Calyc 13- or rarely 10-nerved, bilabiate,—the upper lip 3-toothed—the lower one bifid. *Corolla* bilabiate,—the upper lip straight, entire or emarginately bifid, mostly flatish—lower lip spreading, 3-lobed; lobes flat, the middle one often broader. *Stamens* ascending, 4 and didynamous, or sometimes the 2 upper ones abortive.

128. HEDEOMA. *Pers. Endl. Gen.* 3615.[Greek, *Hedeia Osme*, a pleasant odor; from its fragrance.]

Calyx ovoid-tubular, gibbous on the under side near the base, 13-nerved, bilabiate,—the upper lip 3-toothed—lower one bifid; throat villous. *Corolla* bilabiate,—the upper lip erect, flat—lower lip spreading, 3-lobed, lobes nearly equal. *Stamens* 2 fertile, ascending, about as long as the corolla; *anthers* 2-celled; cells diverging or divaricate: the two upper stamens entirely wanting,—or rudimentary and sterile; short, subulate and capitate. *Herbs*, or *suffruticose* plants. *Cymules* few-flowered, loose, axillary.

1. H. PULEGIOIDES, *Pers.* Stem herbaceous, erect, branching, pubescent; leaves lance-ovate, rather obtuse, subserrate, narrowed at base, petiolate; cymules about 3-flowered; corolla about as long as the calyx. *Benth. Lab. p.* 366. *Fl. Cestr. p.* 350.

PULEGIUM-LIKE HEDEOMA. *Vulgò.*—Pennyroyal.

Root annual. *Stem* 6 to 12 inches high, hoary-pubescent, branched above. *Leaves* half an inch to an inch long, sparingly serrate or sometimes entire, slightly pubescent, narrowed at base to a pubescent *petiole* one eighth to half an inch in length,—the *floral leaves* resembling the cauline ones. *Cymules* usually 3-flowered; *bracteoles* linear-lanceolate, scarcely as long as the pedicels. *Corolla* pale blue, with purple spots. *Stamens* scarcely exerted, ascending, the anthers approximated under the upper lip,—the upper pair of stamens reduced to mere abortive rudiments. Slaty soils; old fields, &c.: throughout the U. States. *Fl.* July—Aug. *Fr.* September.

Obs. A warmly aromatic little herb,—in general use as a popular diaphoretic, carminative, &c. and therefore entitled to a description by which it may be certainly recognized. This is not the “*Pennyroyal*” of Europe; but has been so called because of its resemblance to that plant,—which is a species of *Mint*—viz. the *Mentha Pulegium*, L.

129. MELISSA. *Benth. Endl. Gen.* 3617.[Greek, *Melissa*, the honey-bee; the flowers being a favorite of that insect.]

Calyx tubular, 13-nerved, bilabiate,—the upper lip mostly spreading, 3-toothed—the lower one bifid. *Corolla* bilabiate,—the upper lip erect, flattish, emarginately bifid;—the lower lip spreading, 3-lobed, middle lobe mostly broader. *Stamens* 4, ascending, mostly approximated in pairs at summit; *anthers* 2-celled; cells distinct, parallel, finally diverging,—the *connective* often thickened. *Herbaceous* or *suffruticose*.

1. M. OFFICINALIS, L. Stem herbaceous, erect, branching; leaves ovate, coarsely crenate-serrate, obtuse or truncate and sometimes cordate at base, rugose; cymules loose, few-flowered, turned to one side; bracteoles few, ovate, petiolate; corolla twice as long as the calyx. *Benth. Lab. p.* 393. *Fl. Cestr. p.* 351.

OFFICINAL MELISSA. *Vulgò.*—Balm. Common Balm.

Fr. La Melisse. *Germ.* Die Melisse. *Span.* Melisa.

Root perennial. *Stem* 1 to 2 or 3 feet high, more or less pubescent. *Leaves* 2 to 3 or 4 inches long; *petioles* half an inch to an inch and half in length,—the *floral leaves* resembling the cauline, but usually somewhat cuneate at base. *Cymules* 3 to 6-flowered, on a short common peduncle. *Calyx* arid, pilose,—the upper lip truncate, with 3 short acute teeth—the teeth of the lower lip longer, subulate and ciliate; throat gaping, pilose. *Corolla* white or ochroleucous—sometimes slightly tinged with purple. Gardens: cultivated. Native of Southern Europe, and Asia. *Fl.* July—Aug. *Fr.* September.

Obs. This is generally cultivated or kept in gardens, as a popular medicinal Herb,—the infusion being a pleasant diaphoretic drink. It is partially naturalized, in many places.

TRIBE VI. SCUTELLARINEAE. *Benth.*

Calyx bilabiate,—the upper lip truncate, entire or somewhat 3 toothed. *Corolla* bilabiate,—the upper lip vaulted; tube exerted, ascending, annulate within or naked. *Stamens* 4, ascending under the upper lip of the corolla.

130. PRUNELLA. *L. Endl. Gen.* 3624.

[German, *Brunelle*,—from *Die Braeune*, the Quinsy; said to be cured by it.]

Calyx tubular-campanulate, about 10-nerved, reticulately veined, bilabiate,—the upper lip flat, dilated, truncate, with 3 short teeth—the lower lip bifid, segments lanceolate. *Corolla* ringent,—the upper lip erect, vaulted, entire—the lower lip depending, 3-lobed, middle lobe rounded, concave, crenulate; *tube* a little contracted at throat, inflated below it on the under side, with an *annulus*, or little ring of short hairs or scales, near the base within.

1. *P. VULGARIS, L.* Leaves ovate-oblong or ovate-lanceolate, crenate dentate or obsoletely serrate, sometimes pinnatifidly incised, petiolate. *Benth. Lab. p.* 417. *Fl. Cestr. p.* 352. *Icon, Fl. Lond.* 3.

COMMON PRUNELLA. *Vulgò*—Heal-all. Self-heal.

Fr. Brunelle ordinaire. *Germ.* Gemeine Brunelle. *Span.* Brunéla.

Root perennial. *Stem* 8 to 12 or 15 inches high, erect or ascending, somewhat branched, especially at base. *Leaves* 1 to 3 inches long; *petioles* half an inch to 2 inches long (those of the radical or lower leaves often 3 or 4 inches long); the *floral leaves* bract-like, orbicular-cordate, sessile, with a short abrupt acumination,—the lower ones conspicuously acuminate. *Cymules* 3-flowered, crowded into compact imbricated oblong terminal spikes. *Bracteoles* none. *Corolla* violet-purple (rarely pale purple or nearly white), smoothish. *Fields*; *roadsides*; *open woodlands*, &c.: introduced. Native of the old world. *Fl.* July—September. *Fr.* August—November.

Obs. This plant appears to be distributed over the four quarters of the globe; but I should judge it not to be a *native*, here. Although not a pernicious weed, it is so common, on our farms, that it seemed proper to notice it in this work. Its ancient reputation for *healing wounds*—like that of many other such medicaments of the olden times—is now quite obsolete. The famous *mad-dog scull-cap* (*Scutellaria lateriflora, L.*)—which once figured in the *Gazettes* as a specific for *Hydrophobia*—belongs to this Tribe,—and is frequent in wet meadows.

TRIBE VIII. NEPETEAE. *Benth.*

Calyx with the limb oblique, or sub-bilabiate,—the upper segments larger. *Corolla* bilabiate,—the upper lip somewhat vaulted—lower one spreading; throat mostly inflated. *Stamens* 4, ascending or diverging,—the *upper* pair longer!

131. NEPETA. *Benth. Endl. Gen.* 3636.

[Supposed to be named from *Nepete*,—a town in Italy.]

Calyx tubular, sometimes ovoid, about 15-nerved, arid; limb obliquely 5-toothed. *Corolla* bilabiate,—the upper lip erect, somewhat concave, emarginate or bifid—the lower lip spreading, 3-lobed, middle lobe largest; throat dilated, with the margin often reflexed; tube slender below, naked within. *Stamens* ascending,—the lower pair shorter; *anthers* mostly approximated in pairs, 2-celled; cells diverging, finally divaricate.

1. *N. CATARIA*, *L.* Hoary-pubescent; stem erect, tall; leaves oblong-cordate, acute, coarsely crenate-serrate, rugose; cymules densely many-flowered, the upper ones crowded in a spike—the lower ones distant; calyx ovoid-tubular; corolla one half longer than the calyx. *Benth. Lab. p. 477. Fl. Cestr. p. 356.*

CAT NEPETA. *Vulgò.*—Cat-mint. Cat-nep.

Fr. Herbe aux Chats. *Germ.* Die Katzen muenze. *Span.* Gatera.

Plant softly pubescent. *Root* perennial. *Stem* 2 to 3 feet high, mostly several from the same root, somewhat branched. *Leaves* 2 to 3 or 4 inches long, green above; canescent beneath; *petioles* half an inch to an inch and half in length, grooved on the upper side. *Cymules* on short common peduncles, in interrupted terminal spikes; *bracteoles* lance-linear, a little longer than the pedicels. *Corolla* ochroleucous, with a reddish tinge and purple dots, pubescent,—the upper lip emarginately bifid, the lower one crenate dentate, villous at base. *Fence-rows*; fields, and waste places: introduced. Native of Europe. *Fl.* June—August. *Fr.* July—September.

Obs. This foreigner is so extensively naturalized as to be a rather troublesome weed. The dried herb, in infusion, is a highly popular medicine among the good ladies who deal in simples,—and is probably often useful: But, as a weed on the farm, it is objectionable,—and, when permitted to multiply, gives to the premises a very slovenly appearance.

2. *N. GLECHOMA*, *Benth.* Stem procumbent, radicating at base; leaves cordate-reniform, rounded, crenate; cymules few-flowered,—all distant, axillary; calyx tubular; corolla nearly three times as long as the calyx. *Benth. Lab. p. 485. Fl. Cestr. p. 356.*

Glechoma hederacea. L. Icon, Fl. Lond. 3.

Vulgò.—Ground Ivy. Ale-hoof. Gill.

Fr. Lierre terrestre. *Germ.* Die Gundelrebe. *Span.* Yedra terrestre.

Root perennial. *Stem* 6 to 18 inches long, slender and prostrate,—the flowering branches erect or ascending, 4 to 8 or 10 inches high, retrorsely pubescent. *Leaves* three fourths of an inch to an inch and half long, and rather wider than long; *petioles* 1 to 3 inches long; *floral leaves* conformable, or similar to the cauline ones. *Cymules* all distant; *bracteoles* minute, subulate and ciliate. *Corolla* blue or purplish-blue (rarely white), pilose,—the upper lip bifid. *Anthers* approximated in pairs,—the cells diverging and presenting the figure of a cross. *Fence-rows*, and moist shaded places: introduced. Native of Europe, and Northern Asia. *Fl.* May—June. *Fr.* July.

Obs. Naturalized about many settlements,—and being a mere weed, is often inconveniently abundant. The herb was employed, in England, to clarify and give a flavor to Ale (whence one of its common names), until the reign of *Henry 8th*,—at which period *Hops* were substituted. The infusion of the herb is a popular medicine,—like that of the preceding species.

TRIBE IX. STACHYDEAE. *Benth.*

Calyx irregularly veined, or 5 to 10-nerved,—the limb equal, oblique, or somewhat bilabiate, 3 to 10-toothed. *Corolla* bilabiate,—the upper lip galeate or flat, entire or emarginate—the lower lip variously 3-lobed. *Stamens* 4, ascending,—the upper pair shorter.

132. LAMIUM. *L. Endl. Gen. 3645.*

[Greek, *Laimos*, the throat, from its gaping flowers.]

Calyx tubular-campanulate, about 5-nerved; limb mostly oblique; teeth 5, nearly equal, subulate at apex. *Corolla* ringent,—the

upper lip ovate or oblong, galeate, mostly narrowed at base; throat dilated; lateral lobes at the margin of the throat truncate or oblong—sometimes with a tooth-like process; middle or lower lobe (lower lip) broad, emarginate, contracted at base and substipitate. *Anthers* approximated in pairs, 2-celled; cells finally divaricate, oblong, often hirsute externally. *Akenes* triquetrous with the angles acute, truncate at summit, smooth or minutely rugose-tuberculate.

1. *L. AMPLEXICAULE, L.* Leaves orbicular, crenately incised,—the lower ones petiolate—the floral ones sessile, amplexicaul; tube of the corolla naked within, the lateral lobes not toothed; anthers hirsute. *Benth. Lab. p.* 511. *Fl. Cestr. p.* 357. *Icon, Fl. Lond. 3.*

STEM-CLASPING LAMIUM. *Vulgò*—Dead-Nettle. Hen-bit.

Fr. Lc Lamier. *Germ.* Die Taube-nessel. *Span.* Ortiga muerta.

Root annual. *Stems* several, or much branched from the base, decumbent or ascending, 6 to 12 inches high, mostly purplish. *Leaves* half an inch to three quarters in length, and mostly wider than long,—the lower or cauline ones on *petioles* half an inch to an inch long. *Cymules* densely many-flowered, axillary,—the lower ones distant—the upper ones rather approximated. *Calyx* sessile, hirsute. *Corolla* bright purple, pubescent,—the galeate upper lip nearly entire, clothed with a purple villus,—lower lip obcordate; throat dilated, laterally compressed; tube slender, much exserted. The *Corolla*, in the lower cymules, is often minute, or wanting. Gardens, and cultivated Lots: introduced. Native of Europe and Northern Africa. *Fl.* April—May. *Fr.* June.

Obs. This worthless little *weed* is abundantly naturalized in and about our gardens, in Pennsylvania,—and requires some attention to keep it in due subjection. Another species (*L. purpureum, L.*) has also been introduced, in some localities; but it does not appear to multiply so rapidly.

· 133. LEONURUS. *L. Endl. Gen.* 3647.

[Greek, *Leon*, a lion, and *Oura*, a tail; from some fancied resemblance.]

Calyx turbinate, 5 or 10-nerved,—the limb truncate. 5-toothed; teeth subulate, subsperescent, finally spreading. *Corolla* bilabiate,—the upper lip oblong, entire, flattish or somewhat vaulted—lower lip spreading, 3-lobed,—the lateral lobes oblong—the middle one entire or sometimes obcordate. *Anthers* approximated in pairs, incumbent, 2-celled; cells mostly parallel, the valves naked. *Akenes* triquetrous, truncate at summit, smooth.

1. *L. CARDIACA, L.* Pubescent; lower stem-leaves palmate-lobed, the upper ones ovate and lobed; floral leaves cuneate-oblong, mostly trifid, with a lengthened narrow base,—the lobes of all the leaves ovate or lanceolate; corolla longer than the calyx-teeth,—the tube with a villous ring within at base; upper lip flattish, hirsutely villous; lower lip spreading, the middle lobe entire. *Benth. Lab. p.* 518. *Fl. Cestr. p.* 358.

CARDIAC LEONURUS. *Vulgò*—Motherwort.

Fr. L'Agripaume. *Germ.* Das Herzgespann. *Span.* Agripalma.

Root perennial. *Stem* 2 to 4 feet high, branched at base and above, retrorsely pubescent, with a hairy ring at the joints or nodes. *Leaves* 2 to 4 inches long, rugose,—the lower ones nearly orbicular in the outline; *petioles* 1 to 2 inches long. *Cymules* 3 to 6 or 8-flowered, sessile, distant, forming an interrupted leafy *spike* 6 to 12 or 15 inches in length; *bracteoles* subulate, smooth. *Calyx* strongly 5-ribbed, smoothish; teeth acuminate, pungent,—the lower ones rather longer. *Corolla* pale purple, externally very villous, especially on the upper lip. *Akenes*

hirsute at summit. Fence-rows; and waste places: introduced. Native of Europe and Asia. *Fl.* June—July. *Fr.* August.

Obs. This foreigner is completely naturalized, and is apt to occupy all neglected nooks, and waste places, about farm yards, and along field sides. It is an utterly worthless *weed*—unsightly and disagreeable,—and speedily gives a forlorn appearance to the premises of the slothful and slovenly farmer. There is another species (*L. marrubiastrum*, *L.*) which has become partially naturalized in some districts; but it does not threaten to become so prevalent and troublesome.

134. MARRUBIUM. *L. Endl. Gen.* 3657.

[Etymology obscure; supposed to be from a town in Italy.]

Calyx tubular, 5 to 10-nerved, nearly equally 5 or 10-toothed,—the teeth erect or finally spreading. *Corolla* bilabiate,—the upper lip erect, flattish or concave, entire or bifid—lower lip spreading, 3-lobed, middle lobe broader, mostly emarginate; tube included in the calyx. *Stamens* included; *anthers* 2-celled,—the cells divaricate, subconfluent. *Akenes* obtuse at summit, but not truncate.

1. *M. VULGARE*, *L.* Stems ascending, hoary-tomentose; leaves roundish-ovate or oval, crenate-dentate, softly villous and canescent beneath; cymules many-flowered, woolly and canescent; calyx with 10 subulate recurved teeth; upper lip of the corolla oblong, bifid at apex. *Benth. Lab.* p. 591. *Fl. Cestr.* p. 360.

COMMON MARRUBIUM. *Vulgò*—Hoar-hound.

Fr. Marrub blanc. *Germ.* Der weisse Andorn. *Span.* Marrubio.

Root perennial. *Stems* 9 to 18 inches high, cespitose or branching from the base. *Leaves* about 2 inches long, abruptly narrowed at base to a flat nerved woolly petiole half an inch to an inch long. *Cymules* dense, sessile in the rather distant axils; *bracteoles* subulate. *Corolla* white, small. Stony banks, and waste places: introduced. Native of Europe and middle Asia. *Fl.* July—August. *Fr.* Sept.

Obs. This has been introduced as a medicinal Herb.—and is partially naturalized in many places. It has a *weed-like* appearance, but does not incline to spread much,—and may well be tolerated to some extent, for its valuable tonic properties. The *Syrups* and *Candies*, prepared from or with it, are excellent pectoral medicines.

TRIBE XI. AJUGOIDEAE. *Benth.*

Corolla with the upper lip sometimes very short—sometimes split, with the segments depending,—rarely erect and vaulted; lower lip elongated. *Stamens* 2 or 4, ascending, generally much exserted. *Akenes* more or less reticulately rugose.

135. TEUCRIUM. *L. Endl. Gen.* 3679.

[Named from *Teucer*, a Trojan Prince,—who, it is said, first used the plant.]

Calyx tubular-campanulate, nearly equally 5-toothed. *Corolla* with the tube short,—the 4 upper lobes of the limb nearly equal, oblong and declined, or very short and rather erect,—the lowest lobe largest, oblong or rounded, mostly concave. *Stamens* 4, exserted from the cleft between the upper lobes of the corolla; *anthers* with the cells confluent. *Akenes* rugose.

1. *T. CANADENSE*, *L.* Herbaceous, erect, hoary-pubescent; leaves ovate-lanceolate, acute, serrate, rounded at base, on short petioles;

cymules few-flowered, crowded in a simple terminal spike; calyx declinate, campanulate, finally somewhat gibbous,—the upper teeth broader. *Benth. Lab. p. 672. Fl. Cestr. p. 362.*

CANADIAN TEUCRIUM. *Vulgò*—Wood Sage. Germander.

Root perennial. *Stem* 1 to 2 or 3 feet high, simple or sparingly branched, square with the sides concave and the angles obtuse, clothed with a retrorse cinereous pubescence. *Leaves* 3 to 5 inches long, on *petioles* one fourth to three fourths of an inch in length. *Cymules* 2 or 3-flowered, mostly crowded, sometimes a little distant, in a greenish-grey spike 2 to 5 or 6 inches in length (often an opposite pair from the axils of the first leaves beneath). *Corolla* pale purple, minutely pubescent; *limb* declinate, with a central fissure on the upper side,—the upper or lateral lobes erect, acute,—the middle or lowest lobe oblong or obovate, concave. *Style* longer than the stamens, curved, equally bifid at summit. Fence-rows, and low shaded grounds: throughout the U. States. *Fl.* July. *Fr.* Aug.—Sept.

Obs. This plant is frequently to be seen in low grounds, along streams,—and sometimes along fence-rows, and borders of fields; but it has not become generally known as an intrusive weed. An observing farmer, however, has recently brought to me some specimens of it, collected in his fields,—where, he assured me, he found it a very troublesome weed—and, moreover, exceedingly difficult to extirpate. I have, therefore, deemed it proper to describe the plant, and commend it to further notice,—so that its true character may be certainly determined, before its inroads become extensive.

ORDER XCIV. BORAGINACEAE. *Juss. Lindl.*

Herbs, or sometimes *shrubby* plants, with round stems. *Leaves* alternate, simple, mostly rough and hispid, without stipules. *Flowers* often in one-sided clusters or racemes, which are spiral before expansion (*circinnate*, or *scorpioid*). *Calyx* of 5 foliaceous persistent sepals, more or less united at base, regular. *Corolla* mostly regular,—the limb 5-lobed, often with a row of scales in the throat. *Stamens* as many as the lobes of the corolla and alternate with them. *Ovary* deeply 4-lobed,—the *style* proceeding from the base of the lobes, which in fruit become little nuts or hard akenes. *Seeds* with little or no albumen.

An Order, for the most part, of rough homely plants,—some of them very obnoxious weeds. A few are slightly medicinal. The *Alkanet* of Commerce (a red coloring matter) is afforded by a plant of this Order, viz: *Anchusa tinctoria*, L.) Several species have showy flowers,—and some of the *Heliotropiums* are admired for their fragrance.

TRIBE IV. BORAGEAE. DC.

Ovary consisting of 2 carpels, each 2-celled or 2-parted. *Style* central, proceeding from the base of the lobes. *Fruit* 2 or 4-parted,—the carpels each 2-celled or separable into 2 akenes.

SUB-TRIBE 2. ECHIEAE. DC.

Corolla more or less irregular, naked at throat. *Akenes* affixed to the receptacle.

136. ECHIUM. *Tournef. Endl. Gen. 3757.*

[Greek, *Echis*, a viper; from the resemblance of the seeds to a viper's head.]

Calyx 5-parted. *Corolla* hypogynous, subcampanulate, limb obliquely 5-lobed, unequal. *Stamens* 5, inserted on the tube of the corolla. *Ovary* 4-lobed; *style* simple; *stigma* bifid. *Akenes* 4, distinct, turbinate, with a triangular *areola* at base.

1. *E. VULGARE*, L. Stem tuberculate-hispid; leaves linear-lanceolate, hispid; flowers in lateral secund spikes; stamens longer than the corolla. *DC. Prodr. 10. p. 18. Fl. Cestr. p. 119.*

COMMON ECHINUM. *Vulgè*—Blue-weed. Viper's Bugloss. Blue Devils.
Fr. Herbe aux Vipères. *Germ.* Der Natterkopf. *Span.* Yerba de la
 Vibora.

Root biennial. *Stem* 2 to 3 feet high, branched above. *Radical leaves* 5 to 8 inches long, lanceolate, petiolate; *stem leaves* smaller, linear-lanceolate, acute, sessile. *Spikes* numerous, axillary, secund and at first recurved, finally erect. *Calyx-segments* linear, pectinate-ciliate. *Corolla* at first purplish, finally bright blue, pubescent externally. *Akenes* subovoid, angular on the inner side, keeled on the back, a little incurved and acuminate, rough with tubercles of a greyish-brown color. Fields, and road sides: introduced. Native of Europe. *Fl.* June. *Fr.* August.

Obs. This showy but vile *weed* has become extensively naturalized, in some portions of our country,—and is a sad pest, wherever it establishes itself. I have seen it in considerable quantities in the State of Maryland,—though I think it is yet rare in Pennsylvania. Prof. A. GRAY informs us (*Silliman's Journal*, Vol. 42. p. 13.), that in the valley of the Shenandoah, Virginia, “for the distance of more than a hundred miles, it has taken complete possession, even of many cultivated fields.” A veteran Editor of a Newspaper, in the “old Dominion,” has long been noted for harping on the Ovidian phrase—“*Principiis obsta*,”—i. e. meet and resist beginnings—or nip the first buddings of evil. If he had taught his Agricultural fellow-citizens to apply his favorite maxim, practically, to this plant, he would “have done the State some service”: and every farmer would do well to bear that maxim in mind, not only in reference to this, but to all pernicious weeds. It would save a vast deal of vexatious labor, at a future day.

SUB-TRIBE 4. LITHOSPERMEAE. DC.

Corolla regular, naked at throat. *Akenes* 4, affixed to the receptacle, imperforate at base.

137. LITHOSPERMUM. *Tournef. Endl. Gen.* 3761.

[Greek, *Lithos*, a stone, and *Sperma*, seed; from the stony hardness of its seeds.]

Calyx 5-parted. *Corolla* hypogynous, funnel-form; limb 5-lobed; throat naked. *Stamens* 5, inserted on the tube of the corolla, included. *Ovary* 4-lobed; *style* simple; *stigma* 2 or 4-cleft. *Akenes* 4, distinct, bony, smooth or rugose.

1. *L. ARVENSE*, *L.* Hispidly pilose; leaves lance-linear, rather acute, entire, nerveless, sessile; akenes rugose-pitted. *DC. Prodr.* 10. p. 74. *Fl. Cestr.* p. 118.

FIELD LITHOSPERMUM. *Vulgè*—Stone-weed. Gromwell.

Fr. Grémil des champs. *Germ.* Acker Steinsame.

Root annual. *Stem* 12 to 18 inches high, generally much branched from the root, and often branched near the summit. *Leaves* 1 to 2 inches long,—the lower ones often oblanceolate and obtuse. *Flowers* axillary, solitary, subsessile. *Corolla* ochroleucous, small. *Akenes* ovoid, acuminate, rugose, brown when mature. Grain fields, and pastures: introduced. Native of Europe. *Fl.* May. *Fr.* June.

Obs. A worthless little foreigner,—more noticeable for its frequency in our fields, than for any intrinsic importance—even as a *weed*.

SUB-TRIBE 5. CYNOGLOSSEAE. DC.

Throat of the corolla mostly furnished with arching scales. *Akenes* 4, mostly echinate, or winged, adnate to the base of the style, imperforate at base.

138. CYNOGLOSSUM. *Tournef. Endl? Gen.* 3784.

[Greek, *Kyon*, *kynos*, a dog, and *Glossa*, a tongue; from the form of the leaves.] *Calyx* 5-parted. *Corolla* funnel-form,—the tube nearly as long as the calyx; throat closed by 5-obtuse connivent scales; limb 5-lobed; the lobes very obtuse. *Stamens* 5, included. *Ovary* 4-lobed; *style* simple; *stigma* subcapitate, entire or emarginate. *Akenes* 4, roundish, convex, or depressed, echinate all over, or sometimes only at the edges, imperforate at base, affixed to the base of the style, at maturity separating from base to apex and cohering by the summit of the style.

1. *C. MORISONI*, *DC.* Stem erect, somewhat hispid, divaricately branched at summit; leaves ovate-lanceolate, acuminate, narrowed at base; racemes somewhat in pairs, bracteate, with the rachis villos; pedicels extra-axillary, finally reflexed; calyx-segments nearly as long as the corolla; fruit densely covered with uncinat prickles. *DC. Prodr.* 10. p. 155.

Echinosperrnum Virginicum. *Lehm. Fl. Cestr.* p. 121.

MORISON'S CYNOGLOSSUM. *Vulgò*—Beggars' Lice.

Root annual. *Stem* 2 to 4 feet high. *Leaves* 3 or 4 inches long, acute at each end, scabrous,—the lower ones petiolate—the upper ones sessile. *Racemes* terminating the slender divaricate branches, mostly dichotomous; *pedicels* about as long as the fruit. *Corolla* bluish-white. small. Fence-rows, and borders of thickets: Northern and Middle States. *Fl.* July. *Fr.* October.

Obs. The slovenly farmer is apt to get a practical acquaintance with this obnoxious weed,—in consequence of its racemes of bur-like fruit entangling the manes of his horses, and the fleeces of his sheep. The *Hound's-tongue*, of Europe—another species (*C. officinale*, *L.*)—has been introduced, and is partially naturalized, in many places; and there is also a native species (*C. Virginicum*, *L.*), known by the name of “*Wild Comfrey*,” frequent in our woodlands; but they scarcely come within the purview of this work. The same remark applies to the common *Garden Comfrey* (*Symphytum officinale*, *L.*),—which belongs to this Tribe—and is occasionally seen in Gardens.

ORDER XCIX. CONVULVACEAE. *Juss. R. Br.*

Twining or trailing *herbs* or *shrubs*,—often with a milky juice. *Leaves* alternate, simple, without stipules. *Flowers* axillary, often large and showy. *Calyx* of 5 sepals, imbricated, or usually more or less united, persistent. *Corolla* plicate, and twisted in aestivation,—the limb 5-lobed—or often nearly entire. *Stamens* mostly 5, inserted on the tube of the corolla near the base. *Ovary* 2 to 4-celled, with 1 or 2 erect ovules in each cell; *styles* more or less united; *stigma* often 2-lobed, capitate or linear. *Capsule* 2 to 4- (or by obliteration 1-) celled,—the *valves* falling away from the persistent dissepimentis (*septifragal*). *Seeds* large, with a little mucilaginous albumen: *cotyledons* foliaceous, corrugated—wanting in *Cuscuta*.

An interesting Order—containing many beautiful species. The *Jalap*, and *Scammony*, of the shops, are furnished by plants of this Order.

TRIBE II. CONVULVULEAE. *Chois.*

Carpels coalesced into a single ovary. *Fruit* capsular, dehiscent.

139. BATATAS. *Rumph. Endl. Gen.* 3807.

[Apparently an aboriginal or barbarous name,—adopted for the genus.]

Sepals 5. *Corolla* campanulate,—the limb spreading. *Stamens* 5,

included. *Style* simple; *stigma* capitate; 2-lobed. *Capsule* 3 or 4-celled, 3 or 4-valved. *Seeds* 3 or 4, erect.

1. *B. EDULIS*, *Chois.* Stem creeping, rarely volubile; leaves sub-hastate—cordate with the sinus broad and shallow, often angular and partially lobed, petiolate; peduncles as long or longer than the petioles, 3 or 4-flowered. *DC. Prodr.* 9. p. 358.

Convolvulus Batatas. L. Fl. Cestr. p. 132.

EATABLE BATATAS. *Vulgò*—Sweet Potato. Carolina Potato.

Fr. Patate jaune. *Germ.* Bataten Winde. *Span.* Batata de Malaga.

Root perennial, tuberous; tubers oblong, terete, acute at each end, purple or yellowish-white externally, yellowish within. *Stem* 4 to 8 feet long, slender, prostrate, radicate, pilose. *Leaves* 2 to 3 or 4 inches long; *petioles* about 2 inches in length. *Corolla* purple (*vide DC.*). Gardens, and Lots: cultivated.

Obs. This plant is much cultivated for its fine esculent tubers,—particularly in the sandy soil of New Jersey and the Carolinas,—where it succeeds best. It is propagated by cuttings of the tubers; and, so far as I know, it has never produced flowers, in the middle States. This is said to be the *Potato*, spoken of by SHAKESPEARE, and contemporary writers; the *Solanum tuberosum*, or “Irish Potato” (now so common), being then scarcely known in the old world. According to DE CANDOLLE, the *Sweet Potato* is a native of the *East Indies*; but M’CULLOCH, in his Commercial Dictionary, says it is supposed to have been carried to Europe from *New Grenada*, by Sir JOHN HAWKINS, in 1545.

140. CONVOLVULUS. *L. Endl. Gen.* 3803,

[Latin, *Convolvo*, to entwine, or wind about; descriptive of the plant.]

Sepals 5. *Corolla* campanulate. *Style* simple; *stigmas* 2, terete-linear, often revolute. *Ovary* 2-celled, 4-ovuled. *Capsule* 2-celled. *Seeds* 4, erect.

1. *C. ARVENSIS*, *L.* Stem volubile or often prostrate, angled and striate; leaves ovate-oblong, mostly obtuse, sagittate at base and somewhat auriculate; peduncles mostly 1-flowered, bibracteate—the bracts small, remote from the flower; sepals very obtuse, roundish-ovate. *DC. Prodr.* 9. p. 406. *Fl. Cestr.* p. 131. *Icon, Fl. Lond.* 1.

FIELD CONVULVULUS. *Vulgò*—Bind-weed.

Fr. Liseron des champs. *Germ.* Die Ackerwinde. *Span.* Corregüela.

Root perennial, creeping, long. *Stem* about 2 feet long, slender, branching, procumbent or twining round other plants, twisted, a little hairy. *Leaves* an inch to an inch and half long.—the smaller ones rather acute—the larger ones obtuse and somewhat emarginate—all of them with a minute cusp at the end of the midrib; *petioles* half an inch to an inch long. *Peduncles* axillary, 1 to 2½ inches long, with 2 minute bracts half an inch to an inch below the flower. *Corolla* pale red or reddish-white. Cultivated Lots: introduced. Native of Europe and Asia. *Fl.* June—July. *Fr.* August.

Obs. This foreigner has been introduced into some portions of our country,—and may give the farmers some trouble, if they do not guard against it. We are told that *incessant vigilance* is the condition on which alone the rights of freemen can be maintained; and I believe the farmer will find a similar condition annexed to the preservation of his premises from the inroads of pernicious weeds.

The following remarks, from the *Flora Londinensis*, will afford some idea of the character of this *Convolvulus*, as observed in England,—and may serve as a salutary caution, here.

“Beautiful as this plant appears to the eye, experience proves it to have a most pernicious tendency in Agriculture. The field of the slovenly farmer bears evident testimony of this; nor is the garden wholly exempt from its inroads. The following experiment may serve to show what precaution is necessary in the introduction of plants into a garden, especially when we want them to grow in some particular situation.

“Tempted by the lively appearance which I had often observed some banks to assume, from being covered with the blossoms of this *Convolvulus*, I planted twelve feet of a bank in my garden, which was about four feet in height, with some roots of it: it was early in the spring, and the season was remarkably dry, so that I scarcely expected to see them grow; but a wet season coming on, soon convinced me that my apprehensions were unnecessary, for they quickly covered the whole surface of the bank, to the almost total extirpation of every other plant. It being a generally received opinion, that if a plant was cut down close to the ground, it would thereby be destroyed, or at least very much weakened, I was determined to try the validity of this opinion by an experiment, and accordingly, the whole of the *Convolvulus* was cut down somewhat below the surface of the earth. In about a month the bank was covered with it thicker than before. I then had recourse to a second cutting, and afterwards to a third: but all these were insufficient; for now at this present writing (August) the bank is wholly covered with it; nor do I expect to destroy it, but by levelling the bank and destroying the roots.

“This experiment seems to determine a matter of no small consequence in Agriculture, viz: that the cutting down those plants, which have creeping roots, rather tends to make them spread further than destroy them; and that nothing short of actual eradication will effect the latter.

“It is seldom that this plant is highly prejudicial to meadows, or pastures; but many fields of corn are every year destroyed by it, or rendered of little value.”

TRIBE IV. CUSCUTEAE. *Chois.*

Embryo filiform, destitute of cotyledons! Parasitic Herbs.

141. CUSCUTA. *Tournef. Endl. Gen.* 3816.

[A name of uncertain derivation, and obscure meaning.]

Calyx 4 or 5-cleft. *Corolla* globose-urceolate or tubular,—the limb 5 or rarely 4-cleft. *Stamens* 5, or rarely 4, adnate to the tube of the corolla, alternate with the lobes, and mostly supported at base by epipetalous scales. *Ovary* free, 2-celled and 4-ovuled; *styles* 2, rarely united into 1; *stigmas* acute, clavate, or capitate. *Fruit* mostly capsular,—the pericarp membranaceous, circumscissid at base or bursting irregularly. *Embryo* spiral, filiform, more or less convolute in and around fleshy albumen. Parasitic Herbs, with slender twining leafless orange-colored stems; germinating in the earth, but speedily attaching themselves to other plants by radicating

processes, through which they derive nourishment,—and, dying at the root, soon loose all direct connection with the soil. *Flowers* clustered.

1. *C. EPILINUM*, *Weiz.* Stem filiform; flowers in dense capitate sessile rather distant clusters; calyx 4 or 5-cleft; corolla scarcely exceeding the calyx, withering on the capsule; scales minute; styles finally divaricate; stigmas acute. *DC. Prodr.* 9. p. 452.

C. Europaea? *L. Fl. Cestr.* p. 167.

FLAX CUSCUTA. *Vulgò*—Flax-vine. Dodder.

Fr. Fil de terre. *Germ.* Die Flachs-seide. *Span.* Cuscuta.

Annual. *Stem* 2 to 3 or 4 feet long, very slender, smooth, pale orange-color. *Flowers* in small dense heads or clusters. *Calyx-segments* 4 or 5, ovate, rather acute. *Corolla* yellowish-white or pale orange-color, subglobose-urceolate, 4 or 5-lobed; lobes ovate, acute, somewhat spreading. *Stamens* inserted at the clefts of the corolla. *Scales* adnate to the corolla below the stamens, short, truncate, crenate-laciniate. *Capsule* depressed-globose. *Seeds* reddish-brown, scabrous or almost muricate under a lens. Parasitic on Flax: introduced. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This singular plant—formerly a great pest among the flax-crops—has become quite rare, since the culture of flax has declined. Dr. ENGELMANN, of St. Louis, has given an interesting Monography of our American Cuscutas, in the 43rd volume of SILLIMAN'S *Journal*,—in which a number of native species are described; one of which, at least, (*C. Gronovii*, *Willd. in DC.*—*C. Americana*, of *Fl. Cestr.*) is quite frequent in Pennsylvania: But as they do not interfere with the crops of the farmer, they need not be more particularly noticed, in this work.

ORDER C. SOLANACEAE. *Juss. Lindl.*

Herbs, or *shrubby* plants, with watery juice. *Leaves* mostly alternate, without stipules. *Inflorescence* often supra-axillary; pedicels without bracts. *Calyx* usually of 4 or 5 sepals, more or less united, and mostly persistent. *Corolla* hypogynous, regular or sometimes a little irregular plicate, in aestivation. *Stamens* 5 (rarely 4 or 6), inserted on the tube of the corolla. *Ovary* free, 2-celled, with the placentae in the axis; *style* simple; *stigma* undivided or obsoletely 2-lobed. *Fruit* a many-seeded Capsule or Berry. *Embryo* mostly curved, in fleshy albumen; *cotyledons* semi-cylindric.

An Order affording many powerful narcotics, and stimulants, as well as some valuable esculents. In addition to those here given, may be mentioned the poisonous *Henbane* (*Hyosciamus niger*, *L.*), and the deadly *Nightshade* (*Atropa Belladonna*, *L.*).

TRIBE I. NICOTIANEAE. *Endl.*

Capsule 2-celled, 2-valved—the valves septicial at apex—often finally loculicidal.

142. NICOTIANA. *L. Endl. Gen.* 3841.

[Named in compliment to *John Nicot*,—who introduced it into France.]

Calyx tubular-campanulate, 5-cleft, persistent. *Corolla* funnel-form,—the limb spreading, plicately 5-lobed. *Stamens* 5, inserted on the tube of the corolla, included, equal in length. *Style* simple; *stigma* capitate. *Capsule* covered by the calyx, septicially 2-valved at apex,—the valves finally bifid, retaining separate placentae. *Seeds* very numerous, minute.

1. *N. TABACUM*, *L.* Leaves large, lance-ovate, sessile, decurrent;

lobes of the corolla acuminate,—the throat inflated. *Willd. Sp. Pl.* 1. p. 1014. *Fl. Cestr.* p. 133.

TOBAGO NICOTIANA. *Vulg.*—Tobacco.

Fr. Le Tabac. *Germ.* Der Taback. *Span.* Tabaco.

Whole plant viscid-pubescent. *Root* annual. *Stem* 4 to 6 feet high, stout, finally almost woody at base, paniculately branched above. *Leaves* 1 to 2 feet long, smaller as they ascend. *Calyc* about one third the length of the corolla, ventricose,—the segments lanceolate, erect. *Corolla* about 2 inches long; limb rose-colored, spreading; tube pale yellowish-green. *Capsule* ovoid, sulcate on each side. *Seeds* reniform, rugose. *Fields:* cultivated extensively in the Southern and Western States. Native of the warmer regions of America. Known to Europeans about the year 1560. *Fl.* July—August. *Fr.* September.

Obs. The extent to which this nauseous and powerfully narcotic plant is cultivated—its commercial importance—and the modes in which it is employed to gratify the senses—constitute, altogether, one of the most remarkable traits in the history of civilized man. Were we not so practically familiar with the business, we should, doubtless, be disposed to regard the whole story of the *Tobacco trade*—and the *uses* made of the herb—as an absurd and extravagant fable. In view of the facts and circumstances, it does seem like sheer affectation, on our part, to pretend to be astonished at the indulgence of the Chinese, and other Asiatics, in the use of *Opium*. The habitual use of *Tobacco* is always more or less injurious to the system—especially the nervous system; and in many instances it is highly deleterious. I speak from long observation, and a personal experience of many years,—having *smoked* and *chewed* the herb, until its pernicious effects compelled me to *es-chew* it altogether.

TRIBE II. DATUREAE. *Endl.*

Capsule or *Berry* incompletely 4-celled.—the primary dissepiment bearing the placentæ on both sides, in the middle or near the parietal angle.

113. DATURA. *L. Endl. Gen.* 3815.

[Supposed to be from *Tutorah*,—the Arabic name of the plant.]

Calyx tubular, often angular, 5-cleft at summit or slit on one side, circumscissed above the peltate persistent base, deciduous. *Corolla* funnel-form,—the limb spreading, plicate, 5 to 10-toothed. *Stamens* 5, inserted on the tube of the corolla, mostly included. *Ovary* incompletely 4-celled,—one of the partitions imperfect above the middle—the other complete, placentiferous in the middle on both sides; placentæ projecting, many-ovuled; *style* simple; *stigma* bilamellate. *Capsule* ovoid or subglobose, muricate or aculeate (rarely smooth), half 4-celled at summit, 4-valved. *Seeds* numerous, laterally compressed, sub-reniform, roughish-dotted. Mostly *herbaceous*, fetid and narcotic plants. *Leaves* somewhat in opposite pairs. *Flowers* large, solitary, axillary or dichotomal, on short peduncles.

1. D. STRAMONIUM, *L.* *Stem* dichotomously branching; leaves ovate, sinuate-dentate, petiolate, smooth; capsule aculeate, erect. *Willd. Sp. Pl.* 1. p. 1008. *Fl. Cestr.* p. 133. *Icon, Fl. Lond.* 1.

Vulg.—Jamestown (corruptly *Jimson*) weed. Thorn-apple.

Fr. Pomme epineuse. *Germ.* Der Stech-äpfel. *Span.* Estramónio.

Root annual. *Stem* 2 to 5 feet high, rather stout, terete, pale yellowish-green (dark purple in *var. Tutula*), smooth. *Leaves* 4 to 6 or 8 inches long, sinuate or

somewhat angular-dentate; *petioles* 1 to 3 or 4 inches in length. *Calyx* prominently 5-angled, nearly half as long as the corolla. *Corolla* ochroleucous (pale violet purple in *var. Tatula*), about 3 inches long. *Capsule* about an inch in diameter. Waste places; farm-yards; road-sides, &c. *Fl.* July—Aug. *Fr.* Sept.

Obs. This plant is supposed to be a native; but to my view, its habits and aspect are very much those of a naturalized exotic. In Pennsylvania, the *variety* with *dark purple stems and bluish flowers* (*D. Tatula*, Willd.) is much the most common,—and is usually of larger growth than the other. Both varieties are powerfully narcotic and poisonous,—and equally obnoxious as coarse unsightly fetid *weeds*—which every neat farmer will be careful to extirpate from his premises.

TRIBE IV. SOLANEAE. Endl.

Fruit a 2 or several-celled *Berry*, with central placenta,—rarely a *valveless capsule*.

144. CAPSICUM. Tournef. Endl. Gen. 3854.

[Greek. *kapto*, to bite; from its hot or biting quality.]

Capsule 5 or 6-cleft, persistent. *Corolla* sub-rotate with a very short tube,—the limb plicate, 5 or 6-lobed. *Stamens* 5 or 6, inserted on the throat of the corolla, exserted; *anthers* connivent, longitudinally dehiscent. *Ovary* 2, 3 or 4-celled; placenta adnate to the base of the dissepiment or central angular receptacle, many-ovuled; *style* simple, sub-clavate; *stigma* obtuse, obsoletely 2 or 3-lobed. *Berry* nearly dry, inflated, polymorphous, incompletely 2 or 3-celled,—the upper portion of the placenta and partitions dissolving or disappearing. *Seeds* numerous, compressed, reniform, hot or acrid; *embryo* semicircular, sub-peripheral, within fleshy albumen.

C. ANNUUM, L. Stem herbaceous; leaves ovate, acuminate, entire, glabrous; peduncles solitary, axillary. Willd. *Sp. Pl.* 1. p. 1050. *Fl. Cestr.* p. 139.

ANNUAL CAPSICUM. *Vulgè*—Red Pepper. Cayenne Pepper.

Fr. Poivre d'Inde. *Germ.* Spanischer Pfeffer. *Span.* El Pimentero.

Root annual. *Stem* 1 to 2 feet high, angular, branching above, somewhat pilose. *Leaves* 2 to 4 inches long, deep green; *petioles* 1 to 3 inches long, semiterete, slightly channelled above. *Calyx* angular, with short segments. *Corolla* white, with ovate-oblong spreading lobes. *Anthers* white, with a tinge of blue. *Berry* hollow, terete and slender, ovoid-oblong, or depressed-globose, angular or torose, red when mature. Gardens, and Lots: cultivated. Native of S. America. *Fl.* July—August. *Fr.* October.

Obs. Cultivated for its *fruit*,—which is powerfully stimulant, and much used as a condiment. Several *varieties* (perhaps distinct species)—with the *fruit* of various forms—are to be met with in the gardens. That one with slender terete elongated fruit, is sometimes cultivated on a large scale,—for the manufacture of *Cayenne Pepper*, from the mature fruit: the other forms with thicker rinds, are used in the green state, for *pickles*.

145. SOLANUM. L. Endl. Gen. 3855.

[A name of obscure and uncertain meaning.]

Calyx 5 to 10-parted, persistent. *Corolla* rotate or subcampanulate; tube short; limb plicate, mostly 5-lobed. *Stamens* mostly 5, inserted on the throat of the corolla, exserted; *anthers* connivent,

opening at apex by 2 pores. *Ovary* 2- (rarely 3 or 4-) celled; placentae adnate to the dissepiments, many-ovuled; *style* simple; *stigma* obtuse. *Berry* 2- (rarely 3 or 4-) celled. *Seeds* numerous, sub-reniform; *embryo* peripheral, spiral, including the fleshy albumen.

† *Stem and leaves unarmed.*

1. *S. NIGRUM, L.* Stem herbaceous, angular, branched, scabrous on the angles; leaves ovate, obscurely repand-dentate; flowers subumbellate. *Willd. Sp. Pl.* 1. p. 1035. *Fl. Cestr.* p. 136.

BLACK SOLANUM. *Vulgò*—Night-shade. [*Yerba mora.*
Fr. Morelle noire. *Germ.* Der schwarze Nachtschatten. *Span.*

Root annual. *Stem* 1 to 2 feet high, much branched, angular or slightly winged. *Leaves* 2 to 3 inches long; *petioles* about an inch long. *Umbels* lateral, above the axils, few-flowered, nodding. *Corolla* white. *Berries* globose, rather small, black when mature. Waste places; about gardens, and dwellings. *Fl.* July. *Fr.* September.

Obs. Several varieties of this are noticed in the books; and the common one, in this country, is the *var. Virginicum*, of *Willdenow*: whether really a *native*, seems undetermined. It is a homely, worthless, and even deleterious *weed*,—which ought to be carefully expelled from the vicinity of all dwellings.

2. *S. TUBEROSUM, L.* Root producing tubers; stem herbaceous, simple, angular; leaves interruptedly pseudo-pinnate,—the lobes ovate, entire; peduncles corymbosely subdivided. *Willd. Sp. Pl.* 1. p. 1033. *Fl. Cestr.* p. 136.

TUBEROUS SOLANUM. *Vulgò*—Common Potato. Irish Potato.
Fr. Pomme de terre. *Germ.* Die Kartoffel. *Span.* Batatin.

Annual: the base of the stem producing tuberos oblong or roundish pedicellate *rhizemas*. *Stem* 2 to 3 feet high, thickish and succulent or fleshy, often decumbent, somewhat pubescent. *Leaves* odd-pinnately dissected,—the segments somewhat petiolate, sometimes opposite, the alternate pairs very small. *Flowers* in terminal nodding corymbs, on a common peduncle 3 to 5 inches long; *pedicels* articulated. *Corolla* bluish-white. *Anthers* orange yellow, often slightly cohering. *Berries* globose, about half an inch in diameter, greenish-yellow when mature. Kitchen gardens, and fields: cultivated. Native of S. America. *Fl.* June—July. *Fr.* September.

Obs. This most important plant is more or less cultivated, for its esulent *tubers*, by every owner or occupant of land. It is one of the indispensable crops, for a family.* Numerous *varieties* of tubers—purple, white and yellow—have been obtained, by long culture, or from seedling plants. According to *M'Culloch*, Potatoes were introduced to *England*, from Virginia, by Sir *Walter Raleigh*, in 1586: into *Ireland*, in 1610,—where they have “long furnished from three-fifths to four-fifths of the entire food of the people”: and into *Scotland*, in 1728.

† † *Stem and leaves aculeate.*

* Within a few years past, a most alarming disease, or *rot* (sometimes called “Potato Murrain”), has attacked the *tubers*, about the time they were full grown—and in many instances entire crops have been destroyed. This disease has appeared in various and distant parts of our own country,—and in some seasons, has spread dismay throughout Great Britain and Ireland. Although the *cause* of this affection has been anxiously investigated, it does not seem, as yet, to be well understood.

3. *S. ESCULENTUM*, *Dunal*. Stem herbaceous, nearly simple; leaves ovate, somewhat sinuate-lobed, tomentose; peduncles solitary, thickened, nodding; calyx aculeate; fruit very large.

S. insanum, *L. Willd. Sp. Pl. 1. p. 1037. Fl. Cestr. p. 137.*

ESCULENT SOLANUM. *Vulgò*—Purple Egg-plant.

Fr. Aubergine rouge. *Germ.* Eifrüchtiger Nachtschatten.

Whole plant clothed with a stellated tomentum. *Root* annual. *Stem* about 2 feet high, hollow, aculeate, finally subligneous. *Leaves* 6 to 9 inches long,—the nerves and petioles aculeate; petioles 1 to 3 inches long. *Peduncles* lateral, supra-axillary, thick (sometimes slender and dichotomous, or bearing 2 flowers), aculeate. *Calyx* 5 to 7 or 10-parted, aculeate. *Corolla* purplish, pubescent; lobes 5 to 7 or 10, ovate, spreading. *Berries* ovoid or obovoid-oblong, 3 to 5 or 6 inches in diameter, smooth, mostly dark purple when mature—sometimes pale green. Gardens; cultivated. Native of India. *Fl.* July—Aug. *Fr.* Sept.—Octo

Obs. This is cultivated for its *fruit*,—which is quite a favorite culinary vegetable. The *S. Melongena*, *L.*—a nearly allied species or perhaps *variety*—which is not prickly, and produces a whitish fruit,—is also cultivated, though not so commonly as this.

4. *S. CAROLINENSE*, *L.* Stem suffruticose, branching, annual; leaves ovate-oblong, acute, sinuate-angled and often subhastate, prickly on both sides; racemes simple, loose; fruit small. *Willd. Sp. Pl. 1. p. 1043. Fl. Cestr. p. 138.*

CAROLINIAN SOLANUM. *Vulgò*—Horse Nettle.

Root perennial. *Stem* 1 to near 2 feet high, annual but firm and almost shrubby, hollow, branching, armed with sharp spreading prickles. *Leaves* 4 to 6 inches long, aculeate on the midrib and larger nerves on both sides, clothed with a hirsute stellate pubescence; *petioles* half an inch to an inch and half long. *Racemes* lateral, opposite to and often longer than the leaves. *Calyx* 5-parted, aculeate. *Corolla* bluish-white. *Berries* globose, one fourth to one third of an inch in diameter, orange-yellow when mature. Pastures, and cultivated grounds,—especially in the Southern States. *Fl.* July. *Fr.* October.

Obs. This is an exceedingly pernicious *weed*,—and so tenacious of life that it is almost impossible to get rid of it, when once fully introduced. It grows in patches, so thickly as to deter Stock from feeding among it, and even to monopolize the soil,—while its roots gradually extend around, and to a great depth. It is a native of the Southern States,—but has found its way to several localities in Pennsylvania. The farmers will do well, therefore, to enable themselves to know it, when they meet it,—and moreover to eradicate it, promptly and effectually, wherever they find it on their premises.

146. LYCOPERSICUM. *Tournef. Endl. Gen. 3856.*

[Literally, *Wolf-Peach*; a metaphorical name, having reference to the fruit.]

Calyx 5 to 10-parted, persistent. *Corolla* rotate; tube very short; limb plicate, 5 to 10-lobed. *Stamens* 5 or 6, inserted on the throat of the corolla, exerted; *filaments* very short; *anthers* oblong-conical, cohering by an elongated membrane at summit, longitudinally dehiscent on the inner side. *Ovary* 2 or 3-celled, with the placentae adnate to the dissepiment, many-ovuled. *Berry* 2 or 3-celled.—*Seeds* numerous, reniform, pulpy-villous; *embryo* sub-peripheral, within the fleshy albumen.

1. *L. ESCULENTUM*, *Mill.* Stem herbaceous; leaves interruptedly pseudo-pinnate,—the segments petiolate, lance-ovate, acuminate,

deeply incised-serrate; racemes 2-parted, leafless; fruit depressed-globose, mostly torose.

Solanum Lycopersicum, *L. Willd. Sp. Pl. 1. p. 1033. Fl. Cestr. p. 137.* [apple.

ESCULENT LYCOPERSICUM. *Vulgò*. Tomato, or Tomatoes. *Love-Fr.* Pomme d'amour. *Germ.* Der Liebes-Apfel. *Span.* Tomato.

Plant of a greyish aspect, viscid-pubescent and somewhat fetid. *Root* annual. *Stem* 2 to 4 feet long, branching, often straggling or procumbent unless supported. *Leaves* odd-pinnately dissected.—the alternate pairs of segments smaller. *Flowers* in naked lateral racemose elusters; *common peduncle* 1 to 2 inches long, dichotomously divided.—the subdivisions articulated to the pedicels of the flowers. *Calyx-segments* 5 to 10, linear-lanceolate, long. *Corolla* yellow, pubescent.—the lobes 5 to 10, lanceolate, spreading. *Anthers* cohering, acuminate, with the points recurved. *Berries* large (1 to 3 or 4 inches or more in diameter), globose, or flatly depressed and orbicular, often remarkably torose or distorted by large swelling ridges, red or reddish-orange color when mature. Gardens, and Lots: cultivated. Native of Spanish America. *Fl.* June—August. *Fr.* Aug.—Sept.

Obs. This is cultivated for its succulent acid fruit—which, as a sauce, is considered very healthful,—and has, of late years, become a favorite and almost universal dish, in its season. Even the vendors of *medical nostrums* have seized upon it, as a means of levying an additional tax upon the credulous.

ORDER CI. GENTIANACEAE. *Juss. Lindl.*

Herbs, with a watery juice. *Leaves* mostly opposite, simple and entire, without stipules. *Inflorescence* usually centrifugal.—the flowers showy. *Calyx* mostly of 4 or 5 (rarely 6 to 12) persistent, more or less united, sepals. *Corolla* regular, mostly twisted in aestivation. *Stamens* as many as the lobes of the corolla, and alternate with them, inserted on its tube. *Ovary* single, formed of 2 united *carpophylls*. 1-celled, or sometimes half 2-celled by the introflexion of the valves or parietal placentae, many-ovuled; *stigmas* 2 or single, sometimes sessile. *Capsule* 1- (or half 2- or 4-) celled, septical, many-seeded. *Seeds* with fleshy albumen and a minute embryo.

An Order containing many beautiful species,—a number of them valuable for their bitter, tonic properties: among which may be mentioned the *Gentian* of the shops (*Gentiana lutea*, *L.*). Few or none, however, are of any Agricultural importance.

TRIBE I. GENTIANEAE. *DC.*

Corolla twisted to the right (or left, if you look into the centre of the flower,) in aestivation. *Testa* membranaceous. *Leaves* mostly opposite, very entire.

SUB-TRIBE 2. CHLOREAE. *DC.*

Anthers furnished with a connective. *Style* distinct, deciduous.

147. SABBATIA. *Adans. Endl. Gen. 3546.*

[Named after *Libervatus Sabbati*; an Italian Botanist.]

Calyx 5 to 12-parted. *Corolla* sub-rotate,—the limb 5 to 12-lobed! *Stamens* as many as the corolla-lobes; *anthers* erect, opening by a longitudinal fissure, finally recurved. *Ovary* with the valves slightly introflexed, 1-celled,—the ovules inserted along the sutures; *style* 2-parted,—the branches stigmatiferous, at length spirally twisted. *Capsule* 2-valved, septical, 1-celled, with spongy placentae along the sutures. *Seeds* numerous, minute, destitute of a distinct funiculus:

1. *S. ANGULARIS*, *Parsh.* Stem acutely 4-angled, somewhat winged,—the internodes the length of the leaves; branches opposite, erect,

corymbose; leaves ovate, sessile and amplexicaul; calyx-segments mostly 5, linear-lanceolate, acute, much shorter than the corolla; corolla mostly 5-parted,—the lobes obovate, rather obtuse. *DC. Prodr.* 9. p. 50. *Fl. Cestr.* p. 125.

ANGULAR SABBATIA. *Vulgò*—Centaury.

Root annual? (biennial, *DC.*). *Stem* 12 to 18 inches high, often bushy with numerous branches. *Leaves* about an inch long. *Flowers* sometimes composed of 6 parts. *Corolla* rose red, with a pale green star in the centre. *Capsule* oblong-ovoid, mucronate, with a keeled suture on each side. *Seeds* rugosely pitted, under a lens. Sterile old fields: Canada to Carolina. *Fl.* July—August. *Fr.* September.

Obs. This plant has but little connection with *Agriculture*: yet it is so generally and deservedly popular, as a Bitter, and tonic medicine, that it would seem desirable for every farmer to be able to identify it,—and therefore I have inserted it. There is another plant in the South and West, belonging to this Tribe, which is highly commended for similar properties,—namely, the *Wild Colombo* (*Frasera Carolinensis*, *Walt.*). I do not deem it necessary, however, to do more than mention it, here.

ORDER III. ASCLEPIADACEAE. *R. Br. Lindl.*

Herbs, or *shrubs*, mostly with a milky juice. *Leaves* generally opposite, simple, entire; stipules none or reduced to mere bristles. *Inflorescence* interpetiolar, somewhat umbellate, fasciculate, or racemose, rarely solitary. *Calyx* 5-parted, persistent. *Corolla* hypogynous, 5-lobed, deciduous. *Stamens* 5, inserted into the base of the corolla, alternately with the lobes; *filaments* sometimes free, but usually dilated and connate in a tube including the pistil (hence called the *Gynostegium*, or *pistil-covering*).—the tube often augmented by 5 cucullate appendages (*stamineal crown*); *anthers* erect, united, truncate at summit—or the connective sometimes thickened and acuminate, or produced into a thin whitish membrane—mostly 2-celled, the cells with projecting cartilaginous appendages: *pollen* cohering in waxy masses (*Pollinia*), which are attached in pairs (from the contiguous cells of different anthers) to 5 small gland-like processes at the angles of the stigma. *Ovaries* 2; *styles* 2; *stigma* common to both styles, fleshy, dilated, 5-cornered, bearing a little shining blackish corpuscle, or gland, at each corner. *Follicles* 2 (one often abortive); *placenta* attached to the suture, finally separating. *Seeds* numerous, compressed, imbricated, pendulous; *testa* membranaceous, usually margined,—the margin, near the hilum, splitting into a silky *coma*; *albumen* thin.

An Order remarkable for the peculiar structure of the flowers (well illustrated in *GRAY'S Botanical Text Book*),—and containing many plants interesting to the curious; but few that concern the mere practical farmer.

TRIBE III. ASCLEPIADEAE. *R. Br.*

Filaments connate. *Anthers* 2-celled. *Pollinia* 10, affixed in pairs to the processes of the stigma, pendulous.

DIV. 7. ASCLEPIADAE. *Dcne. DC.*

Throat of the corolla naked. *Stamineal crown* 5-leaved,—the leaflets concave or cucullate, inserted at the base (rarely on the summit) of the tube of connate filaments (*gynostegium*), and mostly with a subulate or horn-like averted process arising from the cavity of each leaflet.

148. ASCLEPIAS. *L. Endl. Gen.* 3490.

[The Greek name of *Aesculapius*,—to whom this genus is dedicated.]

Calyx deeply 5-parted,—the segments (or sepals) ovate-lanceolate, small, spreading. *Corolla* deeply 5-parted,—the lobes valvate in aestivation, lance-oblong, at first spreading, finally reflexed. *Sta-*

mineal crown seated on the summit of the gynostegium, 5-leaved; leaflets cucullate,—the hoods ovate or dilated above, always emitting from the bottom of the cavity an averted horn-like process which is curved towards the stigma. *Anthers* terminated by a membrane. *Pollinia* compressed, pyriform, affixed by the attenuated apex, pendulous. *Stigma* depressed. *Follicles* smooth or sometimes softly muricate. *Seeds* compressed, margincd, eomose. Perennial *Herbs*; mostly lactescent. *Leaves* opposite, sometimes verticillate—rarely alternate. *Umbels* interpetiolar, or sometimes terminal.

1. A. TUBEROSA, L. Hirsute; not lactescent; stem ascending, divaricately branched at summit, leafy; leaves oblong-lanceolate or linear-oblong, mostly alternate, subsessile; umbels numerous, lateral and terminal, often forming a spreading corymb. *DC. Prodr. S. p. 567. Fl. Cestr. p. 173.*

TUBEROUS ASCLEPIAS. *Vulgò*—Butterfly-weed. Pleurisy-root.

Whole plant mostly very hairy. *Root* perennial; large, tuberous. *Stem* about 2 feet high, generally more or less oblique or leaning; branches spreading and often recurved. *Leaves* 2 to 4 inches long, and half an inch to an inch wide, scattered or rarely opposite, varying from lance-linear to oblong and ob-lanceolate, acute or obtuse, mostly obtuse at base, on very short petioles. *Stamineal crown* bright orange color.—the leaflets erect, lance-oblong, distinct, abruptly narrowed below, the infolded margins with each an obtuse tooth near the base; *horns* subterete, tapering to a point, incurved, nearly as long as the leaflets. *Follicles* about 4 inches long, somewhat ventricose, acuminate, tomentose-pubescent. Old fields; Pastures, and fence-rows: throughout the U. States. *Fl. July—Aug. Fr. Sept.—October.*

Obs. This is the only species of the genus, which is inclined to make its appearance in our cultivated grounds, or pasture fields,—and even this, though a rough, coarse *weed*, is not a troublesome one. I have inserted it, merely as a specimen of a remarkable and somewhat numerous family, which may be readily recognized by the peculiar structure of the flowers. When in bloom, the bright orange-colored umbels of this species are quite showy. The *root* once had a reputation for being medicinal; but it is now generally neglected.

ORDER CV. OLEACEAE. *Hffmsg. & Link. Lindl.*

Trees or shrubs. *Leaves* opposite, simple or odd-pinnate. *Flowers* racemose or paniculate, terminal and axillary, perfect and complete, or sometimes dioicous and apetalous. *Calyx* 4-lobed or 4-toothed, mostly persistent, rarely obsolete. *Corolla* 4-cleft, or of 4 distinct petals—sometimes wanting; aestivation mostly valvate. *Stamens* usually 2. *Fruit* various—baccate, drupaceous, capsular or samaroid.—2-celled, or by abortion often 1-celled and 1 or 2-seeded. *Seeds* pendulous, mostly albuminous.

A small but interesting Order. *Olives*, and *Olive oil*, are afforded by the genus (*Olea*) which is the type of the family,—the *pericarp*, instead of the seed, yielding the oil. The *Manna* of the shops is derived from a species of *Ash* (*Fraxinus rotundifolia*, L.).

TRIBE I. FRAXINEAE. *Bartl.*

Fruit dry, samaroid, 2-celled, indehiscent. *Flowers* sometimes polygamous or dioicous and apetalous—sometimes 4-petalled, rarely 2-petalled—and sometimes destitute of calyx. *Seeds* albuminous.

149. FRAXINUS. *Tournef. Endl. Gen. 3353.*

[The Latin name of the *Ash* tree; etymology obscure.]

DIOICOUSLY POLYGAMOUS: *Calyx* 4-cleft or none. *Petals* sometimes

none, sometimes 4, often cohering in pairs at base, oblong or linear. *Stamens* 2. *Stigma* bifid. *Samara* 2-celled, compressed, winged at apex; cells 2-ovuled, by abortion 1-seeded. *Seeds* pendulous, compressed; albumen fleshy, thin; embryo as long as the albumen. *Trees*. *Leaves* opposite, mostly odd-pinnate. *Flowers* racemose or paniculate.

☞ *Flowers* dioicous and apetalous.

1. *F. AMERICANA*, *L.* Leaflets in 3 or 4 pairs, petiolulate, elliptic-ovate, acuminate, entire or obsoletely dentate, glaucous beneath; petioles and young branches terete, smooth; buds with a rufous velvety pubescence; panicles compound, loose, axillary; flowers calyculate; samaras linear-oblong, obtuse, narrowed at base. *DC. Prodr.* 8. p. 277. *Icon, Mx. Sylva.* 3. tab. 118.

F. acuminata. *Lam. Fl. Cestr.* p. 8.

AMERICAN FRAXINUS. *Vulgò*—White Ash.

Stem 40 to 60 and 80 feet high, and 2 to 3 feet in diameter,—the young branches smooth and dotted with white specks. *Leaflets* 2 to 4 inches long,—at first downy, finally smooth and green above, pubescent and glaucous beneath. *Flowers* with a minute 3 or 4-toothed calyx. *Samara* terete at base, with a narrowish lance-oblong wing. Woodlands: throughout the U. States,—but particularly in the Northern States. *Fl. May.* *Fr.*

Obs. The timber of this tree is highly valuable, and much used by wheelwrights, coachmakers, &c. It also makes excellent fuel.

2. *F. PUBESCENS*, *Walt.* Leaflets in 3 or 4 pairs, petiolulate, elliptic-lanceolate, acuminate, subserrate; petioles and young branches velvety-pubescent; flowers calyculate; samaras linear-lanceolate. *DC. Prodr.* 8. p. 278. *Fl. Cestr.* p. 8.

F. tomentosa. *Mx. Sylva,* 3. p. 63. *Icon,* tab. 119.

PUBESCENT FRAXINUS. *Vulgò*—Red Ash.

Stem 30 to 50 or 60 feet high, and 12 to 18 inches in diameter. *Leaflets* 2 to 3 inches long,—more lanceolate and narrower than in the preceding—more pubescent beneath—and the petiolules shorter. *Samaras* terete and tapering below, almost acute at base, with a long narrow linear-lanceolate wing. Low grounds; along streams: throughout the U. States. *Fl. May.* *Fr.*

Obs. This has considerable resemblance to the preceding species; but, beside the pubescence of the young branches, it is a smaller and less valuable tree.

3. *F. SAMBUCIFOLIA*, *Lam.* Leaflets in 4 or 5 pairs, sessile or subsessile, ovate-lanceolate, acuminate, serrate, somewhat rounded and unequal at base, hirsutely bearded beneath on the midrib and in the angles of the nerves; flowers naked; samaras oblong, obtuse at each end. *DC. Prodr.* 8. p. 278. *Fl. Cestr.* p. 8. *Icon, Mx. Sylva,* 3. tab. 122.

SAMBUCUS-LEAVED FRAXINUS. *Vulgò*—Black Ash. Water Ash.

Stem 30 to 40 or 50 feet high, and 12 to 18 inches in diameter; young branches glabrous, green, sprinkled with black elliptic dots or warts. *Leaflets* 3 to 4 inches long, rugose and shining above, with tufts of tawny pubescence in the angles of the nerves beneath. *Samaras* broadish, of nearly uniform width. Low grounds; along rivulets, &c. Northern and Middle States. *Fl.* April. *Fr.*

Obs. This species is less common, and of less value, than either of the preceding. There are several other species in the Southern

and Western States; but I have not judged it expedient to swell this work by a more particular notice of them.

TRIBE III. OLEINEAE. DC.

Fruit fleshy, drupaceous or baccate. *Flowers* perfect, and complete. *Seeds* albuminous.

150. LIGUSTRUM. *Tournef. Endl. Gen.* 3352.

[Latin, *ligare*, to tie; from the use made of its pliable branches.]

Calyx with a short tube, 4-toothed, deciduous. *Corolla* funnel-form, the tube longer than the calyx; limb 4-parted. *Stamens* 2, inserted on the tube of the corolla, included. *Ovary* 2-celled; ovules 2 in each cell, pendulous from the apex of the septum; *style* very short; *stigma* bifid, obtuse. *Berry* globose, 2-celled; cells 2- (or by abortion 1-) seeded. *Shrubs*. *Leaves* opposite, simple, entire. *Flowers* in terminal thyrsoid panicles.

1. *L. VULGARE*, *L.* Branches slightly pubescent at apex; leaves elliptic-lanceolate, acute or obtuse, mucronulate, glabrous; panicle compound, contracted. *DC. Prodr.* 8. p. 293. *Fl. Cestr.* p. 2. *Icon, Fl. Lond.* 1.

COMMON LIGUSTRUM. *Vulgò*—Privet. *Prim.*

Fr. Le Troène. *Germ.* Die Gemeine Rheinweide. *Span.* Alheña.

Stem 6 to 8 or 10 feet high, much branched; branches opposite. *Leaves* 1 to 3 inches long, varying from lanceolate and acute, to elliptic or oblanceolate and obtuse, on short petioles. *Corolla* white. *Berries* black (rarely greenish-white) when mature. *Way-sides*; fence-rows, &c.; introduced. Native of Europe. *Fl.* June. *Fr.* October.

Obs. This *shrub* is perhaps intitled to notice, in the present work, from the circumstance of its having been introduced, by the early settlers of Pennsylvania, for the purpose of *hedging*. It did not answer the purpose, however,—and was soon neglected. Yet it has become partially naturalized.

The *Olive* (*Olea Europaea*, *L.*)—which is so noted and important a plant, in the South of Europe—belongs to this tribe. It has not yet, I believe, been successfully cultivated in our country; but, with a fair trial, it may possibly succeed, in our Southern States.

APETALOUS EXOGENS.

ORDER CVI. ARISTOLOCHIACEAE. *Juss. Lindl.*

Herbaceous, or *shrubby* and climbing,—the *wood* without concentric zones. *Leaves* alternate, simple, petiolate—often with foliaceous stipules. *Flowers* mostly perfect, axillary, solitary. *Calyx-tube* more or less adherent to the ovary; limb 3-lobed,—the lobes valvate in aestivation. *Stamens* 6 to 12, epigynous or adherent to the base of the short thick style. *Stigmas* radiating, as many as the cells of the ovary. *Fruit* dry or somewhat fleshy and succulent, 3 to 6-celled, many-seeded. *Embryo* minute, in the base of fleshy albumen.

A small Order, of little or no interest in *Agriculture*.

151. ARISTOLOCHIA. *Tournef. Endl. Gen.* 2162.

[A Greek name,—having reference to the medical virtues of the plant.]

Calyx colored, tubular,—the lower portion adherent to the ovary, ventricose above the ovary, straight or curved; limb oblique, 2 or 3-lobed,—the lower lobe sometimes ligulate or extended to a lip.—*Stamens* 6, inserted on an epigynous disk; *anthers* extrorse, 2-celled, subsessile, adnate to the style. *Stigmas* 6, radiated. *Capsule* coriaceous, 6-celled, septically 6-valved. *Seeds* numerous.

1. A. SERPENTARIA, *L.* Stem erect or ascending, flexuose; leaves lance-oblong, acuminate, entire, cordate (and sometimes auriculate) at base; peduncle sub-radical; lip of the calyx lanceolate. *Willd. Sp. Pl.* 4. p. 159. *Fl. Cestr.* p. 515.

SNAKE-ROOT ARISTOLOCHIA. *Vulgò*—Virginia Snake-Root.

Root perennial, of numerous rather coarse fibres. *Stem* herbaceous, 9 to 15 inches high, simple or branched from the base, slender, angular, pubescent, leafy above, nearly naked or with small abortive leaves below. *Leaves* 2 to 4 or 5 inches long; *petioles* one fourth of an inch to near an inch long. *Flowers* rather large, few or solitary, near the base of the stem and often concealed beneath dead leaves, on a flexuose bracteate *peduncle* 1 to 2 inches in length. *Calyx* a dull purplish brown, subcoriaceous, angularly bent, gibbous at the angle,—the limb dilated and somewhat 3-lobed. *Capsule* turbinate or roundish-obovoid, somewhat fleshy, pubescent. Rich woodlands; throughout the U. States. *Fl.* June. *Fr.* July—August.

Obs. This little plant is to be found in almost every woodland, where the soil is good; and its medicinal value, as an aromatic stimulant, renders it desirable that every person should know or be enabled to recognize it. For this reason I have been induced to give it a place, here.

ORDER CVII. CHENOPODIACEAE. *Vent. Lindl.*

Chiefly weed-like *Herbs*. *Leaves* mostly alternate, more or less fleshy, without stipules. *Flowers* inconspicuous, sometimes dioecious or polygamous. *Calyx* deeply divided, or sometimes tubular at base, persistent. *Stamens* inserted into the base of the calyx opposite its segments, and equal to them in number, or fewer. *Ovary* single, free or occasionally adherent to the tube of the calyx, with a single ovule arising from its base. *Fruit* an utricle or akene—sometimes baccate. *Seed* single, with copious farinaceous albumen,—the *embryo* peripheral, more or less completely surrounding the albumen.

A homely, but rather important, Family of plants. Beside those here given,

may be mentioned the *Quinoa* (*Chenopodium Quinoa*, Willd.)—an article of food, in South America; and the maritime genera, *Salsola* and *Salicornia*, which yield vast quantities of *Soda*.

SUB-ORDER I. CYCLOLOBEAE. C. A. Meyer.

Embryo either completely annular or curved into the form of a horse-shoe,—the albumen being central and more or less copious.

TRIBE II. ATRIPLICEAE. C. A. Meyer.

Flowers polygamous or dioicous, not bracteate. *Calyx* of the staminate flower different from that of the pistillate one. *Stem* continuous (*i. e.* not articulated).

152. SPINACIA. Tournef. Endl. Gen. 1915.

[Latin, *Spina*, a thorn; the covering of the fruit being often prickly.]

FLOWERS DIOICOUS: STAM. FL. *Calyx* 4 or 5-parted,—the segments equal. *Stamens* 4 or 5, inserted on the receptacle opposite the segments of the calyx. PISTILLATE FL. *Calyx* ventricose-tubular, 2 or 3-toothed. *Ovary* ovoid, 1-celled, 1-ovuled; *stigmas* 4, elongated, filiform, subsessile. *Akene* included in the turgid indurated calyx, which is often 2 or 3-horned on the back. *Seed* vertical, compressed; *embryo* annular, peripheral, surrounding the farinaceous albumen. *Herbaceous*: *flowers* axillary, glomerate,—the staminate ones in racemose-paniculate clusters.

1. *S. OLERACEA*, L. Leaves hastate-lanceolate, often incised at base, petiolate; fruit sessile, prickly or unarmed. Willd. *Sp. Pl.* 4. p. 766. *Fl. Cestr.* p. 565.

POT-HERB SPINACIA. *Vulgò*—Spinach, or Spinage.

Fr. Epinard des potagers. *Germ.* Der Spinat. *Span.* Espinàca.

Root annual. *Stem* 18 inches to 2 feet high, somewhat branched, or often simple. *Leaves* 2 to 4 inches long, cuneately tapering to a *petiole* 1 to 3 or 4 inches in length. *Flowers* greenish. *Fruit* inclosed in the subglobose persistent calyx, which is scarcely cleft at maturity, and often not prickly in the variety usually cultivated. Gardens: cultivated. Native of the East. *Fl.* June—July. *Fr.* Aug.—September.

Obs. This well-known pot-herb—said to have been first brought into Spain, by the Arabs—is frequently found in gardens,—especially in the vicinity of our cities and market towns. The *Atriplex hortensis*, L. or *Garden Orach*, is another pot-herb, belonging to this Tribe; but I believe it is not much cultivated in the U. States.

TRIBE III. CHENOPODIEAE. C. A. Meyer.

Flowers perfect or polygamous. ebracteolate or rarely bibracteolate, all similar. *Seed* vertical or horizontal; *testa* crustaceous or membranaceous. *Stem* continuous.

SUB-TRIBE 3. KOCHIEAE. Endl.

Flowers ebracteolate. *Seed* horizontal; *testa* crustaceous or membranaceous.

153. BETA. Tournef. Endl. Gen. 1924.

[Celtic, *Bett*, red: or from its fruit resembling the Greek letter B (*Beta*).]

FLOWERS PERFECT: *Calyx* urceolate, 5-cleft, finally indurated at base,—the segments remaining unchanged. *Stamens* 5, inserted on a fleshy ring at the throat of the short calyx-tube, opposite the segments of the limb. *Ovary* depressed, 1-celled, 1-ovuled; *stigmas* 2, short, connate at base. *Utricle* subglobose, inclosed in the dru-

paceous tube of the calyx, and covered by the fleshy limb. *Seed* horizontal, depressed; *testa* membranaceous; *embryo* annular, peripheral, surrounding the farinaceous albumen. *Herbaceous*, with a large fleshy root formed of concentric zones. *Flowers* glomerate in spikes or paniculate racemes,—the fruit often concrete or cohering.

1. *B. VULGARIS*, *L.* Lower leaves ovate; flowers in dense sessile axillary clusters, interruptedly spicate. *Willd. Sp. Pl.* 1. p. 1308. *Fl. Cestr.* p. 178.

COMMON BETA. *Vulgò*—Beet. Garden Beet. Sugar Beet.
Fr. Bette-rave. *Germ.* Gemeiner Mangold. *Span.* Acélgas.

Root biennial, fleshy, large (often 3 or 4 inches in diameter and more than a foot long.) terete, tapering downwards, deep purple or yellowish,—exhibiting, on a transverse section, *concentric layers* which seem to have some relation to the number and size or vigor of the *radical leaves*—perhaps severally formed and nourished by them. *Stem* 2 to 4 feet high, sulcate-angled, smooth, somewhat paniculately branching. *Radical leaves* 6 to 12 inches long, undulate, greenish-purple; *petioles* 4 to 8 inches long, succulent, purple, channelled above; *stem leaves* lance-ovate, acute, petiolate, smaller as they ascend. *Calyx* purplish-brown, fleshy at base, finally indurated or externally suberose,—the *segments* keeled, incurved and subsaccate at apex. *Seed* depressed, cochleate-orbicular, loosely farinaceous, enveloped in a purple membrane and lodged in a bony cell at the base of the calyx. Gardens, and Lots: cultivated. Native of Southern Europe. *Fl.* July. *Fr.* September.

Obs. Very generally cultivated for its fine esculent *root*—of which there are several *varieties*. That one, called “Sugar Beet”—with a pale yellowish root—is extensively cultivated, on the continent of Europe, for the purpose of making *Sugar*,—and has been partially tried, in this country: But, while we have the *Sugar Maple* and the *Sugar Cane* to supply us, it is not probable the *Beet* will be much relied upon, for that object. A large-rooted variety of *B. Cicta*, *L.* (a nearly allied species), called *Mangel Wurtzel*, or *Scarcity Root*, is sometimes cultivated for Stock,—and is probably entitled to more attention than it has yet received from our farmers—who are not generally partial to the culture of *root crops*.

154. CHENOPODIUM. *L. Endl. Gen.* 1930.

[Greek, *Chun*, a goose, and *Pous, podos*, a foot; from the form of the leaves.]

FLOWERS PERFECT: *Calyx* 5-parted,—the segments finally keeled. *Stamens* 5, inserted at the bottom of the calyx, opposite the segments. *Ovary* depressed, 1-celled, 1-ovuled; *stigmas* 2 or 3, filiform, very short. *Utricle* membranaceous, depressed, included in the connivent 5-angled calyx. *Seed* horizontal, lenticular; *testa* crustaceous; *embryo* annular, peripheral, surrounding the copious farinaceous albumen.

1. *C. ALBUM*, *L.* Leaves rhomboid-ovate, erose-dentate, entire and tapering towards the base,—the upper ones oblong-lanceolate, entire; racemes erect, branched, somewhat leafy. *Willd. Sp. Pl.* 1. p. 1302. *Fl. Cestr.* p. 176. *Icon, Fl. Lond.* 1.

WHITE CHENOPODIUM. *Vulgò*—Lamb’s Quarters. Goose-foot.
Fr. Anserine blanche. *Germ.* Der Gaensefuss.

Root annual. *Stem* 3 to 5 or 6 feet high, rather stout, angular, often striped with yellow and green, sometimes purplish, branched. *Leaves* 1 to 3 inches long, covered with very minute flat or cup-like scales (especially on the under sur-

face), which give them a glaucous or mealy appearance; *petioles* 1 to 2 or 3 inches long. *Flowers* in pulverulent clusters. *Calyx* depressed, 5-angled by the prominent keels of the incurved segments, greenish and glaucous. *Seed* dark purple or nearly black, lenticular and slightly cochleate, smooth and shining. Gardens, Yards, and waste places: introduced. Native of Europe. *Fl.* July—Aug. *Fr.* October.

Obs. This coarse and rather homely *weed* has become very extensively naturalized throughout the U. States,—and is quite troublesome in gardens. The young plant is sometimes used as a pot-herb; but would be gladly dispensed with by all neat gardeners and farmers.

2. *C. ANTHELMINTICUM*, *L.* Leaves oblong-lanceolate, acute, dentate; racemes axillary and terminal, long, slender, leafless. *Willd. Sp. Pl.* 1. p. 1304. *Fl. Cestr.* p. 177.

WORM-DESTROYING CHENOPODIUM. *Vulgè*—Worm-seed.

Plant pale yellowish-green. *Root* perennial. *Stem* 2 to 3 or 4 feet high, sulcate-angled, branched. *Leaves* 1 to 2 or 3 inches long, repand-dentate or sometimes rather incised-dentate, cuneate at base, sprinkled with resinous atoms beneath; *petioles* one fourth to three fourths of an inch long. *Flowers* in long slender interrupted naked racemes or spikes,—the clusters small. *Calyx* smoothish, green. *Stigmas* 3. Gardens, road-sides, and waste places. *Fl.* July. *Fr.* Sept.—Octo.

Obs. This species is noticed here, chiefly because of its repute as a remedy for worms, in children. The plant has a strong disagreeable odor,—and the essential oil—though a very nauseous dose—often proves an effective vermifuge. Mr. ELLIOTT considered it a *native* of the Southern States; but it has not that appearance, in *Pennsylvania*.

There are several other weed-like species of *Chenopodium* to be met with, occasionally; but they have not become as troublesome as the *C. album*.

ORDER CIX. AMARANTHACEAE. *Juss. R. Br.*

Herbs, or *suffruticose* plants. *Leaves* simple, opposite or alternate, mostly without stipules. *Flowers* perfect or monoicous, rarely dioicous, aggregated in heads, or spikes, or dense clusters, imbricated with dry scarious *bracts* which are usually colored. *Calyx* of 3 to 5 sepals, persistent, dry and scarious. *Stamens* hypogynous, as many as the sepals and opposite to them,—sometimes multiplied, distinct or monadelphous, with the alternate ones abortive (*staminodia*); *anthers* often 1-celled. *Ovary* single, 1 or several-ovuled; *stigma* simple or compound. *Utricle* membranaceous, 1 or several-seeded, valveless, bursting irregularly. *Seeds* lenticular- reniform; *testa* crustaceous; *embryo* curved or forming a ring round the circumference of the farinaceous albumen.

An Order of plants mainly of a *weed like* character,—though some of the *Prince's feather* tribe are admired for their showy unfading clustered inflorescence.

TRIBE II. ACHYRANTHEAE. *Endl.*

Ovary 1-ovuled. *Anthers* 2-celled.

SUB-TRIBE 4. AMARANTHEAE. *Endl.*

Flowers monoicously polygamous or perfect, tribracteate. *Utricle* circumscissid or indehiscent.

155. AMARANTHUS. *L. Endl. Gen.* 1972.

[Greek, *a*, not, *maraino*, to fade, and *anthos*, a flower; the flowers not changing or fading.]

FLOWERS MONOICOUSLY POLYGAMOUS: *Calyx* of 3 or 5 sepals, mostly colored, slightly connected at base. *Stamens* 3 or 5 (rarely 2 or 4), free; *staminodia* none. *Ovary* 1-celled, 1-ovuled; *stigmas* 2 or 3,

filiform, sessile. *Utricle* circumscribed. *Seed* lenticular-reniform; *embryo* curved into a half circle, peripheral, surrounding the albumen.

1. *A. ALBUS*, *L.* Stem obtusely angular, smooth, much branched; leaves obovate and spatulate-oblong, emarginate, setaceous mucronate; flowers triandrous, in small axillary clusters. *Willd. Sp. Pl.* 4. p. 382. *Fl. Cestr.* p. 526.

Also? *A. graecizans.* *Willd. l. c.*

WHITE AMARANTHUS.

Root annual. *Stem* 1 to 2 or 3 feet high, rather stout, pale green or whitish, generally much branched,—the principal branches near the base, spreading. *Leaves* half an inch to an inch and half long, entire, narrowed at base to a slender *petiole* one fourth of an inch to an inch and half long. *Flowers* pale green, inconspicuous, in small axillary bracteate clusters; *bracts* subulate-lanceolate, spinescently acuminate, longer than the flowers. Barn yards; Indian-corn fields, &c. *Fl.* Aug. *Fr.* Sept.

Obs. This coarse weed is quite common, in *Chester County, Pa.* in Gardens, and cultivated Lots; and yet I do not learn that it (nor, indeed, either of the following species) has been sufficiently noticed to acquire a *common name*. It is certainly a plant so entirely worthless that it ought to be extirpated. Although stated, in the books, to be a native of Pennsylvania, it has, to me, much the habit and appearance of a naturalized weed.

2. *A. HYBRIDUS*, *L.* Stem sulcate-angled, roughish-pubescent, sparingly branched; leaves ovate or ovate-lanceolate; flowers pentandrous, in dense compound axillary and terminal spikes. *Willd. Sp. Pl.* 4. p. 389. *Fl. Cestr.* p. 526.

HYBRID AMARANTHUS.

Root annual, fusiform, purple. *Stem* 2 to 4 or 5 feet high, often nearly simple. *Leaves* 2 or 3 to 5 inches long, wholly green, roughish, entire, tapering to the apex but the point mostly obtuse, emarginate and setaceous mucronate, abruptly narrowed at base to a *petiole* 1 to 3 inches in length. *Flowers* small, dull green or sometimes becoming purplish, the staminate and pistillate ones intermingled, and densely clustered in ovoid-oblong compound spikes,—the terminal spike elongated and sub-cylindric; *bracts* subulate, with a slender sharp acumination, longer than the flowers. Gardens, and cultivated Lots: New York to Carolina. *Fl.* August. *Fr.* October.

Obs. This is another coarse homely weed,—and quite troublesome in gardens, in the latter part of summer. If permitted to mature its seeds, it soon becomes very abundant.

3. *A. SPINOSUS*, *L.* Stem striate, smoothish, much branched; leaves ovate-lanceolate; axils spinose; flowers pentandrous, in compound terminal and axillary spikes. *Willd. Sp. Pl.* 4. p. 393. *Fl. Cestr.* p. 527.

THORNY AMARANTHUS.

Root annual. *Stem* 18 inches to 2 or 3 feet high, often purple. *Leaves* 1 to 2 inches long, rather obtuse, mucronate, entire, roughish-dotted, with glaucous blotches beneath; *petioles* about as long as the leaves, with 2 subulate spines (*stipules*?) at base, one fourth to half an inch in length. *Flowers* small, clustered in oblong terete erect terminal and subterminal spikes. Cultivated Lots—waysides, and waste places: introduced. Native of India. *Fl.* August. *Fr.* Octo.

Obs. This foreigner is naturalized in many places—especially in the unfrequented streets and outskirts of our sea-port towns,—and

is a vile nuisance wherever it prevails. It cannot be too sedulously guarded against.

ORDER CXI. POLYGONACEAE. *Juss. Lindl.*

Herbs, or rarely *shrubs*. *Leaves* alternate, stipulate.—the *stipules* mostly sheathing or cohering round the stem, above the leaves, in the form of an *ochrea* or boot. *Flowers* sometimes unisexual—often racemose, or spicate—occasionally eymose, or eapitate,—and in some instances, with a tubular or cup-shaped *involute*. *Calyx* of 3 to 6 sepals, more or less united at base, imbricated in aestivation, sometimes colored. *Stamens* definite, inserted on the bottom of the calyx. *Ovary* single, mostly free, with a single erect orthotropous (i. e. straight) ovule; *styles* as many as the angles of the ovary, distinct or connate at base; *stigmas* simple. *Fruit* akene-like, usually compressed or triquetrous; *embryo* inverted, curved or nearly straight, applied to the outside (sometimes in the centre) of farinaceous albumen.

An Order of little interest beyond what belongs to the plants here given,—with the exception of that species of *Rheum* which furnishes the *Rhubarb* of the shops.

TRIBE II. POLYGOEAE. *Endl.*

Involute none. *Ovule* basilar, sessile; *radicle* superior..

156. RHEUM. *L. Endl. Gen.* 1984.

[From *Rha*, the ancient name of the river Volga,—its native region.]

FLOWERS PERFECT: *Calyx* of 6 sepals, in a double series, persistent and shrivelling. *Stamens* 9, arranged in pairs opposite the outer sepals, and singly opposite the inner ones; *anthers* ovoid, versatile. *Ovary* trigonous, 1-celled; *stigmas* 3, subsessile, spreading. *Akene* triquetrous, winged at the angles, surrounded at base by the withered calyx. *Herbaceous:* *Leaves* chiefly radical, large; *flowers* fasciculate, racemose-paniculate.

1. R. RHAPONTICUM, *Ait.* *Leaves* cordate-ovate, rather obtuse,—the sinus at base dilated; *petioles* with a shallow channel above, rounded at the edges. *Willd. Sp. Pl.* 2. p. 458. *Fl. Cestr.* p. 254.

RHAPONTIC RHEUM. *Vulgò*—Rhubarb. *Pie* Rhubarb.

Root perennial, tuberous, large, reddish-brown, yellow within. *Stem* 3 to 5 feet high, stout, nodose, striate-sulcate, smoothish, fistular, paniculately branched at summit. *Radical leaves* becoming very large (18 inches to 2 feet long), smoothish above, pubescent on the veins beneath; *petioles* thick and succulent, 4 to 8 or 10 inches long,—the *stem-leaves* smaller, and *petioles* shorter, as they ascend; *stipules* large, membranaceous, sheathing. *Flowers* in large terminal racemose panicles,—the *pedicels* fasciculate, slender, one third to half an inch long, articulated near the middle. *Sepals* greenish, with white margins,—the outer ones rather narrower. *Stigmas* large, multifid, reflexed. *Gardens:* cultivated. *Native* of Seythia. *Fl.* May. *Fr.* July—August.

Obs. Frequently cultivated for the sake of its fleshy acid *petioles*—which are used by the pastry cook, in early spring, as a substitute for fruit, in making pies.

157. RUMEX. *L. Endl. Gen.* 1993.

[Latin, *Rumex*, a pike, or spear; from the shape of the leaves of some species.]

Flowers sometimes *dioicous*: *Calyx* of 6 persistent sepals, in a double series,—the 3 outer ones green, connected at base—the 3 inner ones larger, sometimes a little colored, connivent, naked or graniferous on the back. *Stamens* 6, in pairs opposite the outer sepals; *anthers* oblong, attached by the base. *Ovary* triquetrous; *styles* 3, filiform, free or adnate to the angles of the ovary; *stigmas* penicillate-multifid. *Akene* triquetrous, free within the valvately connivent inner sepals.

† *Flowers perfect.* * *Inner sepals entire, and all graniferous.*

1. *R. CRISPUS, L.* Radical leaves oblong-lanceolate, mostly acute, curled or wavy on the margin; inner sepals large, cordate, nearly entire, reticulately and prominently veined, all dorsally graniferous. *Willd. Sp. Pl. 2. p. 251. Fl. Cestr. p. 236. Icon, Fl. Lond. 2.*

CURLED RUMEX. *Vulgò*—Sour Dock. Curled Dock.

Fr. Patience friséé. *Germ.* Krauser Ampfer.

Root perennial, rather large, fusiform, yellow. *Stem* 2 to 3 or 4 feet high, angular-sulcate, smoothish, paniculately branched above. *Radical leaves* 8 to 12 or 15 inches long, and 1 to 2 or 3 inches wide; *petioles* 2 to 4 inches long; the *stem-leaves* smaller, linear-lanceolate. *Flowers* in crowded verticillate fascicles, with scarios involucre at base. *Calyx* green; inner sepals much larger than the outer ones, entire or obsoletely denticulate near the base,—each with an ovoid acuminate excrescence, or grain, on the back. *Moist grounds: meadows, &c.:* introduced. *Native of Europe. Fl.* May—July. *Fr.* July—September.

Obs. The *radical leaves* of this are often used as a pot-herb, or early “*Greens*”; but the plant is an unsightly and troublesome weed,—and has become so extensively naturalized as to require a vigilant attention to keep it in due subjection.

* * *Inner sepals dentate,—one or more mostly graniferous.*

2. *R. OBTUSIFOLIUS, L.* Radical leaves subcordate-oblong, obtuse, crenulate; inner sepals lance-ovate, acutely dentate near the base,—one of them conspicuously graniferous. *Willd. Sp. Pl. 2. p. 254. Fl. Cestr. p. 236. Icon, Fl. Lond. 2.*

OBTUSE-LEAVED RUMEX. *Vulgò*—Bitter Dock. Broad-leaved Dock.

Root perennial, thickish, branching, brown externally, yellow within. *Stem* 2 to 4 feet high, angular-sulcate, roughish, paniculately branched. *Radical leaves* 8 to 12 inches long, and 4 to 6 inches wide, roughish-pubescent on the nerves; *petioles* 3 to 6 inches long. *Flowers* in interrupted verticillate fascicles. *Calyx* green,—the inner sepals with long acute teeth near the base, and one of them bearing a large grain on the back. *Grass-lots: gardens, meadows, &c.:* introduced. *Native of Europe. Fl.* June—July. *Fr.* August—September.

Obs. This species is even more worthless than the preceding; but—although completely naturalized—it is not quite so prevalent. The presence of either imparts a very slovenly appearance to a meadow or pasture lot.

† † *Flowers dioicous: Sepals not graniferous.*

3. *R. ACETOSELLA, L.* Leaves lanceolate-hastate,—the lobes acute, spreading; flowers dioicous; inner sepals entire. *Willd. Sp. Pl. 2. p. 260. Fl. Cestr. p. 236. Icon, Fl. Lond. 2.*

Vulgò—Sheep Sorrel. Field Sorrel.

Fr. Petite Oseille. *Germ.* Der Sauer Ampfer. *Span.* Acederilla.

Root perennial, somewhat fusiform. *Stem* 6 to 12 or 15 inches high, slender, branching, somewhat angular and furrowed. *Leaves* 1 to 2 inches long,—the lower ones mostly all hastate and on *petioles* as long or longer than the leaves—the upper ones on short *petioles*, and sometimes not hastate. *Flowers* in paniculate racemes, finally becoming purple,—the verticils dimidiate, 6 to 8-flowered. *Pistillate plants* mostly taller than the staminate. *Sandy fields and pastures; about old stumps, &c.:* introduced. *Native of Europe. Fl.* May. *Fr.* August.

Obs. This little species (well known for its acidity,) is often so abundant as to be a nuisance on the farm. Improving the land—especially by adequate dressings of Lime—is believed to be the best mode of expelling this, as well as many other obnoxious plants.

158. POLYGONUM. L. *Endl. Gen.* 1866.

[Greek, *Polys*, many, and *Gonu*, a knee, or joint,—the stem being much jointed.] *Flowers* perfect or *polygamous*: *Calyx* often colored, mostly of 5 sepals, in a double series,—the sepals more or less united, sometimes unequal, often finally enlarged. *Stamens* 5 to 9, mostly 8,—arranged singly opposite the sepals, or sometimes in pairs opposite the inner sepals—often alternating with perigynous or hypogynous *glands*; *anthers* ovoid, didymous, versatile. *Ovary* 1-celled, compressed or triquetrous; *styles* 2 or 3, more or less united below; *stigmas* capitate. *Akenes* lenticular or triquetrous according as the styles are 2 or 3, inclosed by the persistent calyx. *Herbaceous*. *Flowers* often with sheathing ochrea-like *bracts*.

† *Flowers* mostly fasciculate, in terminal or axillary *Spikes*.

1. P. HYDROPIPER, L. Leaves lanceolate, not spotted; spikes filiform, flaccid, nodding; fascicles few-flowered, rather remote; flowers mostly octandrous; calyx glandular-dotted; styles 2 or 3; seeds lenticular or triquetrous. *Alx. Fl. Bor. Am.* 1. p. 238.

P. punctatum. *Fl. Cestr.* p. 248. not? of Ell.

WATER-PEPPER POLYGONUM. *Vulgò*—Water-Pepper.

Root annual. *Stem* 12 to 18 inches high, slender, more or less branched, sometimes decumbent, smooth, often purple. *Leaves* 2 to 4 inches long, tapering to a slender apex, acute at each end, sessile, often hairy on the midrib and upper surface, scabrous-ciliate on the margin, marked with numerous pellucid punctures. *Stipules* sheathing, truncate and fringed at summit with *bristles* one third to two thirds their length. *Spikes* 2 to 4 inches long, very slender and flaccid; fascicles rather distant, 2 to 4-flowered, embraced by tubular truncate bristly-ciliate bracts. *Sepals* green, with the margins white, or often tinged with purple. *Stamens* 5, or frequently 7. *Ovary* either lenticular with 2 styles, or triquetrous with 3 styles. *Akene* purplish brown or nearly black, ovate or triquetrous, and in either case acuminate. Moist waste grounds; road-sides, &c. throughout the U. States. *Fl.* August. *Fr.* September.

Obs. Whether the *P. punctatum*, of ELLIOTT, is really distinct from our plant, I have not the means of determining; but Dr. ENGELMANN, of St. Louis, pronounces the *P. punctatum*, of the *Flora Cestricea*, to be nothing else than the true *P. Hydropiper* of LINNÆUS. The elder MICHAUX so considered it; and Dr. TORREY long since suggested that it might be only a *variety*. I now concur in these views; and have, therefore, restored the Linnæan name to the species. It is a worthless *weed*—as most of the numerous species are; and it is, moreover, a highly acrid plant,—sometimes causing obstinate ulcerative inflammation, when incautiously applied to the skin.

2. P. PERSICARIA, L. Leaves lanceolate, spotted; stipules somewhat pilose, ciliate at summit; spikes terminal and axillary, ovoid-oblong, dense-flowered, erect, on smooth peduncles; flowers hexandrous, and mostly digynous. *Willd. Sp. Pl.* 2. p. 446. *Fl. Cestr.* p. 249. *ICON, Fl. Lond.* 2. [weed.]

PEACH-LEAVED POLYGONUM. *Vulgò*—Lady's thumb. Spotted Knot-*Fr.* Persicaire. *Germ.* Flöhkraut. *Span.* Persicaria.

Root annual. *Stem* 1 to 2 feet high, branching, smooth, often purplish. *Leaves* 2 to 4 inches long, tapering at base to a short petiole,—the upper surface usually marked with a dark-colored lunate or sub-cordate spot near the middle. *Stipules* truncate, fringed with bristles one fourth to one third their length. *Spikes* about an inch long, on glabrous peduncles,—the fascicles crowded. *Sepals* purple or bright crimson. *Akenes* mostly compressed. Waste places; road-sides, &c., introduced. Native of Europe. *Fl.* Aug. *Fr.* September—October.

Obs. This has become a common *weed*,—about farm-houses; and a good taste requires it to be kept down.

3. *P. PENNSYLVANICUM*, *L.* Leaves lanceolate and often spotted; stipules smooth, not ciliate; spikes oblong, somewhat nodding, on glandular-hispid peduncles; flowers mostly octandrous and digynous. *Willd. Sp. Pl. 2. p. 448. Fl. Cestr. p. 250.*

PENNSYLVANIAN POLYGONUM.

Root annual. *Stem* 2 to 3 or 4 feet high, smooth below, geniculate, with tumid nodes, paniculately branched above,—the branches glandular-hispid. *Leaves* 3 to 6 inches long, often with a dark spot in the middle; *petioles* about half an inch long, and usually purple. *Stipules* scarious, not fringed at summit. *Spikes* numerous, rather large (1 to 2 inches long). *Sepals* bright palish-purple or rose-colored, larger than in the preceding. *Akenes* compressed. Moist grounds; waste places, &c.: throughout the U. States. *Fl.* July—Aug. *Fr.* September—October.

Obs. This has much general resemblance to the preceding—usually growing in company with it—and equally worthless. It is, however, a stouter plant, and readily distinguished by the characters above noted.

† † *Flowers in paniculate clusters. Stem aculeate.*

4. *P. SAGITTATUM*, *L.* Stem flaccid, procumbent, 4-angled, retrorsely aculeate; leaves sagittate, acute, on short petioles; flowers octandrous and trigynous, crowded, subcapitate,—the heads on smoothish peduncles. *Willd. Sp. Pl. 2. p. 453. Fl. Cestr. p. 251.*

SAGITTATE POLYGONUM. *Vulgò*—Arrow-leaved Tear-thumb.

Root annual. *Stem* 2 to 4 feet long, slender, branching, acutely quadrangular,—the angles armed with sharp recurved prickles. *Leaves* 1 to 3 inches long, and half an inch to an inch wide, sagittate at base,—the midrib and petiole retrorsely aculeate. *Stipules* lanceolate, amplexicaul or sheathing, smooth. *Flowers* in pedunculate heads or clusters. *Sepals* pale red, with the margins nearly white. *Akenes* ovoid-triangular. Swampy meadows, and thickets: New York to Florida. *Fl.* August. *Fr.* September.

Obs. The mowers and haymakers are familiar with this *weed*, in the second crop of wet meadows. Ditching and draining are the remedies for the evil.

5. *P. ARIFOLIUM*, *L.* Stem flaccid, sulcate-angled, retrorsely aculeate; leaves hastate, acuminate, on long petioles; flowers hexandrous and digynous, distinct, sub-racemose; racemes few-flowered, on glandular-hispid peduncles. *Willd. Sp. Pl. 2. p. 453. Fl. Cestr. p. 251.*

ARUM-LEAVED POLYGONUM. *Vulgò*—Halbert-leaved Tear-thumb.

Root annual. *Stem* 3 to 6 feet long, slender but coarser than the preceding, branching, often purple. *Leaves* 2 to 5 inches long, and 1 to 3 inches wide, hastate-lobed at base,—the lobes acuminate—the midrib and nerves hirsute; *petioles* half an inch to 3 inches long, sulcate-angled, retrorsely aculeate. *Stipules* ovate, amplexicaul, ciliate. *Flowers* in slender loose racemose clusters. *Calyx* often of 4 connected sepals, purple, with the margins pale red. *Akenes* compressed, ovate. Swampy low grounds; along rivulets, &c.: throughout the U. States. *Fl.* August. *Fr.* September.

Obs. This is generally found in company with the preceding,—and is of much the same obnoxious character, as a *weed*. There are

several other species of *Polygonum* to be met with about our farms (descriptions of which may be found in the *Floras*);—but, as they are not particularly troublesome, they are omitted, here.

159. FAGOPYRUM. *Tournef. Endl. Gen.* 1987.

[So named, from its fruit resembling that of the *Fagus*, or Beech.]

Flowers perfect, or sometimes diclinous by abortion. *Calyx* of 5 persistent colored nearly equal sepals, in a double series. *Stamens* 8, arranged in pairs opposite the 3 external sepals, singly opposite the 2 inner ones, and alternating with 8 hypogynous glands; *anthers* ovoid, versatile. *Ovary* trigonous, 1-celled; *styles* 3, longish; *stigmas* capitate. *Akene* triquetrous, embraced at base by the marcescent calyx.

1. F. ESCULENTUM, *Moench*. Stem erect, paniculately branched, sulcate-angled, smoothish; leaves cordate-sagittate or subhastate, acute; racemes terminal and axillary. [252.]

Polygonum Fagopyrum. *L. Willd. Sp. Pl.* 2. p. 455. *Fl. Cestr.* p.

ESCULENT FAGOPYRUM. *Vulgò*—Buck-wheat.

Fr. Bléd Sarrasin. *Germ.* Der Buchweizen. *Span.* Trigo Sarraceno.

Root annual. *Stem* 2 to 4 feet high, much branched, pubescent near the nodes, becoming dark purple. *Leaves* 2 to 3 or 4 inches long, and 1 to 2 inches wide, often a little hastate at base, on *petioles* 1 to 2 or 3 inches long (sessile, *Endl.*); *stipules* short, smooth. *Flowers* in somewhat paniculate racemes,—the fascicles rather crowded; *pedicels* slender, longish, obscurely articulated above the middle. *Sepals* mostly white, with tinges of green and pale purple. *Akenes* equally and acutely triquetrous, somewhat acuminate, much longer than the withered sepals, smooth, dark brown when mature, often striately elouled. *Fields*: cultivated. Native of Middle Asia. *Fl.* Aug. *Fr.* Sept.—October.

Obs. This is extensively cultivated for its *seeds*,—the farinaceous albumen of which affords a delicious article of food, when properly managed—and a very sorry one, if unskilfully treated. The culture of the plant is pretty much confined (in this region, at least,) to rough hilly districts; as it is considered a severe and unprofitable crop, on highly improved lands. It is, however, admirably adapted to subdue wild lands—or those newly cleared of timber. The glandular *flowers* are a favorite resort—and afford a rich reward to the labors—of the *Honey-Bee*.

ORDER CXII. PHYTOLACCACEAE. *R. Br. Lindl.*

Herbs, or *suffruticose* plants. *Leaves* alternate, entire, without stipules. *Flowers* racemose. *Calyx* of 4 or 5 petaloid slightly connected sepals. *Stamens* as many, or twice as many, as the sepals—or sometimes indefinite. *Ovary* compound (rarely simple), consisting of 10 confluent 1-ovuled carpels; *styles* or *stigmas* distinct—one for each cell or carpel. *Fruit* baccate or dry, entire or lobed, 1 or many-celled. *Seeds* ascending, solitary; *embryo* mostly peripheral, and curved round mealy albumen.

A small Order, and of little interest in Agriculture.

160. PHYTOLACCA. *Tournef. Endl. Gen.* 5262.

[*Gr. Phytón*, a plant, and *Lachanon*, a pot-herb; the young shoots being so used.]

Flowers perfect, or rarely dioicous. *Calyx* of 5 roundish-ovate colored persistent sepals. *Stamens* as many as, or usually some multiple of, the sepals,—often 10, inserted on a sub-hypogynous disk; *anthers* incumbent. *Ovary* free, composed of 5 to 10 confluent

ent carpels; *styles* as many as the carpels, recurved at apex. *Fruit* a depressed-globose 5 to 10-celled *berry*; cells 1-seeded.

1. *P. DECANDRA*, L. Leaves ovate-oblong, acute at each end; flowers decandrous and decagynous. *Willd. Sp. Pl.* 2. p. 822. *Fl. Cestr.* p. 283. [berry.

DECANDROUS PHYTOLACCA. *Vulgò*—Poke. Poke-weed. Pigeon-*Fr.* Morelle à Grappes. *Germ.* Kermesbeere. *Span.* Yerba carmin.

Whole plant glabrous. *Root* perennial, large, fusiform and branching. *Stem* herbaceous. 4 to 6 feet high, stout, branching, terete or obtusely ribbed below the petioles and branches, finally purple. *Leaves* 5 to 10 inches long, acute or acuminate, thin; *petioles* half an inch to 2 inches or more in length. *Racemes* 3 to 6 inches long, simple, mostly opposite the leaves, on angular *peduncles* 2 to 4 inches long. *Sepals* white, membranaceous at the margin. *Berries* vertically depressed, umbilicate, orbicular, obscurely ribbed, 10-celled, 10-seeded, dark purple and juicy when mature. *Seeds* compressed, roundish-reniform. Rich soils; on banks, borders of fields, in clearings, &c.: throughout the U. States. *Fl.* June—September. *Fr.* August—October.

Obs. The *young shoots* of this plant afford a good substitute for *Asparagus*: the *root* is said to be actively emetic; and the tincture of the *ripe berries* is, or was, a popular remedy for chronic rheumatism. The mature berries, moreover, have been used by the pastry cook, in making *pies* of equivocal merit. Notwithstanding all this, the plant is regarded and treated as a *weed*, by all neat farmers.

ORDER CXIII. LAURACEAE. *Juss. Lindl.*

Trees or shrubs. *Leaves* mostly alternate, simple, sometimes lobed but with entire margins, destitute of stipules. *Flowers* often polygamo-dioicous. *Calyx* of 4 to 6 somewhat united sepals which are imbricated in two series, free from the ovary. *Stamens* definite, but usually more numerous than the sepals, inserted on the base of the calyx; *anthers* 2 to 4-celled, opening by reflected persistent *valves!* *Fruit* a berry or drupe,—the *pedicel* often thickened. *Seed* solitary, destitute of albumen: *cotyledons* large, plano-convex or almond-like.

The *tropical plants* of this Order are highly interesting,—affording *Cinnamon*, *Cassia*, and *Camphor*; and also that species of *Laurus* (*L. nobilis*, L.) of which the Ancients formed their *Laurel* wreaths, or crowns. The species in the U. States are of less importance.

TRIBE X. FLAVIFLORAE. *Nees.*

Flowers dioicous or polygamous. *Calyx* rotate, thin, yellow. *Stamens* 9 fertile—sterile none; *anthers* 2 or 4-celled, all introrse. *Berry* on a nearly naked pedicel, which is sometimes thickened.

161. SASSAFRAS. *Nees. Endl. Gen.* 2056.

[Altered from *Sassafras*, the Spanish name of Saxifrage,—given to this plant.]

Flowers dioicous, naked. *Sepals* 6, membranaceous, united at base, persistent. **STAM. FL.** *Stamens* 9, in three series, all fertile,—the 3 innermost supported by a pair of stipitate *glands*; *anthers* introrse, linear, 4-celled,—the lower cells lateral—the upper ones covered by the ascending or reflected valves of the lower ones. *Ovary* entirely abortive. **PISTILLATE FL.** *Stamens* 9 or fewer, all sterile,—the inner ones often coalesced with glands. *Ovary* 1-celled, 1-ovuled; *style* subulate; *stigma* discoid. *Berry* 1-seeded, on a thickened clavate fleshy pedicel, and supported by the unchanged spreading sepals.

1. *S. OFFICINALE*, *Nees.* Leaves 3-lobed, or ovate and entire;

flowers in terminal clustered corymbose racemes, with lance-linear villous bracts; buds and pedicels silky-pubescent.

Laurus Sassafras. *L. Willd. Sp. Pl.* 2. p. 485. *Fl. Cestr.* p. 254. *Icon, Mex. Sylva*, 2. tab. 81.

OFFICINAL SASSAFRAS. *Vulgò*—Sassafras.

Stem 15 to 40 or 50 feet high, and 6 to 12 inches (in some rare instances, near 2 feet) in diameter, branching,—the young branches yellowish and pubescent. *Leaves* 3 to 5 inches long, and 2 to 4 inches wide,—often ovate and undivided, but more commonly dilated and 3-lobed at apex and cuneate at base (sometimes oval, with a lateral lobe),—silky-pubescent when young, finally smooth; *petioles* half an inch to an inch long. *Flowers* from the same buds, and contemporaneous, with the leaves. *Sepals* oblong, rather obtuse, pale greenish-yellow. *Berries* ovoid-oblong, dark blue when mature; *pedicels* purple. Woodlands; fence-rows, and old fields: Canada to Florida. *Fl.* April. *Fr.* September.

Obs. The *bark* of this well-known small tree is a powerful, yet pleasant, aromatic stimulant, and possesses valuable medicinal properties; which acquired for it, at an early day, in Europe, an exaggerated reputation. An infusion of the *roots*, or *bark* of the roots, makes an excellent diet drink. The *pith* of the young branches contains much mucilage,—and is said to be used, in the South, along with the *young leaves*, to thicken potage, and make the celebrated “Gumbo Soup.” We learn, also, from MICHAUX’S *Sylva*, that bedsteads made of the *wood*, “are never infested with insects”; which circumstance—to adopt the language of the *Gazettes*—is certainly “important, if true,”—and well worthy of notice.

162. BENZOIN. *Nees. Endl. Gen.* 2057.

[A name said to be derived from the Arabic,—expressive of *perfume*.]

Flowers dioicous, in small lateral fascicles or clusters, surrounded by a deciduous 4-leaved *involucre*. *Sepals* 6, membranaceous, connected at base, persistent. *STAM. FL.* *Stamens* 9 *fertile*, in three series; *anthers* introrse, ovoid, 2-celled, opening by as many ascending valves: also 6 to 9 *sterile stamens*, in 2 or 3 series, with compressed reniform-emarginate heads, alternating with the fertile ones of series 2 and 3—or sometimes with all the fertile ones. *Ovary* an abortive rudiment. *PISTILLATE FL.* *Sterile stamens* 15 to 18, filiform, acute, alternating with smaller spatulate ones. *Ovary* 1-celled, 1-ovuled; *style* short; *stigma* 2-lobed. *Berry* 1-seeded, sitting on the persistent calyx.

1. *B. ODORIFERUM*, *Nees*. Leaves obovate-lanceolate, entire; flowers in lateral umbellate clusters, preceding the leaves; buds and pedicels smooth.

Laurus Benzoin. *L. Willd. Sp. Pl.* 2. p. 485. *Fl. Cestr.* p. 253.

ODORIFEROUS BENZOIN. *Vulgò*—Spice-wood. Wild Allspice. Fever-bush.

Stem 6 to 8 or 10 feet high, much branched; branches virgate, brittle. *Leaves* 2 to 4 inches long, mostly acute or with a short acumination (sometimes obtuse and rounded at apex), often cuneate at base; *petioles* about half an inch long. *Flowers* in involucrate clusters of 3 to 5 from a bud, on pedicels 1 or 2 lines long; flower-buds distinct from the leaf-buds,—usually a flower-bud on each side of a leaf-bud. *Sepals* greenish-yellow, obovate-oblong, obtuse. *Stamens* rather shorter than the sepals,—the filaments of the sterile ones (*staminodia*) bearing 2-lobed (or sometimes peltate) glands instead of anthers; *perfect anthers* 2-celled,—each cell opening by a longitudinal elastic valve, which is detached

at the lower end and reflected upwards. *Berries* oval, red or finally dark purple when mature. Moist rich low grounds; borders of thickets, &c. Canada to Florida. *Fl.* April. *Fr.* September.

Obs. This is a strongly aromatic shrub. In early times—before Physicians were so numerous—an infusion of the brittle spicy twigs was much used as a popular remedy, and even as a preventive, of the fevers which attacked the first settlers: but it is now chiefly prescribed as a diet-drink for sickly cows, in the spring of the year.

ORDER CXIV. SANTALACEAE. *R. Br.*

Trees, shrubs, or sometimes herbs. *Leaves* alternate, simple, entire, without stipules. *Flowers* perfect, or sometimes dioicously polygamous, small. *Calyx-tube* adherent to the ovary; *limb* 4 or 5-cleft, valvate in aestivation, its base lined with a fleshy disk, the edge of which is often lobed. *Stamens* usually as many as the lobes of the calyx and opposite them, inserted on the edge of the disk. *Ovary* 1-celled; *ovules* 2 to 4, pendulous; *style* short; *stigma* capitate, 2 or 3-lobed, or rarely radiate—sometimes simple. *Fruit* drupaceous or dry, indehiseent, mostly crowned with the limb of the calyx. *Seed* with a densely fleshy albumen.

The fragrant *Santal wood*—afforded by species of *Santalum* (the type of the Order)—is the only product of much interest, beside the genus here given.

163. NYSSA. *L. Endl. Gen.* 2086.

[A name of obscure derivation.]

Flowers polygamo-dioicous. *Calyx* with the tube short; *limb* 5-parted, deciduous. *Stamens* 5 to 10, inserted round a flattish disk which fills the bottom of the calyx, in the sterile flowers; *anthers* 2-celled, didymous. *Ovary* inferior, 1-celled; *ovule* single, pendulous; *style* subulate, incurved; *stigma* simple. *Drupe* baccate, 1-seeded; *nut* oval, striate-angular. *Seed* inverted; *embryo* straight, in the axis of scanty albumen.

1. *N. MULTIFLORA*, *Walt.* *Leaves* oval and obovate, acute at each end, often acuminate, very entire,—the petiole midrib and margin villous; fertile peduncles mostly 3-flowered. *Ell. Sk.* 2. p. 684. *Fl. Cestr.* p. 164.

N. villosa. *Willd. Sp. Pl.* 4. p. 1112.

N. sylvatica. *Mr. Sylva*, 3. p. 33. *Icon, tab.* 110.

MANY-FLOWERED NYSSA. *Vulgô*—Sour Gum. Black Gum. *Pepe-*

Stem 30 to 60 or 70 feet high, and 1 to 2 feet in diameter; branches numerous, horizontally spreading and often a little drooping. *Leaves* 2 to 4 inches long, dark green and shining above, paler and pubescent beneath, the margin villous-elliptic: *petioles* half an inch to an inch long, often margined, conspicuously villous-elliptic. *Staminate flowers* pedicellate, 2 to 5 or 6 in a loose cluster, on a slender common peduncle about an inch long. *Fertile flowers* sessile, mostly 3 in a dense involucrate eluster (sometimes 2, or only 1), on a clavate common peduncle, which at first is about half an inch—finally an inch to an inch and half—in length. *Drupe* elliptic, near half an inch long, bluish-black when mature. Moist woodlands, and low grounds: throughout the U. States. *Fl.* May—June. *Fr.* September.

Obs. The woody fibres of this tree are remarkably interlocked, so as to render it very difficult to split; on which account it is much used for making naves, or *hubs*, for carriage wheels,—and also hatter's blocks. The younger trees, when growing solitary, have much symmetry—affording a fine shade; and in autumn the leaves add greatly to the picturesque appearance of the country, by changing to a bright crimson color. There are three other species of *Nyssa*, in the Southern States,—with which I have but little acquaintance:

viz. *N. biflora*, Walt. *N. uniflora*, Walt. and *N. capitata*, Walt. The first two are described as trees of large size,—often reaching the height of 60 or 80 feet, in the Southern swamps and ponds. The *N. capitata* is a shrub, rarely reaching the height of 20 feet,—and bearing a large red sub-acid drupe, called “Ogeechee Lime”,—which is said to make a good preserve. See ELLIOTT’S *Sketch*, Vol. 2. pp. 684–6. and Dr. BALDWIN’S *Correspondence*, p. 328.

ORDER CXVII. ULMACEAE. *Mirbel.*

Trees, or *shrubs*, with a watery juice. *Leaves* alternate, simple, roughish, with deciduous stipules. *Flowers* in lateral fascicles, or axillary and solitary, perfect or sometimes polygamous. *Calyx* campanulate, 4 or 5- (sometimes 6 or 8-) cleft, free from the ovary; lobes imbricated in aestivation. *Stamens* inserted on the base of the calyx, as many as its lobes and opposite to them—sometimes more numerous. *Ovary* 1 or 2-celled, with a single suspended ovule in each cell; *styles* or *stigmas* 2, divergent. *Fruit* 1-celled and 1-seeded, indehiscent,—either *samaroid* or *drupaceous*. *Seed* pendulous; albumen none, or very little.

A small Order,—and of little interest, beyond what is here given.

SUB-ORDER I. ULMEAE. *A. Gray.*

Flowers perfect, fasciculate. *Fruit* samaroid: albumen none.

164. ULMUS. *L. Endl. Gen.* 1850.

[An ancient Latin name,—of obscure etymology.]

Calyx membranaceous, turbinate-campanulate, 4, 5, or 8-cleft. *Stamens* as many as the lobes of the calyx. *Ovary* compressed, ovate, 2-celled; ovules solitary, appended to the apex of the dissepiment; *styles* 2, diverging, *stigmatose* on the inner side. *Samara* membranaceous, compressed, winged all round, by abortion 1-celled and 1-seeded. *Seed* inverted.

1. U. AMERICANA, *L.* Leaves ovate, smooth above, very unequal at base, rather simply serrate,—the serratures uncinately acuminate; flowers conspicuously pedicellate, in loose fascicles; samara oval, densely villous-ciliate on the margin. *Willd. Sp. Pl.* 1. p. 1325. *Fl. Cestr.* p. 178. *Icon, Mex. Sylva*, 3. tab. 126.

AMERICAN ULMUS. *Vulgò*—White Elm. Weeping Elm.

Stem 60 to 80 feet, or more, in height, and 2 to 3 or 4 feet in diameter; branches long and spreading, or often rather drooping. *Leaves* 3 to 5 inches in length, acuminate; *petioles* one fourth to half an inch long, smoothish. *Stipules* smooth. *Calyx* somewhat obliquely truncate, about 8-cleft, smoothish; tube green; lobes purplish-brown, short, rounded. *Stamens* mostly 8, exserted. *Styles* pubescent, nearly white. *Samara* reticulately veined, tapering to a pedicel at base, emarginate or bifid at apex between the 2 styles,—the segments incurved so as to leave an apparent foramen through the wing; margin densely fringed with soft white hairs. Banks of streams; borders of swamps, &c.: throughout the U. States. *Fl.* April. *Fr.* June.

Obs. This is a fine large tree; and, if I mistake not, is the species so much cultivated as a *Shade tree*, in New England. The noble avenues of *Elms*, at *New Haven, Conn.* are the admiration of all visitors; and nothing is required but a little attention, at the proper season, to have every village in the land similarly adorned. *Why* will not the people of all our American towns and villages learn to do that much, for the sake of taste, and their own future comfort?*

*It may be hoped that the persuasive arguments, and elegant illustrations, of A. J. DOWNING, Esqr. in reference to Shade trees, Landscape Gardening, &c. will induce our countrymen, generally, to pay more attention to such improvements, than they have hitherto done.

2. *U. FULVA*, *Mx.* Leaves oval or obovate-oblong, conspicuously acuminate, very scabrous above, rather unequal and somewhat cordate at base, doubly serrate; buds clothed with a fulvous tomentum; flowers in dense sessile fascicles; samara orbicular, naked on the margin. *Fl. Cestr. p.* 179.

U. rubra. *Mx. Sylva*, 3. *p.* 89. *Icon, tab.* 128.

TAWNY ULMUS. *Vulgò*—Slippery Elm. Red Elm.

Stem 30 to 50 feet high, and 12 to 18 inches in diameter; branches virgate. *Leaves* 4 to 6 or 8 inches long,—the upper surface remarkably rough—the under surface tomentose-pubescent, especially along the midrib and nerves; *petioles* about one third of an inch long, pubescent. *Stipules* pilose. *Calyx* about 7-cleft; lobes obtuse, clothed and ciliate with a reddish-tawny pubescence. *Stamens* often 7, much exerted. *Styles* glandular-pubescent, purple. *Samara* radiately veined, on a slender pedicel the length of the calyx, cleft at apex between the styles,—the segments acuminate and so incurved and overlapped as to give the margin the appearance of being entire at apex. Rich low grounds; fence-rows, &c.: throughout the U. States. *Fl.* April. *Fr.* June.

Obs. The inner bark of this species contains a large quantity of mucilage,—which has caused it to be added to the *materia medica*, in our Shops. The military, on the Canada frontier, during the last war, fed their horses with it, when destitute of the usual forage,—and found it a tolerable substitute for hay. The tree being smaller, and the branches straggling, it does not answer for a *shade tree*, so well as the preceding. There is another species, (*U. alata*, *Mx.*) occasionally to be met with,—having the branches remarkably ridged, or winged, with a cork-like bark; but it is a small tree, and not of much interest to the farmer.

SUB-ORDER II. CELTIDEAE. *Rich. A. Gray.*

Flowers polygamous, subsolitary. *Fruit* drupaceous. *Albumen* scanty.

165. CELTIS. *Tournef. Endl. Gen.* 1851.

[An ancient name of the *Lotus*,—applied to this genus.]

Calyx of 5 or 6 sepals, slightly connected at base, persistent, concave, imbricated in aestivation. *Stamens* as many as the sepals and opposite to them; *anthers* introrse, 2-celled, cordate, acuminate.—*Ovary* ovoid, 1-celled; *ovule* single, appended to the parietes near the apex; *stigmas* 2, terminal, elongated and acuminate, spreading or recurved, glandular-pubescent. *Drupe* globose, fleshy, smooth, 1-seeded. *Seed* pendulous, curved; *cotyledons* conduplicate, emarginate at apex, inclosing the somewhat gelatinous central albumen.

1. *C. OCCIDENTALIS*, *L.* Leaves obliquely ovate, acuminate, serrate, entire at base; flowers solitary or in pairs; fruit brownish-orange color. *Willd. Sp. Pl.* 4. *p.* 994. *Fl. Cestr. p.* 180. *Icon, Mx. Sylva*, 3. *tab.* 114.

WESTERN CELTIS. *Vulgò*—Nettle-tree. Sugar-berry.

Stem 20 to 60 or 80 feet high, and 6 inches to 2 or 3 feet in diameter. *Leaves* 2 to 4 or 5 inches long, more or less scabrous on the upper surface, and somewhat hairy beneath, finally coriaceous; *petioles* one third or half an inch in length. *Flowers* axillary, solitary or sometimes in pairs; *pedicels* slender, half an inch or three quarters in length. *Sepals* dull greenish-yellow, oblong-lanceolate. *Stigmas* densely pubescent, long, divaricate, with the points often incurved. *Drupe* yellowish-brown when mature (purple, *Ell.*);—the pulpy coat thin, sweetish. Rich light soils; throughout the U. S. but I think not abundant any where. *Fl.* May. *Fr.* September.

Obs. This is by no means a common tree, in Eastern Pennsylvania,—and is but little known to the farmers. There appears to be another species (probably *C. crassifolia*, Lam.),—with larger coarser leaves, and, if MICHAUX is correct, with *dark blue fruit*; but I have not seen the fruit, and cannot speak confidently of the character of the tree. It is, however, rather a matter of Botanical curiosity, than of Agricultural importance.

ORDER CXXII. EUPHORBACEAE. Juss. R. Br.

Herbs, shrubs, and even trees.—often with an acrid milky juice. *Leaves* opposite or alternate, mostly simple: *stipules* small and deciduous, or often wanting. *Flowers* monoicous or dioicous, usually bracteate or involucrate. *Calyx* free, lobed,—with various glandular or scaly internal appendages (in a few cases with genuine *petals*?),—sometimes obsolete or wanting. *Stamens* definite or indefinite, distinct or monadelphous: *anthers* 2-celled. *Ovary* sessile or stipitate, 2-3- or several-celled (or rather of so many united *carpels*); *ovules* solitary or twin and collateral, suspended from the inner angle of the cell near the apex; *styles* and *stigmas* as many as the cells, distinct or united. *Fruit* capsular,—often separating into its elementary carpels, which usually open elastically by one or both sutures. *Seeds* with a large embryo inclosed in fleshy albumen.

This large and varied—yet essentially natural Family—comprises upwards of 100 genera,—many of them possessing very active properties, or otherwise curious and interesting. Of these may be mentioned, the *Croton Tiglium*, L. which yields the powerful *Croton Oil* or *Oil of Tiglium*,—the *Jatropha Manihot*, L. which affords the *Cassava* and *Tapioca*,—the *Crotophora tinctoria*, Juss. yielding *Turn-sol*,—the *Siphonia elastica*, Pers. affording the true *Caoutchouc* or *Gun elastic*,—the *Buzus sempervivens*, L. affording the beautiful *Box-wool*,—the *Hura crepitans*, L. or curious *Sand-box tree*, &c. &c.

TRIBE I. EUPHORBIEAE. Bartl.

Flowers monoicous, apetalous,—the staminate with the pistillate, within a common *involucre*. *Cells* of the ovary (*carpels*) 1-ovuled.

166. EUPHORBIA. L. *Endl. Gen.* 5766.

[Named after *Euphorbus*,—an ancient Greek Physician.]

Flowers monoicous,—several naked monandrous *staminate* ones surrounding a single *pistillate* one, within a common involucre. *Common involucre* campanulate-turbinate; *limb* 4 or 5-cleft,—the lobes membranaceous and often petaloid, with 5 external gland-like teeth alternating with them. **STAMINATE FL.** each consisting of a single stamen with a lacerate-ciliate bract. *Calyx* and *Corolla* none. **PISTILLATE FL.** on a long pedicel. *Calyx* minute, dentate or lobed, often obsolete. *Ovary* composed of 3 united 1-ovuled carpels; *styles* 3, bifid or rarely united in one; *stigmas* 6. *Capsule* 3-lobed (*trilocous*), smooth or verrucose, sometimes pilose,—the cells or carpels elastically 2-valved, opening on the back, deciduous. *Herbaceous*, or *fruticose*; very lactescent: *Leaves* opposite and stipulate, or alternate and naked; *flowers* axillary or sub-umbellate.

1. *E. HYPERICIFOLIA*, L. Stem nearly erect, with spreading branches, smoothish; leaves opposite, unequal at base, oval-oblong, sub-falcate, serrate; corymbs terminal; capsules smooth; seeds blackish. *Willd. Sp. Pl.* 2. p. 895. *Fl. Cestr.* p. 516.

HYPERICUM-LEAVED EUPHORBIA. *Vulgò*—Eye-bright. Spurge.

Plant replete with an acrid milky juice. *Root* annual. *Stem* 9 to 18 inches high, rather slender and leaning as if topheavy, with somewhat dichotomous spreading branches above, smoothish, often purple. *Leaves* half an inch to near an inch and half long, obliquely ovate-oblong or sub-falcate, rather obtuse, sharply

serrate, nearly entire towards the base on the rounded or convex side, more or less pilose with longish fine hairs, 3-nerved, linear-dotted, often stained with purple blotches along the midrib; *petioles* scarcely a line in length. *Clusters of flowers* axillary and dichotomous, pedicellate, forming small corymbs at the ends of the branches; *petaloid segments* of the involucre minute, white, or purple edged with white, minute. *Capsules* small, smooth, often tinged with dark purple. *Seeds* dark brown or nearly black, rugose-pitted, mostly 4-sided, with prominent rib-like or keeled angles. Sandy fields; pastures, road-sides, &c.: throughout the U. States. *Fl.* July—September. *Fr.* Sept.—October.

Obs. This species is very common in dry pasture fields—especially in thinnish sandy soils,—and has been suspected of being the cause of the salivation, or *slabbering*, with which Horses are often affected, in the latter part of summer. I cannot say how much foundation there may be for the suspicion; but I have often observed that horses are not apt to eat much of any acrid or unpalatable plant,—and are, moreover, very expert in selecting esculent herbs from among those which are not so. This plant is a worthless obnoxious little *weed*,—and I believe is best kept down by improving the soil, and choking it out by more valuable substitutes. There is another species (*E. depressa*, Torr. *Ell.*—*E. maculata* L? *Fl. Cestr.*) frequent in cultivated grounds—especially in Indian-Corn fields,—which lies prostrate and very close to the ground—branching off from the root in every direction: but it is scarcely of sufficient importance, even as a *weed*, to claim a further notice, here. I avail myself of this occasion, however, to say, that I am now strongly inclined to believe the *E. maculata*, of most authors, is only a *variety* of *E. hypericifolia*, L,—and that the *E. depressa*, of TORREY & ELLIOTT (“*E. maculata*, L?” of *Fl. Cestr.*), is most probably the *E. thymifolia*, of MICHAUX and PURSH. I have been fortified in this opinion, by the remarks of that able and sagacious Botanist, DR. ENGELMANN, of St. Louis,—to whom I sent specimens of both the species here referred to.

TRIBE IV. CROTONEAE. Blume.

Flowers often furnished with *petals*, fasciculate, spicate, racemose, or paniculate. *Ovary* with the cells 1-ovuled.

167. RICINUS. Tournef. *Endl. Gen.* 5809.

[Latin, *Ricinus*, a tick, or bug; from the resemblance of the seeds.]

Flowers monoicous. *Calyx* 3 to 5-parted,—the lobes valvate in aestivation. *Corolla* none. *STAM. FL.* *Stamens* numerous; *filaments* variously united, and much branched; *anthers* with the cells distinct and pendulous from the apex of the filament. *Ovary* globose, 3-celled; cells 1-ovuled; *style* short; *stigmas* 3, deeply 2-parted, oblong, colored, plumose. *Capsule* mostly echinate, 3 lobed (*trilocous*); cells or carpels 1-seeded.

1. R. COMMUNIS, L. Stem herbaceous, pruinose; leaves alternate, petiolate, peltate, palmately 5 to 7-lobed,—the lobes lanceolate, glandular-serrate; capsule echinate. *Willd. Sp. Pl.* 4. p. 564.

COMMON RICINUS. *Vulgò*—Castor-oil Bean. Palma Christi.

Fr. Le Ricin ordinaire. *Germ.* Der Wunderbaum. *Span.* Ricino.

Root annual. *Stem* 4 to 6 feet high, stout, branched, terete, nodose, smooth, mostly purplish and covered with a glaucous powder. *Leaves* 6 to 12 inches across, palmate-lobed,—the undivided portion nearly orbicular; *petioles* 3 to 6 inches long,

with a gland at apex, and sometimes 1, 2, or 3, near the base; *stipule* opposite to each leaf, embracing the stem, caducous. *Flowers* terminal, paniculate,—the staminate below, the pistillate above—all on articulated pedicels. *Calyx* yellowish-green. *Pistils* purple and glaucous. *Capsule* covered with subulate points. *Seeds* subovoid, smooth, mottled. Gardens and fields; cultivated. Native of India. *Fl.* July—September. *Fr.* Sept.—October.

Obs. This plant is extensively cultivated, in the South western States, for the valuable medicinal *oil* afforded by its *seeds*; and I have seen considerable fields of it, in the warm sandy districts of New Jersey. It is rarely seen in Pennsylvania,—except as a curiosity, in gardens. In tropical regions, it is said to be perennial, and *shrubby*.

ORDER CXXIV. JUGLANDACEAE. DC. Lindl.

Trees. *Leaves* alternate, odd-pinnate, without stipules. *Flowers* monoicous. STAM. FL. in *aments*, with a membranous irregular calyx. *Stamens* indefinite. PISTILLATE FL. mostly in small terminal clusters: *Calyx-tube* adherent to the ovary; *limb* small, 3 to 5-parted,—sometimes with the addition of as many small *petals*! *Ovary* incompletely 2 to 4-celled, with a single ovule. *Fruit* drupaceous,—the *epicarp* (coating of the nut) fibrous-fleshy and indehiscent, or coriaceous and opening by valves,—the *endocarp* (shell or nut) woody and rugosely sulcate, or bony, ribbed and smooth, 2 to 4-celled at base. *Seed* erect, 2 to 4-lobed at base,—the lobes occupying the cells of the nut: *embryo* shaped like the seed: *albumen* none. *Cotyledons* thick, fleshy and oily, 2-lobed, sinuate-tortulose.

A small but interesting Order,—of which the more important genera and species are here noticed.

168. JUGLANS. L. Endl. Gen. 5890.

[Latin, *Jovis Glans*, the nut of Jupiter; by way of eminence.]

MONOICOUS: STAMINATE FL. lateral, amentaceous. *Aments* simple, cylindrical, proceeding from buds distinct from the leaves, on branches of the preceding year. *Calyx* adnate to an entire 1-flowered bract, 5 or 6-parted,—the segments membranaceous, unequal, concave, imbricated in aestivation. *Stamens* numerous, sub-sessile. PISTILLATE FL. terminal, solitary, or few and clustered. *Calyx-tube* ovoid, adherent to the ovary,—the limb 4 or 5-cleft. *Petals* 4, minute, inserted at the summit of the calyx alternately with the segments, slightly connected by their dilated bases, spreading at apex. *Ovary* 1-celled above, 4-celled at base,—the dissepiments doubled, united at the centre and forming a thick receptacle of the ovule; *ovule* single, erect, sessile at the apex of the receptacle; *styles* 2, very short; *stigmas* 2, elongated, recurved, papillose-fimbriate. *Fruit* drupaceous, containing a single nut,—the *epicarp* somewhat fleshy, fibrous within, indehiscent or opening irregularly,—the *nut* woody, rugose and irregularly sulcate, 4-celled below, 1-celled above, 2-valved, 1-seeded. *Seed* affixed to the thick receptacle, erect, 4-lobed below,—the lobes thrust into the cells of the nut; *testa* membranaceous, thin; *cotyledons* fleshy, sinuate-lobed; *plumule* 2-leaved, pinnate. *Trees*, with simple *aments*. *Fruit* indehiscent.

1. *J. NIGRA*, L. Leaflets ovate-lanceolate, subcordate at base, the under surface and petioles slightly pubescent; drupe globose, roughish-dotted, spongy; nut subglobose, rugose-sulcate. *Willd. Sp. Pl.* 4. p. 456. *Fl. Cestr.* p. 513. *Icon, Mex. Sylva*, 1. tab. 30.

BLACK JUGLANS. *Vulgèr*—Black Walnut.

Stem 40 to 60 or 80 feet high, and 2 to 3 feet in diameter, with spreading crooked branches,—often forming a broad roundish and rather open top. *Leaflets* 2 to 4

inches long, serrate, subsessile, in 7 to 10 pairs, with a terminal odd one which is often starved, or abortive. *Aments* about 2 inches long. *Pistillate flowers* in small terminal clusters of 2 to 4, on a short common peduncle. *Drupe* an inch and half to 2½ inches in diameter, mostly globose, sometimes oval or oblong-ovoid, greenish-yellow when mature,—the *epicarp* (or “hull”) more or less succulent and spongy. Rich woodlands; fence-rows, &c.: throughout the U. States. *Fl.* May. *Fr.* October.

Obs. The dense dark-brown *wood* of this species is valuable,—and is much used by Cabinet-makers, as a substitute for *Mahogany*. The spongy *epicarp* is often employed as a domestic dye-stuff,—and the nucleus, or *kernel*, although somewhat oily, is generally esteemed. The *young fruit* and *leaves*, when rubbed or bruised, emit a strong and not unpleasant resinous odor. This tree, when prevalent, is a pretty sure indication of a fertile soil; but it exerts an unfriendly influence on many cultivated plants (especially, it is said, upon the young hedges of *Virginia Thorn*), if placed in its immediate vicinity.

2. *J. CINEREA*, *L.* Leaflets oblong-lanceolate, rounded at base, softly pubescent beneath, with the petioles villous; drupe ovoid-oblong, coriaceous, viscid-pubescent; nut elliptic-oblong, acuminate, conspicuously sculptured. *Willd. Sp. Pl.* 4. p. 156. *Fl. Cestr.* p. 513.

J. cathartica. *Mx. Sylva*, 1. p. 160. *Icon*, tab. 31.

CINEREOUS JUGLANS. *Vulgò*—White Walnut. Butter-nut.

Stem 15 to 20 or 30 feet high, and 6 to 12 or 18 inches in diameter, with numerous branches and a smoothish cinereous bark. *Leaves* 2 to 4 or 5 inches long, serrate, sessile, softly pubescent and paler beneath, in 7 or 8 pairs with a terminal odd one. *Aments* 3 to 5 inches long. *Pistillate flowers* 3 to 5 or 7, in a terminal spike, rather distant, sessile on a long common peduncle. *Drupe* 2 to 3 inches long, and 1 to near 2 inches in diameter, elliptic-ovoid with a short tapering protuberance at apex, often slightly compressed and obscurely angular, softly hairy and clammy,—the *epicarp* somewhat coriaceous; *nut* oval, acuminate, somewhat compressed, deeply sulcate, with the ridges sharp and irregular. Rich bottom lands; along streams, &c.: throughout the U. States. *Fl.* May. *Fr.* Sept.—Octo.

Obs. This is a smaller tree than the preceding—often rather a large branching *shrub*,—and the *wood* is much less valuable. The *bark* affords an *extract*, which is a convenient and popular cathartic. The young *drupes*, collected about the last of June, make excellent *pickles*. The *kernel* of the mature fruit is oily, and soon becomes rancid,—so that it cannot be eaten.

3. *J. REGIA*, *L.* Leaflets oval, rather acute, smooth, nearly entire; fruit roundish-oval. *Willd. Sp. Pl.* 4. p. 155. *Icon*, *Mx. Sylva*, 1. tab. 29.

ROYAL JUGLANS. *Vulgò*—English Walnut. Madeira Nut.

Fr. *Noyer* commun. *Germ.* Die Wallnuss. *Span.* Noguera.

Stem 20 to 30 or 40 feet high, and 9 to 15 inches or more in diameter, branched. *Leaflets* 2 to 5 inches long, acute, or sometimes rounded and emarginate at apex, subserrate or entire, villous in the angles of the nerves beneath, in 3 to 5 pairs with a terminal odd one,—the lower pairs smaller. *Aments* ovoid-oblong, 2 to 3 inches in length. *Pistillate flowers* in small terminal clusters of 2 or 3, on a rather short common peduncle. *Drupe* oval or subglobose, mucronate, about 2 inches long and 1 or 2 inches in diameter, with a smoothish subcoriaceous *epicarp*; *nut* oval, subcompressed, smoothish or somewhat corrugated. About houses: cultivated. Native of Persia. *Fl.* May. *Fr.* October.

Obs. This oriental species is called *English Walnut*, in consequence, as I suppose, of its having come to us by way of the mother country. Such misnomers are not unfrequent, among cultivated

plants. This one is occasionally cultivated for the *young fruit*,—which makes a favorite *pickle*. The tree is rather impatient of the climate, in the rural districts of Pennsylvania; but does very well in the shelter afforded by our cities and large towns. The *nuts* are rarely perfected, here; but those imported, are more highly esteemed than our native walnut.

169. *CARYA*. Nutt. *Endl. Gen.* 5889.

[Greek, *Karya*,—the ancient name of the Walnut tree.]

Flowers monoicous, proceeding from the same buds with the leaves. *STAM. FL.* lateral, amentaceous. *Aments* ternately branched, slender, situated below the leaves. *Calyx* adnate to an entire 1-flowered bract, 2 or 3-parted,—the segments membranaceous, ovate. *Stamens* 3 to 6; *anthers* hairy. *PISTILLATE FL.* terminal, in small clusters. *Calyx-tube* ovoid, adherent to the ovary,—the limb 4-cleft. *Corolla* none. *Ovary* as in *Juglans*; *stigma* sessile, large, discoid, 4-lobed, papillose. *Fruit* drupaceous,—the *epicarp* coriaceous, opening more or less completely by 4-valves; *nut* bony, smooth, often somewhat 4-angled. *Trees*, with *compound aments*. *Fruit* opening by 4 *valves*. Pubescence stellate.

1. *C. ALBA*, Nutt. Leaflets mostly 5, obovate-lanceolate, acuminate, sharply serrate, villous beneath,—the terminal one petiolulate; aments smoothish; fruit depressed-globose; epicarp thick; nut 4-angled, compressed, with the shell thin. *Fl. Cestr. p.* 544.

Juglans compressa. *Mx. Willd. Sp. Pl.* 4. *p.* 458.

J. squamosa. *Mx. Sylva*, 1. *p.* 181. *Icon, tab.* 36.

WHITE *CARYA*. *Vulgò*—Shell-bark, or Shag-bark Hickory.

Stem 60 to 80 feet high, and 1 to 2 feet or more in diameter, with the outer *bark* exfoliating in long scales or plates, which generally adhere in the middle, while one or both ends are detached and elevated, making the surface very rough and shaggy. *Leaflets* mostly in 2 pairs with a terminal odd one, 3 or 4 to 6, 8 or 10 inches long, the terminal one usually largest, and the lower pair much smaller. *Aments* at the base of the young growth, 2 or 3 to 4 or 5 inches long, triple or 3-parted on a common peduncle, smoothish, pendulous, with a linear-lanceolate bract at the base of each branch or lateral ament. *Stamens* mostly 4,—the anthers somewhat hairy. *Pistillate flowers* terminal, mostly 2 or 3 together, sessile on a common peduncle. *Fruit* somewhat umbilicate at the ends, and depressed or sulcate along the sutures of the valves; *epicarp* (or *hull*) thick and subcarinately coriaceous, opening at maturity into 4 distinct valves or pieces; *nut* about an inch long, suborbicular or oval, compressed and somewhat 4-angled, white,—the *shell* thin and frangible,—the *seed* or kernel rather large, only sweet and esulent. Low lands; along streams, &c. New England to Carolina. *Fl.* May. *Fr.* October.

Obs. The *nuts* of this tree are well known, and highly esteemed. I think there are some *varieties*,—with the *bark* less shaggy, the *fruit* with a thinner *epicarp*, a thicker *shell*, and the *kernel* of inferior quality. The whole genus is believed to be peculiar to this continent,—and is celebrated for affording a superior quality of fire-wood.*

2. *C. TOMENTOSA*, Nutt. Leaflets mostly 7, oblong-lanceolate, acu-

* Mr. EMERSON, in speaking of the Hickories of Massachusetts, seems to give *this species* the precedence, for the *fuel* it yields,—as well as for its excellent *nuts*. I think I am not mistaken, however, in saying that, in *Pennsylvania*, the following species (*viz. C. tomentosa*, Nutt. or White-heart Hickory,) is considered superior to all others, as fire-wood. In selecting Hickory wood, for *fuel*, experienced house-keepers, in this region, always give the preference to that which has the least *red* in it.

minate, slightly serrate, roughish-pubescent and resinous-dotted beneath,—the terminal one subsessile; aments tomentose; fruit ovoid or elliptic-oblong; epicarp very thick; nut somewhat 6-angled, with the shell thick and strong. *Fl. Cestr. p. 546.* [PURSH.

Juglans alba. L. Willd. Sp. Pl. 4. p. 457. Not of MICHAUX & J. tomentosa. *Mx. Sylva, 1. p. 176. Icon, tab. 35.*

TOMENLOSE CARYA. *Vulgò*—White-heart Hickory.

Stem 60 to 80 feet or more in height, and 18 inches to 2 feet in diameter,—the bark with the fibres interlocked and not exfoliating. *Leaflets* generally in 3 pairs with a terminal odd one, 3 or 4 to 8 inches long (the two lower pairs considerably smaller than the others), smoothish above, clothed with a roughish stellate pubescence beneath, and sprinkled with minute dark-purple particles among the pubescence. *Aments* 4 to 6 or 7 inches long, filiform, pubescent. *Pistillate flowers* mostly in pairs, sessile on a short thick bracteate common peduncle. *Fruit* ovoid or oblong-oval, large (often 2 inches or more in length, and $1\frac{1}{2}$ in diameter): *epicarp* thick and coriaceous, opening by 4 valves more than half way to the base; *nut* somewhat 6-angled near the apex,—the *shell* very thick and bony,—the *kernel* rather small, and, though esculent, much inferior to the preceding. Upland forests: New England to Virginia. *Fl. May. Fr. October.*

Obs. This species, also, appears to present several *varieties*,—some of them producing remarkably large fruit. All the *Hickories* are noted for affording good *fuel*; but the wood of this one (which is white to the heart—while the others are more or less red, within,) is considered the best of all, for that purpose. It is replete, in early summer, with a sweet syrup-like sap,—and when cut, at that season, is much preyed upon by worms. The proper time for cutting it, is the month of *August*.

3. *C. PORCINA, Nutt.* *Leaflets* 5 to 9—usually 7—lanceolate and obovate-lanceolate, acuminate, serrate, smooth, resinous-dotted beneath,—the terminal one subsessile; fruit pyriform or subglobose; epicarp thin, partially opening; nut with an even surface. *Fl. Cestr. p. 546.*

Juglans porcina. Mx. Sylva, 1. p. 194. Icon, tab. 38.

J. glabra, Willd. and obovata. Lam. Willd. Sp. Pl. 4. p. 458.

HOG CARYA.—*Vulgò*—Pig-nut Hickory. Broom Hickory.

Stem 40 to 60 or 70 feet high, and 1 to 2 feet in diameter, with a close bark, and numerous tough branches. *Leaflets* usually in 3 pairs (not unfrequently in 2 or 4 pairs,) with a terminal odd one, 2 or 3 to 5 or 6 inches long, generally smooth on both sides—sometimes a little pubescent beneath—sprinkled with minute purple particles. *Aments* ternately branched or in pairs, 2 to 4 or 5 inches long, filiform, smoothish. *Pistillate flowers* terminal, solitary, or 2 or 3 sessile and rather distant on a common peduncle. *Fruit* rather small, subglobose, oblong, or obovoid,—the obovoid variety often a little compressed and retuse, or obovate; *epicarp* thin and coriaceous, opening partially (at summit) by 4 valves; *nut* smooth and even,—the *shell* often hard, but sometimes thin and frangible; *kernel* often astringent and bitter,—sometimes esculent, but of inferior quality. Moist woodlands, and low grounds: New England to Carolina. *Fl. May. Fr. Octo.*

Obs. The young saplings of this species were much used, formerly, for making *splint brooms*; and the tough sprouts, or seedling plants, are often employed as ligatures, in rural economy, under the name of *hickory withes*. The *wood*, of the older trees, is used by wheelwrights for making axles of carts and wagons: and, like that of all the species, is much esteemed for fuel. The species most likely to be confounded with this one, is the Bitter-nut Hickory (*C. amara*,

Nutt.), but the latter is much less common,—at least in this region.

4. *C. OLIVAEFORMIS*, *Nutt.* Leaflets 11 to 15, lanceolate and somewhat falcate, serrate, subsessile,—the terminal one petiolulate; fruit obovoid-oblong; epicarp rather thin; nut olive-shaped, obscurely 4-angled, with an even surface. [*Sylva*, 1. tab. 32.]

Juglans olivaeformis. *Mx. Willd. Sp. Pl.* 4. p. 457. *Icon, Mx.*

OLIVE-SHAPED CARYA. *Vulgò*—Pecan Hickory. Pecan nut.

Stem 50 to 70 feet high. *Leaflets* in 5 to 7 or 8 pairs, with a terminal odd one, 3 to 6 inches in length, smooth, with a short roughish pubescence on the midrib and nerves beneath. *Fruit* 1 to near 2 inches long; *nut* with a thin frangible shell.—the *kernel* large. Wet, low grounds: Western and South-western States. *Fl.* April—May. *Fr.* Sept.—October.

Obs. This tree is little known, in the North, except by its very fine *nuts*,—which are even superior to those of the admired *Shell-bark*. There are a few other species of Hickory, in the U. States; but the foregoing are those of chief interest to the farmer.

ORDER CXXV. CUPULIFERAE. *Richard.*

Trees, or shrubs. *Leaves* mostly alternate, simple, penninerved, with deciduous stipules. *Flowers* usually monoicous. STAMINATE FL. in *Aments*, with either a scale-like or a regular calyx, and the *stamens* 1 to 3 times the number of its lobes. PISTILLATE FL. either solitary, 2 or 3 together, or in clusters,—furnished with an *Involucre* which incloses the fruit, or forms a *Cupule* at its base. *Calyx* adherent to the ovary.—the *limb* minute, denticulate, often finally disappearing. *Ovary* 2 to 6-celled, with 1 or 2 pendulous ovules in each cell,—the dissepiments projecting from the parietes to the centre, finally for the most part vanishing; *style* columnar; *stigmas* as many as the cells of the ovary, rigid, cartilaginous. *Fruit* (by abortion) a 1-celled 1-seeded indchiseent *nut*, coriaceous or bony, more or less embraced or inclosed by the involucre. *Seed* without albumen; *embryo* with thick fleshy cotyledons.

A highly important and valuable Order,—of which the principal Genera, and most interesting species (with the exception of *Quercus Suber*, L. from which *Cork* is obtained), are here noticed.

170. OSTRYA. *Michel. Endl. Gen.* 1842.

[Greek, *Ostrion*, a shell, or scale,—in allusion to the structure of the fruit.]

Flowers monoicous. STAMINATE FL. *Aments* cylindric, elongated, lateral and terminal. *Calyx* a simple *scale* without bract; scales imbricated. *Stamens* numerous, inserted at the base of the scale; *anthers* 1-celled, pilose at apex. PISTILLATE FL. *Aments* terminal, loosely imbricated; *bracts* small, deciduous. *Scales of the involucre* in pairs, hairy at base, membranaceous, uniting by their margins and inclosing 1 or 2 flowers. *Calyx* adherent to the ovary, somewhat urceolate,—the *limb* undivided, forming a very short tube, ciliate. *Ovary* 2-celled; *ovules* solitary, suspended from the apex of the dissepiment; *stigmas* 2, subsessile, elongated, filiform. *Fruit* in a *strobile* (or *cone*), formed of the scales of the involucre, which are membranaceous, nerved, and coalesced into *utricles* or little sacs. *Nuts* solitary within the utricles, compressed, ovate-lanceolate, smooth, 1-seeded.

1. *O. VIRGINICA*, *Willd.* *Leaves* ovate-oblong, acuminate, sharply serrate; cones ovoid-oblong; buds acute. *Willd. Sp. Pl.* 4. p. 469. *Fl. Cestr.* p. 541.

Carpinus Ostrya. *L. Mx. Sylva*, 3. p. 30. *Icon, tab.* 109. [wood.]

VIRGINIAN OSTRYA. *Vulgò*—Hop Hornbeam. Iron-wood. Lever-

Stem 20 to 40 or 50 feet high, and 5 to 8 or 10 inches in diameter. *Leaves* 2 to 4 inches long, on short petioles. *Staminate aments* an inch to an inch and half long. *Pistillate aments* mostly terminal and solitary, 1 to near 2 inches long, slender and, while young, linear; *flowers* in pairs.—each pair subtended by an ovate-lanceolate tawny caducous *bract*; each flower contained in a membranaceous *sac* formed by the united scales of the involucre,—the sac enlarging and becoming a bladder-like envelope of the nut, slightly inflated, ovate, imbricated, and forming altogether, at maturity, a pedunculate pendulous *cone*—about the size of, and much resembling, the *Common Hop*. Woodlands: New England to Carolina. *Fl.* April—May. *Fr.* September.

Obs. The *wood* of this small tree is remarkably firm and tough: and although neither very common, nor very important,—it may be well, perhaps, for the intelligent farmer to know what it is when he meets with it. According to Mr. EMERSON, it is known by the name of *Lever wood*, in New England. The *Common Horn-beam*, or *Water Beech* (*Carpinus Americana*, Mx.)—a large shrub, allied to this—is quite frequent along the banks of swampy rivulets.

171. CORYLUS. *Tournef. Endl. Gen.* 1844.

[Greek, *Korys*, a helmet, or cap; in allusion to the involucre fruit.]

Flowers monoicous. STAMINATE FL. *Aments* cylindric, with imbricated bractal scales. *Calyx* of 2 collateral scales beneath the bract, and all three united at base. *Stamens* about 8; *anthers* 1-celled, subsessile, ovoid, bristly at apex. PISTILLATE FL. from subterminal buds, in small clusters at the ends of the branches, with entire bracts; *involucre* of 2 or 3 (at first minute, but subsequently enlarging) villous leaflets, which are lacerate on the margin and coherent at base, embracing 1 or 2 flowers. *Calyx* adherent to the ovary,—the *limb* very minute, denticulate, villous. *Ovary* 2-celled; *ovules* solitary, suspended from the apex of the dissepiment; *stigmas* 2, elongated, filiform. *Nut* (by abortion) 1-seeded, roundish-ovoid, obtuse, subcompressed, bony, smooth, solitary in the enlarged foliaceous lacerate-dentate *involucre*. *Seed* pendulous; *testa* very thin and membranaceous; *cotyledons* elliptic, plano-convex.

1. C. AMERICANA, *Marshall*. *Leaves* orbicular-cordate, acuminate; stipules ovate-lanceolate; involucre ventricose-campanulate, much larger than the nut, with the limb compressed, dilated, lacerately many-cleft. *Willd. Sp. Pl.* 4. p. 471. *Fl. Cestr.* p. 539.

AMERICAN CORYLUS. *Vulgò*—Hazel-nut. Wild Filbert.

Shrub. *Stem* 4 to 6 feet high, slender, branching.—the young branches virgate, pubescent and glandular-hispid. *Leaves* 3 to 6 inches long, varying from roundish-cordate to ovate and obovate, dentate-serrate, pubescent; *petioles* one fourth of an inch to an inch long. *Stipules* ovate-lanceolate, caducous. *Aments* preceding the leaves, 1 to 2 inches long. *Pistillate flowers* in pedunculate squamose clusters,—the scales finally enlarging, uniting and forming the involucre of the nuts. *Nut* subglobose, somewhat compressed at apex, rather wider than long, finely pubescent, embraced by the subcoriaceous *involucre*, which is twice as long as the nut, glandular-hirsute externally, ventricose at base, with the limb bilabiate and irregularly lacerate-dentate. Borders of thickets; fence-rows, &c.: throughout the U. States. *Fl.* March—April. *Fr.* September.

Obs. This shrub is generally well known, for its esculent seeds,—though I believe it has never been thought worth while to cultivate it. The *Filbert*, of Europe (*Corylus Avellana*, L.),—an allied species, bearing larger nuts,—is occasionally to be seen in gardens, and is probably worthy of culture; but it is scarcely, as yet, intitled

to be reckoned among our cultivated plants.* Judging from the habit of Hazel bushes, and their tendency to form thickets, they are probably the identical genus referred to, by VIRGIL, in the passage—“*Hic inter densas CORYLOS &c.*”

172. QUERCUS. L. *Endl. Gen.* 1845.

[Celtic, *Quer*, handsome, or excellent, and *Cuez*, a tree; on account of its value.] *Flowers* monoicous. STAMINATE FL. *Aments* slender, pendulous, without bracts. *Calyx* 6 to 8- (mostly 5-) parted,—the segments unequal, ciliate, some of them occasionally bifid. *Stamens* 4 or 5 to 10, inserted round a glandular disk at the base of the calyx; *anthers* 2-celled. PISTILLATE FL. from buds which are axillary, or sessile on a common peduncle. *Involucre* 1-flowered,—formed of minute bracts, and scales, imbricated in many series, and coalesced into a *cupule* embracing the base of the flower. *Calyx* adherent to the ovary,—the limb 6-cleft or obsolete denticulate. *Ovary* 3 or 4-celled; *ovules* in pairs in the cells, collateral, suspended from the apex of the inner angle; *stigmas* as many as the cells of the ovary, subsessile, erect or spreading. *Nut* (or *Acorn*) by abortion 1-seeded, ovoid or oblong, mucronate, coriaceous woody, embraced and more or less included by the indurated cup-like *involucre*. *Seed* pendulous; *testa* membranaceous, thin; *cotyledons* plano-convex, thick and fleshy.

¶ The numerous species of *Oak* may, for convenience, be arranged in two principal *Sections*,—namely, those with *biennial*, and those with *annual* fruit: and these, again, may be thrown into subordinate *groups*—distinguishable by the outline or margin of the *leaves*. The most important, only, of each group, will be here described.

§. 1. FRUCTIFICATION BIENNIAL: FRUIT SUBSESSILE.

† WILLOW-LEAVED AND LIVE-OAK GROUP.

Leaves mostly entire, narrow and small, often perennial.

1. Q. PHELLOS, L. Leaves deciduous, linear-lanceolate, tapering at each end, mucronate at apex, glabrous; cupule saucer-shaped; acorn roundish. *Willd. Sp. Pl.* 4. p. 423. *Icon, Mx. Sylva*, 1. tab. 14.

Vulgò—Willow-leaved Oak. Willow-Oak.

Stem 40 to 60 or 70 feet high, and 1 to 2 feet or more in diameter, with a smoothish bark. *Leaves* 2 to 4 inches long, subsessile, entire or the young ones sometimes dentate. *Acorn* small, subglobose, seated in a shallow saucer-like subsessile cup. Moist low grounds: New Jersey, and South. *Fl.* May. *Fr.* October.

Obs. There are apparently some *varieties* of this,—or, if they are specifically distinct, nearly allied species. The tree sometimes acquires considerable size,—but the timber is not particularly valuable; and as it is rather local in its *habitat*, is not much known beyond those limits. The Oaks of this *Section* are remarkable for their *biennial fructification*,—the axillary pistillate flowers, which

*The young forked twigs of the *European Filbert*, constitute the celebrated divining rod (*virgula divinatoria*) with which certain impostors, in the old world, practice upon the credulity of the ignorant. In our own Country, a kindred set of knaves, called “Water smellers,” employ the twigs of *Hamamelis Virginica*, L. or *Witch Hazel*, for similar purposes,—and it is found to answer *equally well*—when they have *fit subjects* to practice upon!

appear in the spring, remaining almost stationary the first season—the ovaries not enlarging, nor becoming mature fruit, until the *succeeding year!* In consequence of this peculiarity, the fruit, in the *second year*, ceases to be *axillary* (except in the evergreen species)—the leaves of the first summer having fallen, and left the fruit naked on the sides of the branches.

2. *Q. IMBRICARIA, Mx.* Leaves deciduous, lance-oblong or elliptic-lanceolate, acute at each end, mucronate, smooth and shining above, pubescent beneath; cupule saucer-shaped; acorn somewhat hemispherical. *Willd. Sp. Pl. 4. p. 428.* *Icon, Mx. Sylva, 1. tab. 15.*
SHINGLE QUERCUS. *Vulgò*—Laurel-leaved Oak.

Stem 40 to 60 feet high, and 1 to 2 feet in diameter, with a smoothish bark; branches numerous and irregular. *Leaves* 3 to 5 inches long, entire, somewhat crowded, on short petioles. *Acorn* rather small, roundish above, with a broad flattish base, so as to be nearly hemispherical, seated in a shallow sessile cup. Banks of streams: Western States. *Fl.* May. *Fr.* October.

Obs. This species—being chiefly confined to the country west of the Alleghany Mountains—is but little known in the east: and although deriving its specific name from the roofing material which it affords, its timber is said to be of an inferior quality—even for that purpose.

3. *Q. VIRENS, Ait.* Leaves perennial, coriaceous, elliptic-oblong, somewhat toothed or angled on young trees, entire on old ones, with a revolute margin, rather acute at apex but not mucronate, stellately pubescent beneath; cupule turbinate, pedunculate; acorn oblong. *Willd. Sp. Pl. 4. p. 425.* *Icon, Mx. Sylva, 1. tab. 12.*

GREEN QUERCUS. *Vulgò*—Live Oak.

Stem 20 to 40 or 50 feet high, and 1 or 2 to 5 or 6 feet in diameter, with numerous large wide-spreading crooked branches,—the wood remarkably dense and heavy, with twisted gnarled fibres. *Leaves* an inch and half to 3 inches long, perennial, but a portion of them falling from the old trees every spring, dark green above, whitish beneath, on short petioles. *Acorn* ovoid-oblong or oval, of a dark brown color, seated in a bowl-shaped pedunculate cup,—the peduncle about an inch long, axillary. Sea-coast: Virginia to Florida. *Fl.* April. *Fr.*

Obs. This noted tree—so valuable in ship-building—is pretty much confined to the sandy sea-coast of the Southern States. Its most northern locality appears to be at Old Point Comfort, near Norfolk, Virginia,—where it is reduced to quite a small tree. Four or five other species, belonging to this group, are found in the U. States—chiefly in the South; but they are mostly small, and of little value.

† † BLACK AND RED-OAK GROUP.

Leaves repand or sinuate-lobed, rather large: lobes acute,—the points or nerves setaceously mucronate.

4. *Q. NIGRA, Willd.* Leaves somewhat coriaceous, cuneate, dilated at apex, retuse or obscurely 3-lobed, smooth above, covered with a russet pulverulent pubescence beneath, when young the nerves setaceously mucronate; cupule subturbinate; acorn ovoid. *Willd. Sp. Pl. 4. p. 442.*

Q. ferruginea. Mx. Sylva, 1. p. 95. Icon, tab. 20.

BLACK QUERCUS. *Vulgò*—Black Jack. Barren Oak.

Stem 15 to 30 or 40 feet high, and 6 to 12 or 15 inches in diameter, with a thickish furrowed dark-colored bark; branches numerous. *Leaves* 5 to 8 inches long, much dilated at apex (4 to 6 inches wide), narrowed towards the base, on short petioles. *Acorn* ovoid, seated in a rather deep or bowl-shaped sessile cup. Sterile soils: New Jersey to Florida. *Fl.* May. *Fr.* October.

Obs. This small tree—abundant in Maryland, and well known by the name of “Black Jack”—is chiefly valuable for fuel.

5. *Q. TINCTORIA*, *Bartr.* Leaves obovate-oblong, sinuate-lobed, pulverulent beneath; cupule subturbinate; acorn ovoid. *Willd. Sp. Pl.* 4. p. 411. *Fl. Cestr.* p. 531. *Icon, Mx. Sylva*, 1. tab. 24. (*fruit, tab. 25.*)

DYER'S QUERCUS. *Vulgò*—Black Oak. Quercitron.

Stem 60 to 80 or 90 feet high, and 2 to 3 or 4 feet in diameter, with a thickish deeply-furrowed dark-colored epidermis, and a spongy yellow inner bark. *Leaves* 6 or 8 inches long, obovate in their outline, more or less deeply sinuate-lobed (usually 3 principal lobes on each side),—the base obtuse or sometimes cuneately tapering, smoothish above, the under surface clothed with short stellate or fasciculate hairs which present a pulverulent appearance; *petioles* 1 to 2 inches long. *Acorn* rather small, ovoid, seated in a sessile cup, which is tapering at base. Rich upland forests: New England to Georgia. *Fl.* May. *Fr.* October.

Obs. The *wood* of this species is not very durable,—neither is it much esteemed for fuel: Yet, in consequence of its abundance, it is, or has been, very extensively used for fencing, firewood and shingles. The straight fibres, and facility of splitting the wood, no doubt recommended it for shingles. The inner *bark* is an article of commerce, under the name of *Quercitron*; and is exported in large quantities to Europe, where it is employed in dyeing yellow. It has nearly superseded the use of *Weld* (*Lieseda luteola*, *L.*) in Calico printing. The prevalence of this fine tree, in Woodlands, is an indication of a good soil for Agriculture.

6. *Q. COCCINEA*, *Wangenh.* Leaves oblong, deeply sinuate-lobed, smooth, the lobes divaricate, acutely dentate, petioles rather long; cupule subturbinate, conspicuously scaly; acorn roundish-ovoid, a little depressed at apex. *Willd. Sp. Pl.* 4. p. 445. *Fl. Cestr.* p. 532. *Icon, Mx. Sylva*, 1. tab. 25. (*fruit, tab. 24.*)

CRIMSON QUERCUS. *Vulgò*—Red Oak. Scarlet Oak.

Stem 60 to 90 feet high, and 2 to 3 or 4 feet in diameter. *Leaves* 5 to 8 inches long, deeply lobed (usually 4 principal lobes on each side), the sinuses rounded and wider at bottom, the base obtuse or sometimes rather cuneate, both surfaces smooth and shining green, with a dense pubescence in the axils of the nerves beneath,—finally becoming red, and spotted with deeper crimson; *petioles* 2 to 4 inches long. *Acorn* roundish, depressed or slightly umbilicate at apex,—the lower half immersed in a rough scaly cup. Rich moist woodlands: New England to Georgia. *Fl.* May. *Fr.* October.

Obs. This is a fine large tree,—and is remarkable for its crimson leaves, in autumn. The *wood* is much used for Coopers' stuff, &c. and the *bark* of this, and the two next following species, is esteemed the best, of all the Oaks, for the process of tanning.

7. *Q. RUBRA*, *L.* Leaves oblong, smooth, sinuate-lobed, sinuses rather acute; lobes incised-dentate with the teeth very acute; cupule shallow, saucer-shaped, flat at base, nearly even on the outer surface; acorn rather large and turgidly oblong-ovoid. *Willd. Sp. Pl.* 4. p. 445. *Fl. Cestr.* p. 532. *Icon, Mx. Sylva*, 1. tab. 28.

RED QUERCUS. *Vulgò*—Red Oak. Spanish Oak (erroneously).

Stem 60 to 90 feet high, and 2 to 4 feet in diameter. *Leaves* 5 to 8 or 9 inches long, often somewhat obovate, rather obtuse at base, sinuate-lobed (usually 3 principal lobes on each side), the sinuses shallower and more acute than in the preceding species; *petioles* 1 to 2 inches long. *Acorn* oblong-ovoid, plump and rather large, seated in a broad flat-bottomed saucer-like sessile *cup*, of which the scales are so compact as to present a smooth or nearly even surface. Hilly woodlands: Northern and Middle States. *Fl.* May. *Fr.* October.

Obs. The *wood* of this species is also used for Coopers' stuff, &c. and the *bark* is in high repute with the Tanners.* This (and I think the preceding, also,) is often called "*Spanish Oak*," in districts where the *true* Spanish Oak is not found: but that name properly belongs to the following.

S. Q. FALCATA, *Mx.* Leaves elongated and rather narrow, sinuate-lobed, or sometimes almost palmately 3-lobed, obtuse at base, densely tomentose beneath; lateral lobes falcate, the terminal one longer and trifid; cupule shallow, subturbinate; acorn roundish-ovoid. *Mx. Sylva*, 1. p. 106. *Icon*, tab. 23.

Q. elongata. *Willd. Sp. Pl.* 4. p. 444.

FALCATE QUERCUS. *Vulgò*—Spanish Oak. Red Oak.

Stem 40 or 50 to 80 feet high, and 1 or 2 to 4 feet in diameter. *Leaves* 3 to 6 and 9 inches long, with 2 to 4 or 5 (usually 3) distant more or less falcate entire lobes on each side,—those on small trees, or young branches, often dilated and 3-lobed at apex, with the side-lobes diverging; *petioles* about an inch long. *Acorn* small, seated in a shallow saucer-like *cup*, which is tapering at base and supported on a short peduncle. Sandy, or sterile clay soils: New Jersey to Georgia. *Fl.* May. *Fr.* Octo.

Obs. This tree (which is the *genuine* "*Spanish Oak*,")—so far as I have observed—seems to be pretty much confined to that district, along the Atlantic coast, which is marked as *alluvial*, on Geological maps. It is said to grow very large, in the South; but is rather below an average size, near its northern limits. The *timber* is reddish, coarse-grained and not very durable,—but is much used for the inferior kinds of Coopers' stuff. The *bark*, however, is reputed as preferable to that of every other species of Oak, for tanning.

9. Q. PALUSTRIS, *Mx.* Leaves oblong, deeply sinuate-lobed, smooth—lobes divaricate, acutely dentate, the sinuses broad; cupule saucer-shaped; acorn subglobose, small. *Willd. Sp. Pl.* 4. p. 446. *Fl. Cestr.* p. 532. *Icon, Mx. Sylva*, 1. tab. 27.

MARSH QUERCUS. *Vulgò*—Pin Oak. Swamp Spanish Oak.

Stem 40 to 60 or 70 feet high, and 1 to 2 feet in diameter, with numerous rather slender horizontal or drooping branches, which are frequently very knotty. *Leaves* 4 to 6 inches long, deeply lobed (usually 3 lobes on each side).—the lobes rather narrow, diverging, the base of the leaves obtuse or often somewhat cuneate, both surfaces smooth, except a tuft of pubescence in the axils of the nerves beneath; *petioles* 1 to 2 inches long. *Acorn* small (mostly numerous),

* I observe that Mr. EMERSON, in his truly valuable and interesting "*Report on the Trees and Shrubs growing naturally in the Forests of Massachusetts*," speaks of the bark of *Quercus rubra* as being "almost worthless for the use of the tanner." I am, of course, unable to speak from personal or experimental knowledge; but I have uniformly understood, from the Tanners of *Pennsylvania*, that the Red Oak bark ranked next in value to that of the true Spanish Oak: and that impression is even now sustained by the testimony of my friend, Mr. JOSHUA HOPES, of this Borough,—who is well acquainted, botanically, with our Forest trees; and, moreover, served a regular apprenticeship to the tanning business.

seated in a smoothish shallow nearly flat-bottomed subsessile *cup*, which is often abruptly tapering from the centre of the base. Wet low grounds; along rivulets, &c.: New England to Pennsylvania, and West to Illinois. *Fl.* May. *Fr.* October.

Obs. The *wood* of this Oak is very firm,—and is much employed by wheelwrights, &c. It is quite common in Pennsylvania,—but does not appear to extend to the South. It would seem as if the *Q. fulcata*, and this species, were distinctly located in the two great divisions of the U. States. Four or five additional species, belonging to this group, are found in the U. States; but they are not very important,—and some of them are quite small and scrubby.

§. 2. FRUCTIFICATION ANNUAL: FRUIT MOSTLY PEDUNCULATE.

† WHITE-OAK GROUP.

Leaves sinuate-lobed; lobes obtuse and not mucronate.

10. *Q. OBTUSILOBA*, *Mx.* Leaves obovate-oblong, cuneate at base, pubescent beneath, irregularly sinuate-lobed,—the upper lobes dilated, retuse; cupule hemispherical or bowl-shaped; acorn elliptic-ovoid. *Fl. Cestr. p.* 533. *Icon, Mx. Sylva, 1. tab.* 5.

Q. stellata. Wangenh. Willd. Sp. Pl. 4. p. 452.

OBTUSE-LOBED QUERCUS. *Vulgò*—Barrens White-Oak. Post Oak.

Stem 20 to 40 or 50 feet high, and 1 to 2 feet in diameter; branches irregular, spreading, densely pubescent when young. *Leaves* 4 to 6 inches long, thick and coriaceous, mostly with 3 unequal lobes on each side and unequal angular sinuses,—the upper surface smoothish and shining (often roughish with short fasciculate hairs, when young), the under surface pale ferruginous, or tawny, and clothed with a stellate pubescence; *petioles* about half an inch long. *Acorn* rather small, oval or roundish-ovoid, with the apex often depressed or umbilicate,—the lower half embraced by the sealy hemispherical *cup*, which is sessile, or the fruit often in small clusters on a common peduncle. Dry sterile hills; among serpentine rocks, &c.: New York to Florida. *Fl.* May. *Fr.* October.

Obs. This tree, in *Chester county, Penn'a.*, seems to be confined to slaty barren hills, and exposed ridges of serpentine rock. The *wood* is very durable, and much valued for posts, &c. It also makes excellent fuel.

11. *Q. ALBA, L.* Leaves oblong, pinnatifidly sinuate,—lobes nearly equal, oblong, obtuse, mostly entire, the sinuses narrow; cupule somewhat bowl-shaped, tuberculate; acorn ovoid-oblong. *Willd. Sp. Pl. 4. p.* 448. *Fl. Cestr. p.* 534. *Icon, Mx. Sylva, 1. tab.* 1.

WHITE QUERCUS. *Vulgò*—Common White Oak.

Stem 60 to 80 and 100 feet high, and 2 to 4 or 5 feet in diameter, with a whitish or light grey bark. *Leaves* 4 to 6 inches long, subcoriaceous, smooth, nearly equally pinnatifid, usually with 3 or 4 lobes on each side (sometimes cuneate and 3-lobed); *petioles* half an inch to an inch long. *Acorn* rather large, seated in a shallowish bowl-shaped *cup*, which is pubescent and rough externally with roundish tubercles,—the fruit generally in pairs, sessile on a common peduncle about half an inch long. Woodlands; throughout the U. States: often abundant in moist low clayey grounds. *Fl.* May. *Fr.* October.

Obs. This is one of our finest and most valuable forest trees,—and frequently attains to an enormous size. Its prevalence, however, is not so indicative of a good soil, as that of the *Q. tinctoria*, or Black Oak. The *timber* is firm and durable, though somewhat liable, when in the form of boards and scantling, to warp or spring.

It is extensively used in the mechanic arts,—especially by the Wheel-wright, the Mill-wright, and the Ship-wright. The *keels* of some of our finest National vessels have been obtained from this Oak. It also affords the best quality of Coopers' stuff, for making Liquor-casks. The *bark* is astringent and tonic, and is frequently employed in medical practice. The *acorns* are sweet, affording a nutritious and favorite food of swine. On young trees, the *leaves* are remarkably persistent, after they are killed by the frost, in autumn. Three other species, in the U. States, belong to this group,—remarkable for their large acorns, or large cupules; but they are rather too rare, and too local in their *habitat*, to require a place in a practical farmer's *Flora*.

† † CHESNUT-OAK GROUP.

Leaves coarsely sinuate-dentate,—not lobed.

12. Q. EICOLOR, Willd. Leaves oblong-obovate, rather acute, softly tomentose beneath, coarsely and unequally sinuate-dentate, entire at base; fruit mostly in pairs, sessile on long common peduncles; cupule hemispherical; acorn ovoid-oblong. Willd. *Sp. Pl.* 4. p. 440. *Fl. Cestr. p.* 534.

Q. *Prinus* discolor. *Mx. Sylva*, 1. p. 47. *Icon*, tab. 7.

TWO-COLORED QUERCUS. *Vulgò*—Swamp White-Oak.

Stem 40 to 60 or 70 feet high, and 2 to 3 feet in diameter. *Leaves* 4 to 6 or 8 inches long, varying from broad-ovate to oblong and obovate, with coarse unequal teeth which are dilated at base, rather acute and callous at apex, smooth above, clothed beneath with a soft velvety pubescence, which is either whitish, pale olive-colored, or greenish-ferruginous; *petioles* about half an inch long. *Fruit* in pairs (or often single), on an axillary common peduncle 1 or 2 to 4 inches long. *Acorn* rather large, seated in a roughish-pubescent bowl-shaped *cup*,—the margin of which is dentate with the points of the scales. Low grounds; along streams, &c.: Pennsylvania to Carolina. *Fl.* May. *Fr.* October.

Obs. The *timber* of this is every way inferior in value to that of *Q. alba*. This, and all the following species of this subdivision, have considerable general resemblance; so much, indeed, that the elder MICHAUX regarded them all as *varieties* of *Q. Prinus*.

13. Q. PRINUS, L. Leaves obovate and elliptic-oblong, acute or acuminate, finely pubescent beneath, coarsely and nearly equally sinuate-dentate,—the teeth obtuse; fruit on short common peduncles; cupule nearly hemispherical; acorn oval. Willd. *Sp. Pl.* 4. p. 439. *Fl. Cestr. p.* 534.

Q. *Prinus* palustris. *Mx. Sylva*, 1. p. 52. *Icon*, tab. 8.

Vulgò—Swamp Chesnut-Oak. Chesnut White-Oak.

Stem 60 to 80 or 90 feet high, and 2 to 3 or 4 feet in diameter. *Leaves* 5 to 8 inches long, penninerved with a coarse obtuse tooth for each nerve, and a small callus at the apex of each; *petioles* 1 to near 2 inches long. *Fruit* in pairs (1 often abortive), on a common peduncle about half an inch long. *Acorn* large, oval, or ovoid-oblong, seated in a scaly bowl-shaped *cup* which embraces nearly one third of the nut. Moist low woodlands: Penna. to Florida. *Fl.* May. *Fr.* October.

Obs. This is often a fine tree, and the *timber* valuable.

14. Q. MONTANA, Willd. Leaves broad-obovate, acute, pubescent and subglaucous beneath, coarsely and nearly equally sinuate-den-

tate,—the teeth short, broad and obtuse, submucronate; fruit on short common peduncles; cupule turbinate; acorn elliptic-oblong. *Willd. Sp. Pl. 4. p. 440. Fl. Cestr. p. 535.*

Q. *Prinus monticola.* *Mx. Sylva, 1. p. 56. Icon, tab. 9.*

MOUNTAIN QUERCUS. *Vulgò*—Rock Chesnut-Oak.

Stem 40 to 60 or 70 feet high, and 1 to 2 or 3 feet in diameter.—when old, the bark thick and deeply furrowed. *Leaves* 4 or 5 to 8 or 9 inches long, broadly (and sometimes roundish-) obovate, rather unequal at base,—the teeth often shortly mucronate with a small callous point; *petioles* half an inch to an inch long. *Acorn* large, rather longer but not so thick as in the preceding (about $1\frac{1}{4}$ inch long, and $\frac{2}{3}$ of an inch in diameter), seated in a rather deep bowl-shaped or sub-turbinate *cup*. Hilly, rocky woodlands: New England to Carolina. *Fl. May. Fr. October.*

Obs. The *wood* of this species is valuable,—and the *bark* is esteemed by the Tanners. The *acorns*, also, are sweet and nutritious,—much sought after by swine.

15. Q. CASTANEA, *Muhl.* *Leaves* oblong-lanceolate, acuminate, pubescent and cinereous beneath, nearly equally dentate or sinuate-serrate,—the teeth rather acute, and callous at apex; fruit subsessile; cupule nearly hemispherical; acorn elliptic-ovoid. *Willd. Sp. Pl. 4. p. 441. Fl. Cestr. p. 535.*

Q. *Prinus acuminata.* *Mx. Sylva, 1. p. 61. Icon, tab. 10.*

CHESNUT QUERCUS. *Vulgò*—Chesnut-Oak. Yellow Oak.

Stem 40 to 60 or 70 feet high, and 1 to 2 feet in diameter. *Leaves* 3 to 6 inches long, the points of the teeth (and along the whole margin) callous, the upper surface smooth and yellowish-green, the under surface finely pubescent and whitish or cinereous; *petioles* half an inch to an inch long. *Acorn* rather small, seated in a pubescent bowl-shaped *cup*, which embraces one third of the nut, and is either sessile on the branch or on a short common peduncle. Mountains; slaty hills, and banks of streams: Middle and Western States. *Fl. May. Fr. October.*

Obs. This is often a fine tree,—though not so common, in Eastern Pennsylvania, as the others of this subdivision. It presents some *varieties*—at least in the *leaves*; but they generally have a striking resemblance to those of the *Chesnut tree*. The *acorns* are said to be more sweet and nutritious than those of any other species. There is a dwarf species (*Q. Chinquapin, Mx.*), belonging to this subdivision—common on our slaty hills; but it is too small and unimportant to require a more particular notice, here.

The fifteen Oaks, here described, are all noble trees,—and some of them of great value. They are emphatically (as ENDLICHER says of the Order,) “*sylvarum decora*”—the pride and ornament of our American forests; and every young American Farmer should be able to distinguish them all, and to understand their intrinsic and relative importance.

173. FAGUS. *Tournef. Endl. Gen. 1847.*

[Latin—from the Greek. *phago*, to eat; the fruit being esculent.]

Flowers monoicous. STAMINATE FL. *Aments* globose, pendulous on long peduncles, with minute deciduous bractal scales. *Calyx* campanulate, 5 or 6-cleft. *Stamens* 8 to 12. PISTILLATE FL. from terminal buds, with numerous linear unequal *bracts* surrounding, and connate with, the 2-flowered urceolate somewhat 4-lobed *involucre*. *Calyx* adherent to the ovary,—the limb elongated, lacinate.

Ovary triquetrous, 3-celled; ovules solitary, pendulous; styles 3, filiform; stigmas lateral, fissure-like. Fruit capsule-form,—a coriaceous or subligneous muricate involucre, finally 4-valved, usually containing 2 nuts. Nuts acutely triquetrous, crowned with the pilose limb of the calyx, by abortion 1-celled and 1-seeded; epicarp coriaceous; endocarp villous. Seed pendulous; testa membranaceous, thin; cotyledons thick, fleshy, irregularly plicate.

1. *F. SYLVATICA*, L. Leaves elliptic-ovate, acuminate, slightly dentate, ciliate on the margin; nut ovoid-triquetrous, obtuse, mucronate. Willd. *Sp. Pl.* 4. p. 459. *Fl. Cestr.* p. 538.

F. sylvestris. *Mx. Sylva*, 3. p. 18. *Icon*, tab. 107.

WOOD FAGUS. *Vulgò*—Beech-tree. White Beech.

Fr. Le Hêtre. *Germ.* Die Buche. *Span.* Haya.

Stem 40 to 80 feet or more in height, and 1 to 2 feet or more in diameter, with a thin even-surfaced whitish bark, and giving out numerous slender horizontal or depending branches, which subdivide and terminate in slender terete acuminate buds, near an inch in length. Leaves 2 or 3 to 5 inches long, more or less dentate, penninerved, and plicate along the nerves while young, silky-pilose, finally smoothish on the upper surface; petioles one eighth to half an inch long; stipules long, linear, membranaceous, tawny, caducous. Aments of staminate flowers very numerous, loosely subglobose, silky-pubescent, pale greenish-yellow, on slender silky-pilose peduncles an inch or inch and half long. Involucres of the pistillate flowers fewer, roundish-ovoid, enlarging, coriaceous, muricate with flexible subulate squarrose or recurved points, ferruginous-pubescent, on rigid axillary peduncles about half an inch long. Nuts 1 or 2 in each involucre, pubescent, pale reddish brown. Low moist woodlands; throughout the U. States. *Fl. May.* *Fr.* September—October.

Obs. The density and uniform texture of the wood, renders it valuable for many purposes,—such as plane-stocks, and other implements of the mechanic arts. The leaves, especially of young trees, are remarkably persistent, after they are killed by frost,—often remaining on the branches until late in the ensuing spring. The oily seeds afford a nutritious food for swine.

The Beech—although a symmetrical and pretty tree—is seldom cultivated, in this country, either for shade or ornament: And yet it would seem, from VIRGIL'S Pastorals, that in the land of sweet do nothing (“dolce far niente”), the Italian Peasant, of ancient times, found an enviable enjoyment under its spreading branches—

———“*patulæ recubans sub tegmine FAGI.*”

174. *CASTANEA*. *Tournef. Endl. Gen.* 1818.

[Named from a City of Thessaly (*Castanea*),—famed for Chesnuts.]

Flowers monoicous, or very rarely perfect. STAMINATE FL. indefinitely glomerate around axillary amentaceous spikes, rarely solitary, bracteolate. Calyx deeply 5 or 6-parted. Stamens 8 to 15; anthers incumbent. PISTILLATE and PERFECT FL. from axillary subsolitary buds, with numerous linear unequal bracts which are connate with the campanulate 1- to 3-flowered involucre. Calyx adherent to the ovary,—the limb 5 to 8-cleft. Stamens 5 to 12, mostly abortive, minute. Ovary 3 to 6-celled; ovules solitary, pendulous; style very short, thick; stigmas as many as the cells, setiform, spreading. Fruit capsule-form,—a coriaceous echinate involucre, containing 1 to 3 nuts, and opening by 4 valves. Nuts ovoid when single, plano-convex or compressed when two or three,—1-seeded by abortion.

Seed pendulous; *epicarp* coriaceous; *endocarp* fibrous; *testa* membranaceous, sinuately folded,—the folds lining the chinks or fissures of the kernel; *cotyledons* thick, farinaceous, often unequal, plicate, closely cohering.

1. *C. VESCA*, Gaertn. Leaves oblong-lanceolate, acuminate, mucronately sinuate-serrate, smooth on both sides. *Willd. Sp. Pl.* 4. p. 460. *Fl. Cestr.* p. 536. *Icon, Mx. Sylva*, 3. tab. 104.

EATABLE CASTANEA. *Vulgò*—Chesnut. Chesnut tree.

Fr. Le Chataignier. *Germ.* Der Kastanienbaum. *Span.* Castaño.

Stem 60 to 80 or 90 feet high, and 2 to 4 or 5 feet in diameter. *Leaves* 6 to 9 inches long; *petioles* about half an inch long; *stipules* linear-lanceolate, entire, smoothish, caducous. *Staminate flowers* small, whitish or ochroleucous, in slender pubescent interrupted spikes or *aments*, 4 to 8 inches in length.—the florets crowded in dense bracteate clusters: *stamens* long. *Pistillate flowers* mostly 3 together, in a scaly squarrose ovoid involucre. *Involucre* usually solitary—sometimes 3 or 4 in a cluster—sessile, enlarging, finally globose, about 2 inches in diameter, thickly covered with acute compound or coalesced prickles, opening at maturity by 4 valves or lobes, densely villous within. *Nuts* 3 (by abortion often 2 or 1), roundish-ovate, acuminate, reddish-brown, smooth below, the upper half covered with a grayish-tawny pubescence; the middle nut flattened on both sides, the lateral ones convex or gibbous externally,—and when the lateral ones are both abortive, the central one becomes roundish-ovoid. Upland forests,—abundant on sterile slaty hills; throughout the U. States. *Fl.* June. *Fr.* October.

Obs. The American Chesnut-tree is scarcely more than a *variety* of the European,—the chief difference being in the size of the fruit. The *nuts* of our native Chesnut-tree are smaller, and the kernels much sweeter, than those of the European variety—or “Spanish Chesnut,” as it is commonly called. The *wood* of the Chesnut-tree is light, easily split, and rather brittle,—yet very durable; not esteemed for fuel, but highly valued for making fences. The tree seems naturally to abound on our sterile slaty hills, and is of rapid growth,—being speedily reproduced, by suckers from the stump, when cut off—and therefore well calculated to keep up a supply of fencing timber.

2. *C. PUMILA*, Mill. Leaves obovate-oblong, acute, serrate or denticulate, whitish-tomentose beneath. *Willd. Sp. Pl.* 4. p. 461. *Fl. Cestr.* p. 537. *Icon, Mx. Sylva*, 3. tab. 105.

DWARF CASTANEA. *Vulgò*—Chinquapin.

Stem 6 to 10 or 12 feet high, and 1 to 2 or 3 inches in diameter. *Leaves* 2 to 6 inches long, mucronately serrate or sometimes denticulate, green and smoothish above, clothed with a soft dense cinereous tomentum beneath; *petioles* about half an inch in length. *Staminate flowers* in *aments*, 1 or 2 to 4 inches long, slender and numerous. *Involucres* of the pistillate flowers in spikes, or clustered on short tomentose axillary branches or common peduncles, enlarging, finally globose, an inch or inch and half in diameter, pubescent and prickly, opening at summit with 4 lobes or valves. *Nut* (by abortion?) constantly solitary, small, ovoid, acute, dark brown, pubescent at summit. Sterile soils: Maryland to Florida. *Fl.* June. *Fr.* October.

Obs. This *shrub* is rarely seen, north of Maryland. The *kernels* are remarkably sweet and pleasant to the taste,—but are scarcely half the size even of our native Chesnut. The *seeds* of both *Chesnut* and *Chinquapin*—and especially of the latter—are very subject to be preyed upon, by worms.

ORDER CXXVII. BETULACEAE. *Richard. Bartl.*

Trees, or shrubs. Leaves alternate, simple, straight-veined; *stipules* free, deciduous. *Flowers* monoicous; both kinds in axillary aments, and usually naked,—placed 2 or 3 together in the axil of each 3-lobed bract. *Stamens* definite. *Ovary* 2-celled; cells 1-ovuled; *stigmas* 2, sessile, filiform. *Fruit* membranaceous or samaroid, by abortion 1-celled and 1-seeded, forming with the 3-lobed bracts a kind of *strobile*. *Seed* destitute of albumen.

An Order consisting of the two genera here noticed. The peculiar odor of Russia leather, is said to be owing to a pyroligneous oil obtained from the *Betula alba*, L. a European species; and, according to Sir W. J. HOOKER, a wine is made of the sap of the same tree, in Scotland.

175. BETULA. *Tournef. Éndl. Gen.* 1840.

[Supposed from *Betu*,—the Celtic name for the Birch.]

STAMINATE AMENTS with the *scales* peltate, bibracteolate, 3-flowered. *Calyx* a scale. *Stamens* 4; *anthers* subsessile, oblong, 1-celled.

PISTILLATE AMENTS with the *scales* 3-lobed, imbricated. *Calyx* none. *Ovaries* 3 under each scale, sessile, 2-celled; *ovules* solitary, pendulous from the apex of the dissepiments; *stigmas* 2, filiform. *Fruit* an ament-like *strobile*, with membranaceously margined scales. *Nuts* lenticular, samaroid or winged.

1. *B. NIGRA*, L. Leaves rhomboid-ovate, acute, doubly serrate, entire at base, pubescent beneath; pistillate aments subsessile, somewhat erect, elliptic-oblong; scales villous,—the lobes sub-linear, obtuse. *Willd. Sp. Pl.* 4. p. 464. *Fl. Cestr.* p. 539.

B. rubra. *Mx. Sylva*, 2. p. 99. *Icon*, tab. 72.

BLACK BETULA. *Vulgò*—Black Birch. Red Birch.

Stem 40 to 60 or 70 feet high, and 1 to 2 feet in diameter,—the young trees and branches with a smoothish cinnamon-colored bark,—the outer layers of old bark exfoliating in broad thin revolute laminae or sheets. *Leaves* 1 to 4 inches long; *petioles* 1 fourth to 3 fourths of an inch in length; *stipules* small, oblong-lanceolate. *Staminate aments* 2 to 3 inches long, flexible and pendulous. *Pistillate aments* about an inch long, oblong, obtuse, on short peduncles; *scales* 3-cleft two thirds of their length,—the segments equal, linear or spatulate-linear, obtuse. *Nut* compressed, ovate, with a membranaceous margin which is widest towards the base. Low grounds; banks of streams; New Jersey to Carolina. *Fl.* April. *Fr.* August.

Obs. The timber of the *Birches* is not particularly valuable,—though some of them afford tolerable specimens of lumber, as well as good fuel. The *virgate branches* were famous instruments in the hands of Pedagogues, of the olden time, in promoting good order, and a close attention to study, among the rising generation: * But “the march of mind,” in the present day, has rendered such auxiliaries nearly obsolete! The flexible twigs of this species,—instead of being used to stimulate idle boys to learn their lessons—are chiefly employed for making coarse brooms, to sweep streets and court-yards, in our Cities.

2. *B. LENTA*, L. Leaves cordate-oblong, acuminate, sharply serrate; pistillate aments subsessile, somewhat erect, elliptic-ovoid; scales roughish-pubescent,—the lobes ovate-lanceolate, rather acute, prominently veined. *Willd. Sp. Pl.* 4. p. 464. *Fl. Cestr.* p. 540. *Icon*, *Mx. Sylva*, 2. tab. 74.

SOFT OR PLIANT BETULA. *Vulgò*—Sweet Birch. Cherry Birch.

*—————“afflictive Birch,
“Curs'd by unletter'd, idle youth.”

J. PHILIPS.

Stem 30 to 60 feet high, and 1 to 2 feet in diameter; branches numerous, slender, pliable, smooth and dotted with small white scars. *Leaves* 3 or 4 inches long, thinish, varying from ovate-oblong to obovate, mostly somewhat cordate and often a little unequal at base,—the upper surface sprinkled with long hairs—the margin and nerves beneath hairy; *petioles* about half an inch long, pilose. *Staminate aments* 2 to 3 inches long, larger than in the preceding species. *Pistillate aments* about an inch long, and two thirds of an inch in diameter; *scales* 3-cleft nearly half their length.—the lobes prominently keeled and nerved, hirsutely ciliate. *Nut* compressed, elliptic-obovate, acute at each end, with a membranaceous margin which is broader towards the summit, and somewhat ciliate,—but every where narrower than in the preceding. Mountain forests; throughout the U. States. *Fl.* April. *Fr.* August.

Obs. The *wood* of this species is colored reddish,—something like that of the Wild Cherry (*Cerasus serotina*, DC.); and it is used, like that, in making Cabinet-ware, bedsteads, &c. The bark and young twigs are pleasantly aromatic,—and were formerly employed in domestic brewings, diet-drinks, &c.

3. *B. Papyracea*, Ait. Leaves ovate, acuminate, doubly serrate,—the veins beneath hirsute, petioles glabrous; pistillate aments pedunculate, nodding, nearly cylindrical; scales with the lateral lobes short, sub-orbicular. Willd. *Sp. Pl.* 4. p. 464. Icon, *Mx. Sylva*, 2. tab. 69.

PAPER BETULA. *Vulgò*—Paper Birch. Canoe Birch.

Stem 40 to 60 or 70 feet high, and 1 to 2 or 3 feet in diameter; branches slender and flexible.—the shining brown bark dotted with white. *Leaves* 2 to 3 inches long; *petioles* about half an inch long. *Pistillate aments* about an inch long, pendulous on a peduncle three-fourths of an inch in length. New England, and Canada. *Fl.* April—May. *Fr.* July—August.

Obs. The *wood* of this, is considered less valuable than that of the preceding species; but the tree is remarkable, as furnishing, in its thin firm and durable bark, the material of which the Aborigines of our country made their portable Canoes. Various other articles—as boxes, baskets, &c. are manufactured from the bark. There are several other species of *Betula*, in the U. States,—as the *B. excelsa*, Ait. a tree of considerable size, in British America and the northern parts of New England,—and the *B. populifolia*, Ait. a small tree, very abundant in some portions of New Jersey—beside some shrubby ones: But I have supposed the preceding to be those of chief interest to the farmer, and have therefore omitted the others.

176. ALNUS. Tournef. Endl. Gen. 1841.

[The Latin name for the Alder.]

STAMINATE AMENTS with the scales peltate, 5-bracteolate beneath, 3-flowered. *Calyx* 4-parted. *Stamens* 4, inserted at the base of the calyx-lobes, and opposite them; *anthers* ovoid, 2-celled. PISTILLATE AMENTS with the scales imbricated, fleshy. *Calyx* of 4 scale-like sepals. *Ovaries* 2 under each scale, sessile, 2-celled; *ovules* solitary, pendulous; *stigmas* 2, filiform. *Strobile* formed of coalescing scales and bracteoles, which become woody. *Nuts* woody, compressed, angular, not winged, by abortion 1-celled and 1-seeded.

1. *A. serrulata*, Willd. Leaves obovate, sub-acuminate, doubly serrulate; stipules oval, obtuse. Willd. *Sp. Pl.* 4. p. 336. *Fl. Cestr.* p. 525. Icon, *Mx. Sylva*, 2. tab. 75. fig. 1.

SERRULATE ALNUS. *Vulgò*—Common Alder. Candle Alder.

Stem 3 to 10 or 12 feet high, and half an inch to 1 or 2 inches in diameter, with crooked and rather rigid branches. *Leaves* 2 to 4 inches long, strongly nerved, sub-plicate, thick and subcoriaceous, smoothish; *petioles* about half an inch long. *Staminate aments* one and a half to near 3 inches long, cylindrical, slender, flaccid, pendulous and sub-fasciculate near the ends of the branches; *scales* reddish-brown; *anthers* yellow. *Pistillate aments* half an inch to near an inch long, oblong, rigid, dark purplish-brown, persistent, on short lateral branches below the staminate ones,—when in flower, bristled with the dark-purple exerted stigmas. Swamps, and margins of rivulets; throughout the U. States. *Fl.* March—April. *Fr.* October.

Obs. This *shrub* is of little or no value;—and is only noticeable as a frequent intruder in swampy meadows, and along rivulets,—where, if neglected, the bushy growth soon gives the premises a slovenly appearance. It is true, the *Alders* often make a comfortable shade for the *Trout*, in the little pools of our meadow rivulets: but the tidy farmer likes to keep even the margins of those streams clear of weeds and bushes.

ORDER CXXVIII. SALICACEAE. *Richard. Lindl.*

Trees, or shrubs. *Leaves* alternate, simple; *stipules* scale-like and deciduous, or foliaceous and persistent. *Flowers* dioicous: both kinds in *Aments*, destitute of floral envelopes, one under each bract. *Stamens* 2 to several, sometimes monadelphous; *anthers* 2-celled. *Ovary* 1-celled or imperfectly 2-celled, many-ovuled! *styles* 2, very short; *stigmas* 2 to 3-lobed. *Fruit* a follicular kind of *capsule*, opening at apex by 2 valves. *Seeds* numerous, ascending; *funiculus* short, thick, solitting into a silky-lanuginous *coma*! *Albumen* none.

An Order comprising the *Willows* and *true Poplars*.

177. SALIX. *Tournef. Endl. Gen.* 1903.

[Celtic, *Sal*, near. and *Lis*, water; alluding to its place of growth.]

STAMINATE AMENTS with entire bracts. *Calyx* none. *Receptacle* gland-like. *Stamens* 2 to 5; *filaments* free, or more or less connate. PISTILLATE AMENTS with entire bracts. *Ovary* 1-celled; *ovules* numerous, on parietal placentae near the base; *stigmas* 2, subsessile, 2-lobed. *Capsule* follicular, 1-celled, 2-valved,—the valves bearing the erect comose seeds in the middle, near the base.

1. *S. VITELLINA, L.* Branches rather erect, yellow; leaves lanceolate, glandular-serrulate or nearly entire, smoothish and yellowish-green above, silky-pilose and glaucous beneath; aments coëtaneous. *Willd. Sp. Pl.* 4. p. 668. *Fl. Cestr. p.* 562.

EGG-YOLK SALIX. *Vulgò*—Yellow Willow. Golden Osier. *Fr.* Osier jaune. *Germ.* Die Dotter-weide. *Span.* Sauce.

Stem 30 to 40 or 50 feet high, and 2 to 3 feet in diameter at base; branches numerous, with a smooth shining orange-yellow bark. *Leaves* 2 to 3 or 4 inches long, generally lanceolate and acute, with indistinct cartilaginous glandular serratures,—not unfrequently obovate-oblong, obtuse and entire (especially when young, or the early ones at the base of young branches); *petioles* 1 or 2 lines long; *stipules* minute, ovate-lanceolate, caducous. *Pistillate aments* about 2 inches long; *scales* ovate-lanceolate, ciliate, externally pubescent. About houses; meadows, &c.: introduced. *Fl.* April. *Fr.*

Obs. This was introduced from Europe, at an early period, as a *shade-tree* about houses, and spring-heads or fountains,—and has become almost naturalized in some spots: but is gradually giving place to the more graceful *Babylonian Willow*. It is propagated by cuttings,—and spreads also by the roots. I have never observed any but *pistillate* trees. A *variety* with paler branches (perhaps *S. alba*, of authors), is also frequently to be seen, in old settlements; and, I think, has been cultivated, by the manufacturers of Gun-

powder, in order to obtain charcoal from the *wood*. Sir W. J. Hooker says, the *twigs* of the *S. vitellina* are used, in Europe, "as an Osier," for making baskets.

2. *S. BABYLONICA*, *L.* Young branches very slender, flaccid and pendulous; leaves linear-lanceolate, acuminate, sharply serrulate or nearly entire; stipules minute, ovate, glandular-dentate; aments coëtaneous. *Willd. Sp. Pl.* 4. p. 671.

BABYLONIAN SALIX. *Vulgò*—Weeping Willow. Drooping Willow. *Fr.* Saule pleureur. *Germ.* Babylonische Weide. *Span.* Sauce de Babilonia.

Stem 30 to 50 feet high, and 2 to 3 or 4 feet in diameter at base, widely branching above,—the young branches greenish, very numerous, slender, long and perpendicularly pendent. *Leaves* 2 to 4 or 5 inches long, narrow-lanceolate, the larger ones with a long acumination, smooth; *petioles* 1 or 2 lines long. *Pistillate aments* about an inch long, mostly ascending or turned up, on the pendulous branches; *scales* lanceolate, smooth. About houses: introduced. *Fl.* April. *Fr.*

Obs. This elegant and interesting species—a native of the East—is deservedly admired, and much cultivated, as a *shade-tree*. The *pistillate* plant, only, has been introduced to this country. Its *specific name* was given, by LINNÆUS, under the idea that it might be the tree so touchingly referred to, in the 137th Psalm:—"By the rivers of *Babylon*, there we sat down, yea, we wept, when we remembered Zion. We hanged our harps upon the *Willows* in the midst thereof."

In addition to these, there has been introduced to some extent, the *S. viminalis*, *L.* or common *Osier*, of Europe,—the pliable branches of which are wrought into baskets; and also a species which I have supposed to be the *S. Russelliana*, of *Smith*: But, as they scarcely come within the scope of the present work, I do not insert them. Most of our *native* Willows are mere *shrubs*,—of little or no Agricultural interest.

178. POPULUS. *Tournef. Endl. Gen.* 1904.

[Latin, *Populus*, the people: the *tree of the people*; being used to shade public walks.]

STAMINATE AMENTS with lacinate or fringed bracts. *Calyx* subturbinate,—the limb oblique, entire. *Stamens* 8 to 12, or more;—the *filaments* free. PISTILLATE AMENTS with bracts and calyx as in the staminate: *Ovary* 1-celled; *stigmas* 2, subsessile, elongated, 2-parted. *Capsule* 1-celled, 2-valved. *Seeds* numerous, comose.

1. *P. TREMULOIDES*, *Mx.* Leaves small, cordate-orbicular, abruptly acuminate, unequally dentate-serrulate, pubescent on the margin. *Mx. Sylva*, 2. p. 241. *Icon*, tab. 99. fig. 1. *Fl. Cestr.* p. 568.

P. laevigata? or *P. trepida?* *Willd. Sp. Pl.* 4. p. 803.

TREMULA-LIKE POPULUS. *Vulgò*—Quaking Asp. American Aspen.

Stem 30 to 50 or 60 feet high, and 12 to 18 inches in diameter, with a smoothish cinereous bark. *Leaves* about 2 inches in length, and rather wider than long; *peti* es 2 to 3 inches long, slender, smooth, subterete towards the base, laterally compressed or vertically dilated near the leaf, which disposes the leaf to be agitated by the slightest motion of the air. *Pistillate aments* 3 to 4 or 5 inches long. Low swampy grounds: Northern and Middle States. *Fl.* April. *Fr.* May.

Obs. This is a rather pretty tree,—and is occasionally planted about houses and lawns, for shade and ornament. It is admired for

the extreme mobility of its *leaves*; and is, moreover, in considerable repute for the tonic properties of its *bark*.

2. *P. ANGULATA*, *Ait.* Branches alate-angular; leaves deltoid-ovate, acuminate, obtusely uncinately-dentate, glabrous,—the younger ones broadly cordate. *Willd. Sp. Pl.* 4. p. 805. *Icon, Mx. Sylva*, 2. tab.

ANGULATE POPULUS. *Vulgò*—Cotton-wood. Carolina Poplar. [94.

Stem 60 to 80 feet high, and 2 to 3 or 4 feet in diameter,—the bark on the branches elevated into acute longitudinal ridges, as if by the decurrence of the petioles. *Leaves* 3 to 6 or 8 inches long; *petioles* 2 to 4 inches long, laterally compressed near the leaf. *Staminate aments* large. Along rivers; South Western States. *Fl. March. Fr.*

Obs. This tree is well known along the rivers in the valley of the Mississippi. The *wood*, however, of all the poplars, is light, brittle, and of little value. There are several other *native* species,—but, being of small importance to the farmer, they are omitted here. The two following were *introduced*, as shade trees.

3. *P. GRAECA*, *Ait.* Branches terete; leaves cordate-ovate, acuminate, obsolete serrate, somewhat ciliate. *Willd. Sp. Pl.* 4. p. 804.

GRECIAN POPULUS. *Vulgò*—Athenian Poplar.

Stem 30 to 50 feet high, and 1 to 2 feet in diameter, with irregular and rather spreading branches. *Leaves* 4 to 6 or 8 inches in length, and as wide as long; *petioles* 1½ to 3 inches long, laterally compressed near the leaf. *Pistillate aments* 3 to 6 inches long. About houses: cultivated. Native of Greece. *Fl. April. Fr.*

Obs. This species was introduced, as a *shade tree*, about 40 years ago; but it was not generally adopted,—and is now nearly superseded by more eligible ones. We have only the *pistillate* plant in this country; and the cotton which is shed from the capsules is so abundant as to render the tree objectionable, in the immediate vicinity of dwellings.

4. *P. DILATATA*, *Ait.* Leaves much dilated, nearly deltoid, acuminate, serrate, glabrous on both sides. *Willd. Sp. Pl.* 4. p. 804.

DILATED POPULUS. *Vulgò*—Lombardy Poplar. Italian Poplar.

Fr. Peuplier Italien. *Germ.* Lombardische Pappel. *Span.* Alamo de Lombardia.

Stem 60 to 80 feet high, and 1 to 2 or 3 feet in diameter; *branches* numerous, nearly erect, forming a close conical symmetrical top. *Leaves* 2 to 3 inches long, and wider than long; *petioles* about 2 inches long, laterally compressed near the leaf. *Staminate aments* 2 to 3 inches long. About houses, and along avenues: cultivated. Native of Italy. *Fl. April. Fr.*

Obs. This was a favorite ornamental tree, for a number of years; but is now (1846) going out of fashion. Mr. WATSON, in his *Annals of Philadelphia*, says it was introduced to that city, from *England*, in the year 1784, by WILLIAM HAMILTON Esq. of the "Woodlands," west side of the river Schuylkill. The Botanical Editor of Rees's *Cyclopaedia*, however, thinks they have only the *pistillate* plant in England,—whereas it was the *staminate* plant that was introduced by Mr. HAMILTON; and he *may* have procured it from *Italy*. All the Lombardy Poplars that are, or have been, in the U. States, may be considered as elongations, branches, or offsets, of the tree from which Mr. HAMILTON obtained his specimen.

The pretty *Silver Poplar*, or *Abele tree* (*P. alba*, L.)—so remarkable for the snow-white tomentum on the under surface of the leaves—is occasionally to be seen about houses,—and is annually becoming more frequent; but is scarcely, as yet, intitled to a place in our list of cultivated shade trees.

ORDER CXXIX. BALSAMIFLUAÆ. *Blume.*

Trees. *Leaves* alternate, petiolate, palmately lobed; *stipules* caducous. *Flowers* monoicous, in conical or globose *Aments*, with a caducous 4-leaved *involucre*. *Staminate aments* conical or elongated, loosely racemose at base; *stamens* numerous, in capitate clusters,—the lower clusters pedicellate; *anthers* rather large, oblong-didymous, 2-celled, subsessile. *Pistillate aments* pedunculate, globose,—the ovaries surrounded or mixed with numerous small fleshy scales—all finally coalescing and enlarging together. *Ovary* 2-celled—or rather formed of 2 *carpels*—connate at base; *ovules* numerous on the dissepiment; *styles* 2, thickish, continuous with the *carpels*. *stigmatoæ* on the inner face, somewhat recurved. *Capsules* obcordately 2-lobed or 2-beaked, 2-celled, coalescing with the indurated scales in a kind of globose *strabile*, dehiscent between the styles or beaks. *Seeds* few, compressed, margined, peltately affixed to the dissepiment, with but little albumen.

An Order limited to the single genus here given; and consequently, the *Ordinal* and *Generic characters* are the same.

179. LIQUIDAMBAR. *L. Endl. Gen.* 1902.

[A name given on account of the aromatic gum yielded by the tree.]

1. *L. STYRACIFLUA*, *L.* *Leaves* palmately 5-lobed; lobes ovate-lanceolate, glandular-serrate; axils of the nerves villous. *Willd. Sp. Pl.* 4. p. 475. *Icon, Mx. Sylva*, 2. tab. 62.

STORAX-FLOWING LIQUIDAMBAR. *Vulgò*—Sweet Gum. *Bilsted.*

Stem 40 to 60 or 70 feet high, and 2 to 3 feet in diameter, with a deeply furrowed bark when old,—the branches somewhat winged with high ridges of suberose bark. *Leaves* 3 to 5 inches long, deeply 5-lobed,—the lobes spreading; *petioles* about 3 inches in length. *Staminate aments* an inch or inch and half long, conical, branched near the base,—the lowest branches half an inch to nearly an inch long, all bearing small sub-globose heads or clusters of stamens—the upper clusters sessile; *rachis* hirsute with tawny hairs. *Pistillate aments* globose, about an inch in diameter when full grown, muricate with the beaks of the capsules; *peduncles* 2 to 3 inches long. Moist low grounds: New England to Florida. *Fl.* May. *Fr.* October.

Obs. The products of this tree do not meet the expectation naturally raised by its high-sounding name. The *leaves*, however, when slightly bruised, are remarkably fragrant. The *timber* is not particularly valuable,—but makes tolerably good fuel. As far as I have observed, the tree seems to be confined to the *alluvial* district, along the Atlantic coast. It is quite abundant in the lower part of New Jersey,—yet rare in Pennsylvania.

ORDER CXXX. PLATANACEÆ. *Lestib. Lindl.*

Trees, with a watery juice. *Leaves* alternate, petiolate, palmately nerved and lobed; *stipules* intra-petiolar or super axillary, sheathing, deciduous (none, *Endl.**); *petioles* tumid and hollow at base, concealing the young buds. *Flowers* monoicous, minute and inconspicuous, densely crowded on globose receptacles,—

**ENDLICHER*, in saying "*Stipulae nullae*," seems to have followed *JUSSIEU*, without giving the whole of that Author's remark. *JUSSIEU* says, "*Stipulae nullae. sed vagina intra petiolum ramulo circumposita, limbo inaequalis et patens, in ramis decidua*"; and this *sheath*, which embraces the branch within the petiole, or above the axil of the leaf, seems to be as much intitled to the name or character of *stipule*, as is the somewhat analogous *Ochrea* of the *Polygonaceæ*.

both kinds destitute of floral envelopes; *heads* pendulous on long slender peduncles. STAMINATE FL. *Stamens* numerous, irregularly mixed with subclavate scales (*staminodia*), densely crowded. PISTILLATE FL. *Ovaries* numerous, obconic or filiform-clavate, densely crowded, mixed with spatulate scales (*abortive ovaries*); *style* elongated, subulate, *stigmatose* on one side, near the apex. *Fruit* a 1-celled 1-seeded clavate coriaceous little *nut*,—the base surrounded with pappus-like articulated hairs. *Seed* cylindric-oblong, pendulous; *embryo* in the axis of fleshy albumen.

An Order consisting of the single genus here given.—and the *generic character*, of course, the same as that of the Order.

180. PLATANUS. L. *Endl. Gen.* 1901.

[Greek, *Platys*, broad; in allusion to its wide-spreading branches and foliage.]

1. P. OCCIDENTALIS, L. Branches cinereous; leaves roundish-pentagonal, acuminate, obscurely palmate-lobed, sinuate-dentate, pubescent beneath. *Willd. Sp. Pl.* 4 p. 474. *Fl. Cestr.* p. 512. *Icon, Mx. Sylva*, 2. tab. 63.

WESTERN PLATANUS. *Vulgò*—Button-wood. Sycamore. Plane-tree.

Stem 60 to 100 feet high, and 2 to 4 or 5 feet or more, in diameter, with large spreading branches, and a smoothish cinereous *bark*, which exfoliates in broad thinnish plates. *Leaves* 3 to 6 or 8 inches long, and wider than long,—the base at first truncate, finally subcordate, obscurely palmate or angulate-lobed, unequally sinuate-dentate with the teeth acuminate, loosely clothed with a hoary branching deciduous pubescence; *petioles* 1 to 3 inches in length, tumid and hollow at base, covering the young *bud* which is formed within and occupies the cavity; *stipules* somewhat salverform, sheathing the young branches immediately above the petioles.—the *limb* spreading, foliaceous, coarsely and unequally toothed. *Staminate heads* or globes small, on peduncles 1 to 2 inches long, deciduous. *Pistillate heads* about an inch in diameter, pendulous on slender terete peduncles 3 to 5 inches long, persistent. *Nuts* about one third of an inch long, slender, subterete, clavate, mucronate,—the base acute and invested with tawny pappus-like hairs. Banks of streams; roadsides, &c.: throughout the U. States. *Fl.* April—May. *Fr.* October.

Obs. This stately tree—originating from a very small seed—often attains to a larger size than any other in our country. It is sometimes planted for *shade*,—but becomes rather large for streets, or to stand near houses. The *timber* is not much esteemed,—though occasionally sawed into joists, and other lumber. For several years past, the trees (or, at least, the *branches*), in the spring, appeared every where to be diseased and dying; but they have still recovered again, more or less completely, in the course of the summer. The *cause* of this phenomenon,—(whether *insects*, as some suppose—or late unseasonable *frosts*, as I incline to think,) has not been satisfactorily determined.

ORDER CXXXI. URTICACEAE. Juss. *Endl.*

Trees or *shrubs* with a milky juice, or *herbs* with a watery juice. *Leaves* alternate or opposite, often stipulate. *Flowers* monoicous, dioicous, or polygamous, furnished with a regular *calyx*,—sometimes collected in *aments*, or fleshy *heads*. *Stamens* definite, distinct, inserted into the base of the calyx, opposite its lobes. *Ovary* free from the calyx, simple, with a solitary ovule. *Fruit* an *Akene*, or *Utricle*,—often inclosed in a fleshy or baccate calyx or involucre. *Embryo* straight, curved, or spiral,—with or without *albumen*.

A comprehensive and very important Order,—containing plants of various, and, in some instances, of remarkably dissimilar aspect and properties;—such as the *Nettle* and the *Mulberry*—the bitter *Hop* and the luscious *Fig*—the nutritious *Bread-fruit* (*Artocarpus incisa*, L. f.) and the deadly *Upas* (*Antiaris toxicaria*, Leschen.). The celebrated *Cow-tree* or *Pa'o de Vaca* (*Brosimum Galactodendron*, Don.), of South America,—“which yields a copious supply of rich and wholesome milk,”—belongs to this Order; as also does the yellow-dye wood, called *Fustic* (*Maclura tinctoria*, Don.), and the wide-spreading *Banyan-tree* (*Ficus religiosa*, L.), of India. A species of *Ficus* (*F. elastica*, Roxb.) also yields *Caoutchouc* or Gum elastic.

SUB-ORDER II. MOREAE. *Gaudich. A. Gray.*

Trees, or shrubs—very rarely herbs—with a milky juice. Staminate and pistillate flowers either in separate aments or spikes, or often intermixed—and sometimes included in the same hollow receptacle (as in the Fig),—the calyx becoming succulent and forming a compound fruit. Seeds albuminous.

181. MORUS. *Tournef. Endl. Gen.* 1856.

[Greek, *Morea*, the Mulberry : or Celtic, *Mr*, black,—in allusion to the fruit.]

Flowers mostly monoicous, in cylindric spikes. STAMINATE FL. in loose ament-like spikes. *Calyx* 4-parted,—the segments ovate. *Stamens* 4, opposite the calyx-segments; *anthers* introrse. *Ovary* an abortive rudiment. PISTILLATE FL. in dense spikes. *Calyx* 4-parted,—the segments ovate, concave, opposite—the outer pair larger. *Ovary* sessile, ovoid, 2-celled; *ovules* solitary; *stigmas* 2, terminal, filiform, villous on the inner side. *Akene* membranaceous or somewhat fleshy, by abortion 1-celled, 1-seeded, inclosed in the persistent *calyx*, which finally becomes succulent and berry-like. *Seed* pendulous.

1. *M. RUBRA, L.* Leaves cordate-ovate and acuminate, or sometimes 2 or 3-lobed, serrate, scabrous above, pubescent beneath; spikes often androgynous; fruit dark purple. *Willd. Sp. Pl.* 4. p. 369. *Fl. Cestr. p.* 521. *Icon, Mx. Sylva,* 3. tab. 116.

RED MORUS. *Vulgò*—Red Mulberry.

Stem usually 15 to 25 feet high, and 9 to 18 inches in diameter (in some instances considerably taller and larger), with numerous spreading branches at summit. *Leaves* 4 to 6 or 8 inches long, more or less cordate (on young plants often 2 or 3-lobed, and very scabrous above), dentate-serrate, with an entire acumination, deep green and roughish on the upper surface—softly and, while young, somewhat hoary-pubescent beneath, especially along the nerves; *petioles* 1 to 2 or 3 inches long, with linear membranaceous caducous *stipules* at base. *Flowers* greenish, small, numerous, in axillary pedunculate ament-like spikes,—sometimes dioicous—and not unfrequently the spikes are androgynous. *Staminate spikes* 1 to near 2 inches long. *Pistillate spikes* more densely flowered, cylindric, about an inch long,—the calyx of the florets becoming thick and fleshy, forming an oblong terete compound berry, which is juicy, dark purple, and pleasantly esculent when mature. *Peduncle* of the berry about half an inch long. Rich woodlands; fence-rows, &c : throughout the U. States. *Fl. May. Fr.* June--July.

Obs. The *wood* of this small tree is exceedingly durable, and highly valued for making posts, &c. The *leaves* have been successfully used for feeding silk-worms; but the product is said to be not so fine as that afforded by the White Mulberry. The *fruit* is more admired than that of any other species.

2. *M. ALBA, L.* Leaves obliquely cordate-ovate, and somewhat lobed, acute or sub-acuminate, serrate, smoothish and shining; fruit mostly yellowish-white. *Willd. Sp. Pl.* 4. p. 368. *Fl. Cestr. p.* 521.

WHITE MORUS. *Vulgò*—White Mulberry.

Fr. Murier blanc. *Germ.* Weisse Maulbeere. *Span.* Morera.

Stem 10 to 20 or 25 feet high, and 8 to 12 or 15 inches in diameter, much branched at summit. *Leaves* 2 to 4 inches long (sometimes—especially in young plants—2 or 3 times that size), unequally crenate-serrate, often partially lobed, smoothish, shining and yellowish-green; *petioles* half an inch to an inch long, with lance-linear *stipules* at base. *Pistillate spikes* shorter and smaller than in the preceding. *Fruit* pale yellow or straw-color, when mature—rarely dark purple, or nearly black. About houses; fence-rows, &c.: introduced. Native of China, Persia, &c. *Fl. May. Fr.* June--July.

Obs. This species was introduced into *Pennsylvania*, nearly a century since, with a view to the feeding of *Silk-worms*, and the production of *Silk*. The silk-culture, however, was soon abandoned,—for, in that early stage of the Colony, the sparsely settled Agriculturists found it more important to multiply *mammiferous animals*, rather than *Insects*: But the *tree* became partially naturalized,—and is still frequently to be met with, in Chester County. About ten years ago, a *variety* of the White Mulberry—of smaller stature, and much larger leaves, (well known by the name of *Morus multicaulis*)—was introduced, as being still better adapted to the feeding of Silk-worms; and soon afterwards, a scene of speculation and infatuation was exhibited, throughout the U. States, which bade defiance to all the suggestions of reason and common sense. There was a sort *Multicaulis monomania* (or *Moro-mania!*)—so universal, and engrossing, that it became absolutely ludicrous; and was scarcely exceeded in absurdity, by the nearly contemporaneous *epidemic*, which afflicted the nation, in reference to its financial concerns. Almost every body was eagerly engaged in cultivating myriads of trees, *to sell*,—without stopping to enquire *where* they could be sold, or *who* would be likely *to buy!* At some future day—and under different circumstances,—it is quite probable that a portion of our population will find the Silk-culture an eligible business, and the *Morus multicaulis* a valuable little tree.

182. MACLURA. *Nutt. Endl. Gen.* 1857.

[Named in honor of *William Maclure*,—a munificent Patron of Natural Science.] FLOWERS dioicous. STAMINATE FL. racemose. *Calyx* 4-parted, the segments ovate. *Stamens* 4, opposite the calyx-segments. PISTILLATE FL. capitate, densely crowded, and coalesced, on a globose fleshy receptacle. *Sepals* 4, in opposite pairs, oblong, cucullate-concave, fleshy,—the exterior ones larger. *Ovary* sessile, lenticular-compressed, 1-celled; *ovule* single, affixed to the middle of the parietes; *style* terminal, bifid,—one branch elongated and much exerted, *stigmatose* on the inner side—the other branch small or abortive. *Akenes* severally embraced by the fleshy *sepals*, which are all coalesced into a large compound globose lactescent *Berry*, with a glabrous, but uneven, verrucose or irregularly tessellated surface.

1. *M. AURANTIACA*, *Nutt.* Branches spinose; leaves alternate, lance-ovate, acuminate, entire, sub-cordate at base, glabrous and shining above, roughish-puberulent beneath; berry sessile, axillary, solitary. *Nutt. Am. Genera*, 2. p. 234.

ORANGE-LIKE MACLURA. *Vulgo*—Osage Orange.

Stem 15 to 25 or 30 feet high, and 10 to 15 inches, or more, in diameter, with a much-branched bushy top,—the branches virgate, but often inclined to droop or curve downwards, armed with small and very sharp spines. *Leaves* 4 to 6 or 8 inches long, subcoriaceous, macronate by the extended midrib; *petioles* 1 to 2 inches long; *stipules* oblong, somewhat cucullate, caducous. *Pistillate flowers* coalesced in a solid globose head, which is 2 to near 3 inches in diameter, when fully grown; *styles* near an inch long, villous and finally purplish,—the abortive branch, so called, probably an abortive style, and indicative of an abortive second cell in the ovary. South Western States. *Fl* May—June. *Fr.* Sept—October.

Obs. The *roots* of this are of a bright orange color. The *wood* has some resemblance to that of the Mulberry tree, and is probably durable. It is said to be used for *Bows*, by the aboriginal hunters

and warriors. The young plants, properly managed, promise to make a very effective *hedge*,—of which I have seen a good sample, at the seat of the late REUBEN HAINES, Esq. at Germantown, near Philadelphia.

183. BROUSSONETIA. *Vent. Endl. Gen.* 1858.

[Dedicated to P. N. V. Broussonet, a French Naturalist.]

Flowers dioicous. STAMINATE FL. in an ament-like spike, bracteate. *Calyx* 4-parted,—the segments ovate, acuminate. *Stamens* 4, opposite the calyx-segments. PISTILLATE, FL. capitate, densely crowded on a globose receptacle, and mixed with hairy scales (*abortive florets*). *Calyx* urceolate, 3 or 4-toothed. *Ovary* ovoid, 1-celled, obliquely seated on a clavate finally elongated pedicel or stipe (*gynophore*); *ovule* single, parietal; *style* filiform, excentric, *stigmatose* on one side. *Akene* softly fleshy, elevated on the baccate pedicel (*gynophore*), which is surrounded at base by the calyx. *Seed* pendulous.

1. B. PAPIRIFERA, *Vent.* Leaves scabrous above, pubescent beneath,—those on the young branches lobed, on the older ones mostly undivided, roundish-ovate or subcordate, acuminate, serrate. *Willd. Sp. Pl.* 4. p. 743.

PAPER-PRODUCING BROUSSONETIA. *Vulgò*—Paper Mulberry.

Stem 15 to 20 or 25 feet high, and 8 to 12 or 15 inches in diameter, with spreading branches,—the branches coated with a remarkably tough bark. *Leaves* 3 to 6 or 8 inches long; *petioles* 1 to 3 inches long. *Staminate spikes* about 2 inches long, resembling loose aments. *Pistillate flowers* in a dense caudate cluster. About houses: introduced. Native of Japan, and the South Sea Islands. *Fl.* May. *Fr.*

Obs. This tree was introduced into Pennsylvania, some 50 or 60 years since, as a *shade tree*; but it is inferior to many others in beauty,—and is now rarely planted for that purpose. The roots are so prolific in *suckers*, as to be quite a nuisance, about yards and gardens,—almost as bad as *Ailanthus*. I have seen only the *staminate plant*, growing in this country.

184. FICUS. *Tournef. Endl. Gen.* 1859.

[An ancient name,—of obscure derivation.]

Receptacle pyriform or subglobose, fleshy, concealing the florets in a central cavity,—the orifice, at apex, closed by small scales. *Florets* numerous, very minute, pedicellate, crowded on the internal surface of the receptacle, dioicous, or the upper ones staminate and the others pistillate. STAMINATE FL. *Calyx* 3-parted. *Stamens* 3, opposite the calyx-segments; *anthers* incumbent, 2-celled. PISTILLATE FL. *Calyx* 5-cleft,—the tube decurrent on the pedicel. *Ovary* seated somewhat laterally on a short stipe (*gynophore*), 1-celled; *style* lateral, continuous with the gynophore, filiform; *stigma* bifid. *Fruit-bearing receptacle* succulent,—the cavity lined with minute dry membranaceous *utricles*, which are severally surrounded by the vestiges of the calyx. *Seed* parietal, uncinat; *testa* hard, fragile.

1. F. CARICA, *L.* Leaves cordate at base, 3 to 5-lobed, repandentate, lobes obtuse, scabrous above, pubescent beneath; receptacles pyriform, glabrous. *Willd. Sp. Pl.* 4. p. 1131.

CARIAN FICUS. *Vulgò*—Fig-tree.

Fr. Le Figuier. *Germ.* Der Feigenbaum. *Span.* Higuera.

Stem 6 to 10 or 12 feet high,—a stout branching *shrub*, with an acrid milky juice. *Leaves* 6 to 9 inches long, deeply 3-lobed with 2 shorter side-lobes; *petioles* 3 to 5

or 6 inches long, with large convolute *stipules* at base. *Receptacles* axillary, turbinate or pear-shaped, about an inch in diameter. Cultivated. Native of Caria, in Asia. *Fl.* July. *Fr.*

Obs. This shrub requires the shelter of a green-house, in the middle and northern States,—where it produces freely: And although I do not learn that it has yet been much attended to, in our southern States, I think it would probably succeed well, in the open air, in that region. The *inflorescence*, or position of the flowers, of the *Fig*—(concealed within the body of what is commonly regarded as the *fruit*,) is very remarkable;—being just the reverse of that of the *Strawberry*,—in which the minute pistils are scattered over the exterior of the enlarging succulent receptacle.

SUB-ORDER III. URTICEAE. *Juss. A. Gray.*

Herbs (*shrubs*, or *trees*, within the tropics,) with a watery juice, often armed with stinging hairs. *Flowers* mostly loose, spicate or paniculate. *Akene* usually surrounded by the dry membranaceous calyx. *Embryo* straight, in fleshy albumen.

185. URTICA. *Tournef. Endl. Gen.* 1879.

[Latin, *uro*, to burn, and *tactus*, touch; from the sensation produced by touching it.]

Flowers monoicous or dioicous. STAMINATE FL. *Calyx* regular, 4 or 5-parted,—the segments valvate in aestivation. *Stamens* as many as the calyx-segments, and opposite them; *anthers* elliptical, incumbent. PISTILLATE FL. *Sepals* 4, in opposite pairs,—the outer pair smaller, sometimes abortive—the inner pair persistent, sometimes baccate. *Ovary* free, 1-celled; *ovule* single, erect from the base of the cell; *stigma* sessile, subcapitate, villous, penicillate, or filiform and elongated. *Akene* oblong, somewhat compressed, smooth or tuberculate, naked or inclosed by the baccate sepals. *Seed* erect; *testa* connate with the *epicarp*.

1. U. DIOICA, *L.* Hispid and stinging; leaves opposite, ovate-lanceolate, conspicuously acuminate, cordate at base, coarsely and acutely serrate; flowers mostly dioicous, in clustered paniculate spikes longer than the petioles. *Willd. Sp. Pl.* 4. p. 352. *Fl. Cestr.* p. 523. *ICON, Fl. Lond.* 4.

DIOICOUS URTICA. *Vulgò*—Nettle. Stinging Nettle.

Fr. Grande Ortie. *Germ.* Die Brennessel. *Span.* Ortiga.

Root perennial. *Stem* 2 to 3 feet high, obtusely 4-angled, branching, very hispid. *Leaves* 2 or 3 to 5 inches in length; *petioles* half an inch to 2 inches long, hirsute; *stipules* linear-lanceolate. *Flowers* small, in interrupted clusters, on slender axillary branching hispid spikes. About houses; waste places, &c.: introduced. Native of Europe and Asia. *Fl.* June—Aug *Fr.* Aug.—September.

Obs. A naturalized weed,—well known to all who have ever come in contact with it. When permitted to flourish about dwellings (which, of course, can only happen where slovens or sluggards reside), it becomes a vile nuisance. There is a native species (*U. Canadensis*, *L.*), which is a homely and somewhat stinging weed; but it does not incline to intrude much upon farm lands. There is also a smooth little annual species (*U. pumila*, *L.*)—with a succulent and almost translucent stem—which is very common in rich shaded spots, about houses; yet, though entirely worthless, it scarcely rises to the importance of a pernicious weed.

SUB-ORDER IV. CANNABINEAE. *Blume. A. Gray.*

Herbs, erect and annual—or twining and perennial—with a watery juice. *Flowers* dioicous,—the *staminate* ones racemose or paniculate—the *pistillate* ones glomerate, or imbricated with bracts and forming a strobile-like ament. *Embryo* curved; *albumen* none.

186. CANNABIS. *Tournef. Endl. Gen.* 1890.

[An ancient Greek name,—of obscure etymology.]

STAMINATE FL. racemose. *Sepals* 5, nearly equal, imbricated in aestivation. *Stamens* 5, opposite the sepals; *anthers* terminal, large, oblong, pendulous. PISTILLATE FL. spicate-globose, with single bracts. *Calyx* urceolate, membranaceous. *Ovary* subglobose, 1-celled; *ovule* single, pendulous; *style* terminal, short; *stigmas* 2, elongated, filiform, pubescent. *Nut* (or *caryopsis*) 1-celled, 2-valved, indehiscent. *Seed* pendulous; cotyledons incumbent, convex on the back.

1. C. SATIVA, *L.* Leaves digitate, petiolate; leaflets 5 to 7, lanceolate, serrate. *Willd. Sp. Pl.* 4. p. 768. *Fl. Cestr.* p. 564.

CULTIVATED CANNABIS. *Vulgò*—Hemp.

Fr. Le Chanvre. *Germ.* Der Hanf. *Span.* Cañamo.

Root annual. *Stem* 5 to 8 or 10 feet high, obtusely angular and sulcate, scabrous-pubescent, often branched. *Leaves* mostly opposite (the upper ones often alternate); *leaflets* usually 5—sometimes 7—3 to 5 inches long (the outside or lateral ones much smaller than the others, and often entire—especially on the staminate plant); *common petioles* 1 to 2 or 3 inches long; *stipules* lanceolate. *Staminate flowers* greenish, in loose pedunculate axillary clusters, rather crowded in a kind of dense panicle at summit. *Pistillate flowers* axillary, sessile, mostly in pairs. *Calyx* subglobose, acuminate, pubescent, green, slit on one side. *Stigmas* long, slender, densely pubescent, somewhat tawny. *Nut* ovoid, slightly compressed, smooth, greenish, reticulated with whitish veins, inclosed in the persistent calyx. *Cultivated* Native of Persia. *Fl.* June. *Fr.* August.

Obs. This plant—so important in Commerce and the Arts—is cultivated on a large scale, in Kentucky, and some others of the fertile western States; but only to a limited extent, in the middle and northern States.

187. HUMULUS. *L. Endl. Gen.* 1891.[Latin, *Humus*, moist earth, or mould; in allusion to its place of growth.]

STAMINATE FL. racemose or paniculate. *Sepals* 5, equal, imbricated in aestivation. *Stamens* 5, opposite the sepals; *anthers* terminal, large, oblong, erect. PISTILLATE FL. amentaceous or strobile-like, bracteate; *bracts* foliaceous, imbricated in several rows, 2-flowered,—each floret sessile at the base of a scale-like membranaceous enlarging involucre, and embraced by its involute or folded margin. *Calyx* urceolate, obliquely truncate, obsolete denticulate. *Ovary* ovoid, slightly compressed, 1-celled; *ovule* single, pendulous; *stigmas* 2, terminal, elongated, subulate, pubescent. *Strobile* membranaceous, formed of the enlarged imbricated bracts and scales. *Nuts* roundish-ovoid, inclosed in the persistent truncate calyx. *Seed* pendulous; *cotyledons* linear, spirally involute.

1. H. LUPULUS, *L.* Leaves mostly 3-lobed, cordate at base, petiolate, scabrous. *Willd. Sp. Pl.* 4. p. 769. *Fl. Cestr.* p. 563.

Vulgò—Hop. Hop-vine.

Fr. Houblon. *Germ.* Der Hopfen. *Span.* Hoblón.

Root perennial, branching. *Stem* 10 to 15 or 20 feet long, several from the same root (or *rhizoma*), slender, volubile (twining constantly with the sun, or East-South-West), somewhat angular and mostly twisted, retrorsely aculeate, with slender branches above. *Leaves* 3 to 5 inches long, generally opposite—the upper ones often alternate and not lobed,—all very scabrous on the upper surface; *petioles* 1 to 2 or 3 inches long; *stipules* ovate-lanceolate, connate below, free at summit. *Staminate flowers* in oblong panicles. *Pistillate flowers* in pendulous ovoid-oblong bracteate strobiles, or aments, which are proverbially numerous and crowded (“as thick as hops”), 1 to 2 inches long at maturity; *bracts* orbicular or broadly-ovate, with a short abrupt acumination,—the intervening scales (or involucre of the florets) membranaceous, ovate-oblong, rather obtuse, nearly as long

as the bracts, and thickly sprinkled, at base, with orange-colored *resinous atoms*, which are highly bitter and aromatic—containing, in fact, the *Lupulin* or essence of the hop. Cultivated,—but indigenous in most parts of the U. States. *Fl.* July. *Fr.* September.

Obs. The value of the *Cones*, or *Aments*, of the *pistillate* plant, is well known to every house-keeper; and it is cultivated for culinary purposes, in almost every garden. The *medicinal* virtues of the cones are also very considerable. The hops, for the *Breweries*, are cultivated on a large scale, in some districts of the northern and middle States—particularly in Western New York,—where, it is said, they are a profitable crop. The *staminate* plant is of so little account, that it is scarcely known—except to the Botanists.

GYMNOSPERMOUS EXOGENS.

ORDER CXXXII. CONIFERAE. *Juss.*

Trees, or *shrubs*, abounding in resinous juice. *Leaves* mostly evergreen, scattered or fasciated, usually rigid and needle-shaped or linear, entire. *Flowers* monoicous or dioicous, commonly amentaceous. *Staminate flowers* consisting of one or more (often monadelphous) stamens, destitute of calyx and corolla, and arranged on a common rachis so as to form a kind of loose *Ament*. *Pistillate flowers* in *Cones* of various structure and character. *Seeds* albuminous.

A valuable and very interesting Order, of peculiar Botanical character,—comprising some of the most magnificent trees known,* and yielding various balsams, resins, and resinous fluids, of great importance. The celebrated “Cedar of Lebanon” is *Pinus Cedrus*, *L.* belonging to the Sub-genus *Larix*, or *Larch* section of the Pines.

SUB-ORDER I. ABIETINEAE. *Richard. A. Gray.*

Fertile aments formed of imbricated *scales*,—which are the flat and open *carpels*, and bear a pair of *ovules* adherent to their base, with the *foramen* (or *micropyle*) turned downwards. *Scales* subtended by *bracts*. *Fruit* a strobile or cone. *Integument of the seed (testa)* coriaceous or woody, more or less firmly adherent to the scale. *Embryo* in the axis of fleshy and oily albumen, with 2 to 15 *cotyledons*!

188. PINUS. *L. Endl. Gen.* 1795.

[Supposed from the Celtic, *Pin*, or *Pen*, a rocky mountain,—often its place of growth.]

Flowers monoicous. STAMINATE AMENTS solitary or spicate. *Stamens* numerous, inserted on the axis; *anthers* subsessile, 2-celled, covered at apex by the dilated scale-like *connective*. FERTILE AMENTS solitary or clustered. *Scales* (or open flat carpels) imbricated, each mostly subtended by an adnate *bract*. *Ovules* in pairs, at the base of the scales, collateral, inverted. *Strobile* formed of woody scales, with a cavity at the base of each scale, containing the seeds. *Seeds* nut-like; *testa* woody or coriaceous, with the base, on one side, produced into a membranaceous wing.

*Some of the *Pines*, on or near the West Coast of America, are represented as being from 200 to 300 feet in height,—and upwards of 50 feet in circumference, near the base.

SUB-GENUS OR §. 1. PINUS. Link. THE PINES PROPER.

LEAVES *sempervirent, fasciculate* (from the suppression or non-development of the branches).—the fascicles bound with a scarious sheath. at base. BRACTS of the fertile aments evanescent. STROBILE conical, with the scales thickened and angular at summit, often mucronate near the apex, excavated at base. WING of the seed deciduous.

1. *P. VARIABILIS*, Lambert. Leaves fasciculate in twos or threes, elongated, slender, channelled; strobiles ovoid-conic, rather small, subsolitary,—the scales armed with small incurved spines. Willd. *Sp. Pl.* 4. p. 498.

P. mitis. *Mx. Sylva*, 3. p. 120. *ICON*, tab. 3.

VARIABLE PINUS. *Vulgò*—Yellow Pine (of the North).

Stem 40 to 60 or 80 feet high, and 1 to 2 feet, or more, in diameter, with the bark in rather broad flat scales. *Leaves* 3 to 5 inches long, slender, linear, dark green, mostly in pairs (sometimes in threes, on young branches). *Strobiles* (or cones) 2 to 3 inches long. New England to Georgia; abundant in New Jersey. *Fl.* May. *Fr.*

Obs. This tree affords valuable *lumber*,—and is much employed in the construction of houses, and merchant vessels: but it is much inferior in quality to the *P. palustris*, L. or Yellow Pine of the South.

2. *P. PALUSTRIS*, L. Leaves fasciculate in threes, very long; stipules pinnatifid, portions of them persistent; strobiles elongated, conoid,—the scales armed with small recurved spines. Willd. *Sp. Pl.* 4. p. *P. australis.* *Mx. Sylva*, 3. p. 133. *ICON*, tab. 6. [499.

MARSH PINUS. *Vulgò*—Yellow Pine (of the South). Long-leaved Pine.

Stem 80 to 100 feet high, and 2 to 3 or 4 feet in diameter, with a smoothish bark,—the branches rough with the persistent remains of the stipules (stipules ramentaceous). *Leaves* 9 to 15 inches long. *Strobiles* 6 to 9 inches long. Sandy soils: Virginia to Florida. *Fl.* April. *Fr.* Aug.—Sept.

Obs. This is a most important and valuable species. It yields the firmest and most durable *lumber*, for house and ship building, of any of the genus. The superior “heart pine” boards, for flooring, &c. and the string pieces for rail-roads (where a wooden superstructure is used), are furnished by this tree. “From the sap of the living tree,” says Mr. ELLIOTT, “most of the *Turpentine* of commerce is obtained.” *Tar* is procured by charring the wood and roots of this, and other species, by a smothered fire, which melts the turpentine and mixes it with the sap and juices of the wood. *Pitch* is the inspissated residuum, left by boiling *Tar* until the watery portion is driven off. The ground, where this tree prevails, becomes thickly covered by the long leaves—which the Southern people call *straw*.

3. *P. STROBUS*, L. Leaves fasciculate in fives, scarcely sheathed at base, long and slender; strobiles oblong, subcylindric, pendulous,—the scales unarmed, and loosely imbricated. Willd. *Sp. Pl.* 4. p. 501. *Fl. Cestr.* p. 549. *ICON*, *Mx. Sylva*, 3. tab. 10.

Vulgò—White Pine. Weymouth Pine. New England Pine.

Stem 60 or 80 to 120 feet or more in height, and 2 to 4 or 5 feet in diameter straight and with a smooth bark—especially while young; *branches* verticillate, slender, rather few and those near the summit when the trees are crowded. *Leaves* 3 to 5 or 6 inches long, linear, bluish or glaucous-green. *Strobile* 3 to 5 inches long, somewhat curved; *scales* cuneate-obovate, slightly thickened at apex. Rich soils; bottom lands, along streams, &c.: Canada to Virginia. *Fl.* May. *Fr.* Aug.—Sept.

Obs. This is also a most valuable tree,—furnishing an immense amount of *lumber*, in the form of boards and scantling,—and, of late years—since the *Cypress* has become somewhat scarce and dear—it is extensively wrought into *shingles*. Being fine-grained, and comparatively free from turpentine, the White Pine is much used for the interior wood-work of houses—except floors,—for which purpose it is rather soft. There are several other species, belonging to this *section*,—such as *P. inops*, *Ait.* or *Jersey Pine*—with the leaves short and in pairs, and the scales armed with straight subulate spines: *P. rigida*, *Marsh.* or *Pitch Pine*—with the leaves in threes, and the scales with stout reflexed spines: &c. But, as the three here described are decidedly the most important, the others are omitted.

SUB-GENUS OR §. 3. ABIES. *Tournef.* THE FIRS.

LEAVES *sempervirent*, solitary, scattered or distichous.* BRACTS of the fertile aments persistent. STROBILE oblong, with the scales somewhat woody, thin and rounded at apex, not excavated at base. WING of the seed persistent.

4. *P. CANADENSIS*, *L.* Leaves somewhat distichous, flat, minutely denticulate; strobiles elliptic-ovoid, terminal, small. *Willd. Sp. Pl.* 4. p. 505. *Fl. Cestr.* p. 518.

Abies Canadensis. *Mx. Sylva*, 3. p. 185. *Icon*, tab. 13.

CANADIAN PINUS. *Vulgò*—Hemlock. Hemlock-Spruce.

Stem 40 to 60 or 70 feet high, and 1 to 2 or 3 feet in diameter, but tapering rapidly near the top,—with long horizontal, or often rather depending *branches*, which are slender and flaccid, while young. *Leaves* half an inch to three quarters in length, shining green above, bluish-glaucous beneath. *Staminate flowers* in small roundish-ovoid pedunculate aments, which are racemously arranged around, and near the ends, of the slender branches. *Strobiles* terminal, somewhat pendulous, about an inch long, bluish-glaucous when young, finally pale brown or ferruginous; *scales* obovate, concave, with the apex rounded, thin and entire. Mountains; and rocky banks, along streams: throughout the U. States. *Fl.* May. *Fr.* Aug.—Sept.

Obs. This tree is so generally diffused throughout Northern America, that it has been adopted, as *emblematic*, in *Vignettes* on Maps, and other devices, having reference to the country. It does not, however, afford a very valuable *timber*,—though frequently sawed into scantling, and other lumber. The *bark* is much used, in the

*The *Buds* of the Firs contain the undeveloped *branches* of the succeeding year, with all their tiny *leaves* completely formed, and closely packed together. The process of growth elongates the branches, and consequently increases the distance between the leaves. Something like this, seems to be the fact in all trees, in which the branches have a *definite* annual growth; such as the Horse-Chesnut, &c. where the buds contain the future leaves and flowers—perfect, though in miniature. The phenomenon is happily noticed by the Poet, COWPER:

“The beauties of the wilderness are His,
 “That makes so gay the solitary place,
 “Where no eye sees them. And the fairer forms,
 “That cultivation glories in, are His.
 “He sets the bright procession on its way,
 “And marshals all the order of the year;
 “He marks the bounds which Winter may not pass,
 “And blunts his pointed fury; *in its case*,
 “*Russet and rude, folds up the tender germ*,
 “*Uninjured, with inimitable art*;
 “*And ere one flowery season fades and dies*,
 “*Designs the blooming wonders of the next.*”

TASK, *Book VI.*

Northern States, in the process of *tanning*; and MARSHALL informs us, that the Aborigines used it to dye their splints, for baskets, of a red color.

In this section of *Firs*, there are some very ornamental evergreen trees,—with the branches beautifully symmetrical, and forming a conical top;—such as *P. balsamea*, L. the *Balsam* or *Silver Fir*, which yields the “Canadian Balsam;” *P. nigra*, Ait. the *black* or *double Spruce*, which gives the flavor to *Spruce beer*; and several others,—well worthy of culture, to adorn country residences; but scarcely of sufficient *Agricultural* importance to require a description, in this work.

SUB-GENUS OR §.4. LARIX. *Tournef.* THE LARCHES.

LEAVES *numerously fasciculate, needle-shaped, mostly annual, proceeding from subglobose buds which open only at apex,—the buds finally extending into branches laden with other buds.* BRACTS of the fertile aments colored, persistent. STROBILE with the scales woody, thin at apex, excavated at base. WING of the seed persistent.

5. *P. MICROCARPA*, Lambert. Leaves fasciculate, rather short, deciduous; strobiles roundish-ovoid, small, few-flowered; bracts elliptic, obtusely acuminate. *Willd. Sp. Pl. 4. p. 502.*

Larix Americana. *Mx. Sylva, 3. p. 213. Icon, tab. 153.*

SMALL-FRUITED PINUS. *Vulgò*—Red Larch. Tamarack.

Stem 80 to 100 feet high, and 2 or 3 feet in diameter (*vide* MICHAUX, *f.*), with a smooth bark. *Leaves* half an inch to an inch long, crowded into pencil-like fascicles by the abbreviation of the axis or branchlet. *Strobiles* about three quarters of an inch long,—the scales orbicular, loosely imbricated. Mountains: Canada to Pennsylvania. *Fl. May. Fr.*

Obs. According to MICHAUX, this is often a large tree,—and the timber superior to that of “any species of Pine or Spruce.” I have only met with the smaller specimens, to be seen on the mountains of Pennsylvania,—and cannot speak of it from my own observation. I have introduced it, here, chiefly as a sample of the Pines of this section. The “Cedar of Libanus” (*P. Cedrus*, L.) belongs here; but has perennial leaves.

SUB-ORDER II. CUPRESSINEAE. *Richard. A. Gray.*

Fertile aments of few scales crowded on a short axis, or sometimes more numerous and peltate, not bracteate; *ovules* 1, 2, or numerous, borne on the base of the scale, erect (the *foramen* towards its apex). *Fruit* either an indurated strobile,—or fleshy and with the scales coalesced, forming a kind of drupe. *Integument* of the seed (*testa*) membranaceous, woody, or bony. *Cotyledons* 2, or more. *Anthers* of several parallel cells, under the dilated peltate connective.

189. TAXODIUM. *Richard. Endl. Gen. 1794.*

[*Taxus*, the yew, and *oidos*, form,—the foliage having the habit of that plant.] *Flowers* monoicous, on the same branches. STAMINATE AMENTS numerous, arranged in a terminal pyramidal spike or raceme. *Stamens* few, inserted towards the apex of the axis, which is naked at base; *filaments* short, thick, produced into a scale-like excentrically peltate connective; *anthers* with 2 to 5 cells, which are longitudinally 2-valved and seated beneath the lower margin of the connective. FERTILE AMENTS roundish-obovoid, sessile in pairs at the base of the staminate spike; *scales* numerous, inserted on the axis, imbricated, acute, recurved-spreading at apex. *Ovules* 2 at

the base of each scale, sessile, erect, perforate at summit. *Strobile* subglobose,—formed of angular subpeltate lignescent scales. *Seeds* erect from the base; *testa* woody, irregularly angular; *embryo* in the axis of scanty albumen; *cotyledons* 6 to 9, linear.

1. *T. DISTICHUM*, *Rich.* Leaves flat, pinnately distichous on short slender deciduous branches; staminate aments in terminal leafless paniculate racemes; strobiles globose,—the surface uneven.

Cupressus disticha. *L. Willd. Sp. Pl. 4. p. 512. Mx. Sylva, 3. p. 197. Icon, tab. 151.*

DISTICHOUS TAXODIUM. *Vulgò*—Cypress. Bald Cypress.

Stem 80 to 100 feet high, fastigiately branched at summit.—the trunk 2 to 4 feet, or more, in diameter—often abruptly and much enlarged at base; the creeping or spreading *roots* protruding a number of large conical hollow *knots* above the surface of the ground. *Leaves* one third to half an inch long, sub-linear, acute, pinnately or distichously arranged on alternate slender herbaceous branches (which rather resemble *common petioles*), 1 to 2 or 3 inches in length; a number of leaves are also solitary, and scattered on the woody branches. Swamps, along large streams: Delaware to Louisiana. *Fl.* February—April. *Fr.* Sept.—October.

Obs. The *wood* of this noble and remarkable tree is soft, fine-grained, and exceedingly durable. For many years, it supplied the market with those valuable roofing materials, called "*Cedar shingles*;" but since these have become rather scarce and dear, they have been extensively superseded by shingles made of the *White Pine* (*Pinus Strobus, L.*),—which make a reasonably good substitute, at a much less price.

190. *THUJA. Tournef. Endl. Gen. 1790.*

[Greck, *Thu*, to sacrifice; the wood having been used in that ceremony.]

Flowers monoicous, on different branches. **STAMINATE AMENTS** terminal, ovoid, minute. *Stamens* numerous, naked, inserted on the axis; *filaments* excentrically peltate, loosely imbricated; *anthers* with 4 cells, longitudinally deliscent and seated beneath the lower margin of the peltate *connective*. **FERTILE AMENTS** terminal, small, angular-globose, somewhat depressed; *scales* quadrifariously imbricated, spreading. *Ovules* in pairs, at the base of the scales, sessile, erect, bottle-shaped, perforate at summit. *Strobile* formed of imbricated lignescent *scales*, which are recurved-mucronate near the apex,—at first closed, afterwards spreading. *Seeds* 2 under each scale, erect from the base; *testa* bony or membranaceous, produced on each side into a narrow wing; *embryo* in the axis of fleshy albumen; *cotyledons* 2, oblong.

1. *T. SPHAEROIDALIS*, *Rich.* Young branches compressed; leaves minute, scale-like, ovate, quadrifariously imbricated, tuberculate at base; strobile depressed-globose, angular. *

* My friend, Prof. A. GRAY—who did me the favor to glance at some portions of the MS. of this work—suggests a doubt whether this is really a *Thuja*. Not having the means at hand to determine the question, I must content myself with noting the doubt,—and leave its solution for future inquirers. The tree seems, in fact (as remarked by Mr. EMERSON) to be intermediate—a sort of connecting link—between *Thuja* and *Cupressus*;—having "the scale-like imbricated leaves and fan-shaped branches of the former, and the lofty port and globular or many-sided fruit of the latter."

Cupressus thyoides. Willd. *Sp. Pl.* 4. p. 512. *Mx. Sylva*, 3. p. 207. *Icon*, tab. 152.

SPHAEROID THUJA. *Vulgò*—White Cedar.

Stem 60 to 80 feet high, and 1 to 2 feet in diameter, sparingly branched. *Leaves* evergreen, very small and crowded, appressed to the branches. *Strobiles* one third to half an inch in diameter. Swamps, in Pine forests: New England to Georgia. *Fl.* April—May. *Fr.* September.

Obs. This valuable tree is very abundant in certain spots in the Pine forests of New Jersey; and is apparently restricted to swamps or broad shallow pools, near the sources of streams, in that sandy region,—where the straight stems are exceedingly numerous and crowded—forming almost impenetrable dark groves, or clumps, of several acres. The *wood* is light, soft, and very durable. *Shingles* were formerly made, to a considerable extent, from the larger trees: but these are now chiefly wrought into domestic wares, by the *Cedar Cooper*. The smaller trees are used for *fence rails*,—for which purpose they are highly valued. There is, perhaps, no other woodland that will yield so much valuable timber per acre,—and no description of territory, in New Jersey, that will command half the price that can be obtained for good *Cedar Swamp*.

The other species of the genus, as now constituted, are the small trees, or shrubs, known by the name of *Arbor Vitae*,—which, though sometimes cultivated for ornament, scarcely come within the purview of the present work. *

191. JUNIPERUS. L. *Endl. Gen.* 1789.

[Supposed from the Celtic, *Junpus*, rough, or harsh; descriptive of the plant.]

Flowers dioicous,—or rarely monoicous on distinct branches. **STAMINATE AMENTS** axillary or subterminal, ovoid, very small. *Stamens* numerous, naked, inserted on all sides of the axis; *filaments* eccentrically peltate, imbricated; *anthers* with cells in threes or sixes, longitudinally dehiscent, attached beneath the lower margin of the peltate *connective*. **FERTILE AMENTS** axillary, ovoid, imbricately bracteate at base. *Involucre* of 3 to 6 scales, coalesced at base, 1 to 3-ovuled. *Ovules* erect from the base of the involucre, bottle-shaped, perforate at summit. *Fruit* drupaceous, umbilicate at apex, squamose at base,—the involucre baccate. *Seeds* 1 to 3, erect, subtriquetrous; *testa* bony; *embryo* in the axis of fleshy albumen; *cotyledons* 2, oblong.

1. J. VIRGINIANA, L. *Leaves* on the young branches ovate, imbricated in 4 rows, shorter than the fruit,—on the older branches subulate, cuspidate and somewhat spreading. Willd. *Sp. Pl.* 4. p. 853. *Fl. Cestr.* p. 572. *Icon*, *Mx. Sylva*, 3. tab. 155.

VIRGINIAN JUNIPERUS. *Vulgò*—Cedar. Red Cedar.

Stem 30 to 50 feet high, and 9 to 18 inches in diameter at base, tapering, often with longitudinal obtuse ridges and intervening channels, sending off numerous horizontal or spreading branches. *Leaves* minute,—those on the young branches scarcely a line in length, ovate, acute, opposite and decussate, crowded, appressed and imbricated, covering the branches and making them 4-angled,—

* Since the above was written, I learn from Prof. A. GRAY, that the *Thuja occidentalis*, L. or *American Arbor vitae* (which is the "White Cedar" of the Northern States), is regarded as a valuable tree—the most important of the genus—north of New Jersey.

those on the older branches 3 to 5 or 6 lines long, and cuspidate. *Staminate aments* ovoid-oblong, tawny-ferruginous, 2 or 3 lines in length. *Fruit* roundish-ovoid, about 2 lines in diameter, tuberculate with the points of the fleshy connate scales of the involucre, dark blue when mature, and covered with a bright bluish-glaucous bloom. Fence-rows; old fields, &c.: throughout the U. States. *Fl.* April. *Fr.* October.

Obs. The *wood* of this tree is fine-grained, very durable, and valuable for many purposes. The heart-wood (which is reddish,) of this, and a *Bermudian* species, or variety, is much used in the manufacture of black-lead pencils. The tree is said to be injurious to *Thorn hedges*, when permitted to grow in the immediate vicinity. The *J. communis*, *L.* or *Juniper bush*, was formerly kept in many gardens, for the sake of the drupaceous "*berries*,"—which are somewhat medicinal, and were also employed in the preparation of the liquor called *Gin*, or *Geneva*. The *J. Sabina*, *L.* or *Savin*, is another cultivated species—reputed medicinal, and sometimes to be met with;—but neither of them possesses much interest for the Farmer.

There is a *third* SUB-ORDER of this family (TAXINEAE, *Rich.*); which contains (among others) the *Taxus*, or *Yew tree*—so intimately associated in our minds with Churches, and Church-yards: but it scarcely belongs to Agricultural Botany.

ENDOGENOUS OR MONOCOTYLEDONOUS PLANTS.

ORDER CXXXIV. PALMAE. *L. Juss.*

Chiefly *trees*, with unbranched cylindrical trunks, growing by a terminal bud. *Leaves* (or *fronds*) alternate, large, clustered, fan-shaped or pinnated, plicate in veneration. *Flowers* small, perfect or polygamous,—the *stamens* usually as many as the petals and sepals together. *Fruit* a drupe or berry. *Seeds* with cartilaginous albumen, often hollow,—the *embryo* placed in a small separate cavity.

The plants of this noble Order (chiefly *tropical*) have been compared to *Princes*, by European Botanists; and it is certain they could not flourish among the sturdy *Plebeians* of our republican forests! Though but little known in the U. States, they are of incalculable value to the inhabitants of their native regions,—affording food, drink, condiments, medicine, clothing, and shelter—with the utensils, and materials, for almost every economical purpose. Of the more important of these remarkable vegetables, may be mentioned, the *Cocoa-nut tree* (*Cocos nucifera*, *L.*)—which, of itself, supplies nearly all the wants of the people who repose under its shade;* the *Date tree* (*Phoenix dactylifera*, *L.*); and the *Sago Palms* (species of *Sagus* or *Metroxylon*). The plant which furnishes *Rattans* (the *ratons*, *retenos*, or slender flexible branches of the *Calamus Rotang*, *L.*), also belongs to this Order.

TRIBE IV. CORYPHINAE. *Martius.*

*Spathe*s numerous, incomplete. *Ovary* of 3 carpels, cohering inwardly; *ovules* solitary. *Fruit* baccate, 3- or 2-lobed, or (by abortion) simple.

SUB-TRIBE 1. SABALINAE. *Martius.*

Flabelliffrond; i. e. the leaves (or *fronds*) plicate and expanding in the form and manner of a lady's fan.

*"Utilissima generi humano, omniaque ferè quae ad vitam sunt necessaria praebens." *Kunth.*

192. SABAL. *Adans. Endl. Gen.* 1758.

[A name employed by *Adanson*; of unknown, if of any, meaning.]

Flowers perfect, sessile on a branching *spadix* which is sheathed by numerous incomplete *spathes*, bracteate and bracteolate. *Calyx* cup-shaped, 3-parted. *Corolla* 3-petaled. *Stamens* 6, hypogynous; *filaments* nearly distinct, subulate; *anthers* cordate-ovoid. *Ovaries* 3,—at first distinct, soon coalescing; *style* trigonous; *stigma* capitate. *Berry* drupaceous, simple and globose, or deeply 2 or 3-lobed. *Albumen* uniform (not ruminated), horny.

1. S. PALMETTO, *Loddig.* Stem arborescent; leaves plicate-palmate, the petiole unarmed; *spathes* doubled. *Kunth, Enum.* 3. p.

Chamaerops Palmetto. *Mx. Sylva*, 3. p. 1. *ICON*, *tab.* 101. [247.]

Vulgò—Cabbage-tree. Tall Palmetto.

Stem 20 to 40 or 50 feet high, and 10 to 15 inches in diameter, cylindrical, unbranched, naked, with a tuft of large leaves at summit. *Leaves* (or *fronds*) 3 or 4 feet in length, broad, palmate and plicate like a fan; *petioles* (or *stipes*) 1 to 2 feet long, not aculeate. *Flowers* small, greenish, on branching *spadices*, or panicles, at the base of the leaves. *Dryes*, or berries, about the size of a pea, bluish-black when mature. Sea coast: Carolinas to Florida. *Fl.* June—July. *Fr.*

Obs. The *wood* of this elegant tree—though extremely porous—is highly valued in the South, for sub-marine structures, such as wharves, &c. on account of its durability in salt water, and its exemption from the attacks of the ship-worm. The *leaves* are used, also, in the manufacture of hats, baskets, &c. The terminal *bud*, or cluster of undeveloped leaves—called “the cabbage”—affords a favorite vegetable dish, in the South: But Mr. ELLIOTT remarks, “it is a wasteful luxury,—as the tree always perishes when deprived of this part of its foliage.”—*South Carolina* has chosen this graceful plant as the *emblem* of the Commonwealth,—and hence she is often called “the Palmetto State.”

ORDER CXXXV. ARACEAE. *Juss. Schott.*

Herbs, with a fleshy *Cormus* or *rhizoma*.—occasionally shrubby or climbing plants within the tropics. *Leaves* sometimes divided or apparently compound, frequently with the veins more or less reticulated. *Spadix* (often naked at the extremity) usually surrounded by a *spathe*. *Flowers* commonly monoicous (occasionally perfect) and sometimes destitute of envelopes. *Ovary* 1 to several-celled, with 1 or more ovules. *Fruit* a berry. *Seeds* mostly with fleshy albumen.

An Order containing a number of aërid plants; but those here given are the principal ones intitled to the notice of the American Agriculturist.

193. ARUM. *L.* [ARISAEMA. *Mart. Endl. Gen.* 1674.]

[An ancient name,—of obscure etymology.]

Spathe convolute at base,—the limb cucullate or flattish. *Spadix* unisexual at base, with stamens or rudiments of stamens or pistils above (sometimes these entirely wanting),—the summit of the *spadix* exerted or included in the *spathe*, naked. *Floral envelopes* none. *Anthers* on distinct filaments, verticillate,—the cells opening by a pore or transverse fissure. *Ovaries* numerous, free; *ovules* 2 to 6, or rarely more numerous. *Berry* 1 or few-seeded. *Seeds* subglobose, albuminous.

1. A. TRIPHYLLUM, *L.* Leaves mostly in pairs, ternately divided,—the segments elliptic-ovate or lanceolate, acuminate, entire, sessile;

spadix clavate, obtuse, shorter than the spathe. *Willd. Sp. Pl.* 4. p. 480. (in part.) *Fl. Cestr.* p. 530.

Arisaema atrorubens. *Blume, Kunth. Enum.* 3. p. 17.

THREE-LEAVED ARUM. *Vulgò*—Indian Turnep.

Root perennial, consisting of numerous fibres proceeding from the base of an orbicular depressed rugose *cormus*, or subterranean stem. *Aerial stem* none. *Leaves* mostly 2 (sometimes solitary), ternate.—the *leaflets* or segments 2 or 3 to 6 or 8 inches long, smooth, green or often purplish, thin and membranaceous, or almost scarious, when dried; *common petioles* 9 to 18 inches long, inserted on the *cormus*, and embracing the central scape, at base. *Scape* 6 to 15 inches high, situate between the leaves—the base inclosed by the sheathing petioles. *Spathe* 3 to 5 inches long,—the lower half convolute—the upper half (or limb) a little dilated, flat, ovate-lanceolate, acuminate, and cucullately incurved, often variegated with dark-purple and yellowish stripes and spots. *Spadix* mostly unisexual, with the summit clavate, naked and smooth, much shorter than the spathe, but a little exerted from the convolute portion. *Berries* numerous, in a dense oblong cluster around the base of the spadix, orange-red or scarlet when mature. Rich shaded grounds; throughout the U. States. *Fl.* May. *Fr.* Aug.—Sept.

Obs. I have retained the *Linnaean name*, of this plant, in accordance with the suggestion of my friend, Prof. A. GRAY. The *turnep-like* subterranean stem (designated by the name of *Cormus*), is highly acrid in its fresh or green state; but that quality is dissipated, in great measure, by boiling or drying. A kind of *Sago* has been obtained from it; and the recent tuber, grated and boiled in milk, is a popular medicine in coughs and pulmonary consumption.

A plant nearly allied to this, called "*Tanyer*"—(the *Tallo* or *Tarro*, of the New Zealanders, vide *Kunth—Arum esculentum*, L. or *Colocasia esculenta*, Schott.) is said to be cultivated, occasionally, in the gardens of the Southern States, for the sake of the *cormus*, or tuberous *rhizoma*,—which is used at the table as a substitute for the potato, or *yam*.

194. SYMPLOCARPUS. *Salisb. Endl. Gen.* 1705.

[Greek, *Symploke*, connexion, and *Karpos*, fruit,—descriptive of the plant.]

Spathe cucullately conch-shaped, acuminate. *Spadix* pedunculate, oval or subglobose, densely covered with perfect flowers. *Sepals* 4, persistent, becoming fleshy or baccate. *Stamens* 4, opposite the sepals; *filaments* linear, flattened, included; *anthers* 2-celled; cells parallel. *Ovary* 1-celled; *ovule* single; *style* 4-sided, tapering to a minute terminal *stigma*. *Berries* coalescing, 1-celled, 1-seeded. *Seed* destitute of albumen.

1. S. FOETIDUS, *Salisb.* Stemless; leaves cordate-oval, enlarging; spadix oval. *Kunth, Enum.* 3. p. 84. *Fl. Cestr.* p. 112.

FETID SYMPLOCARPUS. *Vulgò*—Swamp Cabbage. Skunk-weed.

Root perennial, in verticils of fleshy fibres from a thick truncate *rhizoma*. *Aerial stem* none. *Leaves* appearing after the spadix has flowered, at first orbicular-cordate, at length cordate-oval, becoming very large (often near 2 feet long, and a foot or more in width), entire, smooth; *stipules* expanding, ovate-oblong, acuminate, or often spatulate. *Spathe* subsessile, spotted with purplish-brown, green, and yellow. *Spadix* about an inch in diameter, on a short thick peduncle. *Flowers* compact, appearing tessellated. *Sepals* dark-brown, fleshy, cuneate, truncate, the apex and margins inflected. *Anthers* slightly exerted. *Style* projecting a little above the sepals. *Fruit* fleshy, coalesced with the base of the persistent sepals, and imbedded in the surface of the receptacle. *Seeds* globose, about the size of a common garden pea. Wet, low grounds: Canada to Virginia. *Fl.* Feb.—March. *Fr.* Sept.

Obs. This plant—so readily known by its skunk-like odor, when wounded—is quite common in wet meadows, and other swampy low grounds, in the middle and northern States. It is a worthless weed,—and its bunches of large leaves are sufficiently unsightly to command the attention of the neat farmer.

195. ACORUS. *L. Endl. Gen.* 1708.

[*Gr. a*, privative, and *kore*, the pupil of the eye; a supposed remedy for sore eyes.] *Spathe* a kind of *phyllodium*, elongated, compressed,—being a continuation of the scape, and resembling the leaves. *Spadix* lateral, sessile, subcylindric, covered with sessile perfect flowers. *Sepals* 6, obovate-oblong, subcuneolate, thickened at apex, persistent. *Stamens* 6, inserted on the base of the sepals; *filaments* linear, flattened; *anthers* reniform (1-celled, *Kunth*?, 2-celled, *Endl.*) transversely dehiscent. *Ovary* trigonous, 3-celled; *ovules* numerous, pendulous; *stigma* sessile, minute. *Fruit* somewhat baccate, indehiscent. *Seeds* few, inverted, albuminous, nestling in a gelatinous matter; *testa* thin, closely adherent to the somewhat horny albumen.

1. A. CALAMUS, *L.* Scape ancipital, terminated by a long ensiform leaf-like spathe extending much above the lateral spadix. *Kunth, Enum.* 3. p. 87. *Fl. Cestr.* p. 226.

REED ACORUS. *Vulgò*—Calamus. Sweet Flag.

Fr. Acore odorant. *Germ.* Der Kalamus. *Span.* Acoro Calamo.

Root perennial, in coarse verticillate fibres from a horizontal creeping pungently aromatic *rhizoma*. *Aerial stem* none. *Leaves* radical, ensiform-linear, 2 to 3 feet long, and half an inch to near an inch wide, smooth. *Scape* as long as the leaves and much resembling them, somewhat triangular below the spadix. *Spadix* 2 to 3 inches long, terete, tapering to an obtuse point. *Sepals* greenish, cuneate-oblong, keeled, with scarious margins. Swampy meadows; about springs, &c. introduced: Native of India. *Fl.* May—June. *Fr.* September.

Obs. This stranger has become naturalized in many places. The whole plant is warmly aromatic—especially the creeping *rhizoma*; and that subterraneous portion is deservedly popular for its medicinal virtues. I have seen some wet meadows, however, in which the plant had got possession to such an extent as to become something of a nuisance,—and a difficult one to get rid of. It would be well, therefore, in introducing it, to plant it only in circumscribed swamps.

ORDER CXXXVII. TYPHACEAE. *Juss. DC.*

Perennial marshy or aquatic *Herbs*. *Stems* without nodes. *Leaves* alternate, linear, entire. *Spadix* with a caducous spathe, or naked. *Flowers* monoicous.—sometimes arranged in contiguous cylindric spikes at the summit of a simple culm—sometimes in globose spadices at the ends of branches,—the staminate flowers above. STAMINATE FL. *Calyx* none,—but, in its stead, simple hairs, or small membranaceous scales. *Stamens* numerous, proceeding immediately from the *rachis*,—often connate below in twos, threes, or fours, and mixed with sterile branching filaments. PISTILLATE FL. *Calyx* none,—but, in its place, subclavate bristles (abortive ovaries), or scales. *Ovaries* sessile or stipitate; *ovule* single, pendulous; *style* simple, continuous with the ovary; *stigma* unilateral, oblong. *Fruit* a sort of dry drupe, indehiscent, 1-seeded. *Seed* inverted; *embryo* in the axis of fleshy albumen.

An order comprising but two genera (*Typha* and *Sparganium*),—and those of little interest to the farmer.

196. TYPHA. *Tournef. Endl. Gen.* 1709.

[Greek, *Tiphos*, a bog, or marsh; from its place of growth.]

Flowers monoicous, in two long dense cylindric spadices, or spikes,

one above the other on the same culm. STAMINATE SPIKE terminating the culm, contiguous to the pistillate one, and merely separated by a membranaceous caducous spathe—or else somewhat remote, with a naked space between them. *Stamens* numerous,—the *filaments* mostly united in threes, and beset with hairs. PISTILLATE SPIKE below the staminate one. *Ovaries* numerous, 1-celled, 1-ovuled,—at first sessile, finally stipitate, surrounded at base with numerous subclavate bristles (abortive ovaries); *style* simple; *stigma* unilateral, tongue-shaped. *Fruit* sub-drupaceous, very small.

1. T. LATIFOLIA, L. Leaves somewhat ensiform-linear, flat; staminate and pistillate spikes mostly contiguous. *Kunth, Enum.* 3. p. 90. *Fl. Cestr.* p. 519. *Icon, Fl. Lond.* 4. [Mace.

BROAD-LEAVED TYPHA. *Vulgò*—Cat-tail. *Coopers' Reed.* *Reed-Fr. Masse d'eau.* *Germ.* Die Rohrkolbe. *Span.* Espadaña.

Root (or rather *rhizoma*) perennial, thick and creeping. *Culm* 4 or 5 feet high, simple, terete, smooth, solid with pith, leafy at base. *Leaves* about as long as the culm, and 1 third to 2 thirds of an inch wide, tapering at apex but obtuse, sheathing the culm at base. *Staminate spike*, or spadix, 6 or 8 inches long, and near an inch in diameter, yellowish-brown, with a sheathing membranaceous caducous spathe as long as the spike. *Pistillate spike* immediately below (and about as thick as) the staminate one. 4 to 6 inches long, greenish-brown,—sometimes in contact or continuous with the staminate spike—sometimes with a naked space of near half an inch between them. Pools, and swampy springs: throughout the U. States. *Fl.* June—July. *Fr.* September.

Obs. The *leaves* of this plant are (or formerly were) much used, by the *Coopers*, to secure the joints of casks, &c. from leaking. Poor people sometimes collect the fruit with its hairy involucl, from the mature spikes, for the purpose of *filling beds*; but it becomes exceedingly dusty and unpleasant, and is even unhealthy,—in every respect a miserable substitute for clean Oats chaff, or cut straw.

ORDER CXXXIX. ALISMACEAE. DC. R. Br.

Swampy *herbs*; mostly perennial,—the leaves and scapes usually arising from a creeping *rhizoma*. *Leaves* either linear, or with a dilated lamina which is ribbed or nerved, but the veinlets commonly reticulated. *Flowers* regular and often complete, perfect or monoicous, mostly in racemes or panicles. *Sepals* and *Petals* mostly 3. *Stamens* as many as both the sepals and petals,—*Ovaries* 3, 6, or many (rarely solitary), verticillate or crowded in a head, distinct or in some degree coalescing. *Seeds* solitary in each carpel or cell, straight or curved, destitute of albumen; *testa* coriaceous or membranaceous.

A small and unimportant order.

SUB-ORDER II. ALISMEAE. Richard.

Leaves with a dilated nerved lamina. *Flowers* complete—i. e. with genuine *petals*. *Embryo* curved.

197. SAGITTARIA. L. *Endl. Gen.* 1042.

[Latin, *Sagitta*, an arrow; from the prevailing form of the leaves.]

Flowers monoicous. *Sepals* 3, persistent. *Petals* 3, deciduous. STAMINATE FL. above; *stamens* numerous. PISTILLATE FL. *Ovaries* numerous, capitately crowded on a hemispherical receptacle, distinct, 1-celled, 1-ovuled; *ovules* erect. *Carpels* numerous, crowded in a head, distinct, laterally compressed, margined, indehiscent, 1-seeded. *Seed* curved; *testa* membranaceous.

1. S. SAGITAEFOLIA, L. Leaves broad-ovate, mostly acute, deeply

sagittate at base; scape simple; bracts ovate-lanceolate, acuminate. *Kunth, Enum. 3. p. 156. Fl. Cestr. p. 528.*

ARROW-LEAVED SAGITTARIA. *Vulgò*—Arrow-head.

Fr. Flechière commune. *Germ.* Das Pfeilkraut. *Span.* Saeta.

Root perennial producing oval fleshy tubers (or *rhizomas*) 1 to 2 or 3 inches in diameter. *Leaves* all radical, 3 or 4 to 8 or 10 inches long (including the lobes), and 1 or 2 to 6 inches wide, sagittate-lobed at base,—the lobes ovate-lanceolate, about as long as the lamina of the leaf; *petioles* 4 to 12 or 15 inches long. *Scape* 9 to 18 inches high, smooth. *Flowers* pedicellate, in numerous verticils of threes, the staminate ones above; *pedicels* one quarter to half an inch long, with membranaceous bracts at base. *Petals* white, orbicular. *Pistillate flowers* with ovaries forming depressed globose heads, which, in fruit, are one half to two thirds of an inch in diameter. Ditches, and swampy springs; throughout the U. States. *Fl.* July—August. *Fr.* Sept. October.

Obs. This plant frequently occurs in ditches and swampy places, and is of a size to attract the notice of the observing farmer. Hogs are fond of the tubers,—and when these animals have access to their place of growth, are apt to disfigure the ground very much, by rooting. *Draining* is the remedy for this, and for most other aquatic weeds.

The *Alisma Plantago*, L. or *Water Plantain* (belonging to a genus which represents the Order—and is the special type of this *Sub-order*), is frequent in wet places,—and at one time, made some noise among gossiping dealers in marvellous specifics, as a certain remedy for *Hydrophobia*: But it was soon forgotten,—and is now scarcely noticeable, even as a weed.

ORDER CXLVI. BROMELIACEAE. *Juss. Lindl.*

Herbs. or *suffruticose* plants (chiefly tropical), often stemless, with perennial roots, or *rhizomas*. *Leaves* mostly rigid, dry, and channelled, with a squamose or scurfy surface, sheathing at base. *Flowers* perfect, spicate, racemose, or paniculate, bracteate. *Sepals* 3. *Petals* 3. *Stamens* 6, or more. *Ovary* free, or adnate to the calyx, 3-celled; *style* trigonous, simple or sometimes separable into 3; *stigmas* 3. *Fruit* 3-celled, baccate and indehiscient, or more frequently capsular and septicidally (or sometimes loculicidally) 3-valved. *Seeds* mostly numerous; *testa* coriaceous; *embryo* small, straight or curved, in the base of mealy albumen.

The plant of chief interest, in this Order, is that which affords the delicious *Pine-apple* (*Bromelia Ananas*, L. or *Ananassa sativa*, Lindl.),—the fruit of which is formed by the consolidation or blending of the imperfect flowers, bracts, and receptacle, into one fleshy succulent mass, which is usually crowned with a terminal tuft of leaves.

198. TILLANDSIA. L. *Endl. Gen.* 1306.

[Named in honor of *Elias Tillands*,—a Swedish Botanist.]

Calyx free from the ovary, unequally 3-parted, persistent,—the segments somewhat convolute. *Corolla* 3-cleft, tubular below, spreading above. *Stamens* 6, hypogynous,—the alternate ones mostly adhering to the petals; *anthers* incumbent. *Ovary* 3-celled; *ovules* several, at the central angle of the cells near the base, in a double series, ascending; *style* filiform or dilated at apex, straight or twisted. *Capsule* cartilaginous, cylindrical or ovoid, 3-celled, septicidally (?) 3-valved (*loculicido-trivalvis*, *Endl.*). *Seeds* several, erect from the base of the dissepiments, linear-clavate, stipitate,—the stipe invested with pappus-like hairs; *embryo* straight.

1. T. USNEOIDES, L. Stem filiform, flexuose, branching, pendulous;

leaves subulate-filiform; peduncles 1-flowered, short. *Willd. Sp. Pl.* 2. p. 14.

USNEA-LIKE TILLANDSIA. *Vulgò*—Long Moss.

Perennial, parasitic, taking root in the fissures of the bark of trees. *Stem* 3 to 6 feet or more, in length, branched, pendulous in long tangled bunches from the limbs of old trees, very slender, terete, covered and somewhat roughened (as well as the leaves) with minute whitish membranaceous *scales* which are dotted in the centre,—the centre of the stem and leaves consisting of a black horny elastic thread. *Leaves* subterete, slender, acute. *Flowers* yellowish-green, *Pursh* (purple, *Loudon. Ency.*), solitary, axillary, sessile, with 3 or 4 small leaves (or bracts) at base. *Calyx* and *Corolla* deeply parted,—the segments equal in length, lanceolate, membranaceous. *Ovary* oblong. *Capsule* nearly cylindrical, 2 or 3-celled. *Seeds* several in each cell, oblong, acute at each end, comose. Grows on the forest trees, in the low-land districts of the South. *Fl.* June—September. *Fr.*

Obs. This singular parasite extends as far north as the Dismal Swamp, in Virginia; but I have not had the pleasure of seeing it in its native forests. Mr. ELLIOTT (from whose *Sketch* I have chiefly derived the above details,) says, “black cattle eat this plant in winter with avidity, and sometimes trees are felled, during a series of severe frosts, to place the moss within their reach. The moss, when dried, is beaten until the bark falls off, and the cartilaginous hair-like flexible stem used for stuffing mattresses, chairs, &c.” The uses, here mentioned, seem to intitle the plant to a place in the present work.

ORDER CLI. SMILACEAE. R. Br.

Herbs or *shrubby* plants, often climbing, mostly perennial by a creeping *rhizoma*. *Leaves* alternate or verticillate, simple, entire, with the veins or veinlets reticulated. *Flowers* perfect or dioicous. *Calyx* free, mostly 6-parted, often corolla-like. *Stamens* as many as the calyx-segments and opposite them, mostly adhering to them at base. *Ovary* mostly 3-celled,—the *styles*, or *stigmas*, as many as the cells. *Fruit* baccate, few- or many-seeded. *Seeds* subglobose, affixed to the central angle of the cells; *testa* membranaceous, thin; *embryo* small, in dense or hard albumen.


A small Order, and of little importance—except as affording the *Sarsaparilla* of the shops,—a medicine of some repute, but of rather uncertain efficacy.

TRIBE II. CONVALLARIEAE. Endl. *Styles* connate.

199. SMILAX. *Tournef. Endl. Gen.* 1184.

[Greek, *Smile*, a grater,—in reference to its harsh prickles.]

Flowers dioicous, in axillary pedunculate simple *umbels*. *Calyx* somewhat corolla-like, campanulate, deeply 6-parted,—or rather of 6 petaloid sepals in two series, the outer ones broader. STAMINATE FL. *Stamens* 6; *anthers* linear, adnate to the filaments. PISTILLATE FL. *Ovary* 3-celled; *ovules* solitary; *stigmas* 3, subsessile. *Berry* 1 to 3-celled, 1 to 3-seeded.

 *Stem* suffruticose, perennial, prickly.

1. S. ROTUNDIFOLIA, L. *Stem* sub-terete; leaves orbicular-ovate, acuminate, subcordate at base; common peduncles scarcely longer than the petioles. *Willd. Sp. Pl.* 4. p. 779. *Fl. Cestr.* p. 566.

ROUND-LEAVED SMILAX. *Vulgò*—Green-brier. Rough Bind-weed.

Plant glabrous, yellowish-green. *Stem* 10 to 20 or 30 (sometimes 50) feet long, slender, flexuose, somewhat branched, armed with straight rigid prickles, and climbing by tendrils. *Leaves* 2 to 3 inches long, and often as wide as long;

petioles one third to three fourths of an inch long, striate, margined at base, giving out a simple, filiform, but strong *tendrils*, on each side, at the summit of the margin. *Flowers* greenish-yellow, in small globose axillary umbels. *Berries* dark blue, or bluish-black with a glaucous bloom, when mature. Moist thickets, and woodlands,—climbing bushes and trees: Canada to Carolina. *Fl.* June. *Fr.* October.

Obs. This rugged shrubby vine is often abundant in moist low grounds,—forming almost impenetrable thickets; and is a great annoyance to the woodman, when employed in clearing out such places. It is not so difficult, however, to extirpate, as the following species.

2. *S. CADUCA, L.* Stem somewhat angular; leaves ovate, mucronate or subacuminate; common peduncles longer than the petioles. *Willd. Sp. Pl.* 4. p. 780. *Fl. Cestr.* p. 566.

CADUCOUS SMILAX. *Vulgò*—Green-brier.

Plant glabrous, yellowish-green, or often tinged with purple. *Stem* 3 or 4 to 8 or 10 feet long, slender, flexuose, simple or somewhat branched, prickly, subprocumbent or leaning, supporting itself by tendrils. *Leaves* about 2 inches in length, and nearly as wide as long, subglaucous beneath and often purplish; *petioles* about half an inch long, and furnished as in the preceding species. *Flowers* greenish-yellow, in small axillary umbels.—the *common peduncle* generally about twice as long as the petioles. *Berries* bluish-black when mature. Thickets, and neglected old fields: Canada to Virginia. *Fl.* May—June. *Fr.* October.

Obs. This is nearly allied to the preceding; but it is a smaller and less rugged plant, in this region,—yet more difficult to subdue. It is quite frequent in sterile old fields, on our slaty hills,—and always indicates a low state of agriculture. There are several other prickly species in the U. States—especially in the South; and some of them may be as annoying to the planter or farmer as these,—but I cannot speak of them from my own knowledge. We have an unarmed herbaceous species (*S. herbacea, L.*)—frequent along fence-rows, and borders of thickets—which is chiefly remarkable for the carrion-like foetor of its flowers.

ORDER CLII. LILIACEAE. *Juss. DC. Lindl.*

Herbs, with the flower-stems springing from bulbs or tubers, or with fibrous or fasciated roots. *Leaves* simple, entire, sub-linear, sheathing or clasping at base,—the radical ones crowded. *Flowers* regular, perfect. *Calyx* colored, mostly corolla-like, 6-parted, or of 6 distinct or slightly connected sepals,—often melliferous at base. *Stamens* usually 6; *anthers* introrse. *Ovary* free, 3-celled; *styles* united; *stigma* often 3-lobed. *Fruit* capsular, 3-celled, mostly loculicidally 3-valved,—sometimes baccate and indehiscent. *Seeds* several or numerous in each cell; *testa* either membranaceous, pale, and sometimes margined—or often crustaceous, brittle and black; *embryo* in the axis of fleshy albumen.

A large and very interesting Order—comprising nearly one hundred genera,—and many of them rivalling the *Rosaceae*, in beauty. The most important plants of this Order, not here described, are those which produce the *Squill* and *Aloes*, so well known for their medicinal properties,—and the *New Zealand Flax* (*Phormium tenax, Forst.*), so valuable for the strength of its fibres.

SUB-ORDER IV. ASPHODELEAE. *Endl.*

Herbs. *Root* bulbous, fasciculate-fibrous, or tuberos. *Calyx* tubular, or of slightly connected sepals, regular and mostly corolla-like. *Stamens* 6, hypogynous or inserted on the calyx. *Fruit* capsular or baccate. *Seeds* globose or angular,—the *testa* crustaceous and black.

TRIBE I. HYACINTHEAE. *Link. Endl.*

Root bulbous. *Calyx* tubular, or 6-sepaled. *Stamens* inserted on the base of the sepals, rarely hypogynous. *Fruit* capsular.

200. ORNITHOGALUM. *Link. Endl. Gen.* 1132.

[Greek, *Ornis. ornithos*, a bird, and *gala*, milk; an ancient whimsical name.]

Calyx corolla-like, of 6 sepals slightly connected at base, spreading above the middle. *Stamens* 6, the *filaments* dilated at base, narrowed and subulate at apex. *Ovary* 3-celled; *ovules* several, in a double series. *Capsule* roundish, obtusely trigonous, 3-celled, loculicidally dehiscent at apex. *Seeds* often few in a cell, subglobose or angular; *testa* black, rugose.

1. O. UMBELLATUM, *L.* Bulb proliferous; leaves linear, channelled; peduncles corymbose, longer than the lanceolate bracts; sepals elliptic-lanceolate; filaments lance-subulate. *Kunth, Enum.* 4. p. 362. *Fl. Cestr.* p. 219. *Icon, Fl. Lond.* 2.

UMBELLATE ORNITHOGALUM. *Vulgò*—Ten o'clock.

Fr. Dame d' onze heures. *Germ.* Die Vogelmilch. *Span.* Ornitogalo.

Bulbs biennial? small, white. *Leaves* radical, numerous, 6 to 12 inches long, very smooth, green with a whitish longitudinal line. *Scape* 6 to 9 inches high, terete, smooth, corymbosely branched at summit,—the branches or *peduncles* alternate, 1 to 2 inches long, each with a membranaceous linear-lanceolate acuminate *bract* at base. *Sepals* white within, externally green with a white margin. *Ovary* somewhat trigonous-turbinate, often abortive. Pastures, and cultivated fields: introduced. Native of the old world. *Fl.* May—June. *Fr.* July.

Obs. This foreigner has escaped from the gardens, in many places,—and multiplies its bulbs so rapidly as to become a great nuisance, if neglected. The *bulbs* are exceedingly tenacious of life; and when once completely in possession of the soil, it is an almost hopeless task to attempt to extirpate them. The *leaves* generally die, however, in the early part of summer,—and, in good land, are replaced by the valuable grasses: so that this obnoxious little intruder is not quite so serious a pest as some others;—such, for example, as the Canada Thistle, or Ox-eye Daisy.

201. ALLIUM. *L. Endl. Gen.* 1137.

[Supposed to be from the Celtic, *All*;—signifying hot or acrid.]

Calyx of 6 petaloid sepals, slightly connected at base, spreading or campanulate-connivent. *Stamens* 6, inserted on the base of the sepals, exerted or included; *filaments* subulate-filiform, more or less dilated below,—the inner or alternate ones often membranaceously dilated, trifid, or with a slender cusp or tooth at summit, on each side of the antheriferous one; *anthers* introrse. *Ovary* 3-celled or sometimes 1-celled by reason of imperfect dissepiments; *style* filiform; *stigma* simple or sometimes trifid. *Capsule* membranaceous, trigonous, or somewhat 3-lobed. *Seeds* few, roundish and angular; *testa* black, rugose or minutely granular-dotted. *Herbs* of a strong odor, with tunicated (biennial?) bulbs. *Scapes* naked, or with sheathing leaves below, solid or fistular. *Leaves* mostly narrow, channelled, semi-cylindric, or terete, often hollow, sometimes flat. *Umbel* terminal, embraced by a membranaceous 1 or 2-valved marcescent spathe-like involucre,—sometimes bearing little *bulbs*. *Flowers* not articulated with the pedicels.

§. 1. PORRUM, *Don. Leek Section.*

Scape leafy below. *Sepals* campanulate-connivent,—the outer ones boat-shaped and keeled. The 3 inner *stamens* tricuspidate,—the lateral cusps longer than the middle antheriferous one.

† *Umbel* bulb-bearing. * *Leaves* flat.

1. *A. SATIVUM*, *L.* Scape terete, leafy to the middle; leaves lance-linear, somewhat channelled; spathe 1-valved, with a long acumination, caducous. *Kunth, Enum. 4. p. 380. Fl. Cestr. p. 216.*

CULTIVATED ALLIUM. *Vulgò*—English Garlic.

Fr. L'Ail. *Germ.* Der Lauch. Knoblauch. *Span.* Ajo.

Growing in bunches. *Radical bulbs* compound, consisting of small bulbous offsets, called *cloves*. *Scape* 1 to 2 feet high, smooth,—the lower half apparently leafy, by the extension of the sheaths. *Leaves* 9 to 15 inches long, distichously arranged. *Heads*, or umbels, bearing numerous small ovoid-oblong bulbs,—each bulb with a membranous covering. *Calyx* pale purple. Gardens: cultivated. Native of Europe. *Fl.* July. *Fr.* September.

Obs. This species is so generally cultivated, as a domestic *medicine*, that it seemed to claim a place, here. I suppose it to be the plant so much esteemed by the "Garlic-eating Peasantry," of *Spain*.

* * *Leaves terete, fistular.*

2. *A. VINEALE*, *L.* Scape terete, slender, sparingly leafy to the middle; leaves terete, with a narrow channel on the upper side; spathe abruptly acuminate, caducous; stamens exserted. *Kunth, Enum. 4. p. 382. Fl. Cestr. p. 215.* [Garlic.

VINE (OR VINEYARD) ALLIUM. *Vulgò*—Garlic. Field Garlic. Crow

Fr. Ail des Vignes. *Germ.* Acker-Lauch. Wein-bergs-Lauch.

Bulbs small. *Scape* 2 to 3 feet high, very slender, with a few leaves below the middle. *Leaves* 8 to 12 or 15 inches long. *Umbel* globose, about an inch in diameter (smaller and densely capitate, when bearing *bulbs*,—the bulbs often vegetating while in the heads); *pedicels* of the flowers filiform, clavate. *Calyx* deep purple tinged with green. Pastures, and cultivated grounds: introduced. Native of Europe. *Fl.* June. *Fr.* August.

Obs. Tradition says, this species was introduced by the first Welsh immigrants to Pennsylvania, for the purpose of supplying an *early pasture*. It is now completely naturalized,—and was formerly so abundant, in some districts, as to be quite a nuisance. It not only imparted a disgusting flavor to *milk*, *butter*, &c. but, by its abundance among the wheat, seriously injured the *flour*,—and rendered the manufacture of it difficult. Our best farmers, however, have now nearly subdued it, by the improvement of their land, and a judicious rotation of crops.

†† *Umbel mostly capsule-bearing. Leaves flat—rarely keeled or folded.*

3. *A. PORRUM*, *L.* Scape rising from the centre of a simple bulb, terete, leafy to the middle; leaves broad, somewhat channelled or folded, and keeled, acute; umbel globose; sepals with a rough keel; stamens a little exserted. *Kunth, Enum. 4. p. 384.*

LEEK ALLIUM. *Vulgò*—Leek. Garden Leek.

Fr. Porreau. *Germ.* Gemeiner Lauch. *Span.* Puërro.

Bulb middle-sized. *Scape* 2 to 3 feet high, stout and solid. *Leaves* distichously arranged on the lower half of the scape, 6 to 12 inches long, and about an inch wide at base, with the margin sometimes ciliate. *Spathe* with a long acumination. *Umbel* globose, dense, rather large (2 inches or more in diameter); *pedicels* of the flowers clavate. *Calyx* pale violet-purple. *Filaments* white. Gardens: cultivated. Native of Europe. *Fl.* July. *Fr.* September.

Obs. This species—which is regarded as a sort of national Em-

blem, by the *Welsh**—is occasionally cultivated as an ingredient in soups, &c. but I have rarely observed it in Pennsylvania.

§ 2. *SCHOENOPRASUM*. Don. *Chives or Onion Section*.

Sepals stellately spreading,—the outer ones keeled. *Filaments* mostly simple,—the inner ones sometimes dilated at base, or furnished with a tooth on each side. *Spathe* 2-valved, not acuminate. *Bulbs* cespitose.

☞ *Leaves terete, fistular.*

4. *A. SCHOENOPRASUM*, *L.* Scape naked or few-leaved at base, about as long as the subulate-filiform leaves; spathe 2-valved, about equal to the umbel; umbel subglobose, capsule-bearing; stamens shorter than the calyx,—the filaments not toothed. *Kunth, Enum.* 4. p. 391. *Fl. Cestr.* p. 216.

RUSH-LEEK ALLIUM. *Vulgò*—Chives, or Cives.

Fr. Ciboulette. *Germ.* Der Schmittlauch. *Span.* Cebollino.

Growing in bunches. *Bulbs* small. *Scape* 6 to 9 inches high, smooth. *Leaves* erect, about as long as the scape. *Umbel* about an inch in diameter. *Spathe* of 2 ovate membranaceous nerved purplish valves. *Calys* purple with a tinge of violet. Gardens: cultivated. Native of Europe. *Fl.* July. *Fr.* September.

Obs. Cultivated as a culinary herb; and often used as a kind of medicinal food for young poultry.

5. *A. CEPA*, *L.* Scape naked, or leafy at base only, fistular, and ventricose below the middle, much longer than the leaves; leaves subterete, fistular, somewhat ventricose; umbel globose, usually capsule-bearing; stamens longer than the calyx,—the alternate filaments obtusely toothed on each side, at base. *Kunth, Enum.* 4. p. 394. *Fl. Cestr.* p. 216.

Vulgò—Onion. Garden Onion.

Fr. Oignon. *Germ.* Die Zwiebel. *Span.* Cebolla.

Bulb biennial? depressed or turnep-shaped, large (2 to 3 inches in horizontal diameter). *Scape* 2 to 3 feet high, terete, often an inch or more in diameter in the most ventricose portion, smooth, glaucous. *Leaves* 6 inches to a foot or more in length. *Umbel* 2 to 3 inches in diameter,—the *pedicels* filiform. *Spathe* greenish-white. *Sepals* lance-oblong, white with a green keel. *Outer stamens* about as long as the calyx, spreading,—the inner ones nearly twice as long, erect; *filaments* white,—the 3 inner ones much dilated at base, obscurely toothed. Gardens, and fields: cultivated. Native country unknown. *Fl.* July. *Fr.* September.

Obs. This species—universally known and cultivated, as a culinary vegetable—is by far the most valuable of the genus. The culture is carried to a great extent in some favorable localities,—as at *Wethersfield, Connecticut*. There is a *variety* with *bulb-bearing* umbels, or heads, sometimes to be seen in gardens. The expressed *juice* of the Onion is a popular remedy for the *croup*, in children. Its stimulating quality is thus playfully alluded to, by *SHAKSPEARE*, in the *Taming of the Shrew*:

“And if the boy have not a woman’s gift,
 “To rain a shower of commanded tears,
 “An *Onion* will do well for such a shift;
 “Which in a napkin being close conveyed,
 “Shall in despite enforce a watery eye.”

* “*Leek to the Welsh, to Dutchmen butter’s dear,
 “Of Irish swains potato is the cheer;
 “Oats for their feasts the Scottish shepherds grind.”* GAY.

Two or three other species of this genus are cultivated, in Europe; namely, *A. Scorodoprasum*, L. or *Rocamboles*—*A. Ascalonicum*, L. or *Schallott*, &c. But I believe they are not much attended to, in this country. We have, also, a few *native* species; but they are scarcely of sufficient importance to require the notice of the Agriculturist.

TRIBE III. ASPARAGEAE. *Juss. DC. & Dub.*

Herbs, shrubs, or trees. Root tuberous, fleshy and fascicled, or fibrous. *Calyx* spreading, or rarely tubular. *Fruit* baccate.

202. ASPARAGUS. *L. Endl. Gen.* 1164.

[Greek, *Asparagos*, a young shoot, or turion; notable in this plant.]

Calyx of 6 nearly equal linear-oblong petaloid sepals, slightly connected at base, spreading at apex. *Stamens* 6,—the lower half of the filaments adnate to the base of the sepals; *anthers* peltate. *Ovary* trigonous-turbinate, 3-celled; *ovules* 2 in each cell; *style* short; *stigmas* 3. *Berry* globose, 3-celled; cells 2-seeded. *Seeds* angular-subglobose; *testa* coriaceous, black; *embryo* excentric, somewhat curved.

1. *A. OFFICINALIS*, L. Unarmed; stem herbaceous, erect, paniculately branched; leaves fasciculate, setaceous and flexible; peduncles articulated in the middle. *Willd. Sp. Pl.* 2. p. 150. *Fl. Cestr.* p. 218. [row Grass."]

OFFICIAL ASPARAGUS. *Vulgò*—Asparagus, or (corruptly) "Spar-Fr. Asperge. *Germ.* Der Spargel. *Span.* Espárrago.

Root perennial, consisting of numerous coarse fleshy fasciculate fibres. Plant smooth, 3 to 6 feet high,—the *turions*, or young stems, at first simple, stout and fleshy, with leaves in the form of appressed scales—finally the stem is ramified into a large panicle. *Leaves* unequal, 1 third of an inch to an inch or more in length, very narrow, linear, flat, abruptly acute, in fascicles of 3 to 10 or 12 (often 6), with a minute ovate acuminate scarious *stipule* at the base of each fascicle. *Peduncles* in pairs (sometimes solitary), lateral (not axillary) at the base of the alternate branches, about half an inch long, slender, the upper half (above the thickened ring, or articulation) slightly clavate. *Calyx* pale greenish-yellow. *Berries* globose, slightly umbilicate, red when mature. Gardens: cultivated. Native of Europe. *Fl.* May—July. *Fr.* September.

Obs. Almost every garden has a bed of *Asparagus* roots, for the sake of the young *Turions*,—which afford a favorite vegetable dish, in early spring.

ORDER CLV. JUNCACEAE. *Juss. Agardh.*

Herbaceous, mostly perennial grass-like or sedge-like plants. *Stem* (or *culm*) nodose, often simple and leafless, or leafy at base with nearly naked scapes. *Leaves* alternate, sheathing at base, narrow, and either flat, channelled or terete. *Flowers* small, glumaceous, in paniculate clusters, eynes, or heads. *Calyx* of 6 dry greenish or brownish sepals, in two series. *Stamens* 6, or rarely 3. *Ovary* free, 3-celled,—or 1-celled by reason of the placentae not reaching the axis; *ovules* either 3 at the base of the ovary, or numerous and affixed to the placentae; *styles* united; *stigmas* 3. *Capsule* loenlicidally 3-valved, few or many-seeded. *Seeds* erect; *testa* membranaceous; *embryo* included in the base of dense fleshy albumen.

A small Order of homely and worthless plants.

203. JUNCUS. *L. Endl. Gen.* 1049.

[Latin, *Jungere*, to join,—being used to tie or bind objects together.]

Calyx bibracteate at base. *Sepals* 6, glumaceous, in a double series,—the 3 outer ones keeled. *Stamens* mostly 6, inserted on the base of the sepals,—sometimes those on the 3 inner sepals abortive.

Ovary free, 3-celled; *ovules* numerous, at the inner angle of the cells, erect; *stigmas* 3, subsessile, filiform, villous. *Capsule* 3-celled, or somewhat 1-celled by the incompleteness of the dissepiments, 3-valved,—the valves bearing the dissepiments in the middle (*loculicidal*). *Seeds* numerous.

1. *J. COMMUNIS*, var. *a?* *E. Meyer*. Culms cespitose, naked, erect, smooth, filled with a continuous pith; sheaths radical, without leaves; inflorescence lateral, much branched, cymose, conglomerate or diffused; flowers triandrous; sepals lanceolate, acuminate, as long as the obtuse capsule. *Kunth, Enum. 3. p. 320.*

J. effusus. *L. Willd. Sp. Pl. 2. p. 205. Fl. Cestr. p. 227.*

COMMON JUNCUS. *Vulgò*—Rush. Soft Rush.

Fr. Junc à Mèche. Germ. Gemeine Simse. Span. Junco.

Root perennial, forming tussocks. *Culms* 2 to 3 feet high, simple, soft and pliable, sheathed at base, and terminating at summit in a long tapering point. *Inflorescence* cymose-paniculate, bursting from a fissure in the side of the culm near the summit, often proliferous, bracteate; *bracts* oblong-lanceolate, scarious. *Stamens* 3, shorter than the sepals, opposite the 3 outer ones; *anthers* white. *Capsule* trigonous-obovoid, obtuse. *Seeds* minute, oblong, acute at each end, yellowish. Moist meadows, and low grounds: throughout the U. States. *Fl. June. Fr. July—August.*

Obs. There appear to be *varieties*, or nearly allied species, which have created some confusion respecting *J. effusus*. KUNTH (after E. MEYER) has reduced the *J. conglomeratus* and *J. effusus*, of LINNÆUS, and others, into varieties of *J. communis*.

The genus is a numerous one,—comprising about 100 known species—of which some 18 or 20 are natives of the U. States. They are all homely plants, and entirely worthless to the farmer; but the one here given is the most troublesome,—continually forming numerous unsightly bunches or tussocks, in wet low grounds—and requiring some attention to keep it in proper subjection. Mr. ELLIOT says that in S. Carolina, this *Rush* “occupies and almost covers rice-fields as soon as they are thrown out of cultivation.”

ORDER CLIX. CYPERACEAE. *Juss. DC.*

Herbs, perennial or annual,—the *stems* (or *culms*) often angular, or compressed, somewhat nodose, usually solid and cespitose, never shrubby. *Leaves* distichously alternate, originating at the nodes,—the *petioles* dilated, embracing the culm, with the margins mostly united so as to form entire sheaths—the *lamina* (of the lower ones especially) often wanting. *Flowers* perfect or unisexual, monoicous or polygamous, rarely dioicous, spicate; *spikes* either solitary and terminal or axillary, or variously clustered, and involucrate, at the summit of the culm: *florets* 1 in the axil of each chafy seale or bract. *Calyx* none,—or the sepals reduced to a few mere bristles. *Stamens* usually 3, hypogynous. *Ovary* free, by abortion single, 1-celled, 1-ovuled; *styles* 2 or 3, more or less united,—the branches *stigmatose* on the inner side. *Fruit* an *Akene* (or *caryopsis*), either compressed, or more or less trigonous, according to the number and perfection of the styles,—the *pericarp* not adnate to the seed, chartaceous, crustaceous or bony. *Seed* conforming to the shape of the pericarp, erect; *testa* delicate: *embryo* minute, included in farinaceous or somewhat fleshy albumen.

An Order of some 50 genera.—remarkable for their worthlessness; and also for their presence, or prevalence, at least, being an indication of swampy, neglected, or valueless land. The *herbage* of this Order—unlike that of a large number of the *Gramineae*, or true *Grasses*—contains but little saccharine matter; and therefore is neither nutritious, nor palatable to stock.

TRIBE I. CARICEAE. *Nees.*

Flowers declinous. *Scales* or *glumes* of the spikes imbricated on all sides. *Akene*

(*caryopsis*, or *nut*) inclosed in a (usually acuminate) sac or *utricle*, formed of 2 membranaceous bracts or glumes with their margins united, but often leaving the apex bidentate.

201. CAREX. *L. Endl. Gen.* 957.

[Latin, *carere*, to lack, or want; the staminate spikes bearing no fruit.]

Spikes one or several, unisexual or androgynous, rarely dioicous. STAMINATE FL. *Stamens* 3. PISTILLATE FL. *Ovary* included in a utricle formed of 2 glumes united by their margins; *utricle* beaked, and either bidentate, emarginate, or truncate at apex. *Styles* 2 or 3, united at base,—the *stigmatose* branches elongated, exserted. *Akene* with a chartaceous pericarp (usually lenticular, or plano-convex, when there are but 2 stigmas,—triquetrous when the stigmas are 3), inclosed in the persistent utricle. *Perennial* herbs. *Culms* triangular, leafy throughout or only at base. *Leaves* grass-like, mostly scabrous on the margins and keel. *Spikes* terminal or axillary, distant or approximated, or variously clustered.

§. 1. SPIKES ALL ANDROGYNOUS.

☞ *Spikes clustered, staminate at their summit. Stigmas 2.*

1. C. MULTIFLORA, *Muhl.* Spike oblong, decompound, interrupted, bracteate,—the spikelets numerous, ovoid-oblong, obtuse; fruit crowded, compressed, ovate, acuminate, 3-nerved, scabrous on the margin, finally diverging, rather shorter than the ovate cuspidate glume. *Kunth, Enum.* 2. p. 387. *Fl. Cestr.* p. 29.

MANY-FLOWERED CAREX. *Vulgò*—Sedge. Sedge-grass.

Culm about 2 feet high, obtusely triangular and leafy at base, acutely triquetrous above. *Leaves* lance-linear, channelled above, scabrous on the margin,—the upper ones over-topping the culm; *sheathes* transversely rugose on the side opposite the leaves. *Spike* 2 to 3 inches long, formed of numerous spikelets which are crowded into clusters a little separated from each other, and either appressed to the rachis or diverging. *Eraets* at the base of the compound spike, and also of the principal clusters, often long and foliaceous,—those at the base of the spikelets, short, setaceous and scabrous. *Staminate glumes* lanceolate, with a short point. *Pistillate glumes* ovate, with a long serrulate point. *Fruit* 3-nerved, bifid at apex, rather small, densely crowded, finally much diverging, and yellowish. Swamps, and low grounds: northern and middle States. *Fl.* May. *Fr.* July.

Obs. This—like all the other species of this very numerous genus (amounting to some 300, or more) is a very worthless plant; and is often quite abundant, in wet meadows. The *form* of the akenes, in *Carex*—like those of *Polygonum*, already noticed—has a constant relation to the *number of styles, or stigmas*. When the stigmas (or stigmatose branches) are 2, the akene is compressed, and ancipital or 2-edged; but when there are 3 stigmas, the akene is uniformly triquetrous. A similar relation, between the form of the akene or nut, and the number of the styles or stigmas, appears to exist in numerous other instances,—as in *Rumex*, *Rheum*, *Scirpus*, *Cyperus*, *Fagus*, *Morus*, *Alnus*, *Betula*, &c. &c. and the law may, perhaps, be general.

§. 2. SPIKES, STAMINATE AND PISTILLATE DISTINCT. *Stigmas 3.*

† *Staminate spike solitary: pistillate sessile.*

2. C. TENTACULATA, *Muhl.* Staminate spike bracteate, on a short peduncle; pistillate spikes about 3, cylindric-oblong, approximate,

horizontal; bracts long, foliaceous; fruit densely crowded, ovoid, ventricose, nerved, long-beaked, about twice as long as the lance-linear awned glume. *Willd. Sp. Pl.* 4. p. 266. *Fl. Cestr.* p. 35.

C. rostrata, *Muhl. in Schkuhr. fide Kunth, Enum.* 2. p. 496.

TENTACULATE OR MANY-BEAKED CAREX.

[(doubtful).]

Whole plant yellowish-green. *Culm* 12 to 18 inches high, triquetrous, scabrous on the angles above, leafy. *Leaves* linear-lanceolate, nerved, scabrous on the margin, longer than the culm. *Staminate spike* about an inch long, with a narrow lance-linear *bract* at base longer than the spike; *glumes* lance-linear, terminated by a long scabrous awn. *Pistillate spikes* commonly 2 or 3 (often but 1—rarely 4), about an inch or inch and half long,—the upper ones approximate, sessile—the lowest one a little distant on a short scarcely exerted peduncle; *glumes* terminated by a long setaceous scabrous awn. *Bracts* resembling the leaves, very long. *Fruit* ovoid, inflated, spreading, smooth and shining, attenuated into a long straight, slender beak. *Akene* triquetrous, roughish-puncticulate. Swampy low grounds. *Fl.* May—June. *Fr.* August.

Obs. This is a very common species, in the swampy meadows of Pennsylvania,—and probably throughout the greater portion of the United States.

†† *Staminate spikes mostly 2 or more. Stigmas 2.*

3. *C. ACUTA*, *Gooden.* Staminate spikes 1 to 3, erect; pistillate spikes usually 2 or 3, rather distant, cylindric, subsessile, often staminate at summit; fruit compressed, ovate, with a very short beak and the orifice entire, about as long as the oblong-lanceolate awnless glume. *Kunth, Enum.* 2. p. 412. *Fl. Cestr.* p. 41. *Icon, Fl. Lond.* 4.

ACUTE (OR SHARP-ANGLED) CAREX. *Vulgè*—Tussock-sedge.

Culms 1 to 2 feet high, very slender and acutely triquetrous, striate, minutely serrulate on the angles, leafy at base,—usually growing in large dense tufts, or *tussocks*. *Leaves* narrow, linear, keeled, scabrous on the margin, often longer than the culm,—the radical ones very numerous and loosely spreading, forming a large tuft of a lively bluish-green. *Staminate spikes* 2 or 3 (often solitary), erect, sessile except the uppermost one; *glumes* oblong, mostly obtuse. *Pistillate spikes* 3 (or often but 2), 1 to 2 inches long, rather slender,—the lowest one on a very short peduncle—the upper ones sessile, and often staminate at summit (*androgynous*); *glumes* brown, with a green keel. *Fruit* ovate, elliptic, or obovate, smooth. *Akene* obovate, mucronate, puncticulate. Swamps: throughout the U. States. *Fl.* April. *Fr.* June.

Obs. The description of *C. caespitosa*, *L.* as given in the books, so nearly fits this plant, that a young Botanist might be puzzled to make anything else of it; and KUNTH pronounces it to be only a marsh form of that species (*Nil nisi forma paludosa Caricis caespitosae*). It is the most common, and most troublesome, of all the species. It is true, that a pedestrian, in crossing neglected boggy meadows, finds its dense tufts quite a convenience, to step on,—yet it is decidedly more *farmer-like* to provide good walking, in such places, by ditching and draining. The *tussocks*, formed by the matted fibrous roots, of this species of *Carex*, are often very large, and very durable. I once hauled a quantity of them into the barn-yard, with a hope that they might decompose, and make manure: but they effectually resisted decomposition, and were tossed about the yard, for years,—as large, and almost as indestructible, as so many hatter's blocks. The best way to dispose of them, is to collect them—when cut out and dried—into a heap, and burn them,—taking care

afterwards, by appropriate draining, to prevent the growth of others.

The three species here described, are inserted merely as samples of a very extensive genus of unprofitable plants,—of which every intelligent farmer would like to know something. Those who may desire to become better acquainted with the family, will find the species well described, in various *Monographs* and *Floras*.

TRIBE IX. SCIRPEAE. *Nees*.

Flowers perfect. *Scales* of the spikelets imbricated on all sides (rarely bi-trifarious), uniform,—the lowest ones usually empty or sterile. *Calyx* none, or substituted by several bristles, hairs, or linear scales. *Style* often bulbous at base.

205. SCIRPUS. *L. Endl. Gen.* 1000.

[An ancient Latin name for the *Bull-rush*,—which belongs to the genus.]

Spikelets many-flowered. *Scales* imbricated on all sides (or rarely sub-distichously),—the lower ones empty. *Calyx* none,—substituted by capillary bristles, which are hispid or puberulent. *Styles* 2 or 3, distinct at summit, united at base, often bulbous and articulated with the ovary. *Akene* crustaceous, either somewhat compressed, or trigonous—according to the condition or number of the styles or stigmas. *Perennial sub-aquatic herbs*. *Culms* mostly simple, triangular or terete, often with leafless sheaths. *Spikelets* either solitary, conglomerate or corymbose, terminal or lateral.

1. *S. TRIQUETER, L.* Culm triquetrous, nearly leafless; spikelets ovoid-oblong (1 to 5), in a dense lateral cluster near the summit of the culm; scales orbicular-ovate, emarginate, mucronate; bristles 3 to 5 or 6, slender, shorter than the akene; styles 2, united below, free at summit; akene subcompressed, obscurely trigonous, abruptly acuminate. *Kunth, Enum.* 2. p. 163. *Fl. Cestr.* p. 593. *Icon, Fl. Lond.* 1.

Also, *S. pungens, Vahl. Kunth, l. c. S. Americanus Pers. & others.*

THREE-CORNERED SCIRPUS. *Vulgò*—Chair-maker's Rush.

Root (or *rhizoma*) creeping. *Culm* 2 to 4 or 5 feet high, cuspidate at summit, acutely triquetrous (2 of the sides concave, the other flat), naked and smooth, sheathed at base,—the sheaths often bearing a few short triangular-carnate leaves. *Spikelets* nearly sessile, in a dense lateral cluster,—i. e. at the base of an erect tapering 1-leaved involucre, which is apparently a continuation of the culm. *Scales* often emarginate, and mucronate with the projecting midrib, ferruginous on the sides,—the margins scariosus and pubescent-ciliate. *Bristles* retrorsely scabrous, brittle. *Akene* smooth, dark-brown. Swampy meadows, and muddy margins of rivers—salt and fresh: throughout the U. States. *Fl.* July. *Fr.* Sept.

Obs. This is the plant used in making the seats of "Rush-bottomed Chairs," in the U. States. Some of the *English* Botanists say, the terete culms of the *S. lacustris, L.* or common *Bull-rush*, are used for that purpose,—which I think must be a mistake; as they are certainly much inferior, in tenacity and pliability, to those of *S. triqueter*,—and the chairmakers would be apt to discover the fact. Numerous species of this genus occur in our wet low grounds: but, although of no value in Agriculture, they scarcely require notice, here,—inasmuch as they are neither very troublesome, nor difficult to get rid of, by draining, and other appropriate management of the grounds.

TRIBE X. CYPHEREAE. *Nees*.

Flowers perfect. *Spikelets* usually many-flowered, with the scales distichously

imbricated, uniform,—the margins often decurrent on the angles of the rachis. *Calyx* none, or rarely cup-shaped,—sometimes substituted by retrorsely hispid bristles. *Style* rarely bulbous at base.

206. CYPERUS. *L. Endl. Gen.* 1003.

[An ancient Greek name,—of uncertain etymology.]

Spikelets many-flowered, or rarely 1 to 3-flowered. *Scales* distichously imbricated,—the lowest ones empty and sometimes smaller. *Calyx* none of any kind. *Stamens* 2 or 3. *Styles* 3 (rarely 2,) united below into one, deciduous. *Akene* crustaceous, triquetrous or rarely compressed,—sometimes mucronate with the persistent base of the united styles. *Perennial herbs*. *Culms* simple, often triquetrous, leafy and sheathed at base. *Leaves* grass-like. *Spikelets* in loose spikes, involucrate fascicles, or umbels.

1. *C. STRIGOSUS, L.* Umbel mostly simple, with several elongated unequal rays bearing oblong loose spikes; spikelets numerous, each 6 to 8 or 10-flowered, lance-linear, acute, much compressed, divaricate, spreading on all sides; involucre of about 6 leaves,—the exterior or lower ones very long. *Torr. N. Am. Cyp.* p. 261. *Kunth? Enum.* 2. p. 87. *Fl. Cestr.* p. 15.

STRIGOSE CYPERUS. *Vulgò*—Bristle-spiked Galingale.

Culm 1 to 2 or 3 feet high, triquetrous, smooth, leafy below and tuberous at base. *Leaves* rather broad, acute, keeled, nearly as long as the culm, somewhat scabrous on the margin. *Umbel* 3 to 6 or 9-rayed, rather spreading; rays unequal, 1 or 2 to 4 or 5 inches long, triquetrous, sheathed at base,—the central ones suppressed—(i. e. the central spikes sessile). *Spikes* yellowish, 1 to near 2 inches long (often compound—or with 1, 2 or 3 smaller spikes, branching from the base), formed by numerous spikelets (20 to 60 or 80) which spread on all sides, and are finally a little reflexed. *Spikelets* about three fourths of an inch long,—the scales somewhat loosely imbricated, striate, with a green keel and yellowish sides. *Styles* long, 3 united in one, distinct at summit. *Akene* triquetrous, oblong, acute, roughish-dotted. Wet meadows, and low grounds: throughout the U. States. *Fl.* Aug. *Fr.* Sept.

Obs. This species is inserted—not as being a particularly troublesome weed, but—as one of the most conspicuous of the genus, in the swampy meadows of the middle and northern States. The two which follow, belong rather to the Southern States,—and are there regarded as real scourges, by the Planters.

2. *C. REPENS, Ell.* Root creeping, tuberiferous at the extremities; umbel mostly simple, 4 to 6-rayed; involucre about 3-leaved, much longer than the rays; spikes distichous; spikelets 10 to 14, linear, obtuse, sub-compressed, approximated, somewhat spreading, each 12 to 20-flowered. *Torr. N. Am. Cyp.* p. 264. *Fl. Cestr.* p. 592. *C. phymatodes. Muhl. Kunth, Enum.* 2. p. 62. [*in Torr.*

CREeping CYPERUS. *Vulgò*—“Nut Grass,” of Florida; *Baldw.*

Root (or *rhizoma*) creeping extensively, and sending up numerous suckers,—the fibrous branches often terminating in tubers the size of a pea. *Culm* 1 to near 2 feet high, triquetrous, very smooth. *Leaves* 9 to 18 inches long, and 2 to 3 lines wide, keeled, smooth or slightly scabrous on the margin, yellowish green. *Umbel* rather erect,—the rays 1 to 2 or 3 inches long. *Involucre* usually 3 or 4-leaved. *Spikelets* half an inch to three quarters in length, a little compressed, obtuse when mature, somewhat distichously arranged on the common rachis,—the lowest ones often in pairs or fasciculate; scales oblong, rather acute, nerved, pale tawny. *Styles* 3, united in one, distinct at summit. *Akene* triquetrous, oblong, minutely punctate. Banks of streams; pastures, and cultivated grounds; New York to Florida, and Louisiana.

Obs. This species is, fortunately, rather rare, in the northern and middle States; but it is said to be a troublesome plant, in the South.

3. *C. HYDRA*, *Mx.* Rhizoma creeping, tuberiferous; umbel mostly simple, 3 or 4-rayed; involucre 2 or 3 leaved, about as long as the rays; spikes distichous; spikelets 4 or 5 on each ray, or spike, lance-linear, acute, much compressed, 14 to 20-flowered. *Torr. N. Am. Cyp. p.* 265. *Icon, Ell. Sketch, 1. tab. 2. fig. 2.*

C. rotundus, *L?* *Muhl. Kunth, Enum. 2. p.* 5S. [grass" ?

HYDRA CYPERUS. *Vulgò*—"Nut Grass," of S. Carolina. "Coco-

Rhizoma creeping,—its branches ending in *tubers* nearly half an inch in diameter. *Culm* 3 to 8 and 12 inches high, triangular, smooth, naked. *Leaves* all radical, shorter than the culm, about 2 lines wide, acute, slightly channelled, often recurved, somewhat glaucous. *Involucre* sometimes shorter than the umbel. *Rays* of the umbel 2 to 3 inches long, erect or slightly spreading. *Spikelets* nearly an inch long, alternate and distichous along the upper part of the rays,—the *scales* closely imbricated, bright chestnut-color with a green keel, not nerved, slightly mucronate. *Styles* 3, united below, distinct at summit. *Akene* triquetrous. Sandy fields; sand drifts, along the sea coast: Virginia to Florida, and Arkansas. *Fl.* All summer.

Obs. This is stated to be one of the greatest pests of the Southern Planters. It seems to be an inhabitant of all the 4 quarters of the globe. Mr. ELLIOTT gives the following account of it:—"This grass (?) is becoming a great scourge to our planters. It shoots from the base of its stem a thread-like fibre, which descends perpendicularly 6 to 18 inches, and then produces a small tuber. From this, horizontal fibres extend in every direction, producing new tubers at intervals of 6 or 8 inches, and these immediately shoot up stems to the surface of the earth, and throw out lateral fibres to form a new progeny. This process is interminable,—and it is curious to see what a chain or net-work of plants and tubers can, with some care, be dug up in a loose soil. The only process, yet discovered, by which this grass can be extirpated, is to plough or hoe the spots in which it grows every day through the whole season. In their perpetual efforts to throw their leaves to the light, the roots become exhausted and perish,—or if a few appear the next spring, they can easily be dug up." J. S. SKINNER, Esq. in a letter written during an excursion to the South, in the spring of 1846, sent to me an imperfect specimen of a Cyperaceous plant, which I suspect to be this species; and says of it—"I send you inclosed a spear or shoot of the vilest of all pests, the *Coco-grass*,—which has taken possession of, and caused to be abandoned, some of the best Sugar estates in Louisiana. Of all things it is said to be the most tenacious of life; and nothing serves so well to propagate it, as to plough and re-plough, with a view to destroy it."

There are numerous other species of *Cyperus*, in the U. States; but the foregoing are the most important for the Agriculturist to be acquainted with. The *Papyrus*—which the ancients used, for writing upon, prior to the manufacture of paper from rags—was obtained from a species of this genus, viz: *C. Papyrus*, *L.*

ORDER CLX. GRAMINEAE. *Juss.*

Mostly *Herbs* of humble growth, perennial or annual, often cespitose—rarely woody and fruticose or arborescent. *Stems* (or *culms*) terete, nodose, mostly hollow,

and closed at the nodes.* *Leaves* distichously alternate, originating at the nodes,—the *petioles* dilated, sheathing the culm, but mostly slit on one side (i. e. the margins not united, as in the *Cyperaceae*); *stipules* axillary, adnate to the petiole, with the summit often free and known as the *ligule*,—sometimes obsolete or wanting; lamina, or blade of the leaf, usually narrow, sub-linear, with parallel nerves, the margins entire and frequently scabrous. *Flowers* perfect or unisexual—monoicous or polygamous, rarely dioicous,—in little spikelets at the ends of branches; and these spikelets disposed in loose panicles—or, by the contraction of the branches, condensed into racemes or spikes. *Spikelets* consisting of distichously imbricated chaffy *bracts* (stunted or modified *sheaths* of abortive leaves),—of which the outer or lower ones are called *glumes*—and the two that immediately inclose each flower are termed *paleae*. *Calyx* or *Corolla* none,—or in the form of minute membranous or fleshy hypogynous *scales* (1 to 3 in number), distinct or united. *Stamens* 1 to 6, or more—commonly 3—hypogynous; *anthers* versatile. *Ovary* free, by abortion single, 1-celled, 1-ovuled; *styles* or *stigmas* mostly 2, the latter plumose. *Fruit* a caryopsis, free or sometimes adherent to the paleae,—the *pericarp* closely adnate to the seed, thin and chartaceous, or rarely crustaceous. *Embryo* situated on the front side, and near the base, of copious farinaceous albumen.

This vast Order—comprising some 230 genera, and perhaps not less than 3000 species—is probably the most generally diffused, and the most important to man, of all the families of plants. The *seeds*, and *herbage*, furnish a principal portion of the food of the human race, and of the more valuable domestic animals. A great number of the Grasses, however, are little better than *weeds*, on a farm,—and some of them exceedingly annoying. Those which the American Agriculturist is more immediately interested to know, are here inserted.

TRIBE I. ORYZEAE. Kunth.

Spikelets sometimes 1-flowered, with the glumes often abortive; sometimes 2 or 3-flowered; the lower florets with a single palea, and neutral; the terminal one, on y, fertile. *Paleae* chartaceous, rigid. *Flowers* often *diclinous*, and mostly *hexandrus*.

207. LEERSIA. Soland. Endl. Gen. 728.

[Named in honor of John Daniel Leers,—a German Botanist.]

Flowers perfect. *Spikelets* 1-flowered. *Glumes* 0. *Paleae* 2, compressed-carinate, nearly equal in length, awnless,—the lower one broader. *Stamens* 3 to 6—rarely 1. *Ovary* smooth; *stigmas* plumose; the hairs branched. *Caryopsis* free, compressed, covered by the paleae.

1. *L. ORYZOIDES*, Swartz. Panicle diffusely branched; florets triandrous; paleae conspicuously ciliate on the keel. *Kunth, Enum.* 1 p. 5. *SPECIM. Gray, Gram. No. 104. Fl. Cestr. p. 92.*

ORYZA—OR RICE-LIKE LEERSIA. *Vulgo*—Cut-Grass. Wild Rice.

*The roots of the Grasses may be regarded as *rhizomas*, or *subterranean stems*,—producing buds, and throwing up *branches*, of rapid growth, which are the *culms*, or aerial *stems*. “The stem of a Grass,” says Prof LINDLEY, “exists in two different states,—that of the rhizoma, and of the culm; the rhizoma, which is the true trunk; and the culm, which may be considered a ramification of it. The rhizoma grows slowly, and differs in no respect from the stem of other Monocotyledons, as is evident in that of the Bamboo. The culm, on the contrary, which grows with great rapidity, is fistular, with a compact impervious diaphragm at each articulation; a fact which must be familiar to every one who has examined a straw, or the joint of a Bamboo. In the beginning when this culm was first developed, it was a solid body like the rhizoma, only infinitely smaller; but in consequence of the great rapidity of its development, the cellular tissue forms more slowly than the woody vascular bundles which it connects, and in consequence a separation takes place between the latter and the former, except at the articulations, where, by the action of the leaves and their axillary buds, is formed a plexus of vessels, which grows as rapidly as the culm distends, and therefore never separates in the centre. Something analagous to this occurs in the flowering stem of the common Onion among Monocotyledons, and in Umbelliferae among Dicotyledons.”

Root perennial, creeping. *Culm* 3 to 5 feet high, striate, scabrous with minute retrorse prickles.—the *nodes* pubescent. Leaves 6 to 12 inches long, lance-linear, acuminate, keeled, retrorsely and sharply scabrous, ciliate on the margin; *sheaths* sulcate-striate, very rough with retrorse prickles in the grooves; *ligule* short, retuse. *Panicle* usually sheathed at base, much branched; branches flexuose, the lower ones in threes and fours. *Spikelets* elliptic-oblong, pedicellate, greenish-white. *Paleae* compressed, pectinate-ciliate on the keel,—the lower one boat-shaped, 3-nerved—the upper one a little longer, linear, 1-nerved. Swamps, and along sluggish rivulets: throughout the U. States. *Fl.* Aug. *Fr.* September.

Obs. This rough grass seems to be common to both hemispheres,—and is often quite abundant in our swampy meadows, and along the margins of muddy streams. It is not only worthless, but rather a nuisance. The farmer should therefore know it, and take measures (by drainage, &c.) to expel it, or keep it in subjection.

208. ORYZA. L. *Endl. Gen.* 729.

[The Greek name of *Rice*,—coined from *Eruz*, its Arabic name.]

Flowers perfect. *Spikelets* 1-flowered. *Glumes* 2, small, awnless but cuspidate, slightly concave. *Paleae* 2, compressed-carinate, nearly equal in length,—the lower one broader, and often with a straight awn at apex. *Stamens* 6. *Ovary* smooth; *stigmas* plumose,—the hairs branched. *Caryopsis* oblong, free, closely embraced by the persistent paleae.

1. O. SATIVA, L. Leaves lance-linear, elongated, rough; panicle racemose, contracted; branches slender, rough; paleae oblong, scabrous, awnless or often with a terminal awn. *Kunth, Enum.* 1.

CULTIVATED ORYZA. *Vulgò*—Rice. Common Rice. [p. 7.
Fr. Le Riz. *Germ.* Der Reiss. *Span.* Arroz.

Root annual. *Culm* 2 to 4 or 5 feet high, smooth, striate. *Leaves* 9 to 18 inches long, broadish, rough on the upper surface, smooth beneath; *sheaths* striate-nerved, smooth; *ligule* elongated (half an inch to three quarters in length), erect, tapering to a point. *Panicle* oblong, 4 to 8 or 9 inches in length, with the branches erect. *Outer palea* nerved or ribbed, hispidly scabrous, often awned,—the inner one awnless. Cultivated in the Southern States. Native of Asia? *Fl. Fr.*

Obs. There are several *varieties* of cultivated Rice; some, called Upland or Mountain Rice, usually awnless,—others, with the paleae commonly awned, or mucronate, cultivated in low grounds which can be irrigated, or overflowed with water. The aquatic variety is one of the staple crops of *South Carolina*. The importance of this plant, to the inhabitants of the tropical regions, generally—but especially in *Asia*—can scarcely be estimated by the residents of higher latitudes. It is believed that its seeds enter more largely into the nourishment of the human family, than those of any other plant—not excepting even Wheat.

209. ZIZANIA. L. (HYDROCHLOA. *Endl. Gen.* 731.)

[A Greek name,—supposed to have been originally applied to *Lolium*.]

Flowers monoicous. *Spikelets* 1-flowered,—the *staminate* and *pi-stillate* ones in the same panicle—the former below, the latter above. STAMINATE SPIKELETS: *Glumes* 0. *Paleae* 2, concave, nearly equal

* In the original language of the New Testament (*St. Matthew, chap. 13*). *Zizania* is the term which is rendered, or represented in English, by the word "Tares": yet *Tares* have usually been considered to be species of *Vetch* (either *Vicia sativa*, L. or *Ervum hirsutum*, L.).

in length, the lower one mucronate, 5-nerved, embracing the 3-nerved upper one. *Scales* 2, glabrous. *Stamens* 6. *Ovary* an abortive rudiment. **PISTILLATE SPIKELETS:** *Glume* a minute orbicular cup-shaped rudiment. *Paleae* 2, linear,—the lower one 3-nerved, terminating in a long straight awn, and embracing the narrower 1-nerved upper one. *Scales* 2, glabrous. *Stamens* abortive rudiments. *Ovary* sessile, oblong; *stigmas* pencil-form,—the hairs simple, subulate. *Caryopsis* cylindric, sulcate on one side, beaked, enveloped in the paleae.

1. *Z. AQUATICA*, L. Panicle pyramidal,—the lower branches spreading, bearing staminate flowers—the upper branches erect, bearing pistillate flowers; spikelets on clavate pedicels; awns long; caryopsis slender, elongated. *Fl. Cestr. p.* 93.

Z. clavulosa. *Mx. Willd. Sp. Pl.* 4. p. 394.

Hydrophyrum esculentum. *Link. Kunth, Enum.* 1. p. 9.

AQUATIC ZIZANIA. *Vulgò*—Water-Oats. Reed. Indian Rice.

Root perennial. *Culm* 4 to 8 or 10 feet high, stout, fistular, terete, glabrous. *Leaves* 1 to 2 or 3 feet long, and an inch to an inch and half wide, linear-lanceolate, keeled, smooth, serrulate on the margin; *sheaths* striate, smooth,—the base, at the nodes, surrounded with a ring of short silky appressed pubescence; *ligule* rather large, elongated, erect, lanceolate, finally lacerate-dentate, often purplish. *Panicle* 1 to 2 feet long,—the branches verticillate. *Pistillate spikelets* about an inch long, needle-like, somewhat racemose on the branches. *Paleae* scabrous, dark greenish-purple,—the lower one closely embracing the upper one, and terminating in a slender straight hispid awn as long as the spikelet. Muddy margins of tide waters; swampy rivulets, &c.: throughout the U. States. *Fl.* August. *Fr.* Sept.—October.

Obs. At the suggestion of my friend, Prof. A. GRAY, I have retained the *name* of this plant, originally proposed by CLAYTON, or GRONOVIVS,—and adopted by LINNAEUS. KUNTH has excluded the *only original species* from the genus,—in violation of the canons in such case made and provided. This fine stout Grass is well known, along the muddy shores of our tide waters, as the favorite resort of the *Reed-bird* (*Emberiza Oryzivora*, L.), in autumn. Mr. ELLIOTT supposed it might be a valuable grass, in overflowed or marshy meadows,—as its leaves, he says, are eaten with avidity by Stock of all descriptions. I do not know that it has been found of much importance, in that respect, in the northern or middle States.

TRIBE II. PHALARIDEAE. *Kunth.*

Spikelets with the flowers either perfect, polygamous, or rarely monoicous,—sometimes 1-flowered with or without a stipitiform rudiment of another flower above—sometimes 2-flowered, both being perfect or staminate—and sometimes 2 or 3-flowered with the terminal one fertile, the others imperfect. *Glumes* mostly equal. *Paleae* often shining and indurated in fruit. *Styles* or *stigmas* frequently much elongated.

210. ZEA. L. *Endl. Gen.* 742.

[Greek, *Zao*, to live; from the sustenance it affords to animal life.]

Flowers monoicous: *Staminate* ones terminal, racemose; *pistillate* ones axillary, densely spicate,—the spike enveloped in the sheaths of abortive leaves. **STAMINATE SPIKELETS** 2-flowered. *Glumes* 2, concave,—the lower one 3-nerved—the upper one 2-nerved. *Paleae* membranaceous, awnless. *Scales* 2, collateral, fleshy, glabrous. *Stamens* 3; *anthers* linear, 4-sided, erect. **PISTILLATE SPIKELETS** 2-

flowered, the lower one *neutral*. *Glumes* 2, fleshy-membranaceous, very broad, ciliate,—the lower one emarginately 2-lobed. *Neutral floret* with 2 paleae,—the lower one rounded, concave, embracing the fertile floret. *Fertile floret* with 2 or 3 concave paleae. *Scales* and *stamens* none. *Ovary* sessile, roundish-ovoid, oblique; *style* terminal, capillary, very long, pubescent at apex and mostly bifid,—the lobes subulate. *Caryopsis* compressed, roundish-reniform or cuneate, with a groove on the upper side, surrounded at base by the persistent glumes and paleae; *pericarp* thin, chartaceous and diaphanous.

1. Z. MAXS, L. Leaves flat, linear-lanceolate, acuminate, entire, with a broad thickish midrib channelled above. *Kunth, Enum.* 1. p. 19. *Fl. Cestr.* p. 94.

Vulgâ—Corn. Indian-Corn. Maize.

Root annual, coarsely fibrous. *Culm* 4 to 8 or 10 feet high, and an inch to an inch and half in diameter, simple (often producing suckers or branches at base), nodose, semi-terete or with a broad shallow channel on alternate sides between the nodes, smooth, solid with pith. *Leaves* 2 to 3 feet long, and 2 to 4 or 5 inches wide, obtusely keeled, smooth beneath, pubescent above, finely ciliate; *sheaths* striate, smooth, conspicuously pubescent along the margin; *ligule* short, obtuse. *Staminate flowers* in terminal pedunculate fasciated racemes; *spikelets* somewhat unilateral on the branches, mostly in pairs—one subsessile the other pedicellate,—each 2-flowered; *anthers* greenish yellow; *scales* collateral, cuneate, truncate, fleshy and smooth. *Pistillate flowers* in stout dense solitary spikes on short axillary branches (1 to 3 or 4—usually 2—of these spikes, or *Ears*, on each plant). *Spikes* 6 to 12 or 15 inches long, enveloped in numerous involute spathe-like “husks” (*i. e.* the *sheaths* of abortive leaves,—of which one originates at each node of the spike-bearing branches); *spikelets* crowded, sessile on the thick fleshy subcylindric rachis (receptacle or “Cob”), arranged in numerous (8 to 12) longitudinal series,—the series, or “rows,” always in approximated pairs. *Ovary* smooth, at first rounded, gradually becoming compressed, in full ears; *style* very long and slender, projecting (with others in a glossy bundle, called “the silk”) beyond the sheaths of the spike,—the exerted portion pendulous, and often purple. *Caryopsis* (or grain) compressed by crowding,—rounded when not crowded), with a slight groove on the upper side, in which the *embryo* is lodged, varying from orbicular-reniform to elongated and cuneate (often indented at apex in the cuneate forms), sitting transversely on the cylindrical or tapering receptacle, and partially imbedded in a socket formed by the persistent glumes and paleae. Cultivated. Believed to be a native of the warmer regions of America. *Fl.* July—August. *Fr.* September—October.

Obs. Culture has produced several *varieties* of this plant,—with the grains *yellow*, *white*, or sometimes *dark purple*. In the north, it is much smaller than in the middle and South western States. There is, also, a remarkable *variety*—frequent, I believe, in the South west—in which a kind of *husk*, or involucre, is developed around every grain, or spikelet, on the receptacle. The *Indian-Corn* is one of the most interesting of the *Gramineae*, or Grass family,—rivalling the *Sugar Cane* and the *Rice*, in intrinsic value, and, in the more favorable districts, ranking next in importance to *Wheat* itself. The fresh Bread, made of Indian-Corn meal (the “*Pone*,” of Maryland and Virginia), when rightly prepared for the Breakfast table, may challenge a comparison with that made from any other grain. *Sugar* has also been obtained from this plant, of an excellent quality, and in considerable quantity; but whether the saccharine product will warrant the culture of the plant for that object, remains to be determined. In *Chester County*, Pa. the *Indian-Corn* is usually the *first* in the routine of crops, on breaking up the Lay, or sod. *Oats* or *Barley* next succeed,—and then *Wheat*; with *Clover* and *Timothy* to constitute the meadow, or Hay-crop, for two or three years after the wheat comes off.

211. PHLEUM. *L. Endl. Gen.* 750.

[A name derived from the ancient Greeks; meaning obscure.]

Flowers perfect: *Spikelets* 1-flowered, *Kunth*, (2-flowered, *Endl.*), crowded into a dense cylindrical terminal spike. *Glumes* 2, keeled, awnless, acuminate or produced at apex into an awnlike bristle. *Paleae* 2, thin and membranaceous, shorter than the glumes,—the lower one truncate at apex, awnless mucronate or awned on the back—the upper one 2-keeled, and often with the stipitiform rudiment of another floret at base. *Scales* 2, unequally 2-lobed, glabrous. *Stamens* 3. *Ovary* sessile; *styles* 2; *stigmas* plumose, with simple hairs. *Caryopsis* free, obliquely ovoid or elliptical, subterete, closely covered with the palea.

1. *P. PRATENSE*, *L.* Culm erect; spike cylindric, elongated; spikelets destitute of the stipitiform rudiment; glumes truncate, mucronately awned,—the awns shorter than the glumes; keel ciliate. *Kunth, Enum.* 1. p. 29. *Fl. Cestr.* p. 59.

MEADOW PHLEUM. *Vulgò*—Timothy. Cats-tail Grass.

Fr. Fléole des Prés, *Germ.* Das Wiesen-Lieselgras.

Root perennial, fibrous. *Culm* 2 to 4 feet high, simple, terete, smooth,—when old rather firm and wiry, and often somewhat bulbous at base. *Leaves* 6 to 12 or 15 inches long, lance-linear, acute, flat, glaucous, somewhat scabrous; *sheaths* striate, smooth; *ligule* membranaceous, obtuse, finally lacerate. *Spike* 3 to 6 or 8 inches long, green. *Glumes* equal, compressed, abruptly mucronate, pubescent. *Paleae* concealed in the glumes.—the lower one larger. *Anthers* purple. *Fr.* July white. Fields and Meadows: cultivated. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This foreign Grass is extensively naturalized in the U. States. In New York, and throughout New England, it is known by the name of *Herd Grass*,—a name which, in Pennsylvania—and I believe in all the States South—is applied exclusively to *Agrostis vulgaris*, *L.* The Meadow Phleum, or *Timothy*, is very generally cultivated in Eastern Pennsylvania; and is undoubtedly one of the most valuable of the “*artificial grasses*,” so called. Mixed in about equal proportions with red clover (*Trifolium pratense*, *L.*), it makes the best quality of *Hay*. It requires a good soil,—and is considered a rather severe and exhausting crop;—inasmuch as the *aftermath*, or second growth of radical leaves, is somewhat scant and tardy, during the dry weather which usually succeeds harvest; and thus the ground is left exposed to the injurious influence of the scorching sun. The *clover*, however, when present in sufficient quantity, soon springs up and affords a shelter to the soil; and, when the land is good, the *green grass* (*Poa pratensis*, *L.*) comes in, spontaneously, as the clover disappears. The *seed*, of Timothy, is usually sown in autumn,—among, and immediately after, *Wheat* and *Rye*; though it answers very well, when sown early the ensuing spring.

212. HOLCUS. *L. Endl. Gen.* 754.

[An ancient Greek name,—of obscure etymology.]

Spikelets 2-flowered, the florets a little distant, pedicellate,—the lower one perfect, awnless—the upper one staminate, awned on the back. *Glumes* 2, nearly equal, boat-shaped. PERFECT FL. *Paleae* 2,—the lower one boat-shaped, awnless—the upper one 2-

keeled. *Scales* 2, 2-lobed, glabrous. *Stamens* 3. *Ovary* sessile, pyriform; *styles* 2, terminal; *stigmas* plumose,—the hairs simple, or rarely bifid at apex. *Caryopsis* free, smooth. STAMINATE FL. *Lower palea* awned near the summit. *Ovary* mostly abortive.

1. *H. LANATUS*, L. Panicle oblong, rather contracted; awn of the staminate floret recurved, included in the glume. *Kunth, Enum.* 1. p. 34. *Fl. Cestr. p.* 91. *Icon, Fl. Lond.* 1.

WOOLLY HOLCUS. *Vulgò*—Feather-grass. White Timothy.

Fr. Houque laineuse. *Foin de mouton.* *Germ.* Wolliges Honig-gras.

Root perennial, fibrous. *Culm* simple, 18 inches to 2 feet high, and, with the leaves and sheaths, clothed with a soft hoary pubescence. *Leaves* lance-linear, acute, 2 to 5 or 6 inches long; *ligule* white, truncate, dentate. *Panicle* oblong, somewhat dense,—the branches hairy. *Glumes* roughish-pubescent, whitish, often tinged with purple. *Florets* both pedicellate, smooth and shining. *Paleae* of the *perfect floret* nearly equal in length, the lower one broader, keeled,—of the *staminate floret* unequal, the lower one larger, keeled, with a recurved or hooked awn on the back near the apex. Moist meadows: introduced. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This grass is naturalized in many places, in Pennsylvania. Some of the farmers in *Virginia* speak favorably of it; but I think it must be from want of familiarity with more valuable kinds. It is true, that MUHLENBERG praises it—calling it “*excellens pabulum*;” but it is certainly very little esteemed by the farmers of *Chester County*: and in this they concur in the opinion expressed by Mr. G. SINCLAIR, in his valuable *Hortus Gramineus*.

213. ANTHOXANTHUM. L. *Endl. Gen.* 756.

[Greek, *Anthos*, flower, and *Xanthos*, yellow; from the color of its spikes.]

Spikelets 3-flowered,—the 2 lower ones *neutral*—the uppermost one *perfect*. *Glumes* 2, keeled,—the lower one shorter, 1-nerved—the upper one 3-nerved. NEUTRAL FL. *Palea* 1, channelled, emarginate at apex, awned on the back. PERFECT FL. *Paleae* 2, boat-shaped, awnless,—the lower one embracing the 1-nerved upper one. *Scales* 0. *Stamens* 2. *Ovary* sessile; *styles* 2; *stigmas* distichously plumose, with simple hairs. *Caryopsis* subterete, free, closely embraced by the paleae.

1. *A. ODORATUM*, L. Panicle contracted into an oblong spike; spikelets sub-pedunculate, spreading, pubescent; paleae of the neutral florets ciliate. *Kunth, Enum.* 1. p. 38. *Fl. Cestr. p.* 64. *Icon, Fl. Lond.* 1.

FRAGRANT ANTHOXANTHUM. *Vulgò*—Sweet-scented Vernal-Grass. *Fl.* Flouve odorante. *Germ.* Das Ruch-gras.

Root perennial. *Culm* erect, 12 to 18 inches high, rather slender. *Leaves* lance-linear, shortish (1 or 2 to 5 or 6 inches long), pubescent; *sheaths* nerved, sulcate; *ligule* elongated, membranaceous. *Panicle* a sort of loose spike 1 to 2 or 3 inches long, becoming yellow when mature; *spikelets* somewhat fascicled, on short peduncles. *Paleae* of the *perfect floret* very short, obtuse, nearly equal, smooth and shining, the lower one much broader. *Paleae* of the *neutral florets* single, linear-oblong, ciliate on the margins,—one of them with a geniculate awn from near the base, more than twice as long as the palea—the other with a straight awn, about as long as the palea, inserted on the back near the summit. *Anthers* linear, large. *Stigmas* white. *Caryopsis* oblong, blackish, shining. Meadows; and moist open woodlands: introduced. Native of Europe. *Fl.* May—June. *Fr.* July.

Obs. This has been much noticed, in Europe, as a fragrant mea-

dow-grass; but it seems rather to belong to a moist, cold, thin soil,—and is by no means regarded, in the U. States, as a grass of superior value. When cut, and partly dry, it emits a remarkably fragrant odor. The *culms* have been used in the manufacture of imitation Leghorn hats and bonnets.

This grass is the plant referred to by Dr. DARWIN, in the following lines of his imaginative poem, the “Botanic Garden:”—

“Two gentle shepherds, and their sister-wives,
 “With thee, ANTHOXA! lead ambrosial lives;
 “Where the wide heath in purple pride extends,
 “And scatter’d furze its golden lustre blends,
 “Closed in a green recess, unenvi’d lot!
 “The blue smoke rises from their turf-built cot;
 “Bosom’d in fragrance blush their infant train,
 “Eye the warm sun, or drink the silver rain.”

Bot. Garden, Part II. Can'to I. l. 85-92.

Belonging to this *tribe* (*Phalarideae*), is the *Meadow Foxtail*, of Europe (*Alopecurus pratensis*, L.); which the farmers, there, seem to regard as a grass of merit: but, although it has been partially introduced into some districts of the U. States, it can scarcely be said to belong to the agriculture of the country,—and it may, perhaps, be doubted whether it can ever advantageously take the place of our best grasses. The *Phalaris arundinacea*, L. (a *variety* of which, with striped leaves, is known by the name of *Ribbon-grass*), also belongs to this *tribe*—as the *generic* name indicates. It is a deep-green luxuriant-looking grass, frequent along swampy ditches; but it is not valuable,—neither is it very troublesome; and therefore I do not describe it at length. The *P. Canariensis*, L. furnishes the well known *Canary-seeds*, used for feeding birds; but does not possess much interest for our farmers.

TRIBE III. PANICEAE. *Kunth*.

Spikelets 2-flowered;—the lower floret imperfect. *Glumes* more tender or herbaceous than the *paleae*,—the lower one often (rarely both) abortive. *Paleae* more or less coriaceous or chartaceous, mostly awnless,—the lower one concave. *Caryopsis* compressed on the back.

214. PANICUM. L. *Encl. Gen.* 770.

[Latin, *Panicula*, a mode of flowering: or *Panis*, bread,—afforded by some species.]

Spikelets 2-flowered,—the lower floret staminate or neutral—the upper one perfect. *Glumes* 2, unequal, concave, awnless. STAMINATE FL. *Paleae* 2. *Stamens* 3: sometimes the floret is NEUTRAL,—the upper *palea* and the *stamens* being abortive. PERFECT FL. *Paleae* 2, nearly equal, coriaceous, concave,—the lower one embracing the 2-nerved upper one. *Scales* 2, collateral, hatchet-shaped, or truncate and 2 or 3-lobed; glabrous. *Stamens* 3. *Ovary* sessile; *styles* 2, terminal, elongated; *stigmas* penicillate, generally purple,—the hairs simple, denticulate. *Caryopsis* free, glabrous, closely embraced by the *paleae*.

† *Inflorescence* spicate. *Spikes* somewhat digitate-fasciculate: neutral floret with a single *palea*.

1. P. SANGUINALE, L. *Spikes* several, digitate, somewhat spreading; leaves and sheaths hairy; florets lance-oblong, slightly ciliate-pubescent on the margin. *Kunth, Enum.* 1. p. 82.

Digitaria sanguinalis. Scop. *Fl. Cestr.* p. 44. Icon, *Fl. Lond.* 3.
BLOODY (OR PURPLE) PANICUM. *Vulgò*—Crab-Grass. Finger-grass.

Root annual. *Culm* decumbent, 1 to 2 feet long, somewhat branching from the sheaths, geniculate, glabrous, radiating at the lower nodes. *Leaves* 1 or 2 to 6 or 8 inches long, softly pilose; *sheaths* strigosely hairy; *ligule* short, truncate, or ovate and acute, white or often tinged with purple. *Spikes* usually 4 to 6 (sometimes 8 or 10) in number, and 2 or 3 to 6 inches in length, often in 2 fascicles or verticils a little distant from each other, becoming purple; *rachis* flat, flexuose, scabrous on the margin. *Spikelets* in pairs, appressed, in two rows on the outer or under side of the rachis, on short pedicels,—the lower one subsessile. Inferior *glume* nearly obsolete. Gardens, and cultivated grounds; throughout the U. States. *Fl.* July—Sept. *Fr.* Aug.—October.

Obs. In the middle States, this is a troublesome Grass in *Gardens*, in the latter part of summer; and is frequent, also, in *Indian-Corn fields*,—but not difficult to be kept in reasonable subjection, by the early and free use of the “cultivator.” Cattle will eat it,—but do not appear to be particularly fond of it; and indeed it is generally *choked out* of good pastures, by the prevalence of more acceptable grasses. It is said to be a serious pest, in the cultivated grounds of the Southern planters. Mr. ELLIOTT—than whom there can be no better authority—has the following remarks on this plant:—“Grows every where on lands not inundated. Well known to planters under the name of Crab or Crop grass. It is the most troublesome grass our planters have to encounter in high ground culture, and though an annual, it is the best grass for hay at present known in our low country.”

A very slender, smooth species (*P. filiforme*, L.), belonging to this sub-division, is often abundant in sandy pastures,—but is not very important in any respect.

†† *Inflorescence* paniculate: branches of the panicle more or less divided; spikelets solitary, scattered.

2. *P. CAPILLARE*, L. *Culm* nearly simple; sheaths very hirsute; panicle large, capillary, loose, finally expanding; spikelets lanceolate, acuminate, smooth, on long scabrous peduncles. *Kunth, Enum.* 1. p. 114. *Fl. Cestr.* p. 45.

CAPILLARY OR HAIR-LIKE PANICUM.

Root annual. *Culm* assurgent or erect, usually 1 to 2 feet (occasionally only a few inches) high, sometimes branching. *Leaves* 3 to 8 or 10 inches long, lanceolate, rather broad, acuminate, nerved, hairy; *sheaths* sulcate-striate, very hirsute with spreading whitish bristly hairs; *ligule* short, fringed or beard-like. *Panicle* large and pyramidal; branches numerous, subdivided, very slender, straight,—at first erect, then spreading, finally divaricate. *Spikelets* small, often purple. *Abortive floret* without a superior palea. *Perfect floret* much shorter than the upper glume, lance-oblong, plano-convex, smooth and shining. Sandy pastures; cultivated grounds: throughout the U. States. *Fl.* Aug. *Fr.* September.

Obs. This worthless species flourishes most in a light sandy soil; but it is usually more or less abundant in all *Indian-Corn fields*, in the latter part of summer. In autumn, the dry culms break off, and the light divaricate panicles are rolled over the fields, by the winds, until they accumulate in great quantities, along the fences and hedges. Common, and remarkable as this grass is, I do not recollect to have ever heard a *common name* for it. This vast genus (containing upwards of 400 species,—a considerable number of which are indigenous, or found in our country) is remarkable for the

little value, or interest, which it possesses, in an agricultural point of view. With the exception of *P. miliaceum*, L.—and perhaps one or two other oriental species, which produce a kind of *Millet*—the whole multitudinous group are regarded as little better than mere *weeds*:—though none of them, so far as I know, are particularly obnoxious, or difficult to expel by judicious culture. The two here described, are inserted merely as samples of a numerous and somewhat variant family.

215. SETARIA. *Beauv.* [PENNISETUM. *Rich. Endl. Gen.* 781.]

[Latin, *Seta*, a bristle; from the bristly involucres of the spikelets.]

Spikelets 2-flowered, invested with an involucre of persistent bristles,—the upper floret perfect—the lower one staminate or neutral, with 1 or 2 awnless paleae. *Glumes* 2, unequal, concave, awnless. STAMINATE FL. *Paleae* 2, membranaceous, with 3 *stamens*: sometimes the floret is NEUTRAL,—the upper palea and stamens being abortive. PERFECT FL. *Paleae* 2, coriaceous, concave, awnless,—the lower one embracing the 2-nerved upper one. *Stamens* 3. *Scales* 2, collateral, truncate, fleshy, smooth. *Ovary* smooth; *styles* 2, terminal, elongated; *stigmas* plumose, with simple hairs. *Caryopsis* free, compressed, included in the paleae. *Inflorescence with the panicle often much condensed or spike-form.*

1. *S. GLAUCA*, *Beauv.* Spike cylindrical, tawny yellow; involucre of numerous fasciculate bristles much longer than the spikelets; paleae of the perfect floret transversely rugose. *Kunth, Enum.* 1. p. 149. *Fl. Cestr.* p. 51.

GLAUCCOUS SETARIA. *Vulgò*—Fox-tail Grass.

Root annual. *Culm* 2 to 3 feet high, sometimes branching, often several from the same root, smooth. *Leaves* 6 to 12 or 15 inches long, somewhat glaucous, lance-linear, keeled, slightly scabrous, with a few long slender hairs at the base; *sheaths* striate, smooth; *ligule* short, fringed or beard-like. *Spike* 2 to 4 inches long, rather slender and quite cylindrical; *rachis* pubescent. *Bristles* of the involucre scabrous upwards, becoming tawny or orange-yellow. *Staminate floret* sometimes wholly abortive or neutral. *Perfect floret* plano-convex,—the *paleae* very firm and traversed by horizontal undulate wrinkles. Cultivated grounds; stubble fields, &c.: introduced. Native of India, and Continental Europe. *Fl.* Aug. *Fr.* September.

Obs. All the species of this genus (formerly referred to *Panicum*) are believed to be strangers, here. This one usually makes its appearance, in abundance, among the stubble after a wheat crop,—and is often seen in pastures, orchards, &c. when not kept down by the promotion of a more valuable growth. Cattle refuse the herbage, if better can be had; and the plant is altogether worthless,—except that poultry (especially turkeys) are fond of stripping the spikes of their seeds, in the latter part of summer.

2. *S. VIRIDIS*, *Beauv.* Spike elliptic-oblong, green; involucre of 4 to 10 fasciculate bristles much longer than the spikelets; paleae of the perfect floret longitudinally striate, punctate. *Kunth, Enum.* 1. p. 151. *Fl. Cestr.* p. 50.

Panicum viride, L. *Fl. Lond.* ICON, Vol. 1.

GREEN SETARIA. *Vulgò*—Green Foxtail. Bottle grass.

Root annual. *Culm* 1 to 2 or 3 feet high, branching near the base, rather slender. *Leaves* 3 to 6 or 8 inches long, lance-linear, flat, somewhat scabrous, minutely serrulate on the margin; *sheaths* striate, smooth, pilose on the margin;

Ligule fringed or beard-like. *Spike* 1 to 3 inches long, somewhat compound or a little enlarged in the middle, often nearly cylindrical; *rachis* hirsute with short hairs. *Bristles* of the involucre scabrous upwards, green. *Sterile floret* usually wholly abortive or neutral,—the *upper palea* very small. *Paleae* of the *perfect floret* smooth, punctulate, striate longitudinally, with a slight transverse rugosity perceptible under a lens. Cultivated grounds; pastures, &c.: introduced. Native of Southern Europe. *Fl.* July—Aug. *Fr.* Aug.—September.

Obs. This species is also naturalized to a considerable extent, and is about as worthless as the preceding,—but is not regarded as a serious nuisance.

3. *S. ITALICA*, *Beauv. var. Germanica*, *Kunth*. *Spike* compound, ovoid-oblong, yellowish-green; involucre of 4 to 8 bristles, unilateral, about as long as the spikelets; paleae of the perfect floret striately punctate, obscurely 3-nerved. *Kunth, Enum. 1. p. 153.*

S. Germanica. Beauv. Fl. Cestr. p. 51.

ITALIAN SETARIA. *Vulgò*—Millet. Bengal-Grass.

Root annual. *Culm* 2 to 4 or 5 feet high. *Leaves* 6 to 12 and 18 inches long, lance-linear, rather broad, flat, serrulate on the margin; *sheaths* striate, pubescent on the margin; *ligule* beard-like. *Spike* compound (or rather a densely contracted panicle), 3 to 6 inches long,* ovoid-oblong or subcylindric; *rachis* densely hirsute with long hairs. *Bristles* of the involucre sometimes longer than the spikelets, yellowish. *Sterile floret* wholly abortive, or neutral,—the upper palea very minute. *Paleae* of the perfect floret smooth, minutely striate-punctate. Fields; cultivated as a fallow crop. Native of Europe and India. *Fl.* July. *Fr.* August.

Obs. Some years ago, the culture of this plant was introduced into Pennsylvania, and excited considerable interest, for a time, among the farmers,—as affording valuable fodder, when the usual hay-crop was likely to be deficient. It was soon found, however, not to be as valuable as the usual fallow crop (of Oats, or Barley), of which it occupied the place; and was, moreover, remarkably liable to damage from rain. The cultivation, therefore, soon declined,—and is now generally abandoned. There is another species (*S. verticillata*, *Beauv.*—with the spike composed of interrupted verticils of spikelets, and the involucre of retrorsely scabrous bristles, in pairs), which is becoming something of a nuisance, about gardens, in many places; but it seems scarcely, as yet, entitled to a more particular notice, here.

216. OPLISMENUS. *Beauv. Endl. Gen. 778,*

[Greek, *Oplismenos*, armed; in reference to its echinate spikelets.]

Spikelets 2-flowered,—the lower floret staminate or neutral—the upper one perfect. *Glumes* 2, unequal, concave or somewhat keeled, mostly awned. *STAMINATE FL.* *Paleae* 2, the lower one awned; sometimes the floret is NEUTRAL—the upper palea and stamens being abortive. *PERFECT FL.* *Paleae* 2, nearly equal,—the lower one acuminate, mucronate, embracing the 2-nerved upper one. *Scales* 2, collateral, truncate. *Stamens* 3. *Ovary* sessile; *styles* 2, terminal, elongated; *stigmas* plumose, with simple hairs. *Caryopsis* free, glabrous, inclosed by the paleae. *Spikelets arranged in spikes,—the spikes racemose or paniculate.*

1. *O. CRUS GALLI*, *Kunth*. *Spikes* alternate, secund, divided or

*The paniculate spike, or contracted panicle, of a gigantic variety which grows wild along the marshy shores of the river Delaware, is often from 12 to 18 inches in length.

simple; florets imbricated; glumes and outer palea of the neutral floret hispid, awned or mucronate; outer palea of the perfect floret terminating in a scabrous awn; rachis hirsute. *Kunth, Enum.* 1. p. 143.

Panicum Crus Galli. L. Fl. Cestr. p. 49. Icon, Fl. Lond. 1.

COCKSPUR OPLISMENUS.

Root annual. *Culm* 2 to 5 feet high, rather coarse, smooth. *Leaves* 9 to 15 inches long, lance-linear, broadish, flat, nerved, serrulate on the margin; *sheaths* rather loose, compressed, striate, smooth; *ligule* none. *Spikes* sub-paniculate,—the spikelets crowded in dense spike-form compound racemes on the branches. *Spikelets* ovoid, plano-convex, echinate, awned or sometimes awnless; lower glume short, ovate, acute, 3-nerved,—the upper one as long as the perfect floret, ovate, acuminate, 5-nerved, with bristles on the nerves. *Neutral floret* with 2 *paleae*.—the lower one ovate, flat, with a scabrous awn or long acumination, 5-nerved—one of the nerves central, scabrous, the others marginal, in approximated pairs, presenting a double row of cartilaginous bristles,—the upper palea ovate, acute, thin and membranaceous, nearly as long as the perfect floret. *Perfect floret* plano-convex, acuminate,—the *paleae* firm, smooth and shining. *Caryopsis* compressed, orbicular, white or ash-colored. Moist grounds; meadows, drains of Barnyards, &c.: introduced? *Fl. August. Fr. September.*

Obs. *Kunth* gives this as an inhabitant of the four quarters of the globe; but I suspect it is a naturalized foreigner, here. There is a *variety*, in which the sheaths are hispid and another in which the floral coverings are awnless. In every form, it is a coarse worthless grass—in fact a mere weed,—apt to abound along the drains of crude liquid, flowing from barn-yards,—and in spots which are usually designated as “wet and sour.” It is readily expelled, however, by a proper management. Frequent and conspicuous as this grass is, I do not know that it has acquired any *common name*, in Pennsylvania.

217. CENCHRUS. *L. Endl. Gen.* 783.

[Greek, *Kenchros*, Millet; probably applied, originally, to some other plant.]

Spikelets involucrate, 2-flowered,—the lower floret staminate or neutral—upper one perfect: sometimes the spikelet is solitary—sometimes 2 or more are crowded within a multifid *involucre*, which is externally muricate with spinose bristles—finally indurated, and falling off with the spikelets. *Glumes* 2, unequal, membranaceous. STAMINATE FL. somewhat resembling the perfect one,—sometimes NEUTRAL, by the abortion of the stamens and upper palea. PERFECT FL. *Paleae* 2, subcoriaceous, concave,—the lower one embracing the upper one. *Stamens* 3. *Scales* 0. *Ovary* sessile, glabrous; *styles* 2, terminal, elongated, sub-connate at base; *stigmas* plumose, with simple denticulate hairs. *Caryopsis* free, somewhat compressed, included in the paleae.

1. C. TRIBULOIDES, *L.* Involucre subglobose, pubescent, spinosely muricate, split on one side. *Kunth? Enum.* 1. p. 166. *Fl. Cestr. p. 52.* TRIBULUS-LIKE CENCHRUS. *Vulgò*—Bur-grass. Hedge-hog Grass.

Root annual. *Culm* 1 to 2 feet long, usually oblique or procumbent, geniculate, branching, smooth. *Leaves* 3 to 6 or 8 inches long, lance-linear, acuminate, slightly scabrous on the margin; *sheaths* loose, smooth; *ligule* beard-like. *Raceme* terminal, of 6 to 12 or 14 alternate involucrate heads or clusters; *rachis* angular, flexuose, slightly scabrous. *Involucre* urceolate or subglobose, laciniate, usually split to the base on one side, hairy, armed externally with rigid subulate scabrous spines, villous within, embracing 1, 2, or 3 spikelets. *Sterile floret* mostly staminate. Sandy fields. *Fl. Aug. Fr. Sept.*

Obs. Our plant appears to agree more nearly with the description of *C. echinatus*, in KUNTH'S *Enumeration*: but Dr. TORREY expressed the opinion to me, that "it is doubtful whether the true *C. echinatus* inhabits N. America; our *two* species (as some call them) being merely forms of *C. tribuloides*."

The plant is very abundant, in the sandy districts of *New Jersey*,—and has found its way to some of the slaty hills of Pennsylvania. It is altogether a worthless grass; and the prickly *involucres* are a grievous nuisance, wherever it prevails in cultivated grounds, or about houses. It ought to be most carefully and thoroughly extirpated, on its first appearance in any agricultural region.

TRIBE V.* AGROSTIDEAE. *Kunth.*

Spikelets 1-flowered,—very rarely with the subulate rudiment of a second superior one. *Glumes* and *Paleae* 2, membranaceously herbaceous,—the lower *palea* often awned. *Stigmas* mostly sessile.

218. MUHLENBERGIA. *Schreb. Endl. Gen.* 803.

[In honor of Rev. *Henry Muhlenberg*,—an early and eminent American Botanist.]

Spikelets 1-flowered,—the flower sessile, bearded at base. *Glumes* 2, unequal, usually much shorter than the *paleae*, awnless or with a short awn. *Paleae* 2, herbaceous, finally slightly indurated,—the lower one awned at apex—the upper one 2-keeled. *Scales* 2, membranaceous, entire. *Stamens* 3,—the *filaments* connate at base with the stipe of the ovary. *Ovary* stipitate, glabrous; *styles* 2, terminal; *stigmas* plumose, with simple hairs. *Caryopsis* free, subterete, glabrous, covered by the *paleae*.

1. *M. DIFFUSA*, *Willd.* Culms filiform, decumbent, branching, diffuse; leaves short, spreading; panicles terminal and lateral, contracted and slender; glumes unequal, very minute; awn about as long as the *palea*. *Kunth, Enum.* 1. p. 200. *Fl. Cestr.* p. 58. SPECIM. *Gray, Gram.* 2. No. 106.

SPREADING MUHLENBERGIA. *Vulgê*—Dropseed Grass. Nimble Will.

Root perennial. *Culm* 6 to 12 and 18 inches long, decumbent, geniculate, compressed, very slender and rather wiry, glabrous, much branched,—the branches assurgent. *Leaves* 1 to 2 or 3 inches in length, divaricate, lance-linear, acute, roughish; *sheaths* rather open, striate, pubescent at throat; *ligule* very short, finally lacerate or ciliate. *Panicles* 3 to 6 or 8 inches long, very slender, often purplish,—the branches alternate, rather distant, appressed, scabrous; *spikelets* all pedicellate, racemose. *Glumes* persistent, very minute,—the lower one a mere rudiment—the upper one truncate, laciniate-dentate. *Paleae* unequal,—the lower one longer, almost triangular, with 3 prominent scabrous nerves, and terminating in a slender scabrous awn, which is generally a little longer than the *palea* itself. *Caryopsis* linear-oblong, acute, brown. Pastures; yards; and borders of dry open woodlands. *Fl.* Aug.—Sept. *Fr.* Sept.—October.

Obs. This slender grass often appears in considerable quantity, in the latter part of summer, in fields which have been kept up some years for pasture. Cattle feed on it; but it is not so valuable as

* The 4th Tribe (STIPACEAE, *Kunth.*) contains no plant of importance in American Agriculture. The genus *Stipa*—the representative of the Tribe—contains a species (*S. tenacissima*, *L. macrochloa*, *Kunth*—the *Esparto*, of the Spaniards,) which is much used in the Southern provinces of Spain, in the manufacture of cordage, matting, sacks, &c. There is also, in Europe, another species of *Stipa* (*S. pennata*, *L.*), which is a curiosity, on account of its very long and beautifully feathered awns.

several of the other grasses, herein mentioned. It is said to be known, in *Kentucky*, by the name of "Nimble Will." In *Pennsylvania*, it has scarcely been noticed, by the farmers, sufficiently to acquire a *common name*.

2. *M. MEXICANA*, *Trin.* Culms slender, ascending, nodose, much branched; panicles terminal and lateral, contracted; glumes acuminate, nearly as long as the paleae; paleae nearly equal, pilose at base. SPECIM. *Gray, Gram. 1. no. 14.*

Cinna Mexicana.—*Kunth, Enum. 1. p. 206.*

Agrostis lateriflora. *Mx. Fl. Cestr. p. 56.*

MEXICAN MÜHLENBERGIA.

Root perennial, creeping. *Culms* erect or ascending, 1 to 2 or 3 feet high, slender and wiry, with numerous swelling nodes, much branched and leafy above, often becoming nearly naked below. *Leaves* 2 to 4 or 5 inches long, lance-linear, acute, nerved, scabrous—especially on the upper surface; *sheaths* smooth, compressed and but partially embracing the culm; *ligule* short, obtuse and lacerate. *Panicles* numerous, 2 or 3 inches in length, contracted and rather dense-flowered,—the lateral ones partly sheathed at base. *Glumes* narrow-lanceolate, with scarious margins and a subulate point. *Paleae* usually longer than the glumes (sometimes twice as long),—the lower one occasionally terminating in an awn. Moist grounds; borders of fields, and woodlands. *Fl.* Aug. *Fr.* September.

Obs. This species affords an indifferent pasture, in the latter part of summer; but it is not of much worth. It is better to supersede these—and all grasses of inferior quality—by the introduction of more valuable ones,—and it *can* be done, by the aid of lime and manure. When the soil is enriched, and properly managed, the better kinds of natural Grasses (especially *Poa* & *Festuca*) soon *come in*, spontaneously, and expel the others.

219. AGROSTIS. *L. Endl. Gen. 810.*

[Greek, *Agros*, a field; being eminently an occupant of fields and meadows.]

Spikelets 1-flowered,—sometimes with the pedicel, or rudiment, of a second superior floret. *Glumes* 2, keeled, awnless, nearly equal, usually much longer than the floret. *Paleae* 2,—the lower one awned on the back, or rarely awnless—the upper one 2-keeled, sometimes very small or obsolete. *Scales* 2, nearly entire. *Stamens* usually 3. *Ovary* glabrous; *stigmas* 2, terminal, subsessile, plumose. *Caryopsis* free.

1. *A. VULGARIS*, *With.* Culms slender, mostly erect; leaves lance-linear; panicle loose, ovoid-oblong in its outline,—the branches spreading, finally divaricate; paleae awnless,—the lower one twice the size of the upper one. *Kunth, Enum. 1. p. 220. Fl. Cestr. p. 55.*

A. polymorpha. *Huds. Gray, Gram. 2. SPECIM. No. 108.*

COMMON AGROSTIS. *Vulgò*—Herd-grass (of *Penna.*). Red-top.

Root perennial, creeping. *Culms* caespitose, very slender, erect or ascending, 1 to 2 feet high. *Leaves* 3 to 6 or 8 inches long, nerved, scabrous; *sheaths* striate, smooth; *ligule* short, truncate. *Panicle* mostly purple,—the branches capillary, alternately semiverticillate, smoothish or often scabrous. *Glumes* smooth, except on the keel, lanceolate, acute, finally expanding. *Paleae* membranaceous, smooth at base,—the lower one nearly as long as the glumes—the upper one very small, retuse. Pastures, and moist meadows: introduced. Native of Europe. *Fl.* July. *Fr.* August.

Obs. This grass is somewhat variable in its botanical characters—as may be inferred from one of the specific names it has received: viz. *A. polymorpha*. It is often cultivated in some districts of the country,—and answers a tolerably good purpose in wet or swampy meadows, which its roots tend to consolidate: but it is not among the most esteemed grasses—either for pasture or hay. It should be borne in mind, by dealers in Seeds, that this is *not* the “Herd-grass” of *New York*, and *New England*,—which is *Phleum pratense*, or *Timothy*. The whole Genus (*Agrostis*,) is known, in *England*, by the name of “Bent Grass,”—and one of the species (*A. stolonifera*, *Willd.*), was quite celebrated, some years ago, under the name of “*Fiorin Grass*”—as being superior to all others for yielding great crops of hay; but, like many other plants whose value has been exaggerated, it has nearly ceased to attract notice.

TRIBE. VI. ARUNDINACEAE. *Kunth*.

Spikelets sometimes 1-flowered, with or without the pedicel or rudiment of a second superior floret—sometimes many-flowered. *Flowers* mostly clothed, or invested at base, with long soft hairs. *Glumes* and *Paleae* 2, membranaceously herbaceous,—the glumes equalling or exceeding the florets—the lower palea awned or awnless. *Mostly tall grasses.*

220. PHRAGMITES. *Trin. Endl. Gen.* 824.

[Greek, *Phragmos*, a partition, or hedge; from the use said to be made of it.]

Spikelets 3 to 6-flowered: *florets* distichous, rather distant, not hairy at base,—the lowest one staminate, the others perfect; *rachis* clothed with long silky hairs. *Glumes* keeled, acute,—the upper one larger. *Paleae* membranaceous,—the lower one elongated, narrow-subulate—the upper one 2-keeled. *Scales* 2, entire. *Stamens* 3. *Ovary* sessile, glabrous; *styles* 2, terminal, elongated; *stigmas* plumose,—the hairs thickish, simple or sometimes branched, papillose-dentate. *Caryopsis* free.

1. *P. COMMUNIS*, *Trin.* Panicle large, loosely expanded; spikelets 3 to 5-flowered. *Kunth, Enum.* 1. p. 251. *SPECIM. Gray, Gram.* 2. no. 127.

Arundo Phragmites. L. Fl. Cestr. p. 61.

COMMON PHRAGMITES. *Vulgò*—Reed-Grass.

Fr. Roseau à balais. Germ. Gemeines Rohr. Span. Caña.

Root perennial. *Culm* 8 to 12 feet high, and often an inch or more in diameter at base, nodose, terete, glabrous. *Leaves* 1 to 2 feet long, and about 2 inches wide at base, linear-lanceolate, attenuated at apex, glaucous, scabrous on the margin; *sheaths* closely embracing the culm. smooth; *ligule* very short, pilose or fimbriate. *Panicle* terminal, large,—the branches smoothish, long, slender, semi-verticillate, with a tuft of soft hairs at base. *Spikelets* lance-linear, erect, pedunculate. 3 to 5- (mostly 3?) flowered. *Lowest floret* staminate, sessile, naked at base; *upper florets* pedicellate,—the *pedicels* finally clothed with long white silky hairs which are nearly as long as the florets (these hairs scarcely perceptible on the young panicle). *Paleae* very unequal,—the lower one with a long slender acumination, which is involute, resembling an awn. Margins of swamps, and swampy streams. *Fl.* August. *Fr.* September.

Obs. This grass appears to be indigenous in both hemispheres. It possesses but little agricultural interest: yet, being so remarkably large (rivalling Indian Corn, in size), I have concluded to give it a place, here.

TRIBE VIII.* CHLORIDEAE. *Kunth.*

Spikelets arranged in unilateral spikes, 1 or many-flowered, with the upper florets abortive. *Glumes* and *Paleae* 2, membranaceous herbaceous,—the glumes persistent on the rachis, the outer one superior—the paleae awnless or awned. *Spikes* digitate or paniculate, rarely solitary; *rachis* not articulated.

221. CYNODON. *Rich. Endl. Gen.* 836.

[Greek; literally *Dog's tooth*; but the reason is not obvious.]

Spikes digitate, in pairs, or racemose. *Spikelets* with 1 perfect floret,—and sometimes with the subulate pedicel or abortive rudiment of a second superior floret. *Glumes* keeled, awnless, nearly equal, the upper one exterior. *Paleae* membranaceous,—the lower one keeled, acute, awnless, or sometimes mucronulate—the upper one 2-keeled. *Scales* 2, fleshy, mostly connate. *Stamens* 3. *Ovary* sessile, glabrous; *styles* 2, terminal; *stigmas* plumose, with simple hairs. *Caryopsis* free, inclosed in the paleae.

1. C. DACTYLON, *Pers.* Spikes 3 to 5, digitate, spreading; paleae longer than the glumes, glabrous, somewhat ciliate, with a beardless bristle at the base of the inner one. *Kunth, Enum.* 1. p. 259.

FINGER CYNODON. *Vulgò*—Bermuda Grass. Dog's-tooth Grass.

Root perennial, fibrous, creeping (numerous slender *rhizomas*). *Culm* procumbent, radicate, 6 to 12 or 15 inches long, terete, smooth. *Leaves* 1 or 2 to 4 inches long, acute, somewhat distichous and rigid, slightly hairy and scabrous; *sheaths* longer than the internodes, hairy; *ligule* beard-like. *Spikes* 3 to 5 (usually 4), 1 to 2 inches long; *rachis* flexuose and angular, not winged. *Scales* obovate, half as long as the ovary. *Stigmas* dark purple. Loose sandy soils; Southern States: introduced? *Fl.* All summer (*Ell.*) *Fr.*

Obs. This grass (which, I am inclined to think, is a foreigner) has never come under my notice, in *Pennsylvania*; but I have received specimens from *Virginia*. I should judge it to be a grass of doubtful value, and equivocal character, in agriculture—compared with our better species. Mr. ELLIOTT gives the following account of it [under the name of *Digitaria Dactylon*], as observed in *S. Carolina*:—“We have two varieties of this plant, one coarser (perhaps a species) growing in damp soils, native; the other described above, said to be imported, a tender, delicate grass, growing over and binding the most arid and loose lands in our country, and apparently preferred by stock of all descriptions to every other grass. The cultivation of this grass on the poor and extensive sand hills of our middle country would probably convert them into sheep walks of great value; but it grows in every soil, and no grass in close rich land is more formidable to the cultivator; it must therefore be introduced with caution.” Sir JAMES EDWARD SMITH, the Botanical Editor of *Rees's Cyclopaedia*, has the following remarks [*Art.* PANICUM *dactylon*], in reference to the plant:—“This grass was perceived by Mr. LAMBERT, to be no other than the *Agrostis linearis*, of KOENIG, RETZIUS, and WILLDENOW,—the *Durva* of the Hindoos,—which the late Sir WILLIAM JONES, in the 4th volume of the Asiatic Researches, has celebrated for the extraordinary beauty of its flowers, and its sweetness and nutritious quality as pasture for cattle. We cannot but remark what extraordinary celebrity is attached, every now and

*The 7th Tribe (PAPPOPHOREAE, *Kunth.*) contains no plant of Agricultural importance.

then, to one grass or other, and how their fame passes away 'like the morning cloud,' while the best graziers scarcely know, perhaps, better than their fat cattle, any thing of the nature of the common never-failing herbage, to which they are both so much indebted."

222. ELEUSINE. *Gaertn. Endl. Gen.* 841.

[Named from *Eleusis*; where *Ceres* the Goddess of harvests, was worshipped.]
Spikes digitate-fasciculate, rarely 1 or 2. *Spikelets* unilateral, sessile, 2 or many-flowered,—the florets distichous, all perfect. *Glumes* shorter than the florets, keeled, awnless. *Paleae* membranaceous, awnless,—the lower one keeled—the upper one with 2 keels. *Scales* 2, emarginately 2-lobed. *Stamens* 3. *Ovary* sessile, glabrous; *styles* 2, terminal; *stigmas* plumose, with simple hairs. *Caryopsis* free,—the *epicarp* membranaceous, opening spontaneously; *seed* transversely rugose.

1. E. INDICA, *Gaertn.* Culm compressed, decumbent; spikes 2 to 4 or 6, linear, straight, digitate; spikelets lance-ovate, about 5-flowered. *Kunth, Enum.* 1. p. 272. *Fl. Cestr.* p. 81.

INDIAN ELEUSINE. *Vulgò*—Dog's-tail Grass. Crow-foot Grass.

Root annual. *Culm* 6 to 12 and 18 inches long, oblique or often nearly pro-cumbent, smooth, branching at base. *Leaves* 2 to 12 inches long, rather crowded and distichous at the base of the culm, linear, often inclined to be conduplicate, smooth or sparingly pilose; *sheaths* loose, striate, glabrous, pilose at throat; *ligule* very short, truncate, minutely dentate. *Spikes* 2 to 4, sometimes 6 (rarely 1), 1 or 2 to 4 inches long; *rachis* compressed. *Spikelets* imbricated, smooth. *Lower paleae* ovate-lanceolate, with a green keel,—the upper one a third shorter, somewhat conduplicate, with 2 keels. *Caryopsis* triangular-ovoid, dark brown, transversely rugose,—the *epicarp* a thin arillus-like membrane. Farm-yards, lanes, and along foot-paths: introduced? *Fl. Aug.*—*Fr.* Sept.—October.

Obs. This grass has, to me, the appearance of being a naturalized foreigner,—though no American Botanist speaks of it as such. It is usually to be seen in abundance, in lanes and woodyards, about farm-houses, in *Pennsylvania*, during the latter part of summer,—where it grows very thick, and forms a fine carpeting in spots which had been previously naked and muddy. Cattle and hogs are fond of it,—and Mr. ELLIOTT commends it for *hay*; but in this region, it rarely grows in mowing grounds, to any considerable extent.

There is another species (*E. coracana*, *Gaertn.*), which is "cultivated, as corn, under the name of *Natchenny*, upon the Coromandel coast." I believe it is unknown in this country,—and probably would not be worth introducing.

TRIBE IX. AVENACEAE. *Kunth.*

Spikelets 2- or many-flowered,—the terminal floret mostly blighted or abortive. *Glumes* and *Paleae* 2, membranaceously herbaceous; *lower palea* mostly awned,—the awn often dorsal, and twisted.

223. AVENA. *L. Endl. Gen.* 864.

[A classical Latin name; applied to this genus.]

Spikelets 2 to 5-flowered; *florets* rather distant,—the uppermost one blighted. *Glumes* nearly equal, awnless, loose and membranaceous. *Paleae* herbaceous,—the lower one mostly bicuspidate at apex, with a twisted awn on the back—the upper one two-keeled, awnless. *Scales* 2, bifid, rather large. *Stamens* 3. *Ovary* sessile, hirsute at

summit; *stigmas* 2, sessile, distant, villously plumose, with simple hairs. *Caryopsis* subterete, sulcate on the inner or upper side, hairy at summit, usually closely embraced by the paleae, and adherent to the upper one.

1. *A. SATIVA*, *L.* Panicle regular; spikelets 2-flowered, pendulous; florets shorter than the glumes, naked at base,—the lower one mostly awned. *Kunth, Enum. 1. p. 301. Fl. Cestr. p. 67.*

CULTIVATED AVENA. *Vulgò*—Oats. Common Oats.

Fr. Avoine cultivée. *Germ.* Gemeiner Hafer. *Span.* Avena.

Root annual. *Culm* 2 to 4 feet high, smooth. *Leaves* 6 to 12 or 15 inches long, lance-linear, nerved, scabrous; *sheaths* striate, smooth, rather loose; *ligule* lacerate. *Panicle* loose, somewhat nodding,—the *spikelets* all pedunculate, pendulous. *Lower floret* mostly awned on the back; *upper floret* awnless,—with a *pedicel* at the base of the upper palea, bearing, at its summit, membranaceous rudiments of a third floret. *Caryopsis* closely invested by the smoothish shining subcartilaginous paleae. Fields; cultivated as a fallow crop. *Fl.* July. *Fr.* August.

Obs. The native country of this plant—as of most of our cultivated grains—seems to be somewhat uncertain,—though this one is said to have been found native in the island of *Juan Fernandez*. *Oats* are extensively cultivated, in this country,—chiefly as food for horses. *Dr. JOHNSON* took occasion, in compiling his Dictionary, to fling a sarcasm at the Scotch, by defining oats to be the food of *Horses in England*, and of *Men in Scotland*,—as if the effects of *climate* were a fit subject on which to taunt a people! Yet this was but one of many instances, of his national prejudice and illiberality.

This grain succeeds better than *Barley*, in a thin soil; and is therefore frequently employed, in the rotation of crops, when *Barley* would have been preferred, had the land been good. The *A. nuda*, *L.* called “skinless oats,”—a species nearly allied to this, but with 3 to 5-flowered spikelets, and the *caryopsis* loosely covered by the paleae,—has been partially cultivated, by the curious, on account of its superior fitness for making *Oat-meal*, as an article of diet for the sick.

224. ARRHENATHERUM. *Beauv. Endl. Gen. 865.*

[Greek, *Arrhen*, male, and *ather*, an awn; the staminate floret being awned.]

Spikelets somewhat 3-flowered,—the lowest floret being staminate, the second one perfect, and the third an abortive filiform rudiment. *Glumes* concave, awnless,—the upper one longer, equalling the florets. STAMINATE FL. *Paleae* 2,—the lower one concave, awned on the back—the *awn* elongated, twisted at base; *upper paleae* 2-keeled, awnless. *Stamens* 3. *Ovary* obsolete. PERFECT FL. *Paleae* 2,—the lower one concave, slightly bifid at apex, awned on the back—the *awn* short, straight; *upper palea* 2-keeled. *Scales* 2, elongated, lance-linear, entire. *Stamens* 3. *Ovary* sessile, hairy at summit; *stigmas* 2, terminal, villously plumose,—the hairs simple, sharply serrulate. *Caryopsis* sub-terete, sulcate on the upper side, adherent to the upper palea.

1. *A. AVENACEUM*, *Beauv.* Leaves flat; panicle oblong, contracted, finally spreading. *Kunth, Enum. 1. p. 307.*

Avena elatior. L. Fl. Cestr. p. 66.

Holcus avenaceus. Scop. Fl. Lond. Icon, Val. 1.

OAT-LIKE ARRHENATHERUM. *Vulgò*—Oat-grass. Grass of the Andes. *Fr.* Avoine élevée. *Germ.* Wiesen Hafer.

Root perennial, creeping, nodose. *Culm* about 3 feet high, glabrous. *Leaves* 4 to 8 or 10 inches long, lance-linear, scabrous on the margin and upper surface; *sheaths* striate, smooth; *ligule* short, retuse. *Panicle* linear-oblong, finally spreading and somewhat nodding,—the branches short, semi-verticillate. *Glumes* unequal,—the lower one shorter than the florets. *Upper palea* of the perfect floret with the filiform rudiment of a third floret at its base. Cultivated lots: introduced. Native of Europe. *Fl.* May. *Fr.* July.

Obs. This grass has been partially introduced, and cultivated, by a few curious farmers; but it does not appear to be much of a favorite, either for pasture or hay, in *Pennsylvania*. It is sometimes called “Grass of the Andes,”—but I know not for what reason, as it seems to be of undoubted European origin.

TRIBE X. FESTUCACEAE. *Kunth.*

Spikelets usually many-flowered. *Glumes* and *Paleae* 2. membranaceously herbaceous, rarely coriaceous.—the lower palea often awned—the awns not twisted. *Inflorescence* generally paniculate.


SUB-TRIBE 1. BROMEAE. *Endl.*

Herbaceous grasses. *Stamens* 3.

225. POA. *L. Endl. Gen.* 876.

[Greek, *Poa*, herbage, or pasture; applied by way of eminence to this genus.]

Spikelets 2 to many flowered,—the *florets* distichous, perfect. *Glumes* awnless, unequal or sometimes nearly equal. *Paleae* awnless,—the lower one keeled or concave—the upper one 2-keeled.* *Scales* 2, entire or bifid. *Stamens* mostly 3. *Ovary* sessile, glabrous; *styles* 2, terminal; *stigmas* plumose,—the hairs simple, sharply serrate-denticulate. *Caryopsis* free, or rarely adherent to the upper palea.

 *Spikelets* paniculate, compressed; florets generally 3 to 5, rather distant, often connected by a villous web at base; lower palea herbaceous, with a diaphanous margin, commonly 5-nerved. LEGITIMATE OR GENUINE POAS, *Kunth.*

1. *P. ANNUA*, *L.* Culms oblique, subcompressed, sometimes radiating at base; leaves rather short; ligules oblong; panicle subsecund, divaricate,—the branches smooth, solitary or in pairs, finally deflected; spikelets oblong-ovate, about 5-flowered,—the florets not villous at base. *Kunth, Enum.* 1. p. 349. *Fl. Cestr.* p. 76. *Icon, Fl. Lond.* 1.

ANNUAL POA. *Vulgò*—Dwarf, or Early Meadow-Grass.

Fr. Paturin annuel. *Germ.* Jaehriges Rispengras.

Root annual. *Culms* cespitose, 3 to 6 or 8 inches long, smooth, geniculate, oblique at base, or often nearly procumbent. *Leaves* 1 to 3 inches in length, sublinear, acute, keeled, smooth, minutely serrulate on the margin; *sheaths* loose, smooth; *ligule* oblong, dentate. *Panicle* sometimes rather secund.—the branches often solitary, subdivided. *Spikelets* rather crowded on the divisions of the branches, 3 or 4 to 6- (very often 3-) flowered. *Glumes* unequal, acuminate, with scarious margins. *Paleae* minutely pubescent, but destitute of the villous web,—the lower one ovate, obtuse, 5-nerved—the upper one a little shorter, scarious, with 2 green keels. Cultivated grounds; pastures; along foot-paths, &c. introduced? Native of Europe. *Fl.* April—Sept. *Fr.* June—Octo.

* It is probable that the “2-keeled” upper palea—so frequent in the Grasses, and so obvious in this, and the following tribe—in reality consists of two collateral keeled paleae, united by their contiguous margins, while the outer margins are inflexed, or folded in,—leaving the two keels apparently at the two edges of the upper palea.

Obs. This little species—which was probably introduced from Europe—comes forward early in the spring,—and what little pasture it affords is tolerably acceptable to Stock: but it is far inferior in value and importance to either of the following.

2. *P. TRIVIALIS, L.* Culm and sheaths somewhat scabrous; leaves lance-linear, flat, acuminate; ligule elongated, acute; panicle diffuse, regular,—the branches scabrous; spikelets ovate, 2 to 3-flowered,—the florets slightly villous at base. *Kunth, Enum. 1. p. 352. Fl. Cestr. p. 75. Icon, Fl. Lond. 1.*

TRIVIAL POA. *Vulgò*—Rough-stalked Meadow-Grass.

Root perennial. *Culm* 1 to 2 or 3 feet high, subterete or slightly ancipital, often declined at base, geniculate, and stoloniferous, somewhat scabrous retorsely. *Leaves* 2 or 3 to 6 or 8 inches long, lance-linear (those of the root or suckers long and narrow), acute or acuminate, slightly scabrous on the margin; *sheaths* striate-nerved, scabrous when rubbed upwards; *ligule* much elongated, scarious and whitish. *Panicle* loose, expanding,—the branches semi-verticillate in about fives, sharply scabrous. *Spikelets* usually 2- (sometimes 3-) flowered. *Glumes* scabrous on the keel,—the lower one rather shorter, very acute—the upper one 3-nerved, with a scarious margin. *Paleae* unequal, nearly smooth or very slightly villous at base,—the lower one longer, 5-nerved, scarious at apex. Moist low grounds; meadows, and woodlands: introduced? *Fl. June. Fr. July.*

Obs. This species (also, perhaps, a foreigner) is frequent in moist pastures and meadows,—and affords a good forage, both pasture and hay. It has much general resemblance to the following species (*P. pratensis*), when growing in open grounds; but is decidedly inferior in value,—and may be readily distinguished from it, by the *elongated ligule* and *retorsely scabrous sheaths and culms*. In woodlands, it is often a weak straggling plant.

3. *P. PRATENSIS, L.* Culm and sheaths smooth; leaves linear, keeled, abruptly acute; ligule short, truncate; panicle somewhat crowded, regular, finally spreading; spikelets ovate, acute, 3 to 5-flowered; florets connected by a villous web. *Kunth, Enum. 1. p. 352. Fl. Cestr. p. 74. Icon, Fl. Lond. 1.*

Also, *P. viridis. Muhl. Kunth. l. c.* [Meadow Grass.

MEADOW POA. *Vulgò*—Spear Grass. Green Grass. Smooth-stalked *Fr. Paturin des Prés. Germ. Vieh-gras. Wiesen Rispen-grass.*

Root perennial, creeping. Plant smooth. *Culm* erect, 1 to 2 or 3 feet high, slender, terete. *Radical leaves* often very numerous, and long (1 to 2 feet or more in length, in good soils), scarcely a line wide and exactly linear, terminating abruptly in a boatshaped or keeled point, deep green, slightly scabrous on the margin,—the *culm leaves* shorter than the striate-nerved glabrous *sheaths*; *ligule* scarious, short, obtuse, often crenate-dentate. *Panicle* at first rather crowded, at length expanding and pyramidal.—the branches semi-verticillate, 3 to 5 from a node, flexuose and nearly smooth. *Spikelets* pedicellate, a little crowded on the branches; 2 or 3 to 5-flowered; *florets* acute, connected at base by cobweb-like hairs. *Glumes* a little unequal, compressed, keeled, sharply acuminate. *Lower palea* somewhat compressed, acute, 5-nerved,—the *upper one* acuminate, slightly scabrous on the two keels. Fields, meadows, and woodlands: introduced? *Fl. May—June. Fr. July.*

Obs. This species (supposed to be a naturalized foreigner,) varies considerably, in size and appearance, when growing in different soils and situations. In our best soils, the radical leaves are very long and luxuriant,—when it is known by the name of “Green Grass.” In *Kentucky*, it is commonly called “Blue Grass,”—a name which properly belongs to the following species (*P. compressa*,

L.). It is the profusion of the nutritious *radical leaves*, which constitutes the chief excellence of this grass. It is, indeed, as MUHLBERG terms it, "*optimum pabulum*,"—being decidedly the most valuable of all the grasses known in our pastures. It has not been found necessary, in *Pennsylvania* (of latter years, at least), to cultivate it, by sowing the seed; for when the land is duly prepared by lime and manure, it soon takes possession of the soil—or *comes in*, as the farmers term it,—and supersedes the artificial grasses. The prevalence, therefore, and luxuriant growth of this grass, is one of the best evidences of the land being in good condition, and well managed. In very poor land, it deteriorates so much that it would scarcely be recognised as the same plant. The slender *culms*, of this species, afford an excellent material for the manufacture of the finer kinds of Leghorn hats.

4. P. COMPRESSA, L. Culm oblique or declined at base, much compressed; panicle contracted, somewhat secund; spikelets oblong-ovate, 3 to 6-flowered; florets connected by a villous web. *Kunth, Enum. 1. p. 355. Fl. Cestr. p. 76.* [Meadow Grass.

COMPRESSED POA. *Vulgè*—Blue Grass. Wire Grass. Flat-stalked *Fr. Paturin applati. Germ. Rehwasen.*

Root perennial, creeping (numerous branching *rhizomas*). Plant smooth with rather few and short radical leaves. *Culm* 9 to 18 inches long, often procumbent and radicating at base. *Leaves* 2 or 3 to 5 or 6 inches long, linear, keeled, roughish near the end, and, with the culm, of a bluish-green or glaucous hue; *sheaths* rather loose, striate; *ligule* short, obtuse. *Panicle* contracted,—at first almost spicate and rather secund—finally a little expanding; the *branches* by twos and threes, short, somewhat flexuose and scabrous. *Spikelets* generally 5 or 6-flowered, subsessile. *Glumes* nearly equal, acute, serrulate on the keel. *Lower palea* minutely pubescent, often dark purple near the apex, with a narrow white scarious margin: *upper palea* scabrous on the two keels. *Caryopsis* oblong, reddish-brown. Upland fields, and pastures: introduced? *Fl. June. Fr. July.*

Obs. This species—which, though rarely if ever cultivated, yet finds its way into most pastures—is not held in so high estimation, by our farmers, as the one next preceding,—and certainly falls far short of it, in the *quantity* of herbage afforded; but that which is afforded, is, in my opinion, even more nutritious. Cows which feed on it, yield the richest milk, and finest butter. The creeping roots (or *rhizomas*) are remarkably tenacious of life,—and in consequence, are sometimes rather troublesome, in cultivated grounds, among other crops: but, on the whole, it is an excellent grass—especially in Dairy and sheep pastures. It seems rather probable, that this—as well as all the preceding species—has been introduced from Europe.

226. GLYCERIA. R. Br. *Endl. Gen. 878.*

[Greek, *Glykys*, sweet; on account of the sweet taste of the seeds.]

Spikelets many-flowered,—the *florets* perfect, imbricately distichous. *Glumes* concave, obtuse,—the lower one shorter. *Paleae* nearly equal,—the lower one elliptic-ovate, rounded at apex or obsoletely 3-lobed, 7-nerved,—the upper one 2-keeled. *Scales* 2, truncate, more or less connate. *Stamens* mostly 3. *Ovary* sessile, glabrous; *styles* 2, terminal, elongated, divaricate; *stigmas* plumose,—the hairs dichotomous, denticulate, hyaline. *Caryopsis* free, oblong.

1. *G. FLUITANS*, *R. Br.* Panicle long, slender, secund; spikelets linear, about 10-flowered; florets distinct, obtuse; lower palea conspicuously 7-nerved, eroded or many-toothed at apex. *Kunth, Enum. 1. p. 367. Fl. Cestr. p. 72. Icon, Fl. Lond. 1.*

FLOATING GLYCERIA. *Vulgò*—Manna Grass.

Fr. Manne de Prusse. Germ. Essbarer Schwingel.

Root perennial, creeping. *Culm* 4 to 6 feet high, erect or ascending, compressed, glabrous. *Leaves* 5 to 8 or 10 inches long, lance-linear, striate, scabrous on the margin and upper surface; *sheaths* nerved, smooth; *ligule* very large, oblong, membranaceous, acute or sometimes obtuse. *Panicle* slender, 12 to 15 inches long, usually partly concealed in the sheath of the upper leaf.—the *branches* mostly simple. *Spikelets* about an inch long, nearly sessile, racemose on the branches and appressed. *Glumes* membranaceous, nerveless. *Upper palea* emarginate or bidentate at apex,—the margins folded in, and a green keel at each apparent border. *Caryopsis* oblong, sulcate on the upper side. Wet low grounds; margins of shallow pools, &c. *Fl. June. Fr. July.*

Obs. This stout semi-aquatic grass is common to both hemispheres. The *seeds* have a sweetish taste,—and in some parts of the old world—where they are known by the name of *Manna seeds*—they are used by the poorer peasantry in making soups and gruels. In the U. States, the country people, as yet, are happily ignorant of all such expedients,—and will long continue so, if they have industry enough to cultivate more valuable grains. The *herbage* of this plant is eaten by Stock; but it is so much confined to wet localities, that it is scarcely intitled to be enumerated among the grasses interesting to American farmers.

227. DACTYLIS. *L. Endl. Gen. 892.*

[Greek, *Daktylos*, a finger; in reference to the spiked inflorescence.]

Spikelets 2 to 7-flowered, compressed, densely clustered,—the *florets* perfect. *Glumes* unequal in length, with somewhat unequal sides, keeled, mucronately awned or acuminate, somewhat unilateral at apex,—the upper one often smaller, thinner, nerveless and concave. *Paleae* herbaceous,—the lower one 5-nerved, keeled, mucronately awned, the keel ciliate—the upper one 2-keeled. *Scales* 2, bifid. *Stamens* 3. *Ovary* sessile, glabrous; *styles* 2, terminal, short; *stigmas* plumose,—the hairs simple or bifid, sharply denticulate. *Caryopsis* free.

1. *D. GLOMERATA*, *L.* Panicle distantly branched, rather secund; spikelets 3 or 4-flowered, in dense unilateral clusters at the ends of the branches. *Kunth, Enum. 1. p. 386. Fl. Cestr. p. 80.*

CLUSTERED DACTYLIS. *Vulgò*—Orchard Grass. Cock's-foot Grass. *Fr. Dactyle pelotonné. Germ. Gemeines Knauel-gras.*

Whole plant scabrous. *Root* perennial. *Culm* 2 to 3 or 4 feet high. *Leaves* 6 to 18 inches long, lance-linear, keeled, glaucous; *sheaths* striate; *ligule* elongated, lacerate. *Panicle* glaucous, contracted, racemose at summit, rather one-sided; *branches* 3 to 5, solitary, erect, distant, subdivided towards the extremity. *Spikelets* about 4-flowered, compressed, crowded in dense unilateral ovate or lance-oblong clusters at the ends of the branches. *Glumes* unequal,—the lower one narrower, membranaceous—the upper one 3-nerved, scabrous on the keel. *Lower palea* scabrous, 5-nerved, emarginate, ciliate on the keel, which is extended into a cusp or short scabrous awn; *upper palea* acuminate, bifid at apex, ciliate on the two green keels,—the margins folded in so as to meet, embracing the stamens. *Caryopsis* lance-oblong, subtriquetrous, acute at each end. Fields, and Orchards: cultivated. Native of Europe. *Fl. May. Fr. June.*

Obs. This grass has been introduced, and cultivated to a considerable extent. Our farmers, however, are not agreed upon its merits. Some condemn it as unworthy of culture, either for pasture or hay; while others set a high value on it, for both. The fact seems to be, that it is inferior to *Timothy* (*Phleum pratense*, L.) for hay; yet it has the advantage of the latter, in being mature at the same time with clover,—with which both are usually cultivated. It is also less exhausting to the soil. But its great value is as a pasture, when sown sufficiently thick; which, however, it rarely is,—and hence is apt to form bunches or tussocks. It is of quick growth, and is speedily reproduced after being cut, or eaten down; so much so, that we may almost literally apply to it the lines of VIRGIL:—

“*Et quantum longis carpent armenta diebus*

“*Ecce quæ tantum gelidus ros nocte reponet.*” Georg. 2. 201.

“Cool dews restore beneath night’s transient hours,

“All that the herd each live-long day devours.” Sotheby.

This grass also possesses the additional advantage of thriving well in the shade of trees,—and answers a very good purpose in Orchards, &c. The seed is usually sown in autumn, immediately after Wheat or Rye.

228. FESTUCA. L. Endl. Gen. 899.

[A Latin name for the shoot, or stalk, of a plant; applied to this genus.]

Spikelets 2 or many-flowered,—the *florets* perfect, distichous. *Glumes* unequal, awnless, mostly keeled. *Paleae* herbaceous,—the lower one acute at apex, mucronate or often terminating in an awn, rounded (*i. e.* not keeled) on the back—the upper one 2-keeled. *Scales* 2, acute, bifid at apex. *Stamens* mostly 3. *Ovary* sessile, generally smooth; *styles* 2, terminal, a little distant, very short; *stigmas* plumose,—the hairs simple or rarely bifid, dentate. *Caryopsis* linear-oblong, plano-convex, free or sometimes adherent to the upper palea.

1. *F. PRATENSIS*, *Huds.* Panicle loose, rather erect and secund; branches single or in pairs, racemose; spikelets linear-lanceolate, 5 to 9-flowered; lower palea scarious at apex and rather acute, never mucronate. *Kunth, Enum.* 1. p. 404. *Fl. Cestr.* p. 71. *Icon, Fl. Lond.* 1.

MEADOW FESTUCA. *Vulgè*—Fescue-Grass. Meadow Fescue. *Fr.* Festuque des Prés. *Germ.* Wiesen Schwingel.

Plant glabrous. *Root* perennial. *Culm* 2 to 3 feet high. *Leaves* 4 to 6 or 8 inches long (the *radical leaves* numerous and longer), lance-linear, acuminate, nerved, shining beneath, scabrous on the margin; *sheaths* nerved; *ligule* very short or obsolete. *Panicle* 4 to 6 or 8 inches long, somewhat secund, mostly erect,—the *branches* generally single, but often subdivided. *Spikelets* about 7-flowered, racemose on the branches, often purplish. *Glumes* unequal,—the lower one keeled—the upper one larger, 3-nerved, scarious on the margin. *Lower palea* scarious on the margin, obscurely 5-nerved, somewhat acute but not acuminate nor mucronate; *upper palea* white, with 2 green keels, and the margins doubled or folded in. Fertile pasture fields, and meadows; roadsides, &c. introduced. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This is a valuable grass—commonly mingled with *Poa pratensis*, L. in good soils; but easily distinguished from that plant, by its tapering slender-pointed shining leaves. It is extensively naturalized in the middle and northern States; and although I have never known it to be cultivated, it soon finds its way into all rich

pasture lands. We have a few *native* species of *Festuca*,—but they are of little or no value in Agriculture—and some of them are indicative of a poor soil.

229. BROMUS. *L. Endl. Gen.* 900.

[Greek, *Broma*, food; *Bromos* was an ancient name of a species of wild oats.]
Spikelets 3 to many-flowered,—the *florets* perfect, distichous. *Glumes* unequal, mostly keeled, awnless. *Paleae* herbaceous,—the lower one convex on the back, mostly awned below the apex, and the apex often cleft to the origin of the awn; upper palea 2-keeled,—the keels pectinate-ciliate. *Scales* 2, entire. *Stamens* 3. *Ovary* sessile, hirsute at summit; *stigmas* inserted on the outer side near the summit, subsessile, plumose,—the hairs simple, elongated, acutely denticulate. *Caryopsis* linear-oblong, plano-convex, villous at summit, adnate to the upper palea.

1. *B. SECALINUS, L.* Panicle spreading, nodding in fruit; spikelets ovate-oblong, 8 or 10-flowered,—the florets elliptic with contracted margins, distinct, longer than the flexuose awns. *Kunth, Enum.* 1. p. 413. *Fl. Cestr.* p. 69.

RYE BROMUS. *Vulgò*—Cheat. *Chess.* Brome-grass.

Fr. Brome Seigle. *Germ.* Roggen-Trespe. *Span.* Bromo.

Root annual. *Culm* 3 to 4 feet high, smooth,—the nodes pubescent. *Leaves* 6 to 12 inches long, lance-linear, nerved, scabrous and pilose on the upper surface; *sheaths* nerved, smooth; *ligule* oblong, retuse, lacinate-dentate. *Panicle* 4 to 6 or 8 inches long,—the *branches* semi-verticillate, nearly simple, scabrous and pubescent. *Spikelets* finally nodding,—the *florets* a little remote at base, so as to appear distinct on the flexuose rachis. *Lower glume* shorter, 5-nerved, sometimes mucronate,—the *upper one* 7-nerved, obtuse or emarginate. *Lower palea* obscurely 7-nerved, slightly pubescent near the apex,—the *awn* mostly shorter than the floret, flexuose (sometimes wanting, or a mere rudiment); *upper palea* linear, awnless, pectinate-ciliate on the keel at each border, the scarios margins being folded in. *Caryopsis* closely embraced by the lower palea, grooved on the side with the upper palea doubled in the groove, and adherent. Cultivated grounds,—chiefly among Wheat and Rye: introduced. Native of Europe. *Fl.* June. *Fr.* July.

Obs. This foreigner is a well-known pest among our crops of Wheat and Rye,—and occasionally appears in the same fields, for a year or two, after the grain crop; but being an annual, it is soon choked out by the perennial grasses,—and the fallen *seeds* remain, like myriads of others, until the ground is again broken up, or put in a favorable state for their development. The best preventive of this and all similar evils, in the grain-field, is to sow none but good clean seed.

Among the curious vulgar errors, which yet infest the minds of credulous and careless observers of natural phenomena, may be mentioned the firm belief of many of our farmers (some of them, too, good practical farmers), that this troublesome grass is nothing more than an accidental variety, or casual form, of *degenerate Wheat*,—produced by some untoward condition of the soil, or unpropitious season, or some organic injury:—though it must be admitted, I think, by the most inveterate defender of that faith, that in undergoing the metamorphosis, the plant is surprisingly uniform in its vagaries, in always assuming the exact structure and character of *Bromus*!

A similar hallucination has long prevailed among the peasantry of Europe, in relation to this supposed change of character in the

Grasses: But, in the old world, they were even more extravagant than with us;—for they believed that *Wheat* underwent sundry transmutations,—first changing to *Rye*—then to *Barley*—then to *Bromus*,—and finally from *Bromus* to *Oats*! I believe the most credulous of our countrymen have not been able, as yet, to come up with their transatlantic brethren, in this matter. There are one or two other foreign species, partially naturalized in our pastures,—and two or three native ones occur in and about our open woodlands; but none of them are of much importance, in any agricultural point of view.

SUB-TRIBE 2. BAMBUSEAE. Nees.

Shrubby or arborescent Grasses. Stamens 3 to 6.

230. ARUNDINARIA. Rich. Endl. Gen. 904.

[A name signifying analogous to, or like, *Arundo*,—a large kind of Reed.]

Spikelets many-flowered, somewhat compressed,—the *florets* imbricately distichous, distant, perfect or staminate. *Glumes* concave, awnless, small,—the lower one much less than the upper. *Paleae* herbaceous,—the lower one ovate, concave, sharply mucronate, many-nerved—the upper one 2-keeled. *Scales* 3, entire, acute, membranaceous, subciliate, longer than the ovary. *Stamens* 3. *Ovary* sessile, glabrous; *styles* 3, terminal, very short; *stigmas* plumose,—the hairs long, simple or sparingly branched. *Caryopsis* free, ovoid-oblong, somewhat curved, terete.

1. A. MACROSPERMA, *Max.* Leaves linear-lanceolate, green on both sides, smoothish; panicle terminal, subracemose, simple; spikelets few, distichous, 7 to 10-flowered. *Kunth, Enum. 1. p. 426.*

LONG OR LARGE-SEEDED ARUNDINARIA. *Vulgò*—Cane.

Root perennial, cespitose (creeping *rhizomas*). *Culm* 3 to 15 feet high (30 feet, or more, in the *gigantic variety*), terete, glabrous, fistular, rigid, branching towards the summit,—the branches distichous. *Leaves* distichous, lanceolate, large, flat, slightly acuminate, pubescent on the under surface; *sheaths* much longer than the internodes, marcescent,—the throat contracted; *ligule* bristly. *Panicle* simple,—the peduncles about an inch long, pubescent. *Spikelets* 1 to 2 inches in length. Rich, occasionally inundated soils: South-western States. *Fl. March*—April. *Fr.*

Obs. Having only seen the *small variety* of this species, as it grows in the vicinity of the Dismal Swamp, *Virginia*,—I cannot speak, from personal observation, of the *arborescent variety* which forms the celebrated *Cane brakes* of the *Mississippi* region. Although this remarkable grass has but little connection with Agriculture, I have supposed it might be intitled to a brief notice,*—for which I am indebted to Mr. ELLIOTT's valuable *Sketch of the Botany of South Carolina and Georgia*.

TRIBE XI. HORDEACEAE. Kunth.

Spikelets usually 3 or many-flowered (sometimes 1-flowered), often awned;—the terminal floret blighted. *Glumes* and *paleae* 2, herbaceous.—the former rarely wanting. *Stigmas* sessile. *Ovary* mostly pilose. *Inflorescence* spicate; *spike* simple, solitary; *rachis* rarely articulated, sometimes winged.

231. LOLIUM. L. Endl. Gen. 912.

[A classical Latin name,—applied to this genus.]

Spikelets many-flowered, distichous with the edge to the common

* The slender, straight, elastic *culms*, make very light convenient *angling-rods*, for the disciples of the *Izaak Walton* school.

rachis, sessile,—the *florets* imbricated, naked at base. *Glumes* (in the terminal spikelet) 2, nearly equal, awnless, channelled,—in the lateral spikelets, the lower or inner one (next the rachis) wanting. *Paleae* herbaceous,—the lower one concave, awnless or awned near the apex—the upper one 2-keeled. *Scales* 2, acute, entire or 2-lobed. *Stamens* 3. *Ovary* sessile, glabrous; *styles* 2, very short; *stigmas* plumose,—the hairs elongated, simple, sharply denticulate, hyaline. *Caryopsis* adherent to the upper palea. *Spikelets* in a simple terminal spike.

1. *L. PERENNE*, *L.* Spikelets compressed, linear-lanceolate, longer than the glumes, about 7-flowered,—the florets mostly awnless. *Kunth, Enum. 1. p. 436. Fl. Cestr. p. 87. Icon, Fl. Lond. 1.*

PERENNIAL LOLIUM. *Vulgò*—Ray-grass, or Rye-grass. *Darnel*.
Fr. Ivraie vivace. Germ. Ausdauernder Lolch. Span. Joyo.

Root perennial, creeping. *Culm* 1 to 2 feet high, smooth. *Leaves* 4 to 8 or 10 inches long, lance-linear, shining green, smooth, somewhat scabrous near the end; *sheaths* striate, glabrous; *ligule* truncate. *Spike* about 6 inches long,—the *rachis* flexuose, channelled or concave opposite the spikelets. *Spikelets* 12 to 18 or 20, a little distant, alternately on opposite sides of, and with their edges to, the rachis. *Glumes* 1 to each spikelet (except the terminal one), lance-linear, acute, nerved, resembling a short rigid leaf. *Lower palea* rather obtuse, obscurely 5-nerved; *upper palea* a little longer, ciliate-serrulate on the two prominent keels. *Meadow banks, and Grass lots: introduced. Native of Europe. Fl. June. Fr. July.*

Obs. This grass—which seems to be much esteemed in Europe—has been partially introduced into this country, and has become naturalized in many places,—though I believe it has been but little cultivated, by our farmers. It affords a tolerably good pasture, and makes a handsome sward for yards and lawns; but as a meadow grass, for hay, it is doubtless inferior in value to both *Timothy* and *Orchard-grass*.

There is another species, in Europe (*L. temulentum*, *L.* supposed to be the “*infelix Lolium*,” of *VIRGIL*—the “*Darnel*,” of the English),—of which the *seeds* are said to be somewhat *poisonous*. If so, it is the only instance known, in all the *Gramineae*, in which the sound seeds are of that character.

232. TRITICUM. *L. Endl. Gen. 913.*

[Latin, *tritum*, rubbed, or ground; the seeds being so prepared, for food.]

Spikelets 3- or many-flowered,—the *florets* distichous; *rachis* mostly articulated. *Glumes* sub-opposite, nearly equal, awnless or awned. *Paleae* herbaceous,—the lower one concave, either awnless, mucronate, or awned—the upper one with 2 more or less aculeate-ciliate keels. *Scales* 2, mostly entire and ciliate. *Stamens* 3. *Ovary* sessile, pilose at summit; *stigmas* 2, terminal, subsessile, plumose,—the hairs elongated, simple, sharply denticulate. *Caryopsis* free, or sometimes adherent to the paleae, convex externally, concave or sulcate on the inner or upper side, pubescent at summit.

† *Spike* mostly 4-sided. *Glumes* *ventricose-concave, ovate-oblong, obtuse or truncate.* (GENUINE OR LEGITIMATE TRITICUM).

1. *T. VULGARE*, *Vill.* *Spike* somewhat 4-sided, imbricated, with a tough rachis; spikelets 4 or 5-flowered, rather crowded, broad-ovate,

obtuse; glumes ventricose, mucronate, compressed at apex: lower palea awned, mucronate, or awnless; caryopsis free. *Kunth, Enum.* 1. p. 438.

T. sativum. *Lam. Fl. Cestr.* p. 86.

COMMON TRITICUM. *Vulgò*—Wheat. Winter Wheat. Spring Wheat. *Fr.* Le Froment. *Bled.* *Germ.* Gemeiner Waizen. *Span.* Trigo.

Root annual. *Culm* 2 or 3 to 5 feet high, terete, smooth,—the *nodes* striate, pubescent. *Leaves* 6 to 15 inches long, lance-linear, nerved, smooth or slightly scabrous on the upper surface; *sheaths* nerved, smooth; *ligule* truncate, dentate. *Spike* 3 to 5 inches long, dense, 4-sided, mostly simple, finally nodding; *rachis* compressed, broad, hirsute on the margin. *Spikelets* sessile, broad, compressed at apex. *Glumes* ventricose, boat-shaped at apex. *Florets* usually 3 fertile and 2 abortive.—the penultimate one pistillate—the terminal one neutral and pedicellate. *Paleae* nearly equal,—the lower one ventricose, awned or mucronate—the upper one folded, ciliate on the two keels. *Caryopsis* ovoid-oblong, sulcate on the upper side, yellowish, or brown. *Fields.* cultivated. *Native country* uncertain,—perhaps Persia. *Fl.* June *Fr.* July.

Obs. Although it has been estimated that more human beings are nourished by *Rice*, than by any other grain,—yet it is probable that *Wheat* is the most intrinsically valuable of all the *Cerealia*, or grain-bearing grasses. It is to this plant that civilized man—especially in the temperate latitudes—is emphatically indebted for his *bread*; and it is consequently a prominent object of attention with the practical agriculturist. The *variety*, called “Spring Wheat,” is occasionally, but rarely, cultivated in this country,—while the “Winter Wheat” is cultivated every where, throughout the northern, middle, and western States. A plant that has been so long under culture, in almost every kind of soil and climate, of course presents specimens of various character, and aspect;—such as *bearded*, *beardless*, *red-chaff*, *white-chaff*, &c. and the color of the *grain* also, varies from whitish, or yellowish, to brown. These fixed characters, or permanent varieties of the plant (called *races* by the Botanists), have all, in their turn, been favorites with the farmers,—according as they were best adapted to the market, or the place of growth—or best resisted the ravages of the “*Hessian fly*.” A bearded variety, with a brown grain, called “Mediterranean Wheat,” is the present favorite, in Chester County, Penn. In remarking on the character of the *grain*, M’CULLOCH says, “the finest samples of Wheat are small in the berry (*caryopsis*), thin skinned, fresh, plump, and bright, slipping readily through the fingers.”*

One species of *Triticum* (*T. turgidum*, L.) is said to be cultivated, in *Italy*, solely for the manufacture of Leghorn or straw hats.

†† *Spike* mostly distichous. *Glumes* lanceolate or linear-oblong, often acuminate. [AGROPYRUMS, OR COUCH GRASSES.]

2. *T. REPENS*, L. *Spike* distichous; spikelets about 5-flowered, dis-

* In the north of Europe, they have one or two other species of Wheat, of inferior quality;—namely, *T. Polonicum*, L. or Polish Wheat,—and *T. Spelta*, L. commonly called “*Speltz*.” This latter species the German immigrants brought with them, when they first came to *Pennsylvania*.—and many of them continued the cultivation of it for some time; but they finally learnt—by observation, and the experience of their Anglo-American neighbors—that, however the *Speltz* might be adapted to the bleak regions from whence they migrated, it was not worthy of culture in a soil and climate where the best species of Wheat could be raised with equal facility, and to much greater advantage.

tant, alternate, lance-oblong, acute; glumes acuminate; paleae mostly awnless. *Kunth, Enum.* 1. p. 440. *Fl. Cestr.* p. 86.

CREEPING TRITICUM. *Vulgò*—Couch-grass, Quitch-grass.

Fr. Chien dent. *Germ.* Gemeine Quecke.

Root perennial—a white, jointed, creeping *rhizoma*. *Culm* about 2 feet high, smooth. *Leaves* 4 to 8 or 12 inches long, lance-linear, nerved, scabrous and somewhat pilose on the upper surface; *sheaths* nerved, smooth; *ligule* short, truncate. *Spike* 3 to 5 inches long; *rachis* flexuose, compressed, scabrous on the margin. *Glumes* keeled, strongly nerved, roughish,—the outer margin broader. *Florets* alternate, a little distant. *Lower palea* 5-nerved, mucronate, smooth; *upper palea* obtuse, ciliate-serrate on the two keels. Meadows; pasture lots, &c.: introduced. Native of Europe. *Fl.* July. *Fr.* August.

Obs. This species—which is quite distinct in habit from the *genuine Wheat*—has found its way into some districts of our country; and is a troublesome pest in cultivated grounds, when fully introduced,—by reason of the great tenacity of life in its *rhizomas*, or creeping subterranean stems. It is therefore desirable to keep our farms as clear of it as possible. The *Triticums* of this section—though numerous—are of little agricultural value.

233. SECALE. *L. Endl. Gen.* 914.

[Latin, *secare*, to cut: or perhaps from the Celtic, *Sega*, a sickle.]

Spikelets 2-flowered,—the *florets* sessile, distichous, perfect, with the linear rudiment of a third terminal floret. *Glumes* sub-opposite, nearly equal, keeled, awnless or awned. *Paleae* herbaceous,—the *lower one* awned at apex, keeled, with unequal sides—the outer side broader and thicker; *upper palea* shorter, 2-keeled. *Scales* 2, entire, ciliate. *Stamens* 3. *Ovary* sessile, hairy; *stigmas* 2, subsessile, terminal, plumose,—the hairs elongated, simple, sharply denticulate. *Caryopsis* free, hairy at summit. *Spike simple, compressed, linear.*

1. S. CEREALE, *L.* Glumes subulate-linear and, with the awns, scabrous; paleae smooth,—the lower one bristly-ciliate on the keel and exterior margin. *Kunth, Enum.* 1. p. 449. *Fl. Cestr.* p. 82.

HARVEST SECALE. *Vulgò*—Rye. Common Rye.

Fr. Le Seigle. *Germ.* Gemeiner Roggen. *Span.* Centeno.

Root annual. *Culm* 4 to 6 feet high, glabrous, hairy near the spike. *Leaves* 6 to 18 inches long, lance-linear, smooth beneath, roughish above and on the margin, glaucous; *sheaths* membranaceous, nerved, smooth; *ligule* short, dentate. *Spike* 4 to 6 inches long, 2-sided and flattish, linear. *Spikelets* mostly 2-flowered, with an awn-like rudiment of a third. *Glumes* a little distant from the florets, opposite, scabrous, bristly-pilose at base. *Lower palea* ventricose, acuminate, compressed at apex, 5-nerved, terminating in a long scabrous awn; *keel* and *exterior margin* bristly-ciliate,—the *inner margin* not ciliate, and the nerves on that side less conspicuous: *upper palea* lanceolate, acuminate, often bifid at apex, sparingly ciliate on the 2 keels. *Caryopsis* oblong, subcylindrical, grooved on the upper side, hairy at summit, dusky brown. Fields: cultivated. Native of the East. *Fl.* June. *Fr.* July.

Obs. This cereal grass seems to do best in light sandy soils; and is consequently much cultivated in the lower districts of *New Jersey*, and on the slaty hills of *Pennsylvania*. The *grain*, in such soils, is of a better quality, and affords a whiter flour. *Rye* comes nearer to *Wheat*, in *bread-making* qualities, than any other grain,—but is, nevertheless, decidedly inferior to it. It is the principal bread-corn of the northern parts of Europe—especially of *Russia* and *Germany*.

The *seed* is subject—particularly in wet seasons—to become diseased, and enlarged,—producing what is called *Ergot*, or *spurred*

Rye. This diseased grain is injurious to health, when made into bread; but has been found to possess important *medical properties*, in certain cases, when judiciously administered.

234. HORDEUM. *L. Endl. Gen.* 917.

[An ancient Latin name; of obscure derivation.]

Spikelets 1-flowered, with a subulate rudiment of a second floret—arranged in threes at the joints of the rachis, the lateral ones mostly blighted. *Glumes* lance-linear, flat, rigid, subulate-awned, collateral in front of the spikelets. *Paleae* herbaceous,—the lower one concave, produced into a long awn at apex—the upper one 2-keeled. *Scales* 2, entire or unequally 2-lobed, ciliate or pilose, rarely glabrous. *Stamens* 3. *Ovary* sessile, pilose at summit; *stigmas* 2, subterminal, sessile, plumose. *Caryopsis* hairy at summit, oblong, sulcate on the upper or inner side, adherent to the paleae, or rarely free.

1. *H. VULGARE, L.* Spikelets all fertile, awned,—the florets arranged so as to form a nearly four-sided spike. *Kunth, Enum.* 1. p. 455. *Fl. Cestr.* p. 85.

COMMON HORDEUM. *Vulgò*—Barley. Four-rowed Barley.

Fr. Orge commune. *Germ.* Gemeine Gerste. *Span.* Cebada.

Root annual. *Culm* 2 to 3 feet high, smooth. *Leaves* 6 to 15 inches long, lance-linear, keeled, striate, smoothish; *sheaths* nerved, smooth, auriculate at throat; *ligule* very short. *Spike* about 3 inches long, rather thick and somewhat 4-sided; *rachis* compressed, smooth, pubescent on the margin. *Spikelets* with each one fertile floret, and a pubescent awn-like rudiment of a second at the base of the upper palea. *Glumes* collateral, in front, shorter than the florets, terminating in a slender awn. *Lower palea* 5-nerved, terminating in a very long awn, which is keeled, somewhat 3-nerved, and serrulate on the margin; *upper palea* acuminate, obtuse or emarginate. *Caryopsis* lance-oblong, somewhat angular, adhering closely to the paleae. *Fields:* cultivated. Native of Sicily, and Tartary. *Fl.* May. *Fr.* June.

Obs. The ternate spikelets of this species being all fertile, the spike often assumes somewhat of a *six-sided* appearance; and I understand that in *Western New York*—the great Barley region of this country—it is usually called *Six-rowed Barley*,—though that name would seem more properly to belong to another nearly allied species (*H. hexastichum, L.*)—if, indeed, it be really distinct. This and the following species are cultivated extensively in the middle and northern States—and almost exclusively for the *Breweries*. The grain is rarely given to cattle,—and *Barley bread* is unknown in the U. States. The plant requires a good soil,—and hence serves as a kind of index to the quality of the farms, in Pennsylvania: the fallow crop on good land being generally *Barley*,—while the occupants of a poor soil have to be content with a crop of *Oats*.

2. *H. DISTICHUM, L.* Lateral spikelets sterile, awnless,—the fertile ones awned, distichous or forming a two-sided spike. *Kunth, Enum.* 1. p. 455. *Fl. Cestr.* p. 85.

DISTICHOUS HORDEUM. *Vulgò*—Two-rowed Barley.

Root annual. *Culm* 2 to 3 feet high, smooth. *Leaves* 6 to 15 inches long, lance-linear, nerved, scabrous on the upper surface; *sheaths* nerved, smooth, with 2 lanceolate auriculate appendages at throat; *ligule* short, truncate. *Spike* 3 to 4 inches long, compressed or ancipital, linear; *rachis* flattened, smooth, hirsute on the margin. *Perfect floret* sessile; *lower palea* subcoriaceous, smooth, keeled or angular, partially 5-nerved, embracing the upper palea, and terminating in a very long, keeled, serrulate awn; *upper palea* with a pilose awn-like rudiment

at base. *Sterile florets* (or *spikelets*) pedicellate, staminate (sometimes neuter?).—the *lower palea* awnless—the *upper one* with a naked awn-like rudiment at base. Fields: cultivated. Native of Tartary. *Fl.* June. *Fr.* July.

Obs. This species is something later than the preceding, in coming to maturity; and on that account is preferred by many farmers, in Pennsylvania,—as it interferes less with their Hay crops. It also stands better than the preceding, after it is ripe,—and yields a heavier grain—though not a greater quantity. The seed, of both species, is usually sown (in Pennsylvania,) about the last of March.

TRIBE XII. ROTTBOELLIACEAE. Kunth.

Inflorescence spicate,—the rachis often articulated. *Spikelets* 1 or 2—rarely 3-flowered—seated in an excavation of the rachis,—sometimes solitary—sometimes in pairs, with one of them pedicellate and often blighted: one *floret* of each 2-flowered spikelet (sometimes the lower—sometimes the upper one) often imperfect. *Glumes* 1 or 2—sometimes none—mostly coriaceous. *Paleae* membranaceous, rarely awned. *Styles* 1 or 2, sometimes very short or wholly suppressed.

235. TRIPSACUM. L. Endl. Gen. 930.

[Greek, *tribo*, to grind; the applicability of which is not obvious.]

FLOWERS MONOICOUS: *Spikes* solitary, or often digitate in twos or threes, articulated,—the staminate spikelets above. *Spikelets* sessile, imbedded in the rachis: STAMINATE SPIKELETS in pairs on each joint, and longer than the joint, collateral, 2-flowered,—the *florets* each with 2 *paleae*, and triandrous. PISTILLATE SPIKELETS solitary, as long as the joint, acuminate 2-flowered,—the *florets* each with 2 *paleae*—the outer or lower floret neuter—the inner or upper one pistillate. *Glumes* coriaceous, awnless,—the outer one concave, thick—the inner one thinner and boat-shaped. *Paleae* very thin and membranaceous, hyaline, awnless,—the *lower one* of the *pistillate* floret boat-shaped, acute—the *upper one* shorter, narrowed at apex, 2-nerved. *Scales* 2, somewhat fleshy, truncate and unequally 2-lobed. *Ovary* sessile, glabrous; *style* terminal, elongated; *stigmas* 2, long, densely villous,—the hairs simple. *Caryopsis* ovoid, acute, free.

1. T. DACTYLOIDES, L. Spikes usually 2 or 3, aggregated or digitate, sometimes solitary,—the upper-half staminate, the lower pistillate. *Kunth, Enum.* 1. p. 469. *Fl. Cestr.* p. 95.

FINGER-LIKE TRIPSACUM. *Vulgò*—Gama Grass. Sesame Grass.

Root perennial. *Culms* somewhat cespitose, 3 or 4 to 6 feet high, hard and glabrous, solid with pith,—the internodes broadly channelled on alternate sides; *nodes* smooth, with a dark-brown contracted ring at the base of the sheaths. *Leaves* 1 or 2 to 4 feet long, and half an inch to an inch or more in width, lance-linear, keeled, smooth beneath, roughish on the upper surface, serrulate on the margin, contracted and sparingly pilose at base; *sheaths* nerved, glabrous; *ligule* very short, ciliate. *Spikes* 4 to 6 or 8 inches long, terminal, usually digitate in twos or threes—rarely in fours—but not unfrequently single; when solitary, the pistillate portion of the spike is terete,—when in pairs, semi-terete as if split down,—and when ternate, the spikes are somewhat triquetrous; *rachis* articulated, separating at the joints in drying. STAMINATE SPIKELETS in pairs, which alternate on two sides of the triquetrous rachis, each 2-flowered,—the inner floret sometimes neuter, usually both staminate. *Glumes* nearly equal,—the *outer ones* of each pair of spikelets collateral, one inserted a little above the other, oblong, coriaceous, nerved, the margins thin and inflexed,—the *inner ones* subcoriaceous, boat-shaped. *Paleae* very thin and diaphanous, nearly as long as the glumes. *Stamens* 3; *anthers* orange-colored, becoming reddish-brown, opening by 2 pores at summit. *Ovary* abortive,—often with a long slender *style* and rudiments of *stigmas*. PISTILLATE SPIKELETS imbedded in recesses of the rachis, obliquely ovoid, acuminate, gibbous on the inner side, each 2? flowered (3-flowered, *Nutt*).—the inner? floret fertile. *Glumes* nearly equal,—the *outer one* ovate, acute, indurated and polished, embracing the florets, closing the ob-

lique boat-shaped cavity in the rachis, except a ciliate foramen, or sinus, on each side of its base—the *inner* one thin and subcoriaceous, somewhat boat-shaped, acuminate. *Paleae* very thin and membranaceous, 2 to each floret,—but, by the abortion of one of the florets from pressure, they appear like several paleae enveloping one ovary. *Ovary* roundish-ovoid, acute; *styles* 2 united into 1, long and slender; *stigmas* 2, large, plumose, dark-purple. *Caryopsis* ovoid, smooth,—the *pericarp* thin and tender. Moist meadows; banks of streams, &c.: Middle and Western States. *Fl.* July. *Fr.* September.

Obs. This stout and remarkable Grass is not very common on the *Atlantic slope* of our continent; but it is said to be abundant in the valley of the *Mississippi*. Some years ago, it was highly extolled, by a few western correspondents of our Agricultural Journals, as an article of fodder for Stock; but I have not heard much of it, latterly. The leaves and young culms may probably answer a good purpose—where better materials are scarce: but any one who will examine the coarse hard stems of the full-grown or mature plant, may soon satisfy himself that it can never supersede the valuable grasses, or the good hay, now in use,—nor compete, in any respect, with common Indian-corn fodder.

TRIBE XIII. ANDROPOGONEAE. *Kunth.*

Spikelets 2-flowered,—the lower floret always imperfect. *Paleae* of more delicate texture than the glumes, mostly hyaline.

236. SACCHARUM. *L. Endl. Gen.* 939.

[Latinized from the Greek, *Sacchar*: originally from the Arabic, *Soukar*, sugar.] *Spikelets* in pairs—one of them pedicellate, the other sessile—each 2-flowered, with a tuft of long silky hairs at base; the lower floret neuter, with a single palea,—the upper one perfect. *Glumes* 2, nearly equal, awnless. *Paleae* 3 (counting that of the neutral floret), minute, unequal, awnless, hyaline. *Scales* 2, obsoletely 2 or 3-lobed at apex, sometimes connate in a tube. *Stamens* 1 to 3. *Ovary* sessile, glabrous; *styles* 2, terminal, elongated; *stigmas* plumose,—the hairs simple, denticulate. *Caryopsis* free?—*Gigantic tropical grasses, with large silky panicles.*

1. *S. OFFICINARUM, L.* Leaves flat; panicle large and expanding; spikelets racemose on the slender branches; florets triandrous; glumes obsoletely 1-nerved, or keeled, invested with long silky hairs at base. *Kunth, Enum.* 1 p. 474.

OFFICINAL SACCHARUM. *Vulgò*—Sugar-cane. [Azucar. *Fr.* Canne à Sucre. *Germ.* Aechtes Zucker-rohr. *Span.* Caña de

Root perennial (a nodose *rhizoma*). *Culm* 8 to 15 or 20 feet high, and 1 to 2 inches in diameter, with numerous nodes, and solid with pith. *Leaves* linear-lanceolate, large (something resembling those of Indian Corn). *Panicle* a foot or more in length, loosely branched,—the branches numerous, filiform, 4 to 6 inches long, remarkably plumose, or pubescent with verticils or tufts of long white silky hairs at the base of the racemose spikelets. Cultivated, in *Louisiana*; and other States in the extreme South of the Union. Native of Asia. *Fl. Fr.*

Obs. The *Sugar Cane* is rarely permitted to flower, under cultivation,—being propagated by sections of the culm. The value and importance of this noble Grass, in the domestic economy and commerce of the civilized world, are too well known to require comment. Not having the advantage of an acquaintance with the living plant, my descriptive details and remarks are necessarily very imperfect. Some interesting notices may be found in *Rees' Cyclopaedia* (*Art. Sugar*); and in the *Farmer's Encyclopaedia*.

237. ANDROPOGON. *L. Endl. Gen.* 950.

[Greek; literally *Man's beard*,—in allusion to the hairy spikelets.]

Spikelets in pairs (or the terminal ones in threes,—the middle one fertile and sessile, the others sterile and pedicellate), 2-flowered,—the lower floret neuter with a single palea—the upper one perfect or unisexual. *Glumes* 2, finally somewhat indurated or coriaceous, awnless. *Paleae* mostly 2, shorter than the glumes, hyaline,—the lower one of the perfect floret usually awned—the upper one smaller, awnless, sometimes wanting. *Scales* 2, truncate, mostly glabrous. *Stamens* 1 to 3. *Ovary* sessile, glabrous; *styles* 2, terminal; *stigmas* plumose,—the hairs simple, denticulate. *Caryopsis* free, enveloped by the glumes and paleae.

§1. RACHIS SPICATE.

† *Spikes solitary at the apex of the culm and branches.*

1. A SCOPARIUS, *Mx.* Culm paniculately branched above,—the branches somewhat fasciculate, erect, elongated, slender and purplish; sheaths villous; spikes simple, on long peduncles; florets distinctly alternate, triandrous,—the sterile ones neuter, awned. *Kunth, Enum.* 1. p. 490. *Fl. Cestr.* p. 89. SPECIM. *Gray, Gram.* 1. no. 64.

BROOM ANDROPOGON. *Vulgò*—Indian Grass. Purple Wood-grass.

Root perennial. *Culm* 3 or 4 feet high, rather slender, smooth, somewhat compressed, sulcate on alternate sides of the internodes; *nodes* smooth; *branches* long, slender, in lateral fascicles, or sometimes in pairs, often subdivided. *Leaves* 4 to 8 or 12 inches long, lance-linear, acute, scabrous, a little hairy and somewhat glaucous; *sheaths* striate, roughish; *ligule* truncate. *Spikes* about 2 inches long; *rachis* compressed or plano-convex, pilose at the edges. *Spikelets* distichously arranged: *abortive spikelet* minute, subulate, on a linear plumose pedicel which is nearly as long as the perfect spikelet,—the *floret* neuter; *perfect spikelet* sessile; *glumes* lance-linear, much acuminate,—the lower one bifid at apex; *paleae* nearly equal, ciliate,—the lower? one deeply bifid, with a twisted awn between the segments. Old fields; sterile banks, and road-sides: throughout the U. States. *Fl.* August. *Fr.* September.

Obs. This, and the other *native* species, are remarkably worthless grasses,—and are apt to abound in poor old neglected fields. Where they prevail, no further evidence is required to demonstrate the unprofitable condition of the land, or the miserable management of the occupant.

†† *Spikes conjugate or digitate, at the apex of the culm or branches.*

2. A. FURCATUS, *Muhl.* Spikes digitate, generally in threes or fours; rachis hairy; florets in pairs,—the perfect one sessile, awned—the staminate one awnless, pedicellate. *Kunth, Enum.* 1. p. 492. *Fl. Cestr.* p. 89. SPECIM. *Gray, Gram.* 1. no. 63.

FORKED ANDROPOGON. *Vulgò*—Finger-spiked Wood-grass.

Root perennial. *Culm* about 4 feet high, smooth, terete below, semi-terete above, often branching; *nodes* smooth. *Leaves* 4 to 8 or 12 inches long, lance-linear, nerved, smoothish, scabrous on the margin, pilose at base; *sheaths* striate, smooth; *ligule* obtuse, sometimes ovate, fringed. *Spikes* 2 to 3 inches long, usually in threes or fours (sometimes 5 or 6), frequently purple; *rachis* semi-terete, pilose on the angles: *abortive spikelet* on a clavate, plumose pedicel: *perfect spikelet* sessile. Slaty hills, and sterile low grounds. *Fl.* Aug. *Fr.* Sept.

Obs. This is one of the *native* species which is very worthless,—and very frequent on poor, neglected, badly managed farms.

§2. RACHIS PANICULATE.

3. *A. SACCHARATUS*, *Roxb.* Culm stout, terete, solid with pith; panicle large, loosely expanding,—the branches verticillate, elongated, finally nodding; glumes of the fertile spikelets subcoriaceous, clothed with glossy appressed hairs. *Kunth, Enum. 1. p. 502.*

Sorghum saccharatum. Pers. Fl. Cestr. p. 90.

SUGAR ANDROPOGON. *Vulgò*—Broom-Corn.

Root annual. *Culm* 6 to 8 or 9 feet high, and half an inch to an inch in diameter, smooth; *nodes* tumid, with a ring of short appressed hairs at the base of the sheaths. *Leaves* about 2 feet long, and 2 to 3 inches wide, linear-lanceolate, acuminate, keeled, smooth, densely-pubescent at base adjoining the ligule; *sheaths* smooth; *ligule* short, ciliate. *Panicle* 1 to 2 feet long.—the *branches* nearly simple, long, flexuose, scabrous with short hairs. *Spikelets* mostly in pairs, one of which is abortive (the terminal ones in threes, two being abortive), and these pairs in racemose clusters of threes or fours, near the extremities of the branches. Upper? or inner *partea* of the fertile spikelets with a purplish flexuose awn, about twice as long as the spikelet. Gardens, and fields: cultivated. Native of India, and Arabia. *Fl.* August. *Fr.* October.

Obs. This oriental grass is cultivated, on a small scale, by farmers generally,—for the domestic purpose of making brooms of its panicles: and in some districts of the country, the culture of the plant, and the manufacture of brooms and brushes, are very extensively carried on. It is said that *Sugar* has been obtained from it, in the South of Europe; but it must be much inferior to *Indian Corn* (*Zea Mays*, L.), in its saccharine products: and neither of them, probably, will ever come in competition, to any material extent, with the true *Sugar Cane*. There are 2 or 3 Asiatic species, allied to this one, which are cultivated in the East; namely, *A. Sorghum*, *Brot.* or “Indian Millet”—*A. cernuus*, *Roxb.* known here as “Guinea Corn,” or “Egyptian Millet”—and *A. bicolor*, *Roxb.* called “Chocolate Corn.” All these are occasionally seen, as curiosities, in our Gardens; but they do not—and probably never will—belong to the Agriculture of the country.

4. *A. NUTANS*, L. Panicle oblong, or loose and spreading, finally somewhat nodding; glumes of the perfect spikelets rufescent, shining,—the lower one hairy; awns contorted. *Kunth, Enum. 1. p. 504. Fl. Cestr. p. 88. SPECIM. Gray, Gram. 1. no. 67.*

Also, *A. avenaceus. Mx. Kunth, l. c. p. 503.*

NODDING ANDROPOGON. *Vulgò*—Wood-grass. Oat-like Indian grass.

Root perennial. *Culm* 3 to 5 feet high, simple, terete, glabrous; *nodes* bearded with white appressed hairs. *Leaves* 6 to 15 inches long, lance-linear, rough, serrulate on the margin; *sheaths* nerved, smooth; *ligule* elongated, truncate, bordered by a lanceolate extension of the margins of the sheath. *Panicle* 6 to 9 inches in length,—the ultimate branches, or pedicels of the upper spikelets, plumosely hairy. *Abortive spikelet* pedicellate, often a mere awn-like plumose rudiment. *Glumes* of the perfect spikelet lanceolate, indurated, of a light russet-brown color.—the lower or outer one hairy, embracing the upper one, which is smooth and rather longer. *Paleae* thin and membranaceous,—the lower? one bifid, awned below the division; *awn* contorted, bent obliquely. Sterile old fields: throughout the U. States. *Fl.* Aug. *Fr.* September.

Obs. The three native species of *Andropogon*, here given, are the most common and obtrusive ones, in our poor lands,—at least in *Pennsylvania*. There are a few others,—particularly one with the spikes conjugate, in fastigate bushy panicles (*A. macrourus*, *Mx.*)—which is not unfrequent in wet, swampy meadows; but, though they are all equally worthless, these are scarcely of sufficient importance to require further notice, in this work.

SERIES II.

CRYPTOGAMOUS OR FLOWERLESS PLANTS.

ACROGENS, OR APEX-GROWING PLANTS.

ORDER CLXI. EQUISETACEAE. DC.

Leafless plants. *Rhizoma* creeping. *Stem* simple or verticillately branched, terete, sulcate, articulated—the articulations embraced by monophyllous sheaths. *Fructification* terminal. *Receptacles* of numerous angular peltate stipitate scales, collected in the form of a *strobile* or cone. *Sporanges* in sixes and sevens, membranaceous, adnate to the under surface of the receptacles, 1-celled, filled with numerous spores, introrsely dehiscent. *Spores* embraced by 4 hygrometric clavate filaments (*elaters*).

An unimportant Order, of a single genus.

238. EQUISETUM. L. *Endl. Gen.* 601.

[Latin, *Equus*, a horse, and *Seta*, a bristle; resembling a horse's tail.]

☞ *There being but a single genus, its character is consequently the same as that of the Order.*

1. *E. HYEMALE*, L. Stems all fertile, simple, naked, striate-sulcate, very rough, bearing a terminal ovoid spike; sheaths short, cylindric, whitish, with a black ring at base and summit, dentate,—the teeth lance-subulate, awned, deciduous. *Willd. Sp. Pl.* 5. p. 8. *Fl. Cestr. p.* 574. *Icon, Fl. Lond.* 4.

WINTER EQUISETUM. *Vulgò*—Scouring Rush.

Fr. La Prêle. *Germ.* Das Kännenkraut. *Span.* Equiseto.

Root perennial. *Stems* 1 to 2 feet high, fistular, pale cinereous-green, or glaucous (purplish black at base), terminating at summit in an ovoid blackish spike, or cone, about half an inch in length; *sheaths* 2 to 4 lines long, nearly cylindric, striate, whitish-cinereous, with a purplish-black band at base,—and at summit a ring of small blackish teeth, which soon fall off, leaving the sheath truncate and entire. Margins of swamps; knolls, &c. *Fr.* June.

Obs. This plant is common to Europe and America. The *cuticle* abounds in silicious earth,—and its rough file-like surface is well adapted to the scouring and polishing of hard wood, metals, &c. to which uses it is often applied. There are several other species of this genus,—but they are of no interest to the farmer.

ORDER CLXII. LYCOPODIACEAE. Swartz. DC.

Herbaceous or *fruticose*, mostly perennial, plants. *Stem* erect or prostrate, terete, angular, or compressed, alternately or dichotomously branched, leafy. *Leaves* spirally arranged, often crowded, imbricated, simple, sessile or decurrent, never articulated. *Sporanges* (or *sporocarps*) sometimes in the axils of the leaves, along the whole stem—sometimes in the axils of crowded bracts, forming ament-like spikes at the ends of the branches.

A small Order, of little interest to the farmer.

239. LYCOPodium. L. *Endl. Gen.* 696.

Sporanges 1-celled, uniform, or of 2 forms,—those containing a fine powder, subreniform and 2-valved—those containing globular grains, subglobose, 3 or 4-lobed, and 3 or 4-valved.

1. *L. DENDROIDEUM*, Swartz. *Stem* erect, branched,—the branches alternate, crowded near the summit, dichotomously subdivided; leaves scattered, somewhat 6-rowed, linear-lanceolate, equal, spread-

ing; spikes terminal, solitary, sessile. *Willd. Sp. Pl.* 5. p. 21. *Fl. Cestr.* p. 589.

TREE-LIKE LYCOPODIUM. *Vulgò*—Ground Pine.

Plant smooth, deep green. *Root* perennial. *Stems* (or rather *branches* of the creeping *rhizoma*) 6 to 9 inches high, erect or ascending, terete, flexuose, clothed with lance-linear acute leaves, branched and bushy near the summit,—the branches dichotomously subdivided. slender. *Leaves* (on the branches) somewhat 4-rowed, about 2 lines long, obliquely subulate-linear, or slightly falcate, acute, spreading, shining green,—those on the stem (or main branch) rather appressed. *Spikes* mostly several (1 or 2 to 5 or 6), about 2 inches long, terete, a little tapering upwards, yellowish,—the *scales* or bracts ovate, acuminate, with a scarious margin. Woodlands, and shady thickets: throughout the U. States. *Fr.* July.

Obs. This pretty little plant—of unfading verdure (together with *L. complanatum*, *L.*—a trailing species, with pedately divided, flattened branches)—is much employed in making garlands, and festoons, to decorate country parlours; and is moreover regularly sought after, by those who venerate pleasing ancient usages, for the purpose of trimming churches, at Christmas. Every intelligent person, therefore, would like to know the plant; and for that reason I have inserted it.

ORDER CLXIII. FILICES. *L. Juss.*

Herbaceous plants, with a perennial *rhizoma* (rarely with an erect arborescent trunk). *Leaves* (or *fronds*) scattered on the *rhizoma*, or rosulate-fasciculate at its apex, circinnate in veneration, annual or perennial, simple or compound, entire or pinnatifidly dissected. *Sporanges* placed along the veins on the back or margin of the leaves,—collected in little clusters (termed *Sori*), which are sometimes naked, but often covered by a membranaceous scale, or folded and modified margin of the leaf (called an *Indusium*),—pedicellate or sessile, 1-celled, indefinitely dehiscent. *Spores* numerous, free, globose or angular.

An Order of some 70 genera—very interesting to the curious student of Nature, but unimportant to the practical American farmer. In *tropical* regions, however, the *Ferns* occasionally assume the stature and appearance of trees,—and the roots, or *rhizomas*, of some species, are esculent.

240. PTERIS. *L. Endl. Gen.* 622.

[The Greek name for a Fern; from *Pteryx*, or *Pteron*, a plume or feather.]

Sporanges placed on the apices of the veins, which are united into a nerve-like receptacle, bordering the frond, and forming a continuous linear marginal *sorus*. *Indusium* formed of the inflexed modified margin of the frond, scarious, opening along the inner side.

1. *PT. AQUILINA*, *L.* Frond 3-parted; divisions bipinnate; pinnae oblong-lanceolate,—the upper ones entire—the lower ones pinnatifid, with oblong obtuse segments. *Willd. Sp. Pl.* 5. p. 402. *Fl. Cestr.* p. 583.

AQUILINE OR EAGLE PTERIS. *Vulgò*—Brake. Bracken, *of the Scotch.* *Fr.* Fougère femelle. *Germ.* Adler-Saumfarn. *Span.* Helecho femenino.

Root perennial. *Frond* very large (1 to 2 or 3 feet long), supradecomposed, spreading, the branches bipinnate, the divisions or *pinnae* oblong-lanceolate, subsessile, pubescent, pale dingy green,—the upper ones entire—the lower ones pinnatifid; *segments* half an inch to an inch and half long, and 2 to 4 or 5 lines wide, lance-oblong, obtuse, entire or somewhat repand, with the margin reflexed, confluent at base, or sometimes the lower ones nearly distinct; *stipe* (or foot-stalk of the frond) 1 to 2 feet long, angular, smooth, tawny, or brown. *Sori* linear and marginal, resembling a narrow russet *hem*, or border-trimming, along the edge of the segments, on the under side. Moist woodlands, and thickets; throughout the U. States. *Fr.* July—Aug.

Obs. The *Ferns* have but little connection with our Agriculture : but, as this is a common one nearly all the world over,—and, in our country, one of the most conspicuous of that numerous and curious family of plants,—I have given it a place in this work, merely as a sample of the Order. It sometimes forms quite a thicket, of itself, and affords a good shelter or hiding-place for *Game*, along the borders of woodlands.

ANOPHYTES, OR SUPERIOR CELLULAR PLANTS.

ORDER CLXV. MUSCI. *Dillen. Juss.*

Mostly perennial *herbs*, small in size and wholly cellular in structure. *Stems* terete, slender, erect or procumbent. *Leaves* scattered or distichous, simple, sessile and obsolete decurrent. *Reproductive organs* of two kinds: 1. *Axillary bodies* (*antheridia*, or supposed analogues of *stamens*),—small cylindrical or fusiform pedicellate saes. in the axils of the leaves, containing numerous spherical or oval particles, mingled with minute jointed threads (called *Paraphyses*). 2. *Thecae* (*capsules*, *sporangies*, or *pistillidia*—analogues of *pistils*),—hollow urn-like cases, each elevated on a *seta*, or bristle-like peduncle—covered, in an early stage, by a membranaceous caducous *Calyptra* (resembling a candle extinguisher), and closed by an *Operculum* (or lid), which opens at maturity. The orifice at the summit of the *theca*, or capsule, is sometimes naked, but more commonly protected by one or two rows of rigid little processes, called teeth— or collectively, the *Peristome*. These teeth are either distinct (free), or more or less combined—ranging, numerically, from 4 to 64,—but always, when more than 4, some multiple of that number. The centre of the *theca* is occupied by an *axis*, or little column,—and the space between it and the sides of the *theca* is filled with minute *spores*. The *leaves* which are aggregated round the base of the *seta*, or footstalk of the *theca* (forming what is called the *Perichaetium*), may be regarded as the analogues of *bracts*,—being generally different from the rest of the foliage, and are known by the name of *perichaetial* leaves.

A numerous Order of small and insignificant plants—in the eye of the mere farmer; but by no means unimportant, in the economy of Nature.

241. SPHAGNUM. *Dillen. Endl. Gen.* 476.

[A Latin name,—anciently applied to some kind of Moss.]

Fructification terminal. *Antheridia* clavate. *Pistillidia* disk-form. *Calyptra* irregularly torn in the middle,—the ragged base persistent. *Theca* with a flat deciduous lid,—the orifice destitute of teeth; central column obsolete at maturity. *Soft, flaccid, spongy, pale-green or whitish Mosses*,—in dry situations erect—in pools floating and branched, the branches in lateral fascicles. *Leaves imbricated, concave, nerveless, diaphanous. Thecae, or sporangies, sessile on pedunculate receptacles.*

1. S. PALUSTRE, *L.* Branches tumid, tapering, spreading or recurved; leaves ovate or lanceolate, obtuse or acute, reticulated. *S. obtusifolium. Hook. Brit. Fl.* 2. p. 5.

MARSH SPHAGNUM. *Vulgò*—Bog-Moss.

Stems 3 to 6 or 8 inches long (sometimes much longer, when floating), loosely tufted by numerous branches near the summit. *Leaves* often closely imbricated, glaucous, or whitish. *Theca* oval or subglobose, embraced at base by the persistent remains of the *calyptra* or hood, sessile on a receptacle at the summit of a transparent terminal peduncle. Swamps, and pools; throughout the U. States. *Fr.* in early Spring.

Obs. Several species of *Sphagnum* are enumerated in the books,

—but they have been supposed, by good judges, to be little more than *varieties* of the original *S. palustre*, of LINNÆUS. This soft spongy Moss—which is common to both hemispheres—affords an excellent material for enveloping and protecting the roots of plants which are to be removed to a distance. It is believed to have contributed largely of the material of which *Turf* or *Peat* is formed. The *Mosses* are a very numerous family (comprising about 800 species); and although scarcely claiming the attention of mere practical Agriculturists, they are highly interesting to intelligent observers of Nature and natural phenomena. “In the economy of man,” says Prof. LINDLEY, “they perform but an insignificant part; but in the economy of Nature, how vast an end!” I have therefore deemed it expedient to insert a sample of the Order.

THALLOPHYTES, OR VEGETABLE EXPANSIONS.

ORDER CLXVII. LICHENES. *Ach.*

Perennial plants, varying exceedingly in form, appearance and texture—always constituting a *thallus*, crust, or frond, (*universal receptacle*, *Ach.*) which frequently spreads horizontally upon soil, rocks, bark of trees and dead wood,—and is pulverulent, membranaceous, coriaceous, gelatinous, filamentous, and variously lobed and divided: sometimes it is erect, shrub-like and much branched,—at others, pendent; variously colored, rarely green: often the *substance* is simply composed of cellules—at other times the cellules are mixed with fibres. Imperfect *roots* are sometimes found,—but more for the purpose of fixing the plant to its place of growth, than of deriving nourishment—which appears to be afforded solely by the air. *Fructification* is of two kinds,—1. A *powdery substance*, forming indeterminate masses, or collected into more or less evident *receptacles*; and 2. (what is considered a higher state of fructification.) *apothecia*, or *partial receptacles*,—which have received different names, according to their forms:—as *scutellae* (shields)—*patellulae* (spangles)—*pellae* (targets)—*tubercula* (tubercles)—*cephalodia* (knobs, or heads)—when the stalk which bears them is called the *podetium*)—&c. These *receptacles*, for the most part, are sessile, perennial, and contain a waxy plate or layer, in which are imbedded *sporules* inclosed in little membranous tubes or *thecae*.
HOOKER.

A numerous Order of apparently very insignificant plants: but some of them are nutritious, and slightly medicinal,—while others (as the *Rocella*), afford beautiful and valuable *dyes*. *Lichens*, says Sir W. J. HOOKER, “are among the first plants which clothe the bare rocks and form a *humus* (soil, or mould) for others of a higher organization to live and flourish in.”

† *Thallus usually compressed and lacinated. Apothecia scutelliform [Scutellae, or shields].*

242. CETRARIA. *Ach. Endl. Gen.* 175.

[Latin, *Cetra*, a buckler,—which the *Apothecia* are supposed to resemble.]

Thallus foliaceous, somewhat coriaceously membranaceous, ascending or spreading, lobed and lacinated, naked and smooth on both sides. *Apothecia* orbicular, obliquely adnate to the margin of the *thallus*—the lower portion being free; *disk* colored, plano-concave, with a *border* formed of the *thallus* and inflexed.

1. *C. ISLANDICA*, *Ach.* *Thallus* erect, tufted, olive-brown, paler on one side, lacinated, channelled, and dentate-ciliate,—the fertile laciniae very broad; apothecia brown, appressed, flat with an elevated border. *Hook. Brit. Fl.* 2. p. 221.

ICELAND CETRARIA. *Vulgò*—Iceland Moss.

Obs. Dr. A. GRAY informs me that he has collected this plant on "Grandfather Mountain," *North Carolina*. He says it grows, also, on the White Mountains of *New Hampshire*. It is a mountain plant, and usually grows in exposed situations, on the ground. That which is found in our Shops, and employed as a remedy for coughs, pulmonary consumption, &c. is procured from *Norway*, or from *Iceland*. Sir W. J. HOOKER informs us, that "immense quantities are gathered in the latter country, not only for sale, but for their own use as an article of common food. The bitter and purgative quality being extracted by steeping in water, the *Lichen* is dried, reduced to powder, and made into a cake, or boiled and eaten with milk,—and eaten with thankfulness, too, by the poor natives, who confess 'that a bountiful Providence sends them bread out of the very stones'."

To this section of the Lichens, belongs the *Roccella tinctoria*, DC. the *Rock Moss*, or *Archill*,—so valuable in the arts, for its purple coloring matter.

†† *Thallus shrub-like, rounded, usually much branched and erect, —the branches (or Podetia) fistular. Apothecia hemispherical, fleshy (Cephalodia, or knobs).*

243. CLADONIA. *Hoffm. Endl. Gen.* 168.

[Greek, *Kladon*, a branch,—the ramifications being often numerous.]

Thallus somewhat shrubby, branched or rarely simple, leafy with scales which are finally often evanescent; *branches (or podetia)* cartilaginous, rigid, fistular, all attenuated and subulate, divided, fertile, generally perforated in the axils. *Apothecia* (being *Cephalodia*) sessile, orbicular, convex, capituliform, not bordered, fixed by the circumference, free beneath in the centre, the sides reflexed, uniform within.

1. *C. RANGIFERINA*, *Hoffm.* Podetia erect, elongated, roughish, cylindrical, greenish-white, very much branched; axils perforated; branches scattered, often intricate, divaricate,—the ultimate ones drooping; apothecia subglobose, brown, on small erect branchlets. *Hook. Brit. Fl.* 2. p. 235.

REIN-DEER CLADONIA. *Vulgò*—Rein-deer Moss.

Obs. This is very common in the colder woodlands, throughout the middle and northern States. "A very variable Moss," says Sir W. J. HOOKER, "especially in the length of the ramifications, and also in color,—and an inhabitant of almost every part of the world—even of the tropics; but in the colder and arctic regions it is most abundant. The barren specimens are the most branched and tufted, with the branches very intricate. It is this, which, for the greater part of the year and especially in winter, is the support of the vast herds of *Rein-deer*, wherein consists all the wealth of the Laplanders. No vegetable, LINNÆUS tells us, grows throughout Lapland in such abundance as this,—especially in woods of scattered pines, where, for very many miles together, the surface of the sterile soil is covered with it as with snow. On the destruction of forests by fire, when no other plant will find nutriment, this Lichen springs up and flourishes,—and, after a few years, acquires its full size. Here the *Rein-deer* are pastured; and, whatever may be the depth

of snow during the long winters of that climate, these creatures have the power of penetrating it and obtaining their necessary food." This, and the preceding Lichen, are here noticed—not as belonging to American Agriculture, but—as interesting specimens of a vast Order of plants, which even a *farmer* may with propriety become so far acquainted with, as to have at least a general idea of their character.

ORDER CLXVIII. FUNGI. *Juss.*

Plants consisting of a congeries of *cellules*, among which *filaments* are occasionally intermixed,—increasing in size by addition to their inside—their outside undergoing no change after its first formation; chiefly growing upon dead or decaying substances,—frequently ephemeral, and variously colored. *Sporules* arranged in tubular cells,—the cells situated in some part of the external surface. The part in which the reproductive organs are placed, is called the *Hymenium*.

A very numerous Order—comprising nearly 300 genera, and uncounted species; some of them large, and often either esculent or poisonous,—others minute, and frequently destructive of the *textures* (whether living or dead) on which they grow.

TRIBE I. HYMENOMYCETES. *Fries.*

Hymenium naked. *Sporidia* in little sacs (*asci*).

SUB-TRIBE 1. HYMENINI, OR AGARICINAE. *Fries.*

Hymenium distinct. *Receptacle* long or expanded, superior.

DIV. 1. PILEATI. *Fries.*

Receptacle dilated, occasionally branched, tending to an orbicular form. *Hymenium* inferior.

244. AGARICUS. *L. Endl. Gen. 453.*

[From *Agaria*, a town of Sarmatia,—where the plant was much used for food.] *Fungus* inclosed in a wrapper (*volva*) when young,—with a *pileus*, or cap, supported on a thick terete *stipe*. *Pileus* horizontal, dilated, orbicular, gradually becoming flattened,—the lower surface occupied by distinct radiating parallel *lamellae*, or gills (*hymenium*), on which the *sporules* are situated.

1. A. CAMPESTRIS, *L.* *Pileus* white, fleshy, dry, somewhat scaly or sericeous; *lamellae* free, pink changing to dark fuscous; *stipe* solid, white, with an annular veil. *Lindl. Ency. p. 1002.*

FIELD AGARICUS. *Vulgò*—Common eatable Mushroom.

Fr. Champignon. *Germ.* Der Erd-schwamm.

Obs. This plant is a noted delicacy among Epicures,—and is much cultivated for the table, in Europe. There seems, however, to be some uncertainty in determining the characters, by which the esculent specimens are distinguished from poisonous ones; and therefore caution is always to be observed. Prof. LINDLEY (in LONDON'S *Encyclopaedia of Plants*) says, "the *gills* of this species are loose, pinky red, changing to a liver-color,—in contact with the stem, but not united to it; very thick set, irregularly disposed—some forked next the stem, some next the edge of the *pileus*—some at both ends, and in that case generally excluding the intermediate smaller gills. The *pileus* is white, changing to brown when old, and becoming scurfy; regularly convex, fleshy, flatter with age, from 2 to 4 inches, and sometimes 9 inches in diameter, liquefying in decay,—the flesh white. The *stem* (or *stipe*) is solid, white, cylindrical, from 2 to 3 inches high, half an inch in diameter,—the *cur-*

tain white and delicate. When this mushroom first makes its appearance, it is smooth and almost globular,—and in this state it is called a *button*. This species is esteemed the best and most savory of the genus,—and is much in request for the table, in England. It is eaten fresh, either stewed or boiled,—and preserved either as a pickle, or in powder; and it furnishes the sauce called *ketchup*. The field plants are better for eating than those raised on artificial beds,—their flesh being more tender; and those who are accustomed to them can distinguish them by their smell. But the cultivated ones are more sightly, may be more easily collected in the proper state for eating, and are firmer and better for pickling. The wild mushrooms are found in parks and other pastures, where the turf has not been ploughed up for many years; and the best time for gathering them [in England] is August and September.”

☞ Veil like a cob-web. Gills becoming discolored, cloudy, dissolving. Sporidia brownish-purple.

245. MERULIUS. *Hall. Endl. Gen.* 445.

[A name applied, by the ancients, to a species of Fungus.]

Pileus fleshy or membranaceous, without a stipe. *Hymenium* veined,—the veins or folds a little tumid, anastomosing with each other. *Fungous parasites, sessile, effused or spread about.*

1. M. LACHRYMANS, *Schum.* Effused, large, yellow-ferruginous or deep orange-color; margin white and cottony; veins large, forming irregular pores by their sinuosity. *Lindl. Ency. p.* 1007.

WEeping MERULIUS. *Vulgò*—Dry Rot.

Obs. This *Fungus* (and some others—such as *Polyporus, Sporotrichum, &c.* which infest timber in places where a damp air is confined) is known by the name of “Dry Rot.” It is, says Prof. LINDLEY, “a pest to the wood of dwelling houses [and ships], which it speedily destroys. It is said to be destroyed by a wash of diluted sulphuric acid. The whole plant is generally resupinate, soft, tender, at first very light, cottony and white. When the veins appear, they are of a fine yellow, orange, or reddish-brown, forming irregular *plicae*, most frequently so arranged as to have the appearance of pores,—but never any thing like tubes. Sometimes the *pileus* or substance of the plant, from its situation, produces pendent processes like inverted cones. The whole fructification often forms a circle of 1 to 8 inches in diameter. Except in favorable situations, it does not produce fructification, and resembles a dry pithy cottony substance,—whence it has been called *dry rot*. When in a perfect state, its sinuses contain drops of clear water,—which have given rise to the specific name.” Various chemical processes have been resorted to, to prevent the appearance, or growth, of this destructive fungus—some of which, I believe, have been thought worthy of *Letters patent*; but of their value I am unable to speak. There is a *Fungus*, which, from its resemblance to fibrous roots, is called *Rhizomorpha*. It is often troublesome, by choking up trunks, and bored logs, that are used for the conveyance of water. It has so much the appearance of *real roots*, that it is generally mistaken for them,—especially when the trunks are laid in woodlands: though the question might very naturally occur, to observing minds, how such coarse fibres could penetrate, or pass through the logs, or planks, without being visible in their substance.

There is also a remarkable *Fungus*, called *Oak-leather* (*Xylostroma Corium*, *Pers.* or *Byssus gigantea*, *DC.*),—often found in the fissures or *wind-shakes* of old trees; which bears a striking resemblance to a dressed sheepskin,—and is sometimes almost as large.

TRIBE II. GASTEROMYCETES. *Fries.*

Fungus entirely closed, bearing *sporidia* in an interior or ventral sac.

SUB-TRIBE I. ANGIOGASTERES. *Fries.*

Ventral sac finally bursting forth, separate from the receptacle. *Sporidia* lodged in the receptacle.

DIV. 2. TUBERACEAE. *Fries.*

Sporanges membranous, scattered in an *hymenium* which is often latticed with small veins, and inclosed in a ventral sac. *Sporidia* at first pulpy.

246. TUBER. *Michel. Endl. Gen. 350.*

[An ancient Roman name.]

Ventral sac subglobose, externally smooth or papillose-verrucose, indehiscent, somewhat coriaceous fleshy within, reticulately veined. *Sporidia* sub-pedicellate, scattered among the veins. *Subterraneous Fungi*, often destitute of roots, roundish, fleshy,—the flesh variegated with sporule-bearing veins.

1. *T. CIBARIUM*, *Sibth.* Very rough with sub-prismatic warts, blackish; roots entirely wanting; flesh firm or toughish. *Lindl. Ency. p. 1022.*

EATABLE TUBER. *Vulgò*—Truffle.

Fr. Truffe. *Germ.* Trüffel. *Span.* Criadilla de tierra.

Obs. This is the *Fungus* so celebrated in the annals of cookery, under the name of *Truffle*. It often attains to the size of a man's fist (*pugni saepe mole*, *Endl.*),—and is found in light dry sandy soils, in various parts of *Europe* and *Asia*. Dogs, it is said, are taught to find it by the smell,—and to scratch it up out of the earth. The *Truffle*, I believe, is but seldom met with, in the *U. States*. The late *Rev. Mr. SCHWEINITZ* mentions, that it was not unfrequently found near *Nazareth*, in *Pennsylvania*, some 60 years since, by an old German hunter, and his dog, which had been trained to seek for it.* A subterraneous esculent *Fungus*, called "*Tuckahoe*" (probably nearly allied to the *Truffle*), has been found in the Southern States. See *Farmer's Encyclopaedia*.

Some other *Fungi* are esculent, and much esteemed by *Gastronomers*;—such as the *Morehella esculenta*, *Pers.* or *Morel*,—and the *Helvella esculenta*, *Pers.* They are, however, less known, in our country, than the common eatable *Mushroom*.

SUB-TRIBE IV. MUCOROIDEI. *Fries.*

Peridium formed of flocci loosely woven together, vanishing in the middle. *Sporidia* in heaps.

247. ASCOPHORA. *Tode. Endl. Gen. 255.*

[Greek, *Askos*, a sac, and *phero*, to bear; in allusion to the receptacle of sporules] *Peridium* membranaceous, stipitate, finally bursting, turned inside out, convex and somewhat persistent; *stipe* simple or branched, tubular, pellucid, articulated.

* In reference to the *Tuber cibarium*, *Mr. SCHWEINITZ* says—"Nunquam ipse inveni—sed certior factus sum ante sexaginta annos in vicinitate Nazarethorum ab antiquo venatore germano, caneque suo ad hoc olim educato, non rariter inventum esse."—*Am. Philos. Transactions*, 4. new Series. p. 252.

1. A. MUCEDO, *Link.* Stipe simple; heads inflated, spherical, at first white, finally dark grey, bursting close to the long filiform stipe. *Lindl. Ency. p. 1036.*

Mucor Mucedo. L. *Vulgò*—Mould. Bread-mould.

Fr. Moisissure. *Germ.* Der Schimmel. *Span.* Moho.

Obs. This minute *Fungus* usually abounds on moist decaying substances,—and is well known to most persons—especially to housewives—as growing plentifully on *bread* and *pastry* which has begun to “spoil;”—yet it is probable that many of them have never suspected it of being as genuine a *plant*, as any weed that grows on the farm.

TRIBE IV. CONIOMYCETES, *Fries.*

Sporidia naked, without any heterogeneous receptacle.

SUB-TRIBE II. ENTOPHYTI. *Fries.*

Sporidia naked, separate, without a receptacle.

DIV. 2. HYPODERMIA. *Fries.*

Parasites upon living plants,—originating in a diseased parenchyma, under the *epidermis*, which being ruptured, the *sporidia* burst forth.

248. UREDO. *Pers. Endl. Gen. 181.*

[Latin, *uro*, to burn, or scorch,—from the apparent effect of the plant.]

Peridium none,—or the *epidermis* of the leaves and stems forming a *pseudo-peridium*. *Sporidia* 1-celled, free, sessile, mostly globose.

1. U. SEGETUM, *Pers.* Clusters large, irregular, brown or black, usually occupying the organs of fructification; *sporidia* globose, minute. *Lindl. Ency. p. 1044.*

CORN UREDO. *Vulgò*—Smut. Blight. Smut-Brand.

Obs. This *Fungus* is usually found within the glumes and fruit of *Wheat*, *Barley*, and other Grasses,—spreading, and in a short time filling the whole with a profuse *black dust*, which, under the microscope, is found to consist of minute spherical *sporidia*. Where the *grain* is but partially, or slightly affected, it may be freed from the offensive fungus, by the operations of mechanical contrivances, called “Smut Machines,” which have been invented for that purpose.

The fructification (both ears and tassels) of *Indian Corn*, is often invaded by this destructive parasite,—and sometimes the spikes, or ears, are enlarged to an enormous size. Prof. DE CANDOLLE, and others, have considered this as a distinct species, under the name of *U. Maydis*, or *U. Zeae*. It is curious to observe the manner in which the ears of *Indian Corn*—grains and all—retain something of their original form, while undergoing the destructive process. Various species of this blighting *Fungus* grow on, and are perhaps peculiar to, different genera and species of plants.

249. PUCCINIA. *Pers. Endl. Gen. 185.*

[Perhaps from the Greek, *puka*, densely crowded,—from its manner of growth.]

Peridium none,—or the *epidermis* of the leaves and stems forming a *pseudo-peridium*. *Sporidia* 1 or many-celled, dehiscent at apex, often pedicellate, emerging from under the irregularly ruptured *epidermis*. *Minute fuscous or blackish Fungi, aggregated in little clusters.*

1. P. GRAMINIS, *Pers.* Clusters dense, often confluent and forming long parallel lines, changing from yellowish-brown to black; *sporidia*

elongated, clavate, stipitate, 2-celled,—the upper cell larger. *Lindl.*
 GRASS PUCCINIA. *Vulgò*—Mildew. Rust? [*Ency.* p. 1048.
Fr. La Nielle. *Germ.* Der Mehlthau. *Span.* El Tizon.

Obs. This is the *Fungus* which, under the name of *Mildew* (and perhaps *Rust*—though this may be another species,) often appears so abundantly and operates so injuriously, on our *Wheat crops*, in warm, close, foggy, and cloudy or wet weather, near harvest time,—especially where the crop is a little backward, and mingled with an undue proportion of other grasses, or herbage. The species of this genus are numerous,—and appear to be confined to certain plants, from which they derive their specific names;—as *P. Rosae*—*P. Rubi*—*P. Pruni*—*P. Trifolii*, &c.

There may, perhaps, be different kinds of these minute *Fungi* (species of *Aecidium*, and other genera), infesting the various Grasses, and cultivated crops. A little orange-colored one is very prevalent, some seasons, on the leaves of the *Washington Thorn* (*Crataegus cordata*, *Ait.*). Until they shall be better understood, and a preventive remedy discovered, they deserve to be carefully studied, both by Naturalists and Farmers.

ORDER CLXX. ALGAE. *Juss.*

Leafless flowerless plants, with no distinct axis of vegetation, growing in water, and consisting either of simple vesicles lying in mucus, or of articulated filaments, or of lobed fronds formed of uniform cellular tissue,—absorbing the ambient liquid only by the immersed portion and not conveying it to the other parts; sometimes reddish, sometimes green,—emitting oxygen gas when exposed under water to the sun. *Reproductive matter* either altogether wanting, or contained in the joints of the filaments, or deposited in *thecae* (of various form, size and position) caused by dilatations of the substance of the frond. *Sporules* with no proper integument,—in germination elongating in two opposite directions.

An Order comprising more than 100 genera, some of which afford food—others medicine, and materials used in the arts;—but few of them of any importance in Agriculture,—and those chiefly as a manure, in the vicinity of the Sea shore. The edible *Swallow's nests*, which are esteemed such a delicacy by the *Chinese*, are believed to be mainly constructed of a species of Seaweed.

250. FUCUS. *Agardh. Endl. Gen.* 119.

[Latinized from the Greek, *Phulos*, a Sea-weed.]

*Fron*d flat or compressed (rarely filiform), dichotomous, coriaceous. *Air vessels*, when present, innate in the frond, simple, large. *Receptacles* mostly terminal, turgid, containing tubercles imbedded in mucus and filled with sporules and filaments.

1. *F. VESICULOSUS*, *L.* Frond flat, with a middle nerve or rib, linear, dichotomous, entire; vesicles spherical, innate upon the frond in pairs; receptacles terminal, compressed, turgid, mostly elliptical. *Hook. Brit. Fl.* 2. p. 267.

BLADDERY FUCUS. *Vulgò*—Sea-weed. Sea-wrack.
Fr. Varec. *Germ.* Der Meer-tang. *Span.* Fuco.

Obs. This and some other *Sea-weeds* are attached to submarine rocks, by leathery shield-like expansions; but are often torn loose, and thrown on shore in great quantities, by the agitation of the Sea. Being collected and burned, they leave an alkaline residuum, called *Kelp*,—which is said to be valuable as a *manure*—as well as an article of considerable commercial importance. The poor half-starved cattle, on the coast of Scotland, feed upon this Sea-weed, in times of scarcity; but in our country, such fodder is but little known. For an interesting notice of *Kelp*, see the *Farmer's Encyclopaedia*,—a highly valuable Repository of information in every department of Agriculture,

THE Plants enumerated in this work may be classified according to their character and properties, as follows :

[N. B. Those which are *cultivated*, in *Italics*.]

I. Plants yielding esculent *Roots*, *Herbage*, or *Fruits*, for *Man*.

GENUS.

10. *Brassica oleracea*, L.
- *B*— *campestris*, L.
- *B*— *Rapa*, L.
16. *Raphanus sativus*, L.
21. *Hibiscus esculentus*, L.
25. *Citrus Aurantium*, Risso.
33. *Vitis vinifera*, L.
- *V*— *Labrusca*, L.
- *V*— *aestivalis*, Mx.
- *V*— *vulpina*, L.
35. *Cicer arietinum*, L.
36. *Arachis hypogaea*, L.
37. *Faba vulgaris*, Moench.
38. *Ervum Lens*, L.
39. *Pisum sativum*, L.
40. *Phaseolus vulgaris*, Savi.
- *P*— *lunatus*, L.
43. *Persica vulgaris*, Mill.
- *P*— *laevis*, DC.
49. *Armeniaca vulgaris*, Lam.
- *A*— *dasycarpa*, Pers.
50. *Prunus domestica*, L.
- *P*— *Americana*, Marsh.
- *P*— *Chicasa*, Mx.
51. *Cerasus avium*, Moench.
- *C*— *vulgaris*, Mill.
53. *Fragaria vesca*, L.
- *F*— *Virginiana*, Ehrh.
54. *Rubus Idaeus*, L.
- *Rubus occidentalis*, L.
- *R*— *Canadensis*, L.
- *R*— *villosus*, Ait.
57. *Pyrus communis*, L.
- *P*— *Malus*, L.
60. *Ribes Uva-crispa*, L.
- *R*— *rubrum*, L.
- *R*— *nigrum*, L.
62. *Cucumis Melo*, L.
63. *Citrullus vulgaris*, Schrad.
64. *Cucurbita Pepo*, L.
- *C*— *Melopepo*, L.
- *C*— *verrucosa*, L.
72. *Pastinaca sativa*, L.

GENUS.

73. *Daucus Carota*, L.
101. *Cynara Scolymus*, L.
104. *Cichorium Endivia*, Willd.
105. *Tragopogon porrifolium*, L.
107. *Lactuca sativa*, L.
109. *Vaccinium corymbosum*, L.
110. *Oxycoccus macrocarpus*, P.
113. *Diospyros Virginiana*, L.
139. *Batatas edulis*, Chois.
145. *Solanum tuberosum*, L.
- *S*— *esculentum*, Donal.
146. *Lycopersicum esculentum*, Mill.
152. *Spinacia oleracea*, L.
153. *Beta vulgaris*, L.
156. *Rheum Rhaponticum*, Ait.
157. *Rumex crispus*, L.
159. *Fagopyrum esculentum*, Mh.
160. *Phytolacca decandra*, L.
168. *Juglans nigra*, L.
- *J*— *regia*, L.
169. *Carya alba*, Nutt.
- *C*— *olivaeformis*, Nutt.
171. *Corylus Americana*, Marsh.
174. *Castanea vesca*, Gaertn.
- *C*— *pumila*, Mill.
181. *Morus rubra*, L.
184. *Ficus Carica*, L.
192. *Sabal Palmetto*, Loddig.
201. *Allium Porrum*, L.
- *A*— *Cepa*, L.
202. *Asparagus officinalis*, L.
208. *Oryza sativa*, L.
210. *Zea Mays*, L.
232. *Triticum vulgare*, Vill.
233. *Secale cereale*, L.
244. *Agaricus campestris*, L.
246. *Tuber cibarium*, Sibth.

Eighty in number; of which Fifty-seven are cultivated.

Note.—Many of the preceding, afford food for Domestic animals, also.

II. Plants yielding *Food* exclusively, or chiefly, for *Domestic Animals*.

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|---|---|
| 43. <i>Trifolium pratense</i> , L. | 222. Eleusine Indica, Gaertn. |
| — T—— repens, L. | 223. <i>Avena sativa</i> , L. |
| 44. <i>Melilotus leucantha</i> , Koch. | 224. <i>Arrhenatherum avenaccum</i> , Beauv. |
| 45. <i>Medicago sativa</i> , L. | 225. <i>Poa annua</i> , L. |
| 114. <i>Plantago lanceolata</i> , L. | — P—— trivialis, L. |
| 172. <i>Quercus alba</i> , L. | — P—— pratensis, L. |
| 173. <i>Fagus sylvatica</i> , L. | — P—— compressa, L. |
| 209. <i>Zizania aquatica</i> , L. | 226. <i>Glyceria fluitans</i> , R. Br. |
| 211. <i>Phleum pratense</i> , L. | 227. <i>Dactylis glomerata</i> , L. |
| 212. <i>Holcus lanatus</i> , L. | 228. <i>Festuca pratensis</i> , Huds. |
| 213. <i>Anthoxanthum odoratum</i> L. | 231. <i>Lolium perenne</i> , L. |
| 214. <i>Panicum sanguinale</i> , L. | 235. <i>Tripsacum dactyloides</i> , L. |
| 215. <i>Setaria Italica</i> , Kunth. | 243. <i>Cladonia rangiferina</i> Hoffm. |
| 218. <i>Muhlenbergia diffusa</i> , W ^{ld} .
— M—— Mexicana, Trin. | <i>Thirty</i> in number; of which
<i>Ten</i> are cultivated. |
| 219. <i>Agrostis vulgaris</i> , With. | |
| 221. <i>Cynodon Dactylon</i> , Pers. | |

III. Plants yielding *Condiments and Drinks*.

- | | |
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| 7. <i>Nasturtium officinale</i> , R. Br. | 89. <i>Helianthus tuberosus</i> , L. |
| 8. <i>Barbarea praecox</i> , R. Br. | 96. <i>Artemisia Dracunculus</i> , L. |
| 11. <i>Sinapis nigra</i> , L. | 116. <i>Martynia proboscidea</i> , Glox. |
| — S—— alba, L. | 120. <i>Ocimum basilicum</i> , L. |
| 12. <i>Cochlearia Armoracia</i> , L. | 121. <i>Lavandula vera</i> , DC. |
| 14. <i>Lepidium sativum</i> , L. | 122. <i>Mentha viridis</i> , L. |
| 28. <i>Tropaeolum majus</i> , L. | 123. <i>Salvia officinalis</i> , L. |
| 31. <i>Acer saccharinum</i> , L. | 124. <i>Munjarana hortensis</i> , Moench |
| 33. <i>Vitis vinifera</i> , L. | 125. <i>Thymus vulgaris</i> , L. |
| 57. <i>Pyrus Malus</i> , L. | 426. <i>Satureja hortensis</i> , L. |
| — P—— Coronaria, L. | 144. <i>Capsicum annum</i> , L. |
| 58. <i>Cydonia vulgaris</i> , Pers. | 168. <i>Juglans cinerea</i> , L. |
| 60. <i>Ribes rubrum</i> , L. | — J—— regia, L. |
| 62. <i>Cucumis sativa</i> , L. | 201. <i>Allium Schoenoprasum</i> , L. |
| — C—— Anguria, L. | 234. <i>Hordeum vulgare</i> , L. |
| 67. <i>Apium gravecolens</i> , L. | — H—— distichum, L. |
| 68. <i>Petroselinum sativum</i> , Hoff. | 236. <i>Saccharum officinarum</i> , L. |
| 69. <i>Carum Carui</i> , L. | <i>Thirty-seven</i> in number; of
which <i>thirty-three</i> are cultivated. |
| 70. <i>Foeniculum vulgare</i> , Gaert. | |
| 75. <i>Coriandrum sativum</i> , L. | |

IV. Medicinal Plants.

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|--|---|
| 3. <i>Cimicifuga racemosa</i> , Ell. | 96. <i>Artemisia Absinthium</i> , L. |
| 25. <i>Citrus Medica</i> , Risso. | 108. <i>Lobelia inflata</i> , L. |
| 34. <i>Polygala Senega</i> , L. | 112. <i>Chimaphila umbellata</i> , Nutt |
| 74. <i>Conium maculatum</i> , L. | 122. <i>Mentha viridis</i> , L. |
| 76. <i>Aralia racemosa</i> , L. | — M—— piperita, L. |
| 78. <i>Cornus florida</i> , L. | 123. <i>Salvia officinalis</i> , L. |
| 83. <i>Eupatorium perfoliatum</i> , L. | 127. <i>Hyssopus officinalis</i> , L. |
| 92. <i>Anthemis nobilis</i> , L. | 128. <i>Hedeoma pulegioides</i> , Pers. |
| 95. <i>Tanacetum vulgare</i> , L. | 129. <i>Melissa officinalis</i> , L. |

131. *Nepeta Cataria*, L.
 134. *Marrubium vulgare*, L.
 142. *Nicotiana Tabacum*, L.
 143. *Datura Stramonium*, L.
 147. *Sabbatia angularis*, Pursh.
 151. *Aristolochia Serpentaria*, L.
 154. *Chenopodium anthelminticum*, L.
 161. *Sassafras officinale*, Nees.
 162. *Benzoin odoriferum*, Nees.
164. *Ulmus fulva*, Mx.
 167. *Ricinus communis*, L.
 168. *Juglans cinerea*, L.
 187. *Humulus Lupulus*, L.
 193. *Arum triphyllum*, L.
 195. *Acorus Calamus*, L.
 201. *Allium sotivum*, L.
 242. *Cetraria Islandica*, Ach.
- Thirty-five* in number; of which *fifteen* are cultivated.

V. Plants employed in the *Arts*, in *Commerce*, in *Domestic* or *Rural Economy*.

4. *Magnolia acuminata*, L.
 5. *Liriodendron tulipifera*, L.
 22. *Gossypium herbaceum*, L.
 24. *Tilia platyphylla*, Scop.
 — T— *Americana*, L.
 26. *Melia Azedarach*, L.
 27. *Linum usitatissimum*, L.
 29. *Rhus glabra*, L.
 — R— *typhina*, L.
 31. *Acer saccharinum*, L.
 — A— *dasycarpum*, Ehrh.
 — A— *rubrum*, L.
 32. *Aesculus Hippocastanum*, L.
 41. *Robinia Pseud-acacia*, L.
 42. *Indigofera tinctoria*, L.
 46. *Cercis Canadensis*, L.
 47. *Gleditschia triacanthos*, L.
 51. *Cerasus serotina*, DC.
 56. *Crataegus Crus-galli*, L.
 — C— *cordata*, Ait.
 61. *Lagenaria vulgaris*, Ser.
 77. *Panax quinquefolium*, L.
 78. *Cornus florida*, L.
 80. *Rubia Tinctorum*, L.
 81. *Dipsacus Fullonum*, L.
 115. *Catalpa bignonioides*, Walt.
 149. *Fraxinus Americana*, L.
 — F— *pubescens*, Walt.
 — F— *sambucifolia*, Lam.
 150. *Ligustrum vulgare*, L.
 163. *Nyssa multiflora*, Walt.
 164. *Ulmus Americana*, L.
 165. *Celtis occidentalis*, L.
 168. *Juglans nigra*, L.
 169. *Carya alba*, Nutt.
 — C— *tomentosa*, Nutt.
 — C— *porcina*, Nutt.
 170. *Ostrya Virginica*, Willd.
 172. *Quercus Phellos*, L.
172. *Quercus imbricaria*, Mx.
 — Q— *virens*, Ait.
 — Q— *nigra*, Willd.
 — Q— *tinctoria*, Bartr.
 — Q— *coccinea*, Wangenh.
 — Q— *rubra*, L.
 — Q— *falcata*, Mx.
 — Q— *palustris*, Mx.
 — Q— *obtusiloba*, Mx.
 — Q— *alba*, L.
 — Q— *bicolor*, Willd.
 — Q— *Prinus*, L.
 — Q— *montana*, Willd.
 — Q— *Castanea*, Muhl.
173. *Fagus sylvatica*, L.
 174. *Castanea vesca*, Gaertn.
 175. *Betula nigra*, L.
 — B— *lenta*, L.
 — B— *papyracea*, Ait.
 177. *Salix vitellina*, L.
 — S— *Babylonica*, L.
178. *Populus tremuloides*, Mx.
 — P— *angulata*, Ait.
 — P. *Graeca*, Ait.
 — P. *dilatata*, Ait.
179. *Liquidambar styraciflua*, L.
 180. *Platanus occidentalis*, L.
 181. *Morus rubra*, L.
 — M— *alba*, L.
 182. *Maclura aurantiaca*, Nutt.
 183. *Broussonetia papyrifera*, Vent.
 186. *Cannabis sativa*, L.
 187. *Humulus lupulus*, L.
 188. *Pinus variabilis*, Lambert.
 — P— *palustris*, L.
 — P— *Strobis*, L.
 — P— *Canadensis*, L.
 — P— *microcarpa*, Lamb't.

189. *Taxodium distichum*, Rich. 237. *Andropogon saccharatus*,
 190. *Thuja sphaeroidalis*, Rich. *Roxb.*
 191. *Juniperus Virginiana*, L. 238. *Equisetum hyemale*, L.
 192. *Sabal Palmetto*, Loddig. 239. *Lycopodium dendroideum*,
 196. *Typha latifolia*, L. Sw.
 198. *Tillandsia usneoides*, L. 241. *Sphagnum palustre*, L.
 205. *Scirpus triqueter*, L. 250. *Fucus vesiculosus*, L.
 230. *Arundinaria macrosperma*, *Ninety-one* in number; of which
 Mx. *Twenty-four* are cultivated.
 236. *Saccharum officinarum*, L.

VI. *Pernicious and troublesome* Plants—to be expelled: The
eminently pernicious ones in SMALL CAPITALS.

1. *Ranunculus bulbosus*, L. 131. *Nepeta Cataria*, L.
 2. *Delphinium Consolida*, L. 133. *Leonurus Cardiaca*, L.
 6. *Papaver dubium*, L. 136. *ECHIU M VULGARE*, L.
 13. *Camelina sativa*, Crantz. 138. *Cynoglossum Morisoni*, DC.
 17. *Hypericum perforatum*, L. 140. *CONVOLVULUS ARVENSIS*, L.
 18. *LYCHNIS GITHAGO*, Lam. 141. *Cuscuta epilinum*, Wich.
 23. *Abutilon Avicennae*, Gaert. 143. *Datura Stramonium*, L.
 29. *Rhus venenata*, DC. 145. *Solanum nigrum*, L.
 — R— *Toxicodendron*, L. — S— *CAROLINENSE*, L.
 30. *Ailanthus glandulosa*, Desf 154. *Chenopodium album*, L.
 54. *Rubus Canadensis*, L. 155. *Amaranthus albus*, L.
 — R— *villosus*, Ait. — A— *hybridus*, L.
 55. *Rosa Carolina*, L. — A— *SPINOSUS*, L.
 66. *Cicuta maculata*, L. 157. *Rumex crispus*, L.
 71. *Archemora rigida*, DC. — R— *obtusifolius*, L.
 73. *DAUCUS CAROTA*, L. — R— *Acetosella*.
 79. *Sambucus Canadensis*, L. 158. *Polygonum sagittatum*, L.
 81. *Dipsacus sylvestris*, L. — P— *arifolium*, L.
 82. *Vernonia Noveboracensis*, 185. *Urtica dioica*, L.
 Willd. 199. *Smilax rotundifolia*, L.
 87. *Ambrosia artemisiaefolia*, L. — S— *caduea*, L.
 88. *Xanthium strumarium*, L. 200. *ORNITHOGALUM UMBELLA-*
 — X— *SPINOSUM*, L. *TUM*, L.
 90. *Bidens frondosa*, L. 201. *Allium vineale*, L.
 — B— *chrysanthemoides*, 203. *Juncus communis*, E. Mey?
 Mx. 204. *Carex acuta*, Gooden.
 — B— *bipinnata*, L. 206. *CYPERUS REPENS*, Ell.
 91. *Maruta Cotula*, DC. — C— *HYDRA*, Mx.
 94. *LEUCANTHEMUM VULGARE*, 214. *Panicum sanguinale*, L.
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 100. *Centaurea Cyanus*, L. 219. *Bromus secalinus*, L.
 102. *Cirsium lanceolatum*, Scop. 232. *TRITICUM REPENS*, L.
 — C— *discolor*, Spreng. 245. *MERULIUS LACHRYMANS*,
 — C— *pumilum*, Spreng. Schum.
 — C— *horridulum*, Mx. 247. *Ascophora Mucedo*, Link.
 — C— *ARVENSE*, Scop. 248. *Uredo segetum*, Pers.
 103. *Lappa major*, Gaertn. 249. *PUCCINIA GRAMINIS*, Pers.
 104. *Cichorium Intybus*, L. *Seventy-three* in number; of
 114. *Plantago lanceolata*, L. which some 16 or 18 are eminent-
 117. *Verbascum Thapsus*, L. ly pernicious.
 118. *LINARIA VULGARIS*, Mill.

VII. Plants which are chiefly mere *Weeds*, upon Farms,—and ought to be expelled, or superseded by more useful ones.

- | | |
|---|---|
| 9. <i>Sisymbrium officinale</i> , Scop. | 130. <i>Prunella vulgaris</i> , L. |
| 15. <i>Capsella Bursa-pastoris</i> , Moench. | 131. <i>Nepeta Glechoma</i> , Benth. |
| 19. <i>Portulaca oleracea</i> , L. | 132. <i>Lamium amplexicaule</i> , L. |
| 20. <i>Malva rotundifolia</i> , L. | 135. <i>Teucrium Canadense</i> , L. |
| 29. <i>Rhus glabra</i> , L. | 137. <i>Lithospermum arvense</i> , L. |
| 43. <i>Trifolium arvense</i> , L. | 148. <i>Asclepias tuberosa</i> , L. |
| 52. <i>Potentilla Norvegica</i> , L. | 158. <i>Polygonum</i> (<i>all the species</i>). |
| — P—— <i>Canadensis</i> , L. | 160. <i>Phytolacca decandra</i> , L. |
| 54. <i>Rubus</i> (<i>all the wild species</i>). | 166. <i>Euphorbia</i> (<i>all the species</i>). |
| 59. <i>Oenothera biennis</i> , L. (<i>and all others</i>). | 176. <i>Eruca serrulata</i> , Willd. |
| 65. <i>Saxifraga Pennsylvanica</i> , L. | 194. <i>Symplocarpus foetidus</i> , Salisb. |
| 83. <i>Eupatorium</i> (<i>all the species</i>) | 197. <i>Sagittaria sagittaeifolia</i> , L. |
| 84. <i>Aster ericoides</i> , L. (<i>and all others</i>). | 203. <i>Juncus</i> (<i>all the species</i>). |
| 85. <i>Erigeron</i> (<i>all the species</i>). | 204. <i>Carex</i> (<i>all the species</i>). |
| 86. <i>Solidago nemoralis</i> , Ait. (<i>and all others</i>). | 205. <i>Scirpus</i> (<i>all the species</i>). |
| 87. <i>Ambrosia trifida</i> , L. | 206. <i>Cyperus</i> (<i>all the species</i>). |
| 93. <i>Achillea Millefolium</i> , L. | 207. <i>Leersia oryzoides</i> , Swartz. |
| 97. <i>Gnaphalium polycephalum</i> , Mx. | 215. <i>Panicum</i> (<i>all the species</i>). |
| 98. <i>Erechtites hieracifolia</i> , Raf. | 215. <i>Setaria glauca</i> , Beauv. |
| 99. <i>Senecio aureus</i> , L. | — S—— <i>viridis</i> , Beauv. |
| 103. <i>Cirsium</i> (<i>all the species</i>). | 216. <i>Oplismenus Crus-galli</i> , K'th |
| 106. <i>Taraxacum Dens-leonis</i> , Desf. | 220. <i>Phragmites communis</i> , Trin |
| 108. <i>Lobelia</i> (<i>all the species</i>). | 237. <i>Andropogon scoparius</i> , Mx. |
| 111. <i>Andromeda Mariana</i> , L. | — A—— <i>furcatus</i> , Muhl. |
| 114. <i>Plantago major</i> , L. | — A—— <i>nutans</i> , L. |
| 119. <i>Verbena urticaefolia</i> , L. | 238. <i>Equisetum</i> (<i>all the species</i>). |
| | 240. <i>Pteris</i> (<i>and all other Ferns</i>). |
| | 241. <i>Sphagnum</i> (<i>and all other Mosses</i>). |

About 120 species, which infest the farm, as mere *Weeds*.

INDEX

OF THE

ORDERS, TRIBES, GENERA AND SPECIES.

[Synonyms in *Italics*.]

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