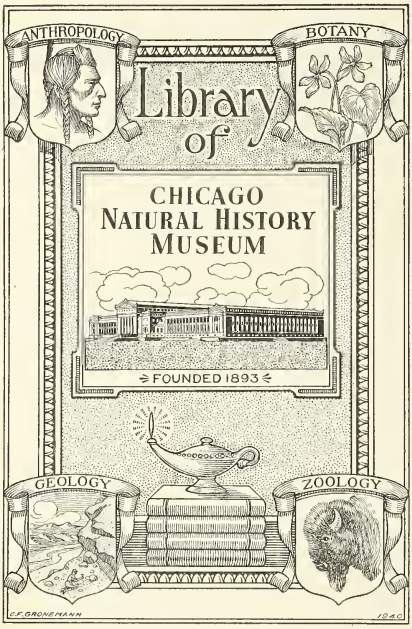

PLANTÆ UTILIORES;

OR

ILLUSTRATIONS OF USEFUL PLANTS,

EMPLOYED IN

THE ARTS AND MEDICINE.

BY M. A. BURNETT.

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CONTENTS.

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Clitoria ternatea major.

CLITORIA TERNATEA MAJOR.——GREATER CLITORIA.

Class XVII. DIADELPHIA.—Order III. DECANDRIA.

Natural Order, LEGUMINOSÆ.——THE PEA TRIBE.

Generic Character.—*Calyx* furnished with two large bracts at the base, five-cleft. *Vexillum* large. *Stamens* diadelphous, inserted along with the petals above the base of the calyx. *Style* rather dilated at the apex. *Legume* linear, compressed, straight, two-valved, acuminated by the base of the style, one-celled, many-seeded. *Seeds* usually separated by cellular substance.—*Don's Gardening and Botany.*

Specific Character.—*Plant* sub-shrubby, evergreen. *Stems* twining, pubescent, branching at the axil of each leaf. *Leaves* with from two to four pairs of ovate mucronate leaflets, and a terminal odd one, nearly smooth, but sometimes having a few minute hairs. *Stipules* very small, awl-shaped. *Bracts* large, roundish. *Calyx* tubular, with five lanceolate segments, remaining in a dry state around the base of the *Flowers* of a considerable size, bright-blue. *Legumes* long, slightly downy.

Var. Major.—A plant raised from seeds, received from New South Wales having large deep blue flowers.

Few gardens, we imagine, in which plants receive the commonest share of attention, will not at some period have possessed the singular and beautiful *Clitoria ternatea,* which is a native of India. Our present subject is from Sydney, New South Wales, whence seeds of it were received by the Lady of B. Harrison, Esq., a gentleman, neighbour of J. Cook, Esq., of Brooklands, Blackheath, Kent, and to whose successful gardener, Mr. W. P. Ayres, they were presented; and being raised, and flowering, proved to be a distinct and very superior variety, well deserving to be distinguished by the name now given it.

"The Clitorias" Mr. Ayres says, "do not root freely from cuttings, but they produce abundance of seed."

In saying, "The Clitorias do not root freely from cuttings," Mr. Ayres doubtless alludes to *C. ternatea,* its varieties, and the annual species in general, as we have not found such others as have come under our notice subject to the difficulty he mentions.

A soil consisting of loam, peat, and leaf-mould, so proportioned as to constitute it light, with good drainage secured to the pots in which the plants are grown, will be found very favourable to their welfare.

Clitoria is from *Clitoris,* an anatomical term; to the subject of which the flowers are thought to bear some resemblance.*

M. de Mirbel, in his very excellent treatise "On the Anatomy and Physiology of Plants," has endeavoured to lay down a distinction between the animal and the vegetable world in the following terms, and it is a distinction which seems to be approved by Sir Edward Smith:—Plants alone have a power of drawing nourishment from inorganic matter, mere earths, salts, or airs; substances incapable of nourishing animals, which only feed on what is or has been organized matter, either of a vegetable or animal nature. So that it should seem to be the office of vegetable life alone to transform dead matter into organized living bodies."

Dr. John Mason Good objects to this distinction between vegetable life and animal life, and observes, that in laying down a distinctive character for animals and plants we are compelled to derive it from the more perfect of each kind, leaving the extreme cases to be determined by the chemical components elucidated on their decomposition. Under this broad view of the subject he proceeds to observe, that while they agree in an origin by generation, a growth by nutrition, and a termination by death; in an organized structure, and an internal living principle; they differ in the powers with which the living principle is endowed, and the effects it is capable of exerting. In the plant it is limited, so far as we are capable of tracing it, to the properties of irritability, contractility, and simple instincts.

The structure of vegetables is truly wonderful, and demands our admiring attention. How excellently adapted are the roots for taking hold of their parent earth, as well as for drawing nourishment for the support of the plant, and imbibing moisture from the neighbouring soil! How commodiously are the various tubes and fibres composing the trunk or stalk arranged for the motion of the sap upwards, to all the extremities of the leaves and branches! How nicely are the leaves formed for the important services they are made to yield in the economy of vegetation! What an excellent clothing does the bark afford, not only for protecting the stem and branches from external injury, but from the hurtful extremes of heat and cold! What evident marks of wisdom and design do the flowers evince in their beautiful and delicate

*Paxton's Magazine of Botany.

construction; how nicely are they formed for the protection and nourishment of the first and tender rudiments of the fruit, and when it has attained more firmness and solidity, how readily do they relinquish their charge, and drop off in decay, when no longer necessary! How wonderfully does the fruit, in some classes, envelope and protect the seed till it has arrived at maturity; and lastly, what a passing strange piece of organized mechanism is the seed itself, and, being necessary for the reproduction of its species, what a remarkable provision is made for its preservation and succession! What but the wisdom of a Deity could have devised, that those seeds which are most exposed to the ravages of the inhabitants of the forest should not only be doubly, but some of them trebly enclosed;* that those most in request as articles of food, should be so hardy and so abundantly prolific;† and that seeds in general, which are the sport of so many casualties, and exposed to injury from such a variety of accidents, should be possessed of a principle of lasting variety, which makes it indeed no easy matter to deprive them of their fructifying power! Plants are also multiplied and propagated by a variety of ways, which strengthen the provision made for their succession.

Nor is the finger of Providence less visible in the means for diffusing or spreading abroad vegetables, than in the provision made for keeping up their succession. The earth may be said to be full of the goodness of the Lord; but how comes it to pass, that in parts untrod by man, and on the tops of ruinous buildings, so many varied specimens of the vegetable creation are to be found? Is it not from the manner in which nature's great Husbandman scatters his seeds about? While the seeds of some plants are made sufficiently heavy to fall down and take up their abode near the place of their nativity; and others after having been swallowed up by quadrupeds, are deposited in the neighbouring soil; some are carried by the fowls of the air to places more remote, or, being furnished with a soft plumage, are borne on the winds of heaven to the situations allotted for them. To prevent some from pitching too near, they are wrapped up in elastic cases, which, bursting when fully ripe, the prisoners fly abroad in all directions; to prevent others from straying too far, they are furnished with a kind of grappling hooks, that arrest them in their flight, and attach them to the spot most congenial to their growth. *These are some of the doings of the Lord, and are wondrous in our eyes!*

In the construction of plants we observe a considerable difference in the consistence of the three classes. Compared with the shrubby race, how hard, firm, and tenacious is the trunk of the majestic oak; and, compared with the herbaceous tribe, how woody, tough, and elastic is the hawthorn twig! But for this, how could the mighty monarch of the wood have been able to withstand the fury of the tempest? While the more humble and lowly shrubs stand not in need of such firmness of texture, their pliability and elastic toughness, together with the prickly coat of mail by which they are enveloped, render them less susceptible of injury in their exposed situation.

Softness, united with a still greater degree of flexibility, are the distinguishing characteristics of the herbaceous order; and how wisely has this been ordered for the various purposes for which they were created! With the firmness of trees, to what a prickly stubble must nature's soft and downy carpet have given way! With the tenacity of shrubs, how would it have answered as food for our cattle?

There are, besides, a number of other properties and peculiarities in the vegetable kingdom, in which the wonderful working of the Divinity shines pre-eminent. How strange, for instance, that if a seed is sown in a reversed position, the young root turns of itself downwards, while the stem refuses to sink deeper in the soil, and bends itself round to shoot up through the surface of the earth! How surprising, that when the roots of a tree or a plant meet with a stone or other interruption in their progress under ground, they change their direction, and avoid it! How amazing, that the numerous shoots which branch out from the root in quest of moisture, pursue, as it were by instinct, the tract that leads to it—turn from a barren to a more fertile soil; and that plants shut up in a darksome room, bend or creep to any aperture through which the rays of light may be admitted!

What amazing variety of size, of shape, and of hue, do we discover among this multitudinous order of things! What different properties do some possess from others; and what a near approach do a few make to that superior order immediately above them, in the scale of existence! The sensitive plant, when slightly touched, evinces something like the timidity of our harmless animals; the hedysarum gyrans, or moving plant of the East, exhibits an incessant and spontaneous movement of its leaves during the day, in warm and clear weather; but in the night season, and in the absence of light and heat, its motions cease, and it remains, as it were, in a state of quiescence! The American Venus' flytrap, like an animal of prey, seems to lie in wait to catch the unwary insect.‡

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* As in the walnut, we have first a thick, pulpy covering, then a hard shell; within is the seed, enclosed in a double membrane

† Wheat is not only a most prolific plant, but comes to maturity in hot and cold, as well as in temperate climates.

‡ Carpenter's Scripture Natural History.

Styrax Benzoin.

STYRAX BENZOIN.——BENZOIN STORAX, OR BENJAMIN TREE.

Class XXIII. POLYGAMIA.——Order I. MONŒCIA.

Natural Order, COMBRETACEÆ.——MYROBALAN TRIBE.

Fig. (*a*) corolla; (*b*) anthers; (*c*) calyx, germen, and style.

Though Garcias ab Horto, Grimm, and Silvius, were acquainted with the real tree from which the resinous substance called Benzoin is collected, its botanical characters were entirely unknown to modern authors till about the year 1787, when Dryander fully ascertained it to be a Styrax. This was done at the request of the late Sir Joseph Banks, who obtained proper specimens of the tree from Mr. Marsden at Sumatra, where it is a native. Ray had erroneously supposed it to be the production of a North American shrub, thence called by Linnæus, Laurus *Benzoin*. The latter, in correcting this error fell into a no less mistake, making the Benjamin-tree a Croton in Mant. 2,294 and a Terminalia in the supplement 434. To this he is supposed to have been led by the French name of this Croton or Terminalia (*Bien-joint,*) but he gives a better reason in justification of himself in the *Supplementum*, where he informs us that a piece of the true *Benzoe*, brought by Thunberg, very closely agreed, in its singular bark, with the tree before him, which grew in the stove at Upsal.

The Benzoin Styrax is of quick growth, and rises to a considerable height; it sends off many strong, round branches, which are covered with a fine downy and hoary bark. The leaves are about four inches long and two broad, alternate, on short footstalks, quite entire, pointed, oblong, elegantly reticulated with triply compound prominent veins, smooth on the upper surface, and clothed beneath with a fine dense hoary down. The flowers are in compound axillary clusters, seldom so long as the leaves, alternately branched, with angular downy stalks, and a few small, oblong, concave, more downy, deciduous bracteas. The flowers are from six to twelve in one cluster, smaller than those of Styrax *officinale*, and usually hang all upon the same side. The calyx is bell-shaped, downy, with very minute teeth; the corolla consists of five linear obtuse petals, four times longer than the calyx, connected together at the base, externally cineritious, and somewhat silky rather than downy. The filaments are ten, shorter than the petals, inserted into the receptacle, connected at the base into a tube almost as long as the calyx, and crowned with linear erect anthers. The germen is superior, ovate, and tomentose, with a slender style, and simple stigma. The fruit is similar to that of Styrax *officinale*.

In some of the northern parts of Sumatra, particularly near the sea-coast, there are several extensive plantations of these trees. The fruit being sown in the rice fields, springs up, and the young plants require only that the surrounding shrubs should be cleared away from them. When the trees have attained the age of six or seven years, incisions are made in the bark, from which the balsam exudes in the form of a thick, whitish, resinous juice. By exposure to the air, this juice soon hardens; it is then pared from the bark with a knife or chisel. For the first three years the trees yield the purest resin: this is of a white colour, inclining to yellow, soft and fragrant. Afterwards, for the next seven or eight years, an inferior sort is yielded; this is of a reddish yellow colour, degenerating to brown. At length the trees, unable to bear a repetition of the process, are cut down, and split into pieces. From these is procured, by scraping, a still worse sort of benzoin, which is dark-coloured, hard, and mixed more or less with the parings of the wood and other impurities.

The inferior sorts of benzoin are exported to Arabia, Persia and some parts of India, where they are burned, to perfume, with their smoke, the temples and houses of the inhabitants; to expel troublesome insects, and obviate the pernicious effects of unwholesome air or noxious exhalations.

Benzoin is brought for sale to the mercantile parts of Sumatra, in large cakes, covered with mats. In order to pack it in chests, it is necessary to break these cakes, and to expose the benzoin to the heat of the sun. The greater part which is brought to England is re-exported to countries where the Roman Catholic and Mahomedan religions prevail; to be there burned in the churches and temples. The exportation of benzoin from London to Magadore only has been estimated at 30,000 pounds weight per annum.

Chemical Properties.—Only three solid balsams are at present known; viz. *Storax*, *Dragon's blood*, and *Benzoin*. *Benzoin* has a very agreeable odour, which is increased by heat. It has little taste. Its specified gravity is 1,092. This substance has been used in medicine for ages, and various processes have been pointed out by chemists for extracting benzoic acid from it; but the only person who has examined its properties in detail is Mr. Brande.

Cold water has very little effect on benzoin, but boiling water takes up a portion of benzoic acid.

Alcohol dissolves it when assisted by a gentle heat, and forms a deep yellow solution inclining to reddish-brown. When this solution is diluted with water, the benzoin precipitates in the form of a white powder. It is precipitated also by muriatic and acetic acids, but not by the alkalies. A few drops of sulphuric acid likewise precipitate the benzoin: but an additional quantity will re-dissolve it, and form a liquid of the colour of port wine. When equal quantities of the alcoholic solution of benzoin and sulphuric acid are mixed, a dark-pink precipitate falls. The liquid assumes a pink colour, which becomes lilac when diluted with water. Nitric acid occasions a strong effervescence, and forms a dark-red fluid with the alcoholic solution, but throws down no precipitate.

Ether dissolves benzoin with facility, and the solution, with re-agents, exhibits the same phenomena as the alcoholic.

Nitric acid acts with violence on benzoin, and converts it into an orange-coloured mass. When assisted by heat the acid dissolves the benzoin; and as the solution cools, crystals of benzoic acid gradually separate. Mr. Hatchett ascertained that by this process a quantity of artificial tannin is formed.

Medical Properties and Uses.—This balsam was formerly considered to be expectorant and was esteemed for its virtues in asthma and other pulmonary affections; it is now, however, little used in practice, and is chiefly valued as yielding the *benzoic acid* which is somewhat stimulating, and imparts a pleasant flavour to other medicines.

Benzoin is also used in the preparation of what is called *court plaster*, which it sometimes renders too irritating. The mode of making it is as follows:—Five ounces of isinglass are dissolved in a pint of water. A quantity of thin black sarcenet being stretched on a frame, this solution is applied warm with a brush equally over the surface; and, when dry, the process is repeated a second or third time. It is finally brushed over with a weak solution of benzoin in spirits of wine, which communicates to it a pleasant aromatic smell.

Benzoin also enters into the composition of the following preparations:—

1. *Fumigating Pastilles.*

Take of Benzoin, 1 drachm.
Cascarilla bark, ½ drachm
Myrrh, 1 scruple.
Oil of nutmegs } of each, 10 drops.
Oil of cloves }
Nitrate of potass, ½ drachm.
Charcoal, 6 drachms.

Mucilage of gum tragacanth, as much as may be required, to cause the mass to adhere; after which it is to be divided and cut into the usual form.

The following is the French method of preparing pastilles:

"Prenez, Benjoin	16 parts.
Baume du Pérou sec . .	16
Qu'on a fait préalablement dans l'eau pour enlever tout l'acide volatil.	
Santal citrin	4
Ladanum	1
Charbon de tilleul . . .	96
Nitrate de potasse . . .	2

" Reduisez toutes ces substances en poudre tres fine, melez-les exactement, et faites-en, avec du mucilage de gomme adraganthe, une masse épaisse, dont vous formerez des cônes échancrés en trépied à la base, que vous ferez sécher dans un four faiblement chauffé."

2. *Virgin's Milk.*—A spirituous solution of benzoin mixed with about 20 parts of rose water, forms a well-known cosmetic. Goulard water is also sometimes sold under this title.

3. *Friar's Balsam, Wade's Drops, Jesuit's Drops.*—These preparations are nothing more than the compound ticture of benjamin.

4. *Pectoral Balsam of Honey.*—This is merely a simple tincture of benzoin, or of tolu, and like the following, is highly stimulant and improper for those diseases for which it is usually commended.

5. *Essence of Coltsfoot,* consists of equal parts of balsam of tolu, and the compound tincture of benzoin, to which is added double the quantity of rectified spirits of wine. It is recommended for coughs and consumptions!!

Riga Balsam.—Take of alcohol or rectified spirit, eight ounces; compound tincture of benzoin, two drachms; tincture of saffron, one drachm: mix. A popular nostrum for sprains and bruises: recommended also as a *vulnerary!*

Off. Prep.—Acidum Benzoicum. *L. E. D.*
Tinct. Benzoini composita. *L. E. D.*

Helleborus niger L.

HELLEBORUS NIGER.——BLACK HELLEBORE.

Class XIII. POLYANDRIA.—Order VI. POLYGYNIA.

Natural Order, RANUNCULACÆ.——THE CROW-FOOT TRIBE.

Black Hellebore, so called from the dark colour of the root, is a perennial plant growing spontaneously on the rocky and woody mountains of many parts of Europe, especially in Austria, Carniolia, Italy, and Greece, and cultivated in our Gardens as an ornamental plant, flowering in mild seasons, from December till March, whence it has obtained the name of Christmas rose. The date of its introduction is unknown; but it appears to have been cultivated in Britain by Gerarde as early as 1596. In the old editions of our dispensatories, it is termed "Melampodium." Anticyra, now Asprospizzia, a city in Phocis, situated near Mount Oeta, was famous among the ancients for the Hellebore which it produced; it was of the best quality, and reckoned a specific for many diseases, particularly for insanity; hence arose the proverb, "Naviget Anticyram," send the madman a voyage to Anticyra. Thus the Roman poet:—

Danda est ellebori multo pars maxima avaris:
Nescio an Antycyram ratio illis destinet omnem.
Hor. Sat. iii. lib. ii.

"By far the largest portion of Hellebore is to be administered to the covetous: I know not whether reason does not consign all Anticyra for their use."

The root, which is the part used in medicine, consists of numerous depending fibres, issuing from a rough transverse knotty head, externally of a blackish colour, internally white or yellowish. The leaves are large, composed of five, six, or more leaflets of a deep green colour, and spring directly from the root on long cylindrical petioles, smooth and dotted with red; the leaflets are ovate-lanceolate, smooth, shining, and coriaceous, with the distal, half of each slightly serrated. The flower-stalk is a scape, six or eight inches long, erect, round, variegated with red, and supporting one or two flowers. The bracteas, or floral leaves, are ovate and indented at the edges. The calyx consists of five large, roundish concave sepals, at first white, or of a pale rose colour, deepening by age, and finally becoming green, after the impregnation of the seed. The petals are tubular, and two lipped. The filaments are numerous, from 30 to 60 in number, capillary, and supporting yellow anthers. The germens, about six or eight in number, become pods, containing many black shining seeds.

Adulterations.—It appears that the merchants of Frankfort and of Hamburgh frequently substitute the roots of the Aconitum *neomontanum*, Adonis *vernalis*, Helleborus *viridis*, Trollius *europæus*, Actæa *spicata*, and some other plants, for those of Helleborus *niger;* but these may in general be distinguished by their paler colour.

Qualities and Chemical Properties.—The fibres of the roots, which are the parts employed, are of the size of a small quill; corrugated; of a colour approaching to black on the outside; and of a yellowish white within. Their odour is disagreeable. Both the virtues and properties of the root are impaired by keeping: but when fresh, their taste is penetrating; and though neither bitter nor very hot, it leaves a lasting impression in the mouth; and has a remarkable effect on the tongue, as observed long ago by Grew, in his work on Tastes. "The root being chewed, and for some time retained upon the tongue, after a few minutes it seemeth to be benumbed, and affected with a kind of paralytic stupor; or as when it hath been a little burnt with eating or supping any thing too hot." M. M. Feneulle and Capron have lately analysed the root, but were unable to discover any alkali in its active principle, similar to that which is yielded by the white Hellebore: a plant, however, that belongs to a very different order, notwithstanding the similarity of the common name. The following are its constituents, viz. a volatile oil, a fatty matter, a resin, wax, a volatile acid, a bitter principle, mucus, alumina, gallate of potash, acidulous gallate of lime, and a salt, with an ammoniacal base. Alcohol appears to extract its virtues most efficiently; from which it would appear, that they depend principally on its resinous part. A watery extract, also, possesses both its purgative and diuretic qualities: and its irritating properties are considerably lessened by boiling.

From the experiments of Feneulle and Capron, as detailed in the Journal de Pharmacie, (vii. 503,) it would seem, that the active and deleterious principle of the Hellebores is an acid contained in the oily matter. Both the Helleborus viridis and hyemalis possess similar properties to the Helleborus Niger, only in a less degree; but the Helleborus fœtidus is more potent than either.

Poisonous Effects and Morbid Appearances.—That Hellebore is a violently *acrid poison*, the subjoined accounts will prove.

Experiments on animals have shown, that when administered in doses of two or three drachms to dogs, death ensues in the course of sixteen or eighteen hours. Smaller animals are killed by its exhibition in much less time: for example, ten grains of the extract introduced into the windpipe of a rabbit destroyed life in six minutes. But with this, as with many other poisons, the effects are greater when applied to serous surfaces and inserted into wounds, than when taken into the stomach.

"Six grains of powdered hellebore were sprinkled over a wound made in the interior of the thigh of a small young dog. There was no visible symptoms at the expiration of eight hours. The next day, twenty hours after the operation, the animal was lying down upon his side, and in a state of great dejection; he was quite sensible to external impressions: he could be moved like an inert mass of matter, and could not by any means keep himself on his legs. He died three hours after. No sensible lesion was perceived in the digestive canal, or in the lungs."—*Orfila.*

Morgagni has recorded a case in which although but half a drachm of the extract was taken, it had a fatal termination in sixteen hours. The post mortem examination showed inflammation of the digestive canal, especially of the large intestines; and similar appearances were found in two cases in which this plant had been administered, through the presumptuous ignorance of a quack-doctor. The chief facts are as follows:—as communicated by M. Ferary to the Societé Medicale d'Emulation at Paris.

"Two persons took a decoction of this root in cyder. Three quarters of an hour after taking it, alarming symptoms were developed, without exciting suspicion of the real cause. One of the men, therefore, took another dose, when vomiting, delirium, horrible contortions, accompanied with immediate coldness supervened, and death at last ensued. On dissection, sixteen hours afterwards, the appearances in each were found precisely similar, except that in the one who took the largest quantity they were more strongly marked. The lungs were gorged with blood. The mucous membrane of the stomach was considerably inflamed, of a blackish brown colour, and reduced almost to a gangrenous state."*

In some cases the stomach and intestines, but particularly the *rectum*, are highly inflamed,—a circumstance which will be observed in those who have died from taking the Colchicum *autumnale*, that thus, in its poisonous effects, very much resembles black hellebore. Slight congestions have also been noticed in the lungs, and the bladder has been observed to be red and thickened.

"A man, who appeared to be nearly fifty years old, being in the hospital on account of melancholia, was about to depart, when he took some extract of black hellebore. In the beginning of the night, at the seventh or eighth hour after taking it, he was attacked with sickness and pains of the abdomen, which were allayed by warm broth. About the fifth hour of the night, those affections returned, and again appeared to be relieved. He lay down an hour afterwards, having vomited two or three spoonsful of a greenish matter. So quietly did he then rest, that none of the patients in the nearest beds heard him; but at the eighth hour, they were attracted to his bedside by a peculiar noise from his mouth; and found him dead. He had taken about half a drachm of the extract; a quantity which had been administered to others with impunity. He had, however, neglected to drink copiously of whey; a precaution it was customary to recommend.

Medical Properties and Uses.—Before the grand discoveries which chemistry has made on the properties of metallic substances, the most violent vegetable medicines were boldly administered, and this plant has been highly extolled by Avicenna, Gesner, Klien, Milman, and others, in mania, dropsy, cutaneous diseases, and worms. As an emmenagogue, it is occasionally given with success; but this property, as well as its hydragogue virtues, are reasonably supposed to depend on its powerful cathartic effects: effects which it sometimes exerts so violently, as to be seldom prescribed; and were it expunged from the list of our materia medica, we could easily fill up the vacancy by indigenous plants of greater utility. The slender fibres of the root only are used. To produce its full effect as a purgative, the dose should be from ten grains to a scruple; but it is very seldom prescribed in substance. The most common form is that of decoction, made with two drachms of the root to a pint of water. Of this an ounce or more is given every three or four hours. The extract which is made by evaporating the decoction to a due consistence, is the basis of Bacher's celebrated hydragogue pills, composed of extract of black hellebore, myrrh, and powdered carduus benedictus, in the proportion of half a drachm of the first two ingredients, and five grains of the last, beat into a mass, and made into pills, each weighing a single grain. These pills, which formerly obtained a place in our Pharmacopœias, in doses from one to six, three or four times a day, were strongly recommended on the continent in dropsical cases, and were believed to unite an evacuant and tonic power. Hence they were supposed particularly adapted to those cases where general debility and relaxation of the system occur. Under the hands of their inventor, they acquired so great reputation, that after a trial in the military hospitals of Paris, the receipt was purchased by the French king, and published by authority. But like many other nostrums, since their composition became known, Bacher's pill has by no means supported the reputation which it had when kept a secret.

Dose.—The dose of extract is from grs. iij. to ℈j; of the tincture from gtt xxx. to ʒj. every six hours, in a mucilaginous vehicle.

Off. Prep.—Extractum Hellebori Nigri, E.D. Tinctura Hellebori Nigri, L.E.D. *olim.* Tinctura Melampodii.

* Beck's Elements of Medical Jurisprudence.

Pyrus Japonica.

PYRUS JAPONICA.——JAPAN PYRUS.

Class XII. ICOSANDRIA.——Order IV. PENTAGYNIA.

Natural Order, POMACEÆ.—THE APPLE TRIBE.

1. Section of calyx, showing the insertion of the stamens and pistils. 2. One stamen and the pistils magnified. 3. Outline of a perfect leaf.

Generic Character.—*Cal.* superior of one leaf, five-cleft, permanent. *Cor.* Petals five roundish, concave, larger than the calyx, and proceeding from it. *Stam.* Filaments twenty, awl-shaped, attached to the calyx, shorter than the corolla; anthers oblong, of two lobes. *Pist.* Germ inferior; styles five, filiform; stigmas simple. *Per.* Fruit roundish, umbilicated, with five membranaceous cells. *Seeds* two in each cell. *Leaves* elliptic-oblong, sharply serrated, smooth.

The characters of this species frequently vary: sometimes having numerous petals, as a semi-double flower, but more frequently appearing with five or six. The pericarpium is seldom larger than a walnut, and rarely perfects itself in this country. A white and also a semi-double variety of this species have been obtained, so nearly coinciding in habit with the plant here figured as not to warrant their being made distinct species.

The *Pyrus Japonica* is a native of Japan, and was introduced into this country by Sir Joseph Banks in 1796. It may be considered to rank among some other shrubs from that country, as the most ornamental which are cultivated in our gardens. It possesses in itself a peculiar recommendation, from its blooming at a season when few other flowers appear. Such flowers as present themselves before Spring has put on her verdant robes are viewed with peculiar pleasure and delight, and in a manner invite us to look forward for that season when Nature appears clothed in her loveliest hues. The flowers of the *Pyrus Japonica* are of a beautiful red, and are in great abundance over the whole plant, with the exception of the last year's shoots: the oldest branches of the tree will throw out spurs with flowers; they begin to make their appearance early in March, before the leaves, and continue in perfect beauty until near the end of April: throughout the summer a few blooms will occasionally appear. This plant is with good effect frequently trained against walls or trellis-work, and forms a desirable shrub, to disperse among open plantations and shrubberies, particularly if intermixed with the white variety; as they are proved to endure the severity of our winters. These shrubs are of free growth; and when planted against walls, pruning is necessary: some of the luxuriant young shoots may be removed without injury to the plants. This species of *Pyrus* is easily propagated, either by layers in the spring, or by cuttings in the autumn; and it adapts itself to almost any soil: in common garden earth it grows freely; and is found to flourish in the environs of London.*

In December, says the 'Mirror of the months,' the meadows are still green—almost as green as in the spring, with the late sprouted grass that the last rains have called up, since it has left off, and the cattle called home to enjoy their winter fodder. The corn-fields, too, are bright with their delicate sprinkling of young autumn sown wheat; the ground about the hedge-rows and in the young copses is still pleasant to look upon, from the sobered green of the hardy primrose and violet, whose clumps of unfading leaves brave the utmost rigour of the season: and every here and there, a bush of holly darts up a pyramid of shining leaves and brilliant berries, from amidst the late wild and wandering, but now faded and forlorn company of woodbines and eglantines, which have all the rest of the year been exulting over and almost hiding it, with their quick-growing branches and flaunting flowers. The evergreens, too, that assist in forming the home inclosures, have altogether lost their sombre hue which they have until lately worn—sombre in comparison with the bright freshness of spring and the splendid variety of autumn: and now, that not a leaf is left around them, they look as gay by the contrast as they lately looked grave.

Now, the high-piled turnip cart is seen labouring along the narrow lanes, or stands ready with its white load in the open field, waiting to be borne to the expectant cattle, that are safely stalled and sheltered for the season; while, for the few that are still permitted to remain at the mercy of the inclement skies, and to make their unwholesome bed upon the drenched earth, the moveable hay-rack is daily filled with its fragrant store, and the open shed but poorly supplies the place of the warm and well-roofed stalls of the straw-yard.

Now, too, some of the younger members of the herd (for the old ones know by experience that it is not worth the trouble,) seeing the tempting green of the next field, through the leafless hedge-rows, break their way through and find the fare as bitter and as scanty as that which they have left.

Now the hazels throw out their husky blossoms from their bare branches, looking, as they hang straight down, like a dark rain arrested in its descent; and the furze flings out its bright yellow flowers upon the otherwise bare common, like little gleams of sunshine, and the moles ply their mischievous night-work in

* Flora Conspicua.

the dry meadows; and the green plover "whistles o'er the lea," and the snipes haunt the marshy grounds; and the wagtails twinkle about near the spring heads; and the larks get together in companies, and talk to each other, instead of singing to themselves; and the thrush occasionally puts forth a plaintive note, as if half afraid of the sound of its own voice; and the hedge-sparrow and tit-mouse try to sing; and the robin does sing still, even more delightfully than he has done all the rest of the year, because it now seems as if he sang for us rather than for himself. . or rather, to us, for it is still for his supper that he sings, and therefore for himself.

Not so with the kitchen-garden; that, if it has been duly attended to, is full of interest this month, especially by comparison with the scenes of decay and barrenness by which it is surrounded. The fruit and trees on the walls are all nailed out with the most scrupulous regularity; and by them, as much as by anything else, you may now judge of the skill and assiduity of your gardener. Indeed, this is the month of all others in which his merits are put to the test, and in which they often seem to vie with those of nature herself. Anybody may have a handsome garden from May to September; but only those who deserve one can have it from September to May. Now, then, the walls are all covered with their wide-spread fruit-fan; the celery beds stretch out their unbroken lines of fresh-looking green: the late planted lettuces look trim and erect upon the sheltered borders where they are to stand the winter and be ready, not to open, but to shut up their young hearts at the first warm breath of spring; the green strings of autumn-sown peas scarcely lift their tender downward turning stems above the dark soil; the hardy endives spread out their now full grown heads of fantastically curled leaves, or stand tied up from the sun and air, doing the penance necessary to acquire for them that agreeable state of unhealthiness without which our squeamish appetites could not relish them; the cauliflower, brocoli, and kale plants, maintain their unbroken ranks; and, finally even the cabbages themselves contrive to look genteel.

As to the flower-garden this month, it looks a picture either of pleasantness or poverty; according to the degree of care and skill which has been bestowed upon it: for though nature wills that we should enjoy her beauties during a certain period of the year, whether we use any efforts towards the obtaining of them or not, yet she lays it down as a general principle, in regard to her gifts, that to seek them, is at once to deserve, to have, and to enjoy them; and that, without such seeking we shall only have just enough to make us sigh after more.

The Flower Festival at Gengano.

How shall I describe the first glance into the street—that bright picture as I then saw it? The entire, long, gently ascending street was covered over with flowers; the ground colour was blue: it looked as if they had robbed all the gardens, all the fields, to collect flowers enough of the same colour to cover the streets; over these lay in long stripes, green, composed of leaves, alternately with rose-colour; at some distance from this was a similar stripe, and between this was a layer of dark red flowers, so as to form, as it were, a broad border to the whole carpet. The middle represented stars and sun, which were formed by a close mass of yellow, round, and star-like flowers; more labour still had been spent upon the formation of names—here flower was laid upon flower, leaf upon leaf. The whole was a living flower-carpet, a mosaic floor, richer in pomp of colouring than any thing which Pompeii can show. Not a breath of air stirred—the flowers lay immovable, as if they were heavy, firmly-set precious stones. From all windows were hung upon the walls large carpets, worked in leaves and flowers, representing holy pictures. Here Joseph led the ass on which sat the Madonna and the child; roses formed the faces, the feet, and the arms; gillyflowers and anemones their fluttering garments; and crowns were made of white water-lilies, brought from Lake Nemi. St Michael fought with the dragon; the holy Rosalia showered down roses upon the dark blue globe; wherever my eye fell flowers related to me biblieal legends, and the people all round were as joyful as myself. Rich foreigners, from beyond the mountains, clad in festal garments, stood in the balconies, and by the side of the houses moved along a vast crowd of people all in full holiday costume, each according to the fashion of his country. Beside the stone basin which surrounds the great fountain, where the street spreads itself out, my mother had taken her place, and I stood just before the satyr's head which looks out from the waters.

The sun burnt hotly, all the bells rung, and the procession moved along the beautiful flower carpet; the most charming music and singing announced its approach. Choristers swung the censer before the host; the most beautiful girls of the country followed, with garlands of flowers in their hands and poor children with wings to their naked shoulders, sang hymns, as of angels, whilst awaiting the arrival of the procession at the high altar. Young fellows wore fluttering ribands around their hats, upon which a picture of the Madonna was fastened; silver and gold rings hung to the chain around their necks, and handsome bright coloured scarfs looked splendidly upon their black velvet jackets. The girls of Albano and Frascati came, with their thin veils elegantly thrown over their black, plaited hair, in which was stuck the silver arrow. Those from Villetri, on the contrary, wore garlands around their hair, and a smart neckerchief, fastened so low down in the dress as to leave visible the shoulder. From Abruzzi, from the Marshes, from every other neighbouring district, came all in their peculiar national costume, and produced altogether the most brilliant effect. Cardinals, in their mantles woven with silver, advanced under canopies adorned with flowers; monks of various orders following, all bearing burning tapers.*

* The Improvisatore, from the Danish of H. C. Anderson.

Helleborus Orientalis.

HELLEBORUS ORIENTALIS.—ORIENTAL OR TRUE OFFICINAL HELLEBORE.

Class XIII. POLYANDRIA.—Order VI. POLYGYNIA.

Natural Order, RANUNCULACÆ.——THE CROW-FOOT TRIBE.

Fig. (*a*) represents a perfect flower, with the petals removed; (*b*) a single petal, to show three of the nectaries at its base; (*c*) the germens attached to the receptacle.

We have great pleasure in being able to present our readers with a correct figure of this rare plant, made from the most admirable drawing by Mr. Ferdinand Bauer for the Flora Græca, and published in vol. i. fasc. v. of that celebrated work. The plant, was gathered on Mount Athos, Delphi, and Mount Olympus in Anatolia, on the hills, near Thessalonia, and abundantly near Constantinople, by Dr. Sibthorp, formerly Professor of Botany in the University of Oxford. Tournefort justly supposes his Helleborus niger orientalis, amplissimo folio, caule prælto, flore purpurascente, to be the Hellebore of the ancients, as he found it in the island of Anticyra, famous for the production of this medicine.

The root is perennial, somewhat fleshy, black externally, and surrounded with many very long, dark-coloured, simple fibres. The stem is very tall, round, smooth, leafy, and of a purplish colour. The radical leaves are stalked, very large, pedate, composed of about nine elliptic, oblong, serrate, pointed lobes, of a dark green colour on the upper surface, and paler, hairy, and veined underneath; those on the stem numerous, on roundish, smooth foot-stalks, channelled above, sheathing at the base, and slightly hairy below. The flower-stalks, which are axillary or terminal, and accompanied by numerous fringed, serrated, leafy bracteas, do not rise above the leaves, but are branched, bearing five or six drooping, concave flowers, of a greenish or whitish colour, turning purple as they fade. The petals are five, roundish, concave, and persistent; the nectaries are numerous, placed in a circle within the petals, deciduous, each of one leaf, tubular, compressed, with a reflected lip, and their base attenuated. The stamens are numerous, thread-like, with oblong anthers. The germens, which are five, of an oblong shape, terminated by the styles, become beaked pods, containing several seeds.

Medical Properties and Uses.—The roots of this species of Hellebore, formerly called *Melampodium* from their black colour, are acrid and violently cathartic. They have been supposed to be useful in maniacal cases, epilepsy, paralysis, hypochondriasis, dropsies, and a variety of other diseases; but as the genuine oriental plant may not be easily accessible to us, it is useful to know that the Helleborus *viridis* is the safest substitute for it, though less active; while the H. *fœtidus*, which has sometimes been used by fraud or mistake, is more violent and dangerous. We learn from Mr. Curtis, in his Flora Londinensis, that great quantities of the roots of H. *viridis* are annually sent up from the country, and used for the true black Hellebore. It has also been conjectured that their qualities are the same; for this species is more nearly allied to the ancient Greek plant than the Helleborus *fœtidus*. A full account of the Medical properties and uses of Hellebore has been already given, under Art. *Helleborus niger*, which, till lately, was supposed to be the drug used by the ancients.*

We subjoin the following extract from a work on Poisons, by Mr. A. S. Taylor, Lecturer on Chemistry, &c. at Guy's Hospital, a gentleman whose valuable productions, indefatigable research, and important discoveries, have conferred great usefulness on medical science:—

"The Narcotico-irritant poisons are derived from the vegetable kingdom. Their *effects* on the body are of a mixed character, since both the brain and alimentary canal are liable to be affected by them.

In order to prove fatal, they require to be exhibited commonly in large doses. The symptoms in most cases appear in about an hour; but sometimes they may be delayed for many hours. This has been especially noticed with regard to poisonous mushrooms. The symptoms commonly observed are vertigo, coma, delirium, paralysis or convulsions: such at least are the effects resulting from Monkshood (Aconite) and Deadly Nightshade (Belladonna.) These poisons have in general a strong and well-marked taste, so that they cannot be criminally administered without suspicion being excited, or without detection. Murder by Monkshood has been accomplished by the criminal substitution of the leaves of this plant for other vegetables at a meal.

* Medical Botany.

The strychnos tribe, including Nux Vomica, has a specific action on the spinal marrow, producing tetanus and convulsions, but rarely coma or delirium. Squills and Foxglove (Digitalis) produce symptoms of narcotism, *i. e.* they affect the brain; but these symptoms are commonly preceded by vomiting, with violent pain in the stomach and bowels, indicative of an irritant action.

Thus, then, there is great variety in the effects produced by this class of poisons, and the same may be said of the post-mortem appearances in the bodies of those who have been killed by them. In some instances the stomach and intestines are inflamed: in others not. Where the person has died under symptoms of narcotism, traces of cerebral congestion are occasionally found; but cases of fatal poisoning by these vegetable substances are so rare, that we have yet much to learn respecting the morbid changes which they produce.

Orfila and other toxicologists have remarked that the narcotic and irritant effects of these vegetable substances seldom appear in the same case. The symptoms are those either of narcotism or irritation, and they sometimes alternate: when taken in *large* doses, they seem to act principally as *Narcotics*, in *small* doses, as *Irritants*.

Analysis.—Most of the narcotico-irritant poisons owe their deleterious effects to the presence of an alkaloidal principle similar to morphia, and susceptible of insulation by complex chemical processes. There is, however, considerable difficulty in extracting these alkaloids from the respective vegetables; and when extracted, the chemical differences among them, in respect to the action of tests, are very slight. Indeed, better evidence of the poisonous nature of a poisonous liquid would commonly be derived from the exhibition of a portion of it to animals, than from the application of chemical tests. In a medico-legal point of view, there are, with few exceptions, no chemical tests for these poisons, when they are mixed up with organic liquids, upon which reliance can be placed. When the vegetable has been used, either in the shape of seeds, leaves, berries, or root, then good evidence may be sometimes procured by searching with or without the aid of a good microscope for the botanical characters of the plant; these parts of the plant, from their indigestible nature, may be found in the vomited matters or evacuations during life, or in the alimentary canal after death. The broken leaves may be separated by washing, as they are quite insoluble in water: they may be therefore easily collected, dried on mica and examined by the microscope, which, under the hands of a good botanist, may thus reveal the nature of the poison. This source of evidence will, however, often fail, owing to the poison having been taken, in the form of extract, infusion or decoction, or even, in some instances, owing to the digestive action of the stomach itself on the vegetable matter. The active alkaloidal principle is no doubt absorbed in all cases of poisoning; but it has not yet been satisfactorily detected by chemical processes in the blood or secretions.

Some years since, I was consulted in a case in which there was hardly a medical doubt that the life of a person had been destroyed by the decoction of a narcotico-irritant vegetable. The fact, however, could not be clearly established. It is much to be regretted, that post-mortem examinations are not enforced as an indispensable part of a coroner's inquest, in all instances of narcotico-irritant poisoning. There is no department of toxicology so defective as this; only a few pathological characters have been observed in cases derived almost exclusively from foreign authorities; and in regard to the effects of some of these poisons on the human body nothing whatever is known except that they destroy life. The acquisition of any sort of medical experience on these points, in England, is unfortunately left to be a matter of the purest accident; and yet on a trial for murder by any of these poisons, our law-authorities would expect that a witness should be perfectly conversant with their effects on the body, while the only possible source of acquiring such knowledge in a satisfactory manner, is entirely cut off from the medical profession! Some well-informed coroners have endeavoured, in performing their duties, thus to benefit the public; but the generality of them act on the principle that the inquest in such cases is merely to record the fact of death from an *external* view of the body.

Treatment.—The treatment of a case of narcotico-irritant poisoning consists in promoting early vomiting by emetics, or in drawing off the contents of the stomach by the stomach-pump. If there should be reason to suppose, from the seat of pain, that the poison has descended into the bowels, then laxative enemata may be used. Recoveries have taken place when the poison has been thus removed, even although formidable symptoms had set in. Cold effusion, or stimulants, may occasionally be required: the patient, if inclined to sleep, should always be kept roused. There is no certain chemical antidote to any of these poisons. Tannin precipitates all the alkaloids: hence it has been strongly recommended as an antidote. No injury can follow its exhibition: and a decoction of black tea will be a good substitute for oak-bark or galls. Coffee may be used as a stimulant. With respect to electricity, Ducros found that the negative current was beneficial to animals poisoned by strychnia or brucin; while the positive current produced convulsions, and accelerated death. (Canstatt, Jahresbericht, 1844, v. 297.) The narcotico-irritants appear to have no corrosive properties:—some of them give rise to a sense of burning heat in the throat and stomach, —this is a local action entirely independent of chemical change; it is especially witnessed in the case of monkshood."

Œnothera missourensis.

ŒNOTHERA MISSOURENSIS.——LARGE-FRUITED ŒNOTHERA.

Class VIII. OCTANDRIA.——Order I. MONOGYNIA.

Natural Order, ONAGRARIÆ.—THE EVENING PRIMROSE TRIBE.

Perianth one-leafed, superior, deciduous: tube cylindrical, erect, long, deciduous: border four-cleft; the segments oblong, acute, bent down. Petals four, obcordate, flat, inserted into the interstices of the calyx. Filaments eight, awl-shaped, curved inwards, inserted into the throat of the calyx, shorter than the corolla. Anthers oblong, incumbent. Germ eylindrical, inferior. Style filiform, the length of the stamens. Stigma four-cleft, thick, blunt, reflex. Capsule cylindrical, four-cornered, four-celled, four-valved, with contrary partitions. *Seeds* very many, angular, naked. *Receptacle* columnar, four-cornered: with the angles contiguous to the margin of the partitions.

Specific Character. *Leaves* lanceolate, veined. *Petals* serrated. *Capsule* elliptic, angular.

Stems branched, prostrate, and of a fine purple; the leaves are seated close on the stem: the flowers appear at each joint; the petals are supported on a long tube somewhat resembling *longiflora;* calyx spotted; the capsules are seated close to the leaves.

This interesting dwarf plant has been described as a biennial; and though it will be found to live and flower for more than two years, yet its existence is but of short duration; it would therefore better support the appellation of a short-lived perennial. The present plant and the *Œ. macrocarpa* have been imagined by some persons to be the same; the flowers of both are similar in appearance and colour, but the straggling habit of growth and the narrowness of the leaves of the *missourensis* will mark a sufficient distinction. During the months of July and August the prostrate branches of the *missourensis* are abundantly decorated by very numerous and luxuriant yellow flowers, which become truly conspicuous from their size, and particularly so from their being produced on a plant of such humble growth. By intermixing this species with the plant *Œ. cæspitosa* (a plant similar in its habit of growth, but bearing a white flower) a pleasing and beautiful group for ornamenting small beds on a lawn or in a flower-garden may be obtained. The careless mixture of the blooms appearing above the dark green leaves, through which the elegantly twining purple stem is casually seen, produces a beauty that every lover of the flower-garden must view with admiration. The rock-work of a garden will also receive a considerable additional charm by a judicious decoration with these elegant little trailing plants. These species of *Œnothera* require an earth tolerably rich: mellow loam, rotten manure, and decayed leaves will form a good composition. As there is no certainty of raising a supply by separating the roots, it is advisable to increase these plants by cuttings, which if planted in an earth somewhat sandy, placed under a hand-glass, and partially shaded, will readily strike: they should be kept in pots under the protection of a frame during the first winter, after which they will thrive well in the open border. This species was discovered by Mr. Nuttall growing freely near the banks of the Missouri.*

From Dr. Lardner's Lectures delivered at New York, we select the following extraordinary and perfectly original observations upon the influence of the moon:—

Lunar Influences.—On a former occasion I examined the question respecting the supposed influence of the moon upon the weather, and demonstrated that so far as actual observation has hitherto afforded grounds for reasoning, there is no discoverable correspondence between the lunar changes and the vicissitudes of rain and drought which can justify or in any degree countenance the popular belief so generally entertained as to dependence of change of weather upon the changes of the moon.

But meteorological phenomena are not the only effects imputed to our satellite; that body, like comets, is made responsible for a vast variety of interferences with organized nature. The circulation of the juices of vegetables, the qualities of grain, the fate of the vintage, are all laid to its account: and timber must be felled, the harvest cut down and gathered in, the juice of the grape expressed, at times and under circumstances regulated by the aspects of the moon, if excellence be hoped for in these products of the soil.

According to popular belief, our satellite also presides over human maladies; and the phenomena of the sick-chamber are governed by the lunar phases; nay, the very marrow of our bones, and the weight of our bodies, suffer increase of diminution by its influence. Nor is its imputed power confined to physical or organic effects: it notoriously governs mental derangement.

* Flora Conspicua.

If these opinions respecting lunar influence were limited to particular countries, they would be less entitled to serious consideration; but it is a curious fact that many of them prevail and have prevailed in quarters of the earth so distant and unconnected, that it is difficult to imagine the same error to have proceeded from the same source. At all events, the extent of their prevalence alone rendered them a fit subject for serious investigation and I propose at present to lay before you some of the principal facts and arguments bearing on these points, for the collection of which we are mainly indebted to the industry and research of M. Arago.

A large volume would be necessary to analyze all the popular opinions which refer to the supposed lunar influences. We shall confine ourselves therefore to the principal of them, and shortly examine how far they can be reconciled with the established principles of astronomy and physics.

The Red Moon.—It is believed generally, especially in the neighbourhood of Paris, that in certain months of the year, the moon exerts a great influence upon the phenomena of vegetation. Gardeners give the name of *Red Moon* to that moon which is full between the middle of April and the close of May. According to them, the light of the moon at that season exercises an injurious influence upon the young shoots of plants. They say that when the sky is clear, the leaves and buds exposed to the lunar light redden and are killed as if by frost, at a time when the thermometer exposed to the atmosphere stands at many degrees above the freezing point. They say also that if a clouded sky intercepts the moon's light, it prevents these injurious consequences to the plants, although the circumstances of temperature are the same in both cases.

Any person who is acquainted with the beautiful theory of dew, which we owe to Dr. Wells, will find no difficulty in accounting for these effects, erroneously imputed to the moon. If the heavens be clear and unclouded, all substances on the surface of the earth which are strong and powerful radiators of heat, lose temperature by radiation, while the unclouded sky returns no heat to them to restore what they have lost. Such bodies, therefore, under these circumstances, become colder than the surrounding air, and may even, if they be liquid, be frozen. Ice, in fact, is produced, in the warm climates, by similar means. But if the firmament be enveloped in clouds, the clouds, having the quality of radiating heat, will restore by their radiation, to substances upon the surface of the earth, as much heat as such substances lose by radiation; the temperature, therefore, of such bodies will be maintained at a point equal to that of the air surrounding them.

Now the leaves and flowers of plants are strong and powerful radiators of heat; when the sky is clear they therefore lose temperature and may be frozen; if, on the other hand, the sky be clouded, their temperature is maintained for the reasons above stated.

The moon, therefore, has no connection whatever with this effect; and it is certain that plants would suffer under the same circumstances, whether the moon is above or below the horizon. It equally is quite true that if the moon is above the horizon, the plants cannot suffer unless it be visible, because a *clear sky* is indispensable as much to the production of the injury to the plants as to the visibility of the moon; and, on the other hand, the same clouds which veil the moon and intercept her light give back to the plants that warmth which prevents the injury here adverted to. The popular opinion is therefore right as to the *effect*, but wrong as to the *cause;* and its error will be at once discovered by showing that on a clear night, when the moon is new, and therefore not visible, the plants may nevertheless suffer.

Time for felling Timber.—There is an opinion generally entertained that timber should be felled only during the decline of the moon; for if it be cut down during its increase, it will not be of a good or durable quality. This impression prevails in various countries. It is acted upon in England, and is made the ground of legislation in France. The forest laws of the latter country interdict the cutting of timber during the increase of the moon. M. Auguste de Saint Hiliare states that he found the same opinion prevalent in Brazil. Signor Francisco Pinto, an eminent agriculturist in the province of Espirito Santo, assured him, as the result of his experience, that the wood which was not felled at the full of the moon was immediately attacked by worms, and very soon rotted.

In the extensive forests of Germany, the same opinion is entertained and acted upon with the most undoubting confidence in its truth. Sauer, a superintendent of one of these districts, assigns what he believes to be its physical cause. According to him, the increase of the moon causes the sap to ascend in the timber: and, on the other hand the decrease of the moon causes its descent. If the timber, therefore, be cut during the decrease of the moon, it will be cut in a dry state, the sap having retired; and the wood, therefore, will be compact, solid, and durable. But if it be cut during the increase of the moon, it will be felled with the sap in it, and will therefore be more spongy, more easily attacked by worms, more difficult to season, and more readily split and warped by changes of temperature.

Admitting for a moment the reality of this supposition concerning the motion of the sap, it would follow that the proper time for felling the timber would be the new moon, that being the epoch at which the descent of the sap would have been made, and the ascent not yet commenced. But can there be imagined in the whole range of natural science, a physical relation more extraordinary and unaccountable than this supposed correspondence between the movement of the sap and the phases of the moon? Assuredly theory affords not the slightest countenance to such a supposition; but let us inquire as to the fact whether it be really the case that the quality of timber depends upon the state of the moon at the time it is felled.

Rhododendron Arboreum.

RHODODENDRON ARBOREUM.—INDIAN-TREE ROSE-BAY.

Class X. DECANDRIA.—Order I. MONOGYNIA.

Natural Order, ERICEÆ.——THE HEATH TRIBE.

Fig. (*a*) represents the pistil; showing the germ, style, and stigma.

Stem twenty feet in height; branches dichotomous, ascending. Leaves at the end of the branches, ovate-lanceolate, on short petioles, bright green on the upper surface, downy beneath; midrib strong, much veined. Flowers deep crimson, from ten to twenty in clusters at the extremity of the branches. Calyx permanent, small, five-cleft. Corolla bell-shaped, dotted in the throat, lobed. Stamens ten, shorter than the corolla, falling with it. Anthers oblong. Germ superior, cylindrical, white, downy.

This magnificent shrub is a native of the Nepal mountains, and was introduced into this country in 1817. In the *Flora Exotica* it is said to have been first discovered by Captain Hardwicke on a tour to Sireenagur in 1796, growing in the mountainous tract called the Sewalic Chain which separates the plains of Hindostan from the Himmaleh mountains; it is called by the natives the *Boorans*. Its wood is used for making stocks of matchlocks, or common muskets of Hindostan.

This species, upon its first introduction, was treated as a hothouse plant; but it is now fully proved to bear the severity of our winters. Sir James Edward Smith, P.L.S., has a specimen in his garden which has stood in the open ground four years; and it has been of late treated as a hardy tree in many collections.

Placed alone upon a lawn, this shrub will appear to great advantage; or mixed with the purple and pink hues of the various American species of this genus, its deep crimson blossoms will appear with additional splendour. Beautiful as this shrub is, it was rarely to be met with until within these few years; but as it is now more generally dispersed, and as it flowers early in the summer, there is reason to expect that the seeds may be perfected in this country, though probably it may be propagated by layers, like the other species of *Rhododendron*.*

Mr. Moore quotes a passage from Tournefort, in his notes to Lalla Rookh, informing us that about Trebizond there is a kind of Rhododendron, on the flowers of which the bees feed, and that their honey drives people mad:—

> "E'en as those bees of Trebizond,—
> Which from the sunniest flowers that glad
> With their pure smile the gardens round,
> Draw venom forth that drives men mad."

It is an interesting amusement (says an admired Author,) to be able to trace in the productions and forms of the vegetable world a certain resemblance, a somewhat of a family likeness, to animated beings, and in fact not only to these, but a resemblance also to various inanimate objects of familiar acquaintance. The subject has often occupied our thoughts, and its consideration in this place may be an occupation not altogether of an uninstructive nature.

Although, to our recollection at least, the subject has not received a formal notice on any previous occasion, the resemblance of flowers to other objects could not escape recognition, and the multitude which have received their titles from these similarities abundantly testifies to that effect. The enumeration of a few of these well-known names will immediately remind the reader of the circumstance. The Turk's cap from a fancied resemblance to that portion of the apparel; the snap dragon, from its similitude to a dragon's mouth; the monk's hood, the bell-flower, the trumpet-flower, the star-worts, the cock's-combs, prince's-feathers, heart's-ease, lion's-tail, satin flower, and many others, the pride of every cottage garden. These all wear some resemblance to the objects from whence they derive their title. But it would be to waste our time to enter into further detail upon things of such common occurrence; the reader, if he pleases, can extend the list at his will, and make his own comments. We shall therefore consider principally the rarer and more striking instances of the display of this mimic faculty to be found in the vegetable world; and the singularities thus presented to our notice are well deserving of a little close attention.

We may premise, however, and in this the reader will probably anticipate us, that instances are of most familiar occurrence in which man has imitated the works of nature, which should not be confounded with our present subject. Thus portions of the order of architecture, and an infinity of the decorations, utensils, weapons, &c. of all ages, find their originals in the productions of the forest and field. It would be absurd

* Flora Conspicua.

to call these cases 'vegetable mimicries.' Again, let not the term under which we have chosen to collect these curiosities be mistaken; it is not, of course, taken to signify that flowers, &c. have the power of conforming themselves to the shape or appearance of other objects; it is intended simply to convey the singular fact, that nature *repeats* in them some of the forms she has ascribed to other members of her great family—any correspondence between other forms and appearances, and the works of man, being in many cases a mere coincidence, and in more not a copy, but a text.

Every one has heard of the columbine—not the stage character, but the homely flower of our gardens. It has received its name from a Latin word, *columba*, a pigeon, from the fancied resemblance of a part of its flower to the neck and body of that bird, while the lateral petals represent its wings; a cluster of such flowers being conceived to present something of the appearance of a brood of young pigeons fluttering around their nest. The larkspurs are as well known as the columbine. The bee-larkspur has the appearance of a bee busily seeking its food in the centre of the flower—a contrivance which no doubt acts the part of a scarecrow; the mimicry being so perfect, as to deter the winged robber from his prey, by the appearance of its being preoccupied. The side-saddle flower tells its own tale. A variety of the tulip tribe, called the parrot tulip, has its petals broken up into shreds, and folded so as to resemble the crest of a paroquet. A greenhouse-tree well known in the vicinity of the metropolis, when in flower, has the very peculiar appearance of there being smooth pieces of red coral stuck over its branches, upwards of an inch in length; it is hence called the vegetable coral-tree. It is a species of *Erythrina;* it is only upon a close scrutiny that the cheat is discovered; and we find that the appearance is produced by the folded scarlet flowers of the plant. Another species of the same tribe bears a flower which in colour and form strongly resembles a cock's-comb. Then my fair readers will not be much puzzled to declare what article of their adornments the drooping flowers of the fuchsia resemble. The little wild convolvulus, which twists round the hedge-spray in its brilliant pink and white streaks, reminds us of the pretty shells which spangle our sea-shores: while the sunflower lifts up his golden face, an apt emblem of his burning prototype: and the *Calceolarias* bring to our remembrance the good old leathern purses of an ancestral generation: and the centre of the impudent jonquil perpetuates the memory of the old-fashioned teacups devoid of handles. Then the sweet pea, and many another *Papilionaceous* flower, bears the image of the painted butterfly, which, from the slenderness of the stalk, seems to be on the wing. *Papilio* is the Latin word for this insect. And the *Tropœalum tricolor* has a flower which seems as if it had originally suggested the idea of the cornucopia.

But the *Tropœalum canariense* or *peregrinum*, the canary-bird creeper, is the favourite mimic of the day. This plant is a native of South America, and was supposed on this account to require the careful treatment of a tropical or greenhouse plant. It was discovered, however, by Mrs. Loudon, that it would bear the exposure of our climate; and since that period, it has been successfully cultivated in the open air, and is rapidly becoming as common in every cottage window and plot as the convolvulus or any of the ordinary creepers. The first few plants acquired publicity at the gates of the Kensington Gardens, where they were displayed, and still are, in the greatest luxuriance. At a certain stage in the expansion of this pretty flower, the image of a canary is almost as perfect as if it had just left the modeller's hand; the head is partly bent down, and is supported upon a delicate little neck, which joins the body of the bird, while the fringed petals admirably mimic the feathers of the canary, and the canary-yellow colour considerably heightens the resemblance. When the flower is further expanded, the similarity in a great measure disappears.

Some of the *Proteaceous* plants have beautiful flowers resembling tinted feathers, others have leaves fringed with long hairs, so as to resemble the plumes of birds. The leaves of some magniolaceous trees are strikingly like the back of a greatcoat—the waist, arms, and tail being all figured. Many other leaves resemble adders' tongues, harts' tongues, spears, stags' horns, hearts, hair, &c.

But of all mimic plants, none surpass the orchid race, of which Dr. Lindley thus writes:—'Some of these plants are so different from others, as to make one almost doubt whether they belong to the vegetable world. If the Brahmins had been botanists, one might have fancied they took their doctrine of *metempsychosis* from these productions. In the genus *Oberonia* and *Drymoda* Pythagoras would have found a living evidence of animals transmuted into plants.' Even those minute orchids which require the use of the microscope for their development, wonderful to relate, agree with the larger ones in the possession of this strange attribute.

Our own country possesses some of these plants, which are well known for their mimic powers. The fly-orchis and the bee-orchis both represent those insects. In the latter case, the resemblance is quite marvellous: there is to all appearance a little yellowish flower, upon which a bee seems resting, and plunging his long proboscis into its centre; the legs and wings of the insect are faithfully delineated, and the fidelity of the imitation is enhanced by the bee being of a different colour to the rest of the flower. A cluster of such flowers look just as if a swarm of bees had alighted one on each flower. One of the Oberon genus is called the man-orchis, or the *Anthropophora*, from its close resemblance to the original. The 'butterfly plants' bear flowers which wear the form of that giddy insect. And, last of the European orchids, the lizard-orchis is the most strange of all. Few persons can form an adequate idea of this curious flower who have not seen it: it represents the neck and head of a lizard; it portrays the long under-jaw, the gaping mouth, the marked head, and even the eye of the reptile, which seems projecting his hideous head and neck from the centre of the flower.

Lactuca virosa L.

LACTUCA VIROSA.——STRONG-SCENTED LETTUCE.

Class XIX. SYNGENESIA.——Order I. POLYGAMIA.

Natural Order, CICHORACEÆ.

Fig. (*a*) represents a floret with the five united anthers, somewhat magnified; (*b*) a single akenopsis with the pappus.

This is a biennial plant; a native of Britain, and other parts of Europe: occurring chiefly in dry warm hedges, and waste grounds, where the soil is calcareous. We perceived it (says Professor Burnett,) in the hedges about Kilburn, on the road to Harrow; in Maiden-lane, near Copenhagen House; at Kingston-bottom, near Coombe Wood, Surrey, and other places near London.

The stem is somewhat woody, rising from two to six feet high; it is erect, slender, very slightly prickly below, smooth above, round, panicled, and thinly clothed with leaves. The leaves are alternate, glabrous, toothed, undivided at the base, and spreading; the cauline ones amplexicaul, sinuate, sometimes lobed, with the midrib armed with short spines on the under side. The bracteas, or floral leaves, are cordate, and pointed. The flowers which expand only in bright sunny mornings, are small, compounded, of a sulphur-yellow colour, and appear in terminal panicles, in August and September. The involucre or calyx is nearly cylindrical, and composed of numerous pointed, imbricated, unequal, flat scales, with membranous edges. The inflorescence is compound, imbricated, and uniform; the florets numerous, perfect, equal, monopetalous, ligulate, truncated, and four or five-toothed. There are five very short capillary filaments, having the anthers united into a cylindrical tube. The germen is nearly ovate, supporting a slender style, longer than the stamens, with two reflexed stigmas. The fruit is an obovate akenium or rather akenopsis surmounted with the stipitate pappus, which is fugacious. The seeds are solitary, erect, and exalbuminous: with the radicle taper and inferior.

The systematic name, *Lactuca*, from *lac*, milk, is obviously expressive of the milky juice with which the plants of this genus generally abound. *Virosa*, poisonous, the trivial name, alludes, no doubt, to its acrid and deleterious properties.

The leaves and stem of this plant abound with a milky juice, which may be collected in great abundance, just as it is beginning to flower: in the same manner as that recommended by Mr. Jeston, of Henly-upon-Thames, for English opium. Sir J. Hill recommends it to be practised in the month of April, which is certainly too early: and Dr. Todd Thomson says that the plant must be gathered, and the *juice expressed;* a plan we consider to be objectionable, as the other fluids must necessarily be mixed with the white juice: which is of a strong fetid smell, of a bitter and acrid taste, and possesses the active powers of the plant.

Poisonous Effects.—Two drachms of the watery extract were applied, by M. Orfila, to the cellular texture of the back of a dog. At the end of two days, the animal, who had only been slightly drowsy, had some vertigoes, and died seventy hours after the operation. The ventricles of the brain contained no fluid; the exterior veins of that organ were distended and injected with black blood; the lungs presented a few patches of a brownish red colour, and their texture was somewhat more dense than natural.

In a dog (says Professor Burnett,) which had been poisoned by three drachms of the extract, introduced in the stomach, *dissection* of the body threw no light on the cause of his death: and in a rabbit which died a short time after we had administered half an ounce of the expressed juice, in a fluid state, we could discover no morbid appearances whatever.

We consider this (observes Mr. Burnett,) as one of the most valuable of our native plants: the inspissated juice is a mild sedative, and if administered in proper doses, constitutes an excellent substitute for opium; when its diuretic effects, which are somewhat powerful, are not contra-indicated. It generally proves somewhat laxative; promotes gentle perspiration, and allays thirst. By the Germans its virtues are highly extolled, and they administer it in palpitation of the heart, and in intermittent fever. Dr. Collin relates twenty-four cases of dropsy; twenty-three of which were cured by taking it, in doses of eighteen grains, to three drachms, every twenty-four hours. In a dropsical case, that lately came under our care, it certainly produced a salutary action on the kidneys, and procured quiet sleep. We have also ascertained, to our own satisfaction, that it possesses another most important virtue, viz. *that of reducing the velocity of the pulse;* at the same time that it appears to increase its tone: and so remarkably efficient was its action on one patient, that three small doses of the tincture diminished the arterial impetus in the wrist from one hundred and twenty pulsations in the minute, to less than seventy; accompanied by intermissions.

Mr. A. S. Taylor, in his work on Poisons, says, "It varies much in strength. Wibmer found that *two grains* caused headache and somnolency, (Op. cit. 200.) By the smell only, it is liable to be mistaken for opium. It is but little soluble in water, and after long boiling, it forms a brown turbid solution which gives a greenish tint with sesquichloride of iron. It therefore contains no meconic acid. On examining a good specimen I have not found any trace of morphia. This shows that the odour of opium may exist in substances which do not contain meconate of morphia. Nitric acid gives a yellowish tinge to the decoction, as it does to most other vegetable solutions. It is bitter to the taste, which appears to be owing to the presence of a bitter principle called LACTUCIN, upon which its feeble narcotic properties probably depend. There are no tests for lactucarium further than the colour, the opiate odour with the want of solubility, and the absence of the other chemical characters of opium. In the plant, it is combined with malic acid, potash, and resin. (Fisher, loc. cit.)"

LACTUCA SATIVA.—GARDEN LETTUCE.

SPEC. CHAR. *Leaves* rounded; stem-leaves heart-shaped; stem terminating in a corymbiform panicle.

The original country of the Garden Lettuce is unknown. By some it is supposed to be an accidental variety sprung from some other species of Lactuca. It was cultivated in England, by Turner, in 1562, and probably much earlier. The leaves are large, milky, frequently wrinkled, usually pale green, but varying much in form and colour in the different varieties. The radical leaves are roundish, and toothed at the margin; those of the stem are obovate or heart-shaped. The stem is round, leafy, two or three feet high, and corymbiform at the top, with numerous bright yellow flowers, which appear in July.

The Garden Lettuce contains, like the other species, a quantity of milky juice; having when inspissated the dark colour, and, in some degree, the odour and taste of opium. The inspissated juice was found by Professor Pfaff to consist of 41 parts soluble in water, 7 of wax, 6 of resin, 18 caoutchouc, and 8 of loss = 80. It contains a free acid, analogous to the oxalic, but different, and a narcotic principle; but no morphia.

The Lettuce is universally esteemed as a cooling and agreeable sallad; and the expressed juice has been long known to possess considerable narcotic powers. Celsus says "Somno vero aptum est lactuca, maximaque æstiva, cujus cauliculus jam lacte repletus est." (Dr. Med. ii. xxxii.) The spirituous extract, under the title of *lactucarium*, has been strongly recommended by the late Dr. Duncan, in doses of from two to six grains, as a substitute for opium, in pulmonary consumption, and some other diseases.

Both the species of lettuce above described afford the lactucarium, which however, as now prepared, is not the spirituous extract but the inspissated proper juice alone; and hence differs materially from the *thrydacé* of the continental physicians, which is formed by the expression of all the juices, both the crude and elaborated saps combined with all the other secretions of the plant which pressure can force out. The true lactucarium is obtained by wounding the plants in the flowering season when their vessels are filled to repletion with proper juice, and so irritable that they often spontaneously burst or are ruptured by very slight accidental injuries. If at this season transverse scratches, or slight incisions be made through the teguments of the stems, the milky juices exude, and soon become in a slight degree inspissated, when the exudations should be scraped off with a silver spatula, and evaporated to a proper consistence at the ordinary atmospheric temperature; or if artificial heat be applied, it should not exceed 120° of Fahrenheit's scale.

The soporific effects of lettuce have long been noticed and familiarly known: the poets feigned Venus, after the death of Adonis, to have sought a bed of lettuces to soothe her grief. And Galen, who, when old, suffered much from watchfulness, found great relief from eating a lettuce at night; a practice which is commonly resorted to, with the same effect, by wakeful persons in the present day.

In the type Cichoraceæ, of the Compositæ where the lactucæ are found, a narcotic principle more or less prevails along with the bitter one of the allied type Cynaraceæ, or Cynarocephalæ, and which gives way in the third group the Corymbiaceæ, or Sorymbiferæ, to an aromatic and stomachic principle, as in the chamomile and tansy. By cultivation, especially by exclusion from light, these narcotic and bitter principles are regulated and modified in their developement, sometimes being increased, and sometimes lessened, according to the purpose for which the plants are intended to be used. By exclusion from light, the sap becomes only in part elaborated, and the taste and effects of the plants ameliorated, as is the case in the cultivated lettuces, endives, &c. And hence it is, that the cultivated lactuca sativa has not only a much less nauseous flavour, but also affords much less lactucarium than the uncultivated lettuce, and especially than the lactuca virosa, as shown by the comparative experiments of Schutz, who from two plants of equal weights found 56 grains of dry lactucarium were afforded by the lactuca virosa, while from the lactuca sativa he only procured 17.

Besides the lactuca sativa, which is our common garden lettuce, the French cultivate as dietetic plants, the palmate, the oak, and the endive leaved species; (lactuca palmata, quercina, and intybacea;) all of which, however, as well as our lactuca sativa are believed by many botanists not to be distinct species, but only permanent varieties of the lactuca virosa, which is esteemed the parent or original form of all.

Lettuces, unlike many other vegetables, such as the cabbage, the spinach, &c., can be grown to as great perfection in a warm as in a temperate climate, provided they be grown on rich soil, and abundantly supplied with water. Hence, says Loudon, the lettuces of Paris, Rome, and Calcutta, are as large and tender as those of London and Amsterdam.

Gladiolus Cardinalis

GLADIOLUS CARDINALIS.——SUPERB CORN FLAG.

Class III. TRIANDRIA.——Order I. MONOGYNIA.

Natural Order, IRIDEÆ.——THE CORN-FLAG TRIBE.

Section showing the position of the stamens and pistil.

Gladiolus, mentioned by Pliny; supposed to have derived this name from *gladius*, a sword, alluding to the shape of the leaf. Root solid, round, covered with a brown membrane. Stem round, about two feet in height; leaves embracing the stem at bottom; flowers on the extremity of the stem on one side of it, in great numbers, of a fine scarlet, with a large white spot on each of the three upper segments of the petal: spathe green, enveloping the flower before it opens, and remaining after the flower has withered.

The beauties of this species cannot be surpassed by any in the genus; and from the root being hardy, it is rendered still more desirable. This, as well as many other bulbous roots, natives of the Cape of Good Hope, have been proved to endure the winter of this country, and thrive extremely well, by the treatment adopted by the Hon. and Rev. Wm. Herbert at Spofforth. The method of preserving the roots is to plant them in a dry south border of light open and sandy earth, and in the winter to protect them with a covering of leaves. They should be planted early in the spring, that the bulbs may mature themselves in the spot where they are to pass the winter: it is very essential that the roots be well ripened. With these precautions there is little fear of their succeeding. Where the roots are well established, they will produce stems from two to three feet in height with a profusion of flowers, which, from the opposition of scarlet and white, become truly interesting, and vie in splendour with any of the bulbous tribe.

"The passing Indian turns the admiring eye,
Smit by the glories of her crimson dye."

This plant is readily increased by the roots, the separating of which should be done early in the spring; and it is better that the roots should remain in the border during the winter, provided it be tolerably dry, rather than be taken up. It was introduced from the Cape of Good Hope in 1790.

* It has been a favourite theme to the imagination, to fancy, or to sing, that Herbs and Flowers and Trees could sympathise with human sorrow. Thus Moschus, in his Greek Hexameter epitaph on Bion, indulges the supposition of the possible sensibility of vegetable nature:—

'Mourn with me, ye plants! woods! now bewail!
Sigh O flowers! from your sorrowing stems,
Blush mournfully, ye Roses! Anemone!
Hyacinth! now speak in your symbol letters,
And by your floral leaves more than common
Express your tokens of grief. The beautiful singer is dead!'

So he apostrophises his lost friend:—

- - - 'At your dissolution,
The trees threw down their fruits, and
Every flower faded.'

This seems extravagant: tho Milton has partly imitated it in his Lycidas. But it may have been a belief of the Greek poets, since one of their few natural philosophers, also a versifier, Empedocles, could say, 'The first of all animals were trees; and sprang from the Earth before the Sun enriched the World, and before days and nights were distinguished,' Plut. Plac. c. 26.—If Plato and Empedocles could teach 'That plants are informed with a soul, and that of this there is a clear proof, for they tremble and shake: and when their branches are bent down by the woodman, they yield but to spring back again to their former uprightness, (Plut. ib.) we may believe that poets allowed them some sympathizing feelings.

Nor is this to be deemed a mere artificial affectation of singularity; for our own days have presented a living instance of such a sensibility, in one, whose feelings were those of pure nature, cherished in private, and very reluctantly disclosed. It is in Mrs. Bray's account of the Cottage poetess, Mary Collings, a humble waiting-maid, that we have this curious instance of the effects of Flowers on the human sensitivities. When asked by her kind encourager how she came to write her Fables, Mary hesitated, blushed, and at last avowed the fact. 'She would tell me the truth, tho she was afraid to speak of it, lest I should think her mazed. Her master had given her a slip of garden, to amuse herself with cultivating it. At length all the flower garden came under her care. When, of an evening, she was among the flower-beds, and saw them all so lively and so beautiful, she used to fancy that the flowers talked to her.' Fables, &c. by M. Collings. The

* Turner's Sacred History.

rising poets of America also, not unpleasingly cultivate sympathies with them. The Greeks used flowers as part of their funeral tributes of regard. Thus Bion, in his Elegy on Adonis, exclaims—'Bring Adonis, however ghastly—place him between the crowns and the flowers—but since he has been dead, all the flowers have withered!' v. 74-6.

The Poet expresses also these two pretty fancies:—'But his remains have turned all things on the earth into flowers. His blood produced the Rose; and his tears, the Anemone,' v.65.... The Anemone was made by the Egyptians an emblem of sickness. Hor. Ap. 1. 2. c. 8.

Turkey has not many friends of the Muses. Yet among their few ancient poets of name, some have shown a strong sense of the beauties of the Floral Creation.

Three passages of Mesihi in his Turkish Odes imply this sensibility. 'O listen to the tale of the Nightingale, which assures us that the vernal season approaches. The Spring has formed a bower of joy in every grove, where the almond-tree sheds its silver blossoms. The groves and the hills are adorned with all kinds of flowers. A pavilion of roses, like the seat of pleasure, is raised in the garden. Who knows which of us may be alive when the fair season ends?—

'The dew glitters on the leaves of the lily like the sparkling of a bright cymitar. The dew-drops fall thro the air on the garden of roses. O listen to me, if thou desirest to be delighted. The roses and tulips are like the blooming cheeks of beautiful maids, in whose ears hang varied gems, like drops of dew; but think not that these charms will have a long duration. Every morning the clouds shed gems over the rose-beds, and the breath of the gale is full of Tartarian musk. Yet be not neglectful of thy duty thro too great a love of the world.—

'The sweetness of the rose-bed has made the air so fragrant, that the dew is changed to rose-water before it falls. The sky has spread a pavilion of bright clouds over the garden. Be joyous then! Be full of mirth, for the Spring season is passing away. It will not last.' Mesihi's Ode, quoted in David's Turkish Grammar.

The Jewish Rabbis have been extravagant on this subject: for some believe that offending human souls transmigrate after death into buds and leaves.

Thus they teach: 'For certain crimes a soul goes into the leaf of a tree. The wind then rises, and, shaking it about, causes great torment. This punishment ceases when the leaf falls to the ground. Sometimes, indeed, such a soul passes from leaf to leaf thro several leaves.' Emek Hammelech, f. 158. c. 2. Nishmath Chajim, fo 161. c. 1.

But Empedocles thought, or chose to assert, that his spirit, among its habitations after this world's grave, went into vegetables. He boldly declared: 'For I *remember* that formerly *I was a plant*, a fish, and a swift bird.' Diog. Laert. 1. 8. s. 77. The Laurel was the shrub which he pretended to have animated. So that Virgil's tale of the Myrtle bleeding and groaning as he tore off its branches: and of the voice from it, Nam Polydorus ego, (Æn. 1. 3.) was in accordance with some of the philosophic as well as popular superstitions of his day.

But however fanciful or wild these ideas and customs may be, they are evidence how eminently Vegetable nature has at all periods and in all countries affected the imagination and the feelings of mankind. It is a fair inference from the universal fact, and from the concurring impressions on ourselves that they were made on purpose to interest us, as well as to beautify our inhabited surface. But it is not an imagination—it is a sober reality to say, that wherever they have been cherished and cultivated, theyhave drawn the human spirit to seek and value the gentler and kinder dispositions and occupations of our very deviable moveable, irascible and sturdy self-will. As these moral, intellectual, and religious results are the natural effects of the Vegetable Creation upon mankind, and appear, more or less, so much in all countries and in all ages, as to indicate that impressions of this sort are universal, we are entitled to infer that these consequences were among the purposes for which this Order of beings was created, and which they were appointed to produce. The general effects of all made things imply that the intention of the Maker was to produce them. So we may reason as to the design and ends of the Creator in His Vegetable classes. They increase our knowlege of Him; they are the pledges of His affection for His human race, and gentle attractions of our sensibilities to Him; they are the great sources of our subsistence, conveniences and improvements; they are the basis of all animal nutrition; they furnish our most constant gratifications and purest pleasures they tend to link our kind feelings with each other, by the sympathising admiration which their beauties excite; the cultivation they require is our most virtuous and beneficial occupation; and their serviceable properties are so arranged as to compel us to this useful cultivation, by their produce being made to arise from it. Their operation on our intellectual faculties and moral emotions, is likewise that of a soothing melioration which increases as our mind advances in its progressive civilization. All the beautiful thoughts and sentiments which poetry has breathed in every age, in praise of verdant or floral nature, and of the rural life, are the expressed homage of the heart to the charms and utilities of the Vegetable Creation, and are so many undesigned but implied encomiums on its invisible Author, for planning and ordaining it. Whatever we may mean, or whatever phrases we may use, we cannot commend nature without praising Him. The panegyric flies immediately from the insensate beauties we may admire, to the Mind which designed them and to the Power which produced them.

Helleborus fœtidus.

HELLEBORUS FŒTIDUS.——FŒTID HELLEBORE.

BEAR'S-FOOT, OR SETTER WORT.

CLASS VIII. POLYANDRIA.—ORDER VI. POLYGYNIA.

NATURAL ORDER, RANUNCULACEÆ.——THE CROW-FOOT TRIBE.

Fig. (*a*) represents the stamens, with the situation of nectariferous petals, (*b*) the capsules.

THIS is an evergreen perennial plant, growing naturally in many parts of Britain, on pastures and in thickets, particularly on a calcareous soil. According to Sir James E. Smith, it grows abundantly on the castle hill at Castle-Acre, Norfolk; and Gerarde, who lived in the 16th century, says that it was wild in his time in many woods and shady places in England. Sir William Hooker, in his Flora of Scotland, states, that it occurs also plentifully on the banks of the Clyde at Blantyre Priory; on old walls at Barncluish, in the vicinity of Glasgow; and between Anstruther and Kepply, near Edinburgh; but that it is scarcely indigenous. It is a well-known plant in gardens; flowering in March and April.

The root is small, bent, and surrounded by numerous dark-coloured fibres; the stem rises to about two feet in height; towards the bottom it is strong, round, naked, and marked with alternate cicatrices, the vestiges of former leaves; is divided, and subdivided into branches, and compressed at the top, producing many flowers. The leaves, which stand upon long channelled footstalks, surrounding the middle of the stem, are divided, as in black hellebore, into several leaflets, usually seven or nine in number, long, narrow, serrated, lanceolated, and of a dark green colour. The scaly leaves or *bracteas*, placed at each ramification of the flower-stem, are smooth, trifid at the lower part and bifid towards the top; but those near the flowers are ovate, pointed, and of a much paler green than the proper leaves. The several stages of transformation of the foliage from proper leaves to bracteæ, is particularly well seen in this plant, where the pedate leaves gradually abort their lobes, and the fimbriate bracteæ, losing their divisions become trifid, bifid, and at last, near the flowers, entire. The flowers are numerous, terminal, drooping, of a pale green, and stand upon long footstalks, forming a sort of panicle: the sepals are five, ovate or heart-shaped, concave, permanent, and tinged at the apex with reddish purple: the petals are eight or ten, minute, tubular, placed in a circle within the sepals, and at the base nectariferous: the petals were mistaken for nectaries by Linnæus, and the true sepals, &c. described by him as petals, the plants being considered then devoid of calyx. The stamens are very numerous, the length of the sepals, supporting white anthers; the germens three or four, becoming beaked follicles like those of black hellebore, containing many small oval seeds disposed in two rows.

QUALITIES.—The smell of the recent plant is very fœtid, its taste bitter, and remarkably acrid, excoriating the mouth and fauces. "The bractcæ possess these qualities in a greater degree than the proper leaves." The plant looses much of its acrimony by drying.

POISONOUS EFFECTS.—When administered in an undue quantity, this plant proves an extremely virulent poison. Its action, although more powerful, seems very much to resemble that of helleborus *niger*; occasioning sickness, pain in the stomach, violent catharsis, convulsions, and death. In Westmorcland, where this plant grows in great abundance, it has obtained, from its pernicious quality, the name of *felon-grass*. From the following fact, related by Mr. Martin, on the authority of Dr. Milne, it would appear that it is also a poison to sheep. Several years ago when the ground was covered with a deep snow, a flock of sheep in Ox-meadow, near Fulborn, in Cambridgeshire, finding nothing but this herb above the snow, ate plentifully of it. They soon appeared terribly disordered, and most of them died; a few being saved by having a quantity of oil administered to them in time, which made them vomit up the pernicious herb. Some of those which died, on being opened, were found to have their stomachs greatly inflamed. Notwithstanding its deleterious properties, the helleborus *fœtidus* is sometimes employed by the common people, and also by itinerant quacks, for the destruction of worms, and not unfrequently proves fatal. The following account, by a Mr. Cooke of Leigh, in Essex, is taken from the *Oxford Magazine* for 1769, vol. ii. p. 99.

"It is much used by venturesome quacks in decoction and coarse powder to kill worms in the belly, which it never fails to do. But it has a deleterious, poisonous quality, which some bodies cannot overcome, and then it is dangerous. Where it killeth not the patient, it would certainly kill the worms; but the worst of it is, it will sometimes kill both. Wherefore it is so dangerous a drug, it ought never to be internally

applied but upon very extraordinary cases, when other anthelmintic medicines have failed, if ever they do and even then too by a very skilful hand: and yet, alas! nothing is scarcely more commonly used by women especially in country places, than the decoction, or powder, of this violent vegetable, for the purpose aforesaid. It has been known to kill several youths, and an old woman also, in three hours' time. Others it renders heart-sick, even to swooning away; and if, through mere strength of nature, they overcome its violent operation and recover, some have lost the hair and the nails from their fingers and toes; and the scarf-skin of the whole body has also peeled off from head to foot thereby—a plain proof of strong poison.

"I had a most melancholy story from a mother in this city, viz. that a country fellow gave some of this plant to his two sons, one of six, the other of four years old, to kill worms; and that before four in the afternoon, they were both corpses."

We again turn to Mr. A. S. Taylor's book for the following case:—"Mr. J. H. Todd, Coroner for Southampton, has kindly forwarded to me the report of an inquiry which took place before him, in Nov. 1845, in which a child under two years of age was poisoned with an infusion of hellebore, administered to it by its grandmother, for the purpose of destroying worms. The leaves of the plant (Bear's foot) were bruised, and boiling water poured over them. Two dessert spoonfuls were given to the child, who had been suffering from ague, but from which he had recently recovered. Within ten minutes after taking the mixture he was very sick, &c. The matter vomited was of a green colour, and slimy: the sickness, &c. continued until the evening, when he died, *i. e.* about thirteen hours after having taken the mixture. There were convulsions before death. On inspection, the whole body appeared blanched; the eyes were sunk, and the pupils dilated. There was diffused inflammation of the mucous membrane of the stomach, and a well marked patch of inflammatory redness, about the size of a five-shilling piece, near its centre. The small intestines, which contained a brownish-yellow fluid, were much inflamed. The cæcum contained about thirty worms. The head and chest were not examined. Death was very properly attributed by the medical witness to the action of hellebore.

The woman who prepared the infusion stated that she had frequently given it in large quantities to young children, and there were no injurious effects. It is nevertheless to be regarded as an active poison; and if persons are not always killed by such worm-medicines, it must be regarded as a very fortunate circumstance. This acrid vegetable never can be given by an ignorant person without great risk.

Medical Properties and Uses.—The whole plant is acrid, and violently cathartic; it sometimes operates as an emetic, and in large doses is highly deleterious. It is used chiefly as a vermifuge; the dried leaves, in powder, are given in ten grains to half a drachm; but its doses do not appear to have been precisely ascertained. The best form for children is a syrup. For this purpose, the bruised leaves are recommended to be first moistened with a little vinegar, then the juice is expressed from the leaves and made into a syrup with coarse sugar. A tea-spoonful is directed to be given at bed-time, and one or two in the morning, for two or three successive days, increasing or diminishing the dose according to the strength of the patient. In the western counties, according to Dr. Parr, a tincture is sometimes made of the leaves with cyder, and said to be a useful preparation. In whatever way, however, it is employed, says this able physician, no medicine acts with more certainty than bear's-foot as an anthelmintic. The root is often used in veterinary practice for the rowels for cattle; and if the powder of the leaves be applied to an ulcerated surface, a profuse discharge is excited. It is on account of these properties that it is vulgarly called *Oxe-heele, Setterwort, Setter-grass,* from *settering,* a term used by farriers, and supposed to be a corruption of setoning. Its virtues, as a vermifuge, were known to Gerarde, and it is frequently used as a domestic medicine in Yorkshire; but, in consequence of its violent properties, medical men seldom prescribe it; and it might, with great propriety, be expelled the Pharmacopœia, into which it was introduced at the recommendation of Dr. Bisset, who says—

"It is by far the most powerful vermifuge for long and round worms of any I have yet experienced. The decoction of about a drachm of the green leaves, or about fifteen grains of the dried leaves in powder, is the usual dose for children from four to seven years old. A full or sufficient dose generally proves more or less emetic. It is usually repeated on two and sometimes three successive mornings: the second dose has commonly a greater effect than the first, and never fails to expel round worms if there be any lodged in the alimentary canal."

Happily for mankind science is continually enlarging the sphere of our usefulness; and worms, which were formerly considered as the causes of disease, may generally (excepting the *tœnia*) be treated as the consequences of disordered primæ viæ, and remedies worse than the malady discarded from practice. Dr. Bisset speaks of the plant as also useful in some asthmatic and hypochondriacal affections. Adamson says, that an injection of an ounce of the decoction of the roots is preferable to every other remedy in epileptic fits, arising from the presence of worms in the intestines.

This species, H. fœtidus, with another the H. *viridus* has often been employed medicinally instead of the true or ancient Greek Hellebore H. *officinalis* of Sibthorpe and Smith.

Aethusa Cynapium

ÆTHUSA CYNAPIUM.——LESSER HEMLOCK, OR FOOL'S PARSLEY.

Class V. PENTANDRIA.——Order II. DIGYNIA.

Natural Order, UMBELLIFERÆ.——THE UMBELLIFEROUS TRIBE.

Gen. Char. *Universal involucre* 0; *partial* 3-leaved, pendulous, dimidiate, placed on the outside. *Fruit* ovato-globose, carpels 5-ribbed; ridges elevated, thick, and acutely keeled.

Spec. Char. "*Leaves* uniform; leaflets wedged-shaped, decurrent, with lanceolate segments."—*Smith.*

Fool's Parsley, so called from the deleterious property of the plant, and the resemblances it bears to parsley, for which it is sometimes unfortunately mistaken, is an annual plant, common in gardens and cultivated grounds in every part of Great Britain and Ireland; flowering from June to September. We observed it in profusion in the churchyards of St. George the Martyr, Borough; and St. Martin in the Fields, London.

From a root (*d*) which is slender and spindle-shaped, the stem rises to the height of a foot or more; it is erect, smooth, branched, striated or slightly grooved, hollow, and generally of a dark purple colour at the base, but not spotted. The lower leaves are tri-pinnate, smooth and shining; of a dark green colour, and supported on short sheathing foot-stalks; the upper ones are bi-pinnate: segments ovate-lanceolate, deeply cut, lobed, and more or less decurrent. The umbels are terminal, on longish peduncles, many rayed, the inner rays becoming gradually shorter; umbellules, small and spreading. The partial involucres consist of three long, linear, pendent leaves, which only half encompass the umbel on the outside. The flowers (*a*) are very small; the petals white, unequal, obcordate, and somewhat radiating; the stamens are five, simple, supporting roundish anthers, (*b*). The germen is beneath the flower, having two reflex styles and obtuse stigmata. The fruit (*c*) is ovate, roundish, deeply grooved, crowned with the styles, and divisible into two parts, each containing a single seed.

Qualities.—The seeds, when bruised, have a slight disagreeable odour, and a nauseous pungent taste. Alcohol extracts their active matter; which is an alkaloid that crystallizes in rhombic prisms; it is likewise soluble in water, but not in ether.

Distinctive Characters.—Being so abundant a weed in rich garden soils, the *Œ Cynapium* is frequently mistaken for common parsley; and therefore deserves to have its characters and noxious qualities universally known and exposed. Although it bears a strong resemblance to the garden parsley, it exhibits differences in its botanical characters, by which it may at once be distinguished. The leaves of fool's parsley are finer, more acute, decurrent, of a darker green; and instead of the peculiar parsley smell, have, when bruised, a disagreeable odour. When the flower stem of the fool's parsley appears, the plant is readily distinguished from *all* other umbellate plants, by what is called its *beard*—three long, pendulous leaves of the involucellum (*e*) under the partial, and no involucrum to the general umbels. The flowers too of the fool's parsley are *white*, those of the garden parsley pale *yellow*. In order to prevent mistakes, it has been recommended to cultivate the *curled* variety of the common parsley only; as it not only possesses the same virtues, but also makes a more elegant garnish.

From Dr. Buckhave we have gleaned the following interesting account; by which it will be seen, that it has also been inadvertently used for Conium *maculatum*. From this plant, however, it is essentially distinguished, as well by the inferiority of its size and unspotted stalk, as by the partial *involucres*, already described; this plant having no general involucre, while hemlock has both general and partial.

"A patient, aged 40, being afflicted with carcinomatous ulcerations of the face and neck, Hemlock pills were prescribed; which she took without inconvenience for two months. But no change, for the better, being produced upon the disease, her Physician prescribed the herb of the Hemlock; directing an ounce to be boiled in thirty-two ounces of water; and of the strained liquor, three ounces were ordered to be taken daily, in different portions, for four or five weeks. But during that time, she frequently complained that the draughts excited tremors, vertigo, headache, cholic pains, vomiting, loss of strength and aversion to food. Suspecting that these might proceed from regimen, he directed strict attention to that particular; and advised her to continue the decoction. But being afterwards informed that symptoms still more alarming had taken place, particularly violent vomiting, he was led to examine the plant, and soon found a large proportion of the *Æthusa*. After this, she was furnished with genuine Hemlock; she formed a similar decoction of it, and took it in the same manner, without inconvenience. Under this medicine, the symptoms of the disease gradually decreased, and at the end of eleven months, the ulcerations healed." This author relates, also, two or three other cases of the same kind.

Poisonous Effects.—The subjoined cases more fully illustrate the symptoms this violent poison produces—

"Two ladies of Castle Donnington, Leicestershire, partook of some salad wherein *Æthusa Cynapium* had been put by mistake, with common parsley, for which it had been *grown* and *was gathered*. Symptoms of an alarming kind soon followed, indicative of the full operation of that pernicious vegetable. They were, a troublesome nausea, with occasional sickness; accompanied with oppressive headache and giddiness; also a strong propensity to slumber, at the same time that *calm* repose was wholly prevented by frequent startings and excessive agitations. The mouth, throat, and stomach, were impressed with the sensation of pungent heat, attended with great difficulty in swallowing. Increased thirst prevailed, with total loss of appetite for every kind of solid aliment. The extremities felt benumbed and were affected with tremors; and all the vital and animal functions were performed with unusual inactivity." The ladies recovered, but no allusion is made to the treatment that was pursued.

The following relation was communicated to Mr. Curtis, by Mr. Lowe, Surgeon, at Preston—

"On Thursday, the 5th of June, Mr. Frekleton, a healthy, strong man, about 35 years of age, a publican, ate a handful of fool's parsley with nearly the same quantity of young lettuce, about one o'clock at noon; in about ten minutes he was affected with a pain and hardness in his stomach and bowels, attended with a rumbling. He walked out into the fields, but was seized with such languor, weariness, and weakness, that it was with difficulty he supported himself till he got home; he was much troubled with giddiness in his head, his vision was confused, and sometimes objects appeared double; at seven o'clock he took an emetic, which brought up, he supposes, all the fool's parsley he had eaten, but not any of the lettuce; this considerably relieved him from the uneasy sensations in the bowels, but the other symptoms continued, and he passed a restless night. Next day he had much pain in his head and eyes, which last were inflamed and bloodshot: he had different circumscribed swellings in his face, which were painful and inflamed, but they were transient and flew from place to place; this night he took a powder, which made him perspire profusely. On Saturday his eyes were highly inflamed, painful, and entirely closed by the surrounding inflammation; this day he was bled, which gave him much ease in his head and eyes. From this time until Monday he continued to get better, but had, even then, pain, heat and inflammation in his eyes, with œdematous swellings of his cheeks; his remaining symptoms went off gradually, and he is now well. He had been told that the plant he had eaten was hemlock: to be satisfied, I accompanied him into the garden where he had gathered the plant, and found it to be *Æthusa Cynapium*, or fool's parsley."

M. Vicat relates that a boy six years of age, having eaten this plant at four in the afternoon, which he mistook for parsley, began immediately to utter cries of anguish, and complained of cramps in the stomach: while he was going from the country to his father's house, the whole of his body became excessively swelled, and assumed a livid appearance: his breathing became every moment more difficult, and short; and he died towards midnight. Another child, aged four, was also poisoned by the same plant, and although the contents of his stomach were rejected, he went out of his senses, talked extravagantly, but eventually recovered, by suitable medical assistance.

* That the root of this plant contains a most energetic poison and that it is capable of producing rapidly fatal effects, is proved by a case reported by Mr. Thomas, in which death took place in an hour. In May 1845, a child aged five years, in good health, ate the bulbs of the Æthusa by mistake for young turnips. She was suddenly seized with pain in the abdomen, followed by sickness, but no vomiting. She complained of feeling very ill. On trying to eat, she could not swallow. She was incapable of answering questions, and her countenance bore a wild expression. The lower jaw became fixed, so as to prevent anything being introduced into the mouth. She then became insensible, and died in *an hour* from the commencement of the symptoms: so far as could be ascertained, there were no convulsions. No post-mortem examination was made. A second child, aged three years, shortly after eating the same substance, was attacked with pain in the epigastrium, sickness, vomiting, and profuse perspiration. She soon recovered, with the exception of suffering severe griping pains without purging, but these disappeared the following day. A third child, of the same age, suffered from similar symptoms. Recovery in the two last cases was due to the plant having been eaten on a full stomach, and to the effect of early and copious vomiting. (Medical Times, Aug. 23, 1845. 408.) Mr. Thomas injected about two ounces of the juice expressed from the recent bulbs into the stomach of a dog through an aperture in the œsophagus, which he afterwards secured by a ligature. There were violent spasms and urgent attempts to vomit. In most of the animals upon which this experiment was tried, death took place in from one to four hours.

The poisonous properties of this plant are believed to be due to an alkaloid, the chemical characters of which are unknown.

Morbid Appearances.—Riviere informs us, p. 255, that in a person who died after having taken this plant, "the tongue was black; a brownish serosity was found in the stomach; the liver was hard, and of a yellow colour; the spleen livid; but the body was not at all emphysematous."

Treatment.—Emetics and purgatives should be administered, and as soon as the poison is evacuated, vinegar and the citric or other vegetable acids. Should stupor remain, apply cold affusions to the head, or bleed from the jugular vein: apply friction to the body, and sinapisms to the feet: and during the cure, give small doses of sulphate of magnesia, dissolved in almond emulsion.

* Poisons, by Mr A. S. Taylor.

Dendróbium moniliférum.

DENDROBIUM MONILIFORME.——NECKLACE-STEMMED DENDROBIUM.

CLASS XX. GYNANDRIA.—ORDER I. MONANDRIA.

NATURAL ORDER, ORCHIDÆ.——THE ORCHIS TRIBE.

A NATIVE of China and Japan, from the former of which countries it was introduced several years since by the Horticultural Society.

In general it is unhealthy, grows slowly, and never flowers. It is particularly distinguished by the tumid joints of the erect stem, of which the contractions become when old so considerable, that the stem acquires something the appearance of a necklace.

Thunberg describes, in his *Flora Japonica* (p. 30), an Epidendrum monile, to which he refers the Fu Ran of Kæmpfer; but he adds, that the leaves are acute, and the flowers white, which renders it probable that he intended some other species. Kæmpfer tells us, that it is suspended by the Japanese in baskets before the doors of their houses, in consequence of some vulgar superstition, the nature of which, however, he did not ascertain.

Stem erect, 2 feet high, polished, branched, with pale-green, tumid joints. *Leaves* oblong, somewhat distichous, obliquely 2-lobed at the apex, with short, membranous, stem-clasping bases (petioles). *Flowers* in pairs, seated on a common peduncle, proceeding from the stem towards its apex, pale rose-coloured, marked with red veins. *Bracteæ* oblong, obtuse, membranous, slightly hairy. *Labellum* with two yellow spots in the throat.*

That plants should be the materials, on which all animal life subsists, and by which it is sustained in its bodily organizations, is a well-known purpose of their own formation. By the operation of their living principle, they convert the inorganic matter, which they not only find but select out of what their roots meet, into their own kind of substance; and this, which gives them their visible existence and beauty, becomes again transmutable into animal flesh by the animal's own vital nature and functions. This double process is every day universally all going on in the three kingdoms of nature. The word selection may seem strong; but if the radicals and the fibres of the roots entering a soil, shoot toward that which their plant needs; and tho coming in contact with other particles, yet take up those only which suit them—what can we call that but selecting? There is a refusal of the one, and an active absorption of the other. A property of discerning and taking, in preference to other matter, that which is the fittest for their nourishment, seems therefore to belong to all Plants.

Without Vegetation, none of the animals we know, but those that live on water, or air, could have continued in existence; for neither man nor animal can subsist on any thing in the mineral kingdom, until vegetation, by first making it vegetable substance, has prepared it for a future conversion into their own. Hence the justness of the Mosaic account, in placing the creation of Plants before that of Animals. Vegetation could have remained without animals—but these unless their food had been ready for them, would, under their present economy of being, have soon disappeared.

It is interesting to read of the mutual services which the organized kingdoms, from their reciprocal composition and structure, can render to each other. Thus an intelligent Naturalist has observed of the OAK:—

'The insects which live and have their being on the Oak, amount to hundreds of species. It nourishes ferns, lichens, mosses, agaries, and boleti. It furnishes its apples, gall-nuts, acorns, leaves, and sawdust. Some are attacked by small fungi, which break their surface, admit moisture, and facilitate decay. The leaves, decomposing, form a vegetable earth; and the worm seizes on them as his portion, and having fed upon part, draws the remainder into the earth.'

* Botanical Register.

Of the Ivy.—'This saves many animals from want and death in Autumn and Spring. In October it blooms in profusion; and its flowers become an universal banquet to the insect race. The great black fly, Musca grossa, and its numerous tribe, with multitudes of small winged creatures, resort to them: also, those beautiful animals, the latest birth of the year, the Admiral and Peacock Butterflies. In its honey, it yields a constant supply of food till the frosts of November. In Spring, in the bitter months of March and April, when the wild products of the field are nearly consumed, the Ivy ripens its berries; and almost entirely constitutes the food of the Missel-Thrush, the Wood-Pigeon, and other birds.' Knapp's Journ. of a Naturalist, p. 66, 86.

While most of our Plants thus form the sustenance and banquet of the animated kingdom, other classes of them were made and meant to be its natural Medicines and secret physicians. For this purpose, those which thus benefit, are universally dispersed. We may regard many of these as useless weeds, yet they silently spread amid all vegetation, to be every where ready for the general benefit. Brutes often need them as much as ourselves, and are repeatedly seen at particular times to select and crop the herbs that they do not use for food, but to which some recollected experience, or unexplainable perception or instinct, leads them, for their resulting efficiencies. Some of these useful plants are also so interspersed with their daily sustenance, that they cannot take the one without also digesting the other. But to man, Plants have been in all ages the natural and the earliest and the most universal physicians. The metallic and mineral drugs of our modern pharmacopœias have not been above three centuries in their sanitary use. Vegetable medicines constituted the physic of our ancestors, as they still are of all nations who do not make European science their predominating guide.

When we consider that Vegetation carpets all the surface of our Globe; and that its shrubs and forests still occupy the largest portion of its superficial extent; and when we find that it is universally, by day and by night, streaming from its verdure—from every leaf, fruit, and flower—an aërial fluid of some sort or other, and in the lower region of the atmosphere immediately over our heads, and mixing in the gaseous strata of it which we breathe.

It is agreed that in the day time plants imbibe from the atmosphere carbonic acid gas; decompose it; absorb the carbon, and emit the oxygen. In the dark, they give out carbon and absorb oxygen, but in far less proportion. Smith Int. Bot. 212-13.... They appear also to decompose the moisture they receive, and to effuse the oxygen.

Some plants differ in what they exhale. M. Candolle found that some Mushrooms exposed to the Sun, under water, yielded 70 per cent. of hydrogen gas; others, in the Sun, in six hours, gave out 42 hydrogen and 56 nitrogen; others, in ten hours, 55 hydrogen and 44 nitrogen. In darkness, this emission ceased. It seems to be a general rule, that the green parts of vegetables are always giving out oxygen gas in light.

Gruithuisen thinks that plants have themselves produced their carbonic acid. Bull. Univ. 1830, p. 163. The leaves and bark of the Pimento exhale aromatic particles or gas so inflammable, that the growers allow no fire to be made near them.

We shall then perceive that it must be hourly causing the most important effects, additions, and changes in the air which we inhale, and must be a very essential and active agent on the vitality, functions, and powers, of our material frame. The atmosphere could not be what it is, in that portion of its expanse which rests immediately on our inhabited surface, unless Vegetation was around us. The powerful effects of its presence we feel in various parts, in the diseases which it occasions.

These are well known in the Tropical countries amid their luxuriant vegetations; and in all marshy districts; and especially in the malaria produced by moisture occurring to decayed vegetation, which is more fatal, when sea and fresh water combine to overflow it.

From these we may form some notion of its extensive influence, in a minor degree, both for good and for ill, in every other locality. That it has constantly an exciting and exhilarating and salubrious effect, we all experience when we pass from a plant-less city into a plant-abounding country. Strength and spirits arise within us, as we reach the abode and diffusion of the Vegetable Kingdom. The eye and mind are not only animated and delighted by its beauty and quietude and gracefulness, diversified figures and colours; and by their harmless playfulness as the breeze flutters among them—but the body feels a new vigour, and its functions new energies, by some invisible agency, of which we soon become strongly sensible; and whose gradual operation, our reviving health, where it has been lapsing, so often gratefully acknowledges.*

* Turner's Sacred History.

Conium maculatum.

CONIUM MACULATUM.—COMMON, GREATER, OR SPOTTED HEMLOCK.

Class V. PENTANDRIA.—Order II. DIGYNIA.

Natural Order, UMBELLIFERÆ.——THE UMBELLIFEROUS TRIBE.

Fig (*a*) represents the root with part of the stem; (*b*) a perfect flower magnified; (*c*) the pistil; (*d*) the fruit, also magnified.

Common Spotted Hemlock, or, as it is termed in our Dispensatories, *Conium*, is a tall umbelliferous biennial plant indigenous to Britain; growing wild in almost every climate, and with us, is found by roadsides, in hedges and waste places; flowering in June and July.

The root is fusiform, resembling that of the common garden parsnip; of a yellowish-white colour externally, and white and fleshy within. The stem, which rises from two to five feet high, is herbaceous, erect round, hollow, much branched, polished and variegated with spots and streaks of a reddish purple. The leaves much resemble parsley or chervil, a circumstance which has sometimes given rise to fatal accidents. The lower ones are large, spreading, and repeatedly compound; the upper ones are bipinnate; the whole stand on long furrowed footstalks; the leaflets are ovate, sharply serrate, of a shining green colour on the upper side, and a whitish green underneath. The umbels are terminal, compound, and many rayed. The general involucrum consists of several short, unequal, lanceolate leaves; the partial ones generally of three leaflets, which only half encompass the umbellule. The flowers are small, and very numerous; the petals white, the outer ones somewhat irregular, inflexed at the apex, and heart-shaped. The stamens are capillary, with roundish anthers. The germen is situated under the flower, supporting two reflexed styles, and obtuse stigmata. The fruit is an ovate, or roundish diakenium or rather diakenopsis, each carpel bearing five equal prominent primary ridges, the lateral ones marginal: the ridges are waved or crenated; and the vallecules are taversed by many streaks, but destitute of vittæ; the seeds are solitary, each having a deep narrow groove in front.

Hemlock is not unfrequently mistaken by herb-gatherers, and even by medical men, ignorant of Botany, for other plants of the same tribe—most commonly for wild cicily, (Chærophyllum *sylvestre*,) which it very much resembles. By a little attention to the characters, the plants may readily be distinguished. Thus in *C. sylvestre* the stem is furrowed, without spots, and hairy; in hemlock it is smooth, and irregularly studded with purplish spots. The latter too has a broadish reflexed *involucrum*, consisting of from three to seven leaves, under both the universal and partial umbels; petals bifid; and seeds, that are striated and beautifully notched on the edges; whilst in the former the partial involucre only is present, the petals are entire and the seeds are not striated.

Other umbelliferous plants are likewise frequently mistaken for hemlock even by those persons who are employed to collect herbs for medicinal purposes. A large quantity of œnanthe crocata was some time since at least offered for sale, if not bought as Conium; and in the summer of 1831, we met with a herb-gatherer who had collected a bundle of Myrrhis temulenta, mistaking it for Conium; and who, notwithstanding our assurances, insisted it was the true hemlock, and contemned our warnings.

To errors such as these, and which only can be avoided by medical men being themselves conversant with the characters of the officinal plants, must much of the disappointment and many of the failures be attributed, that are so frequently heard of, as well as those fatal accidents which from time to time occur.

A plant, bearing the name of Conium was celebrated amongst the Ancients, as a violent poison; and those who were condemned to death by the tribunal of Areopagus, were poisoned by the juice of a species of hemlock. Theramanes, one of the thirty, and Phocion suffered publicly from its effects: and Socrates, whose disciple he had been, and who was the only senator who ventured to appear in his defence, not only immortalized himself by his talents, wisdom and virtues, but by his own death has conferred a notoriety on Conium, which time will never efface. The account of his death as narrated in the *Phædon* of Plato, we subjoin.

And while it affects the mind by its tender touches, and by a consideration of the blind and delusive impulses, which can stimulate a popular faction to a fatal deed, the consequences of which were unseen, till the glory of the Athenians was disappearing, it is evident that the symptoms which the poison is here said to have produced, do not exactly correspond with those we look for, from the Conium *maculatum* of Europe: but we must remember that the historian is not a physician, from whom to expect a scientific or modern description; "that the idiosyncrasies of different individuals render them variously susceptable of the action of the hemlock;" and that all narcotic plants exert very different effects when administered to the natives of warm climates, to those which they produce when they are given either to the weak or the robust of our northern soil.

"And Crito hearing this, gave the sign to the boy who stood near. And the boy departing, after some time returned bringing with him the man who was to administer the poison, who brought it ready bruised in a cup. And Socrates beholding the man, said, 'Good friend, come hither; you are experienced in these affairs,—what is to be done?' 'Nothing' replied the man, 'only when you have drank the poison, you are to walk about until a heaviness takes place in your legs; then lie down: this is all you have to do.' At the same time he presented him the cup. Socrates received it from him with great calmness, without fear or change of countenance,

and regarding the man with his usual stern aspect, he asked, 'What say you of this potion? Is it lawful to sprinkle any portion of it on the earth as a libation or not? 'We only bruise,' said the man, 'as much as is barely sufficient for the purpose.' I understand you, said Socrates, but it is certainly lawful and proper to pray the gods that my departure from hence may be prosperous and happy, which I indeed beseech them to grant. So saying, he carried the cup to his mouth, and drank it with great promptness and facility.

Thus far most of us had been able to refrain from weeping. But when we saw that he was drinking, and actually had drank the poison, we could no longer restrain our tears. And from me they broke forth with such violence, that I covered my face and deplored my wretchedness. I did not weep for his fate so much as for the loss of a friend and benefactor, which I was about to sustain. But Crito unable to restrain his tears was compelled to rise. And Apollodorus, who had been incessantly weeping now broke forth in loud lamentations, which infected all who were present except Socrates. But he observing us, exclaimed, 'What is it you do my excellent friends? I have sent away the women that they might not betray such weakness. I have heard that it is our duty to die cheerfully, and with expressions of joy and praise. Be silent therefore, and let your fortitude be seen.' At this address we blushed and suppressed our tears. But Socrates, after walking about, now told us his legs were beginning to grow heavy, and immediately laid down, for so he had been ordered. At the same time the man who had given him the poison, examined his feet and legs, touching them at intervals. At length he pressed violently upon his foot, and asked if he felt it. To which Socrates replied that he did not. The man then pressed his legs and so on, showing us that he was becoming cold and stiff. And Socrates feeling it himself, assured us that when the effects had ascended to his heart, he should then be gone. And now the middle of his body growing cold, he threw aside his clothes, and spoke for the last time. 'Crito, we owe the sacrifice of a cock to Æsculapius. Discharge this and neglect it not.' 'It shall be done,' said Crito; have you any think else to say?' He made no reply, but a moment after moved, and his eyes became fixed. And Crito seeing this closed his eyelids and mouth."

The description of the plant as given by Dioscorides only proves it to have been one of the *umbelliferæ*, his character of which may be applied to many species: and the references to it by latin writers, amongst whom are Persius, Virgil, Lucretius, and Pliny, under the name of *Cicuta*, reflect no light on the subject.

The leaves of the hemlock when fresh and bruised, have a strong taste, and an odour; when dried they are not so disagreeable, but still possess a heavy narcotic smell. Their taste is slightly bitter and nauseous. Dr. Bigelow found, that if the green leaves are distilled, the water which collects in the receiver has an insupportable nauseous taste, while that remaining in the retort is comparatively insipid.

Poisonous Effects.—An over-dose of hemlock produces all the symptoms of narcotic poisons, such as sickness, vertigo, delirium, dilatation of the pupils, great anxiety, stupor and convulsions. "It first produces giddiness and headache, which are followed by drowsiness so intense that the patients fall asleep whilst they are conversing; coma and convulsions follow, and if proper means to obviate the fatal effects are not promptly taken, death rapidly ensues." We are indebted to M. Orfila for the following account.

On the 23rd of April, at one o'clock, a small dog was made to swallow an ounce and a half of the *fresh root* of Conium *maculatum*, the æsophagus was tried. Forty-eight hours after, he had experienced no bad effects. On the 25th, at noon he was only somewhat dejected.

The same celebrated Toxicologist furthermore observes, that an ounce of the extract of the leaves killed a dog in forty-five minutes when swallowed; ninety grains killed another through a wound, in an hour and a half, and twenty eight grains another, when introduced into a vein, in two minutes. It therefore as Christison remarks, acts by entering the blood vessels; the extract however is a very uncertain preparation, owing to the imperfect pharmaceutical process usually depended on. M. Agasson speaks of a man who had taken hemlock, and who had all the upper parts of the body affected by convulsions, whilst the lower extremities were paralysed. A furious delirium has sometimes been observed in other persons: thus, according to Vicat, p. 274, an Italian who cultivated vines in his own country, found amongst them a plant of this kind, which he took for a parsnip; he ate part of the root for his supper, and gave the rest to his wife, after which they went to bed. In the middle of the night they awoke completely delirious, and began running here and there without a light, over the whole house, in a fit of madness and fury; they struck themselves so rudely against the wall, that they were bruised all over, and their faces particularly, and eyebrows, appeared swelled and bloody: suitable medicines were administered to them, and they were restored to health.

Medical Properties and Uses.—The use of hemlock was principally confined to external applications, till it was introduced by Störck, as an external remedy for scirrhus, cancer, and a host too numerous to mention of other chronic affections. Fothergill, in our own couutry, and Chaussier and Dumeril in France, have found it successful in tic doloureux. Dr. Jackson, who has published several cases in the New England Journal, vol. ii. in which perfect relief was afforded to this disease, recommends "to begin with a single grain of the extract, and to increase to five grains for the second or third dose: afterwards to add five grains to every dose till a full effect is felt on the system."

To avoid disappointment from its effects, which so frequently occurs, the plant must be gathered in June, just as it commences flowering. The leaflets should then be plucked from the footstalks, which are to be thrown away; and the former, after being carefully dried in the sun, or in a stove, very moderately heated, may be preserved in sealed paper, and firmly pressed into a box, from which both air and light are to be excluded if possible. The powder, the best manner of administering it, may be kept for years in an opaque closely-stopped phial. The extract can scarcely ever be relied on, from the carelessness observed in its manufacture: we therefore recommend our readers to practise Mr. Houlton's plan, which consists in submitting the expressed juice to the atmosphere, in shallow vessels; whereby spontaneous evaporation is produced; and a preparation obtained, containing all the virtues of the recent plant.

Dose.—In powder, gr. ij. gradually increased to ʒj.; or from gtt. xij. to lx. of the expressed juice.

Off. Prep.—Extractum Conii, *L. E. D.* Tinctura Conii, *E. D.*

Erythrina carnea.

ERYTHRINA CARNEA.——FLESH-COLOURED CORAL TREE.

Class XVII. DIADELPHIA.——Order III. DECANDRIA.

Natural Order, LEGUMINOSÆ.——THE PEA TRIBE.

The plant which is represented is not the genuine Erythrina carnea, but a downy-leaved variety, with smaller flowers, and a less prickly stem. For the opportunity of figuring the species, as originally described by Miller, and drawn by Ehret, we are indebted to the Counte de Vandes, in whose hothouse at Bayswater our specimen was produced.

A native of the hottest parts of South America, particularly of Vera Cruz and Santa Martha, whence seeds were originally sent to Miller by Houston. It is rather a handsome plant while in flower, but not particularly worth cultivating at any other time.

Stem furnished with short, hooked prickles. *Leaves* ternate, roundish ovate, very slightly cordate at the base, acute, smooth on each side, with a slightly prickly petiole. *Racemes* appearing along with the leaves, from 4 to 6 inches long, erect, very slightly pubescent. *Calyxes* tubular, truncate, with 5 small crenatures. *Corolla* pale flesh-colour, about an inch and a half long; *vexillum* linear; *alæ* and *carina* of equal length, both included within the calyx, acute. *Ovarium* pubescent.*

Plants are distinguished, for their multiplicity and variety; for that exuberance of imagination and taste which they display, and for that sense of elegance and beauty which their Maker must have had, to have so formed and diversified them. They are entirely the creation of His choice—the inventions of His rich and beautiful fancy. Their attractive shapes and qualities, and the abundant gratifications and important uses which we and our fellow animals derive from them, explicitly show that kindness as well as goodness actuated His mind when He projected and made them. They have been all individually designed: and special thought must have been employed in each; both in fixing their specific differences of form and products, and in perceiving what particular combinations and variations of arrangements would effect in every one its appointed end and use.

The Vegetable kingdom expands every where before us an immense portraiture of the Divine Mind, in its contriving skill, profuse imagination, conceiving genius, and exquisite taste; as well as in its interesting qualities of the most gracious benignity and the most benevolent munificence. The various flowers we behold, awaken these sentiments within us, and compel our reason to make these perceptions and this inference. They are the annual heralds and ever-returning pledges to us of His continuing beneficence, of His desire to please and to benefit us, and therefore of His parental and intellectual amiabilities. They come to us, together with the attendant seasons that nurse and evolve them, as the appointed assurances that the World we inhabit is yet to be preserved, and the present course of things to go on.

The recorded promise is, that 'While the earth remaineth, seed-time and harvest, and cold and heat and summer and winter, and day and night, *shall not cease.*' Gen. ch. viii., ver. 22.. . This declaration has been since steadily fulfilled for nearly forty two centuries.

The Thunder, the Pestilence, and the Tempest, awe and humble us into dismaying recollections of His tremendous omnipotence and possible visitations, and of our total inability to resist or avert them; but the beauty and benefactions of His Vegetable Creations—the Flowers and the Fruits more especially—remind and assure us of His unforgetting care, of His condescending sympathy, of His paternal attentions, and of the same affectionate benignity still actuating His mind, which must have influenced it to design and execute such lovely and beneficent productions, that display the minutest thought, most elaborate compositions, and so much personal kindness.

The command for the rise of the Vegetable Kingdom presents them to us in the three natural divisions of —the Grasses, the Herbs, and the Trees; and it extended to ordain their appearing with their reproductive powers for the formation of their seeds and fruits, in order to provide for their perpetuation on Earth in an unfailing succession, without any new creation. The Deity chose that His own agency, and the secondary forces it would employ, should take the form of that organical productivity which is still as great a mystery as it has ever been—which no natural properties or powers perceptible in external nature can at all explain —and which can therefore be justly referred only to His superintending and actuating Power, that prefers

* Botanical Register.

to act in this unseen efficacy, rather than in the perpetual display of manifest new creations. The invisible miracle is left to be inferred by the human sagacity, from the wonderful phenomena that are continually occurring to our eyesight, which no human or known natural agency can account for. It is thus that He makes His eternal Power and Godhead the deduction of our reason and the sentiment of our intellectual sensibility, as well as a communicated truth from His personal revelation. The appeal has been felt by all nations in all ages, although few have acted properly or consistently with the sublime impression.

All Vegetables, in every region, and of all sorts, from the most minute to the most towering; and they are of every degree and variety of size, from that pettiness which escapes our natural sight, to that magnitude which we feel to be gigantic and would deem sublime, but that greater things are about us; have these properties in common with all animals and with the human race—organization: an interior power of progressive growth; a principle of life, with many phenomena that resemble irritability, excitability and susceptibility; and a self-reproductive and multiplying faculty. In all these qualities, they are distinguished from inorganic and earthly matter, and from all fluids and gases; and by these are raised high in the scale of being above them. In these they resemble all animated nature, and our prouder selves. We may dislike such a relationship; but to this extent our bodily frame and functions establish a natural kinship between us. They are very humble cousins, but we cannot destroy the organical and living affinity, nor escape the closing assimilation. We decline and die, as they do; and they sicken, fade, die and decay, like every human being. There is also another analogy. Their substance nourishes us, and ours not unfrequently becomes a part of theirs. They can feed on us, as we more continually and universally do on them. All living nature is linked together by actual connexion, if not by perceivable sympathies.

An organized being is a peculiar conception and fabrication of the Divine mind. And Vegetables have been caused to be organized beings of definite figures, diversified from each other into distinct classes and species; but each species constantly retaining and perpetuating its own peculiar configurations and the qualities thence resulting—and all with a living principle within them. Life and organization are inseparable companions.

To form a correct idea of what an organized being is, you may observe, that in human mechanism we have an imitation and an analogy of vegetable and animal organization, which enable us more fully to understand it, and to perceive how it has originated. Neither watches, cotton-mills, nor steam-engines grow: they must be made by human hands, under the direction of a designing thought and will; and this mode of their fabrication discovers to us how all similar things whose forming agents we have not seen at work and therefore how all natural organizations whose principles of construction are the same, and of which they are in perfect similitude, must have been made.

All mechanisms, from the pair of tongs or the snuffers, to the windmill, the ship, and the manufacturing machines, consist of pieces or particles of matter taken out of their natural and proceeding state, and put into a peculiar arrangement in due relation to each other, so that, from this specific combination, the action of the completed thing may produce the effect intended by its planning, adjusting and commanding maker. Such are the mechanisms of man, and such are the organizations or mechanisms of his Creator. The plant and the animal, and the human beings are, in their bodily structure, material machines. They are so many mechanized substances, consisting of parts that have been put together from some other state into designed and adapted arrangements; and by their artificial and special construction, they each possess and exert powers which thence arise, and produce the phenomena which it was intended to effect. Nothing but human workmanship and skill will account for human mechanism. No metal in the mines could by any chance move itself into the wheels and springs and parts and adjustments which constitute a watch or an organ; and begin marking time or playing a melody. So nothing but Divine agency and intelligence will explain the manner in which the inert particles of things became combined originally into vegetable or animal organizations; because all other known agencies are known to be utterly incompetent to such effects. In neither human or Divine mechanisms do the parts of which they consist tend in themselves to be what they are, or do what they do. Iron has no tendency to be a hammer or a chain; nor brass to be in a clock or cannon, or in a telescope, or in a piano-forte. So none of the particles that constitute plants have any natural tendency to be a carnation, an apple or an acorn, nor to form animal flesh, or to be wings, feathers, feet or fins.

In all cases of mechanism and organization, the forming parts and particles have been taken out of their natural and preceding state, and have been put into those mechanized positions and combinations by some thinking, willing and competent agent, for the express purpose of their being thereby made to be the artificial figures and individual things which we see them respectively to be, and of doing the precise and determinate actions and effects which each of them separately and peculiary performs. Such are organizations in general: and Plants are that peculiar species of their construction, which display to us the Divine ideas in this class of natural being; and which form the largest compartment in the immense panorama of the surface of our terrestrial fabric.*

* Turner's Sacred History.

Phellandrium aquaticum

ŒNANTHE PHELLANDRIUM.—FINE-LEAVED WATER HEMLOCK.

Class V. PENTANDRIA.—Order II. DIGYNIA.

Natural Order, UMBELLIFERÆ.—THE UMBELLIFEROUS TRIBE.

Fig (*a*) represents the corolla, stamens, &c.; (*b*) a back view of the corolla, showing the calyx; (*c*) the germen and styles, with the stamens and anthers; (*d*) the fruit.

This is an indigenous biennial plant, found growing in ditches and rivers; but not very common. We found it (says Professor Burnett,) in great abundance in a pond at Kentish Town, and in a deep ditch at Battersea, associated with the elegant Butomus *umbellatus*, Lythrum *Salicaria*, and other aquatics. It flowers in July and August.

From a jointed root-stake, the fibres from which grow in whorls, proceeds an erect, hollow, smooth, furrowed stem, of a yellowish green colour, and very thick at the lower part, with diverging branches, to the height of three or four feet. The leaves are large, spreading, smooth, dark, shining green, tripinnate and finely divided. The umbels are many rayed, axillary, and opposite to the leaves. The flowers are small, white, formed into umbels, which in the species now under consideration, have a partial involucrum, composed of many lanceolate small leaves; petals equal, obcordate; calyx 5-leaved. The filaments are five, longer than the corolla, and supporting roundish anthers. The germen is inferior, oblong, with two styles, and obtuse stigmata. The fruit is ovate, smooth, striated, and splits into two akenia, each containing one small seed. The old genus *Phellandrium* is now allied to *Œnanthe;* from which it differs only in the absence of a general involucre, and in having all the florets fertile, and not radiate.

Qualities.—The whole plant has a heavy, disagreeable smell; the seeds (which are the parts that have been used in medicine) have an aromatic odour, and a moderately pungent taste, resembling those of fennel. Distilled with water, they yield an essential oil, of a pale yellow colour, and a strong penetrating smell. One pound affords an ounce of watery, and nearly double this quantity of spirituous extract, of which more than three drachms consist of resin.

Medical Properties and Uses.—The seeds of phellandrium *aquaticum*, or, as it is now called, Œnanthe Phellandrium, are carminative narcotic, and diuretic. They have been much recommended on the continent in pulmonary consumption; and many cases are recorded, in which the disease, if not cured, was evidently relieved by them.

Dr. Selig narrates a case of a young unmarried woman, whose mother died consumptive. She laboured under cough, dyspnœa, purulent expectoration, pain in the chest, and fever in the afternoon.

It ought to be remarked, that during four weeks, in which Dr. Selig exhibited various pectoral and febrifuge medicines, the cough, fever, and pains in the chest were much abated; but the expectoration continued, and was offensive by its smell. He then ordered the water-hemlock, with nitre and gum arabic; and strongly urged his patient to permit a seton to be inserted between the shoulders; which she would not submit to. In fourteen days she recovered astonishingly. There were, now, scarcely any remains of fever, and the cough and purulent expectoration were greatly diminished. Her strength and spirits returned. But as the doctor still insisted on the propriety of introducing a seton, and as her terrors at the remedy were great, she abandoned him and his medicine. She then began to grow worse, and in a few months after again sent for him: but the disease was too far advanced to leave any room for hope, and she died some months afterwards.

The second case is more interesting. It is that of a youth of thirteen years of age, who had all the

symptoms of phthisis pulmonalis; and who was completely cured by means of the *Semina Phellandrii aquatici*, which he took for two months, without interruption.

There is a note added to this case by Dr. Hufeland, the editor of the journal from which this account has been translated, where he says, that he also derived great benefit from the same remedy.

Dr. Hargens, of Kiel, likewise states that it relieves consumptive symptoms; and as it is a native of our own country, we wish to direct the attention of British practitioners to it, as a remedy worthy of trial, and one that can be readily obtained. Should any one be disposed to make use of it, it ought to be borne in mind that those of the *umbelliferous* plants which are possessed of active narcotic properties, possess them in an increasing ratio, with their moist or shady situations.

The seeds also were employed by the ancients in calculous complaints; and have been highly extolled by Heister, Ernsling, and others among the moderns, as possessing valuable diuretic, antiseptic, and expectorant powers. When taken in large doses, they appear to produce, though not very actively, the ordinary effects of the narcotic poisons; and on this account we have thought proper to figure the plant in our work. Wepfer has related several cases of poisoning by it; but it appears probable that the Cicuta *virosa* was mistaken for it. Linnæus asserts that the horses in Sweden are seized with palsy by feeding on the Water-Hemlock: to the cow, however, it is wholesome, and she being guided by her faculties of smelling and tasting, feeds upon it unhurt; but that its noxious qualities are attributable to the larva of a small coleopterous insect, *Curculio paraplecticus, L.* (*Lixus paraplecticus*, of Fabricius and Latreille,) which is found in its stalks. The effects respecting this insect are now admitted to be fabulous.

It is, indeed, wisely arranged by God that the plants designed for pasture are not equally inviting to all his creatures: were not this the case one animal would deprive another of food, and the necessity of affording a sufficient supply of the same kind of plant to so great a number of animals would prevent that display of variety in the vegetable kingdom which now affords so much opportunity for research and admiration. The various objects of nature are not placed before us that we may extend our hand to gather them, and, without any thought or pains, to receive from them all their advantages: but to man are given intellectual powers to study, and bodily strength to labour for the extension of their value. All that is necessary to be known respecting our destiny for a future world is revealed with great plainness by the Scriptures; but for our comfort in this world we are required to exert the capacities with which we are endowed in order to make the requisite discoveries. We may remark, in favour of cultivation, that even the soils most friendly to vegetation commonly become by it more productive as the nature of the product is rendered more valuable. In every important attainment each one of us should endeavour to leave the world better than we found it, that, even as regards others, we may not have lived in vain.

Dose.—Of the powdered seeds, from gr. xv. to ʒß and upwards.

Hepatica

HEPATICA TRILOBA.——THREE-LOBED-LEAVED HEPATICA.

Class XIII. POLYANDRIA.——Order III. POLYGYNIA.

Natural Order, RANUNCULACEÆ.——THE CROW-FOOT TRIBE.

Hepatica (from *hepaticos*, of or relating to the liver. The three lobes of the leaves have been compared to the three lobes of the liver.) Dill. giess. p. 108, t. 5. Lin. hort. cliff. 223. D. C. syst. 1, p. 215, prod. 1, p. 22. Involucrum of 3 entire leaves, in the form of a calyx, close to the flower. Calyx of 6 to 9 petal-like coloured sepals, disposed into two or three series. Stamens and ovaries numerous. Carpels tailless. Small perennial early-flowering evergreen herbs, with 3-7-lobed leaves. Scapes 1-flowered, numerous, rising from the same root. Leaves cordate, 3-lobed; lobes quite entire, ovate, acutish; petioles and scapes rather hairy. Native of many parts of Europe in hedges and shady places. Colour of flowers usually blue; found in gardens, but seldom if ever in the fields, with white, brown, flesh-coloured, red, purple, violet, or variegated flowers, but never yellow; single or double. Leaves green, purplish or variegated underneath. All these varieties are designated under names in old Books.

The Hepatica is a swiss species of the anemone; there are many varieties, both single and double, varying in colour, and generally blowing in great profusion in February and March. The flower lies a year within the bud, complete in all its parts. The double flower last longer than the single, and are much handsomer. They thrive best when exposed only to the morning sun; cold does not injure them. They should be kept moderately moist, and may be increased by parting the roots, which should be done in March, when they are in flower; but not oftener than every third or fourth year. Frequent removal weakens, and sometimes destroys them.

Culture. Hepaticas are great favourites for the flower-border, both as being evergreen in their foliage, and for their abundant early blossoms and great variety of colours and shades. A light loam or peat soil suits them best; and they are easily increased by dividing the plants at the root, in spring. When gardeners see its pretty flowers put forth, they say "the earth is in love, we may sow with confidence."

A remarkable instance is recorded of change of colour in these flowers. Some roots of the Double Blue Hepatica being sent from a garden in Tothill-fields to another at Henley upon Thames, when they came to blossom produced white flowers, owing to the difference of the soil: but it is yet more curious, that being returned to their former station, they resumed their original blue colour.

* From facts we infer that Plants have been created on the system of having a living principle within them, capable of producing various results. This principle is not their material organization, because this, when they die, like the animal body on a sudden death, subsists in all its completeness at that moment, and yet it can no longer perform any of the functions of its life. It is also something different from heat, light, and electricity, which can act upon its frame, while it abides there, because neither of these aërial fluids can supply its place or do its offices after its departure. It is distinguished from its own, and from all inorganic matter, by its peculiar power, which life possesses in both plants and animals, of counteracting the laws of chemical affinity while it is in the organic frame, altho these begin to operate irresistibly as soon as it has retired. Humboldt remarked this law, by which no vegetable suffers putrefaction or decomposition in any part until its living principle has retired from it: then a leaf changes, and a flower decays, and a branch withers, but not till life has left that part.

Vegetable life resembles nothing known in nature but animal life, and with this it has a striking analogy. Many of their functional operations we have noticed to be alike; and these, in both, require the presence and co-operation of their living principle, and cease in both when that is withdrawn.

Its presence and activity first appear in the germination of the seed or bud, as they do in the animal egg. In plants, germination seems to have a specific and regular term of germination in each particular

* Turner's Sacred History.

species. Adamson has given this table of the periods in which the following Seeds germinate after being sown:—

Wheat; Millet	1 day.	Purslain	9 days.
Spinach; Beans; Mustard	3 days.	Cabbage	10 —
Lettuce; Aniseed	4 —	Hyssop	30 —
Melon; Cucumber; Cress	5 —	Parsley	40 or 50 —
Radish; Beetroot	6 —	Almond; Chesnut; Peach	1 year.
Barley	7 —	Rose; Hawthorn; Filbert	2 years.

By steeping the seed in the chlorine gas, the process was hastened: cress seed then began its germination in 32 hours.—Achard found that they would not grow in heterogeneous hydrogen gas. Loud. Enc. 195. But though cold represses it, yet this repression only causes it in the regions of frost and snow, to spring up, as soon as the brief season of heat occurs, with a rapidity which the temperate climates do not experience. A Lapland and Siberian Yew exhibits remarkably rapid vegetation, beginning and fruiting in a single month; thus

July 1.—Snow gone.
9.—Fields quite green.
17.—Plants at full growth.
25.—Ditto in flower.
Aug. 2.—Fruit ripe
18.—Snow.

And from that time snow and ice to the 23rd June, when they begin to melt.

It can lay dormant without expiring, in some species, when it seemed to have forsaken them. Thus Mosses 'are extremely tenacious of life; and *after being long dried*, easily recover their health and vigour by moisture. Their beautiful structure cannot be too much admired.' Sir J. Smith, Intr. 493.

This living principle has the singular property of remaining dormant and inert for years or ages, without therefore ceasing to exist. We all know that seeds may be kept a long while unsown, and yet grow whenever planted in a suited soil. This, again, is like animals that have been found inclosed in trees, and yet have revived. When plants are buried in the ground to a greater depth than is natural to them for their proper growth, they do not vegetate; but they do not therefore die; they retain their power of vegetation to an unlimited period; and when, by any accident, brought so near the surface as to suit their evolution, they begin immediately to grow. If the ground in old established botanic gardens be dug much deeper than ordinary, it frequently happens, that species which have been long lost are recovered, from their seeds being latent in the soil. Ground that has not been disturbed for some hundred years, on being ploughed or turned up for any considerable depth, has frequently surprised the cultivator by the appearance of plants which he never sowed, and often which were then unknown to the country. A field that was thus ploughed up near Dunkeld, after a period of 40 years rest, yielded a considerable blade of Black Oats, without sowing. It could have been only from the plough's bringing up to the surface seeds that had been formerly too deeply lodged for germination.—Loud. Encyc. Gard. 194. Some ground turned up in Bushy Park in winter, which had probably not been disturbed since the time of Charles I., was covered in the following summer with Tree Mignionette, Pansies, and Wild Raspberries, none of which grow in the neighbourhood.—Jesse's Gleanings. This has arisen from ancient seeds becoming deeply covered, and there remaining inert, but yet retaining their principle of life. This principle has been ascertained to be capable of existing in this latent state for above two thousand years unextinguished, and springing again into active vegetation as soon as planted in a congenial soil. It even remains unimpaired in blighted corn, and will grow from that as vigorously as from the perfect seed. But yet, although thus abiding in vitality in its dormant state for an indefinite length of time, such is its delicacy of existence when once roused into its living action, that it perishes for ever if it be prevented from continuing its growth.

This living principle can subsist in all its reproductive power in fruit trees, from one to two centuries, and in others for many more. Some of the poisons affect the activity of this principle, though they do not destroy it.

But although we can observe these effects, we do not know what vegetable life really is. We can discern it to be something distinct and different from all the known material agencies of nature. These can excite and affect and assist the agency, but cannot without it do what it does, nor be what it is. We are therefore authorized to deem it a peculiar sui generis principle, as distinct in plants from their material laws and substance, as life and instinct are in animals.

Cicuta virosa.

CICUTA VIROSA.—LONG-LEAVED WATER HEMLOCK, OR COWBANE.

Class V. PENTANDRIA—Order II. DIGYNIA.

Natural Order, UMBELLIFERÆ.——THE UMBELLIFEROUS TRIBE.

Fig (*a*) represents the calyx; (*b*) the calyx with the germen and styles; (*c*) a perfect flower.

This plant has often been confounded with the *Œnanthe* Phellandrium, in consequence of the same English name being applied to both. By comparing the two plants, together with the botanical descriptions of each, their specific differences will be readily distinguished, and the virtues of each accurately ascertained.

This plant, which is much more powerful in its effects than the Conium *maculatum*, is supposed by Haller and many others to have yielded the celebrated Athenian poison: and as goats will not touch the common Hemlock, there is some reason to think that it is the species referred to by Lucretius:

——— Videre licet pinguescere sæpe cicuta
Barbigeras pecudes, hominique est acre venenum.

The Cicuta *virosa* is by far the most active of the poisonous plants of Great Britain; fortunately, however, for us, it is somewhat scarce, or at least, very local in this country. It grows in several parts of England, in ditches, and by the sides of rivers and lakes, flowering in July and August. Sir William Hooker, in his "*Flora Scotica*," enumerates the following as its principal stations in Scotland: the side of Loch-end, near Edinburgh; Pow Mill, Kinrosshire; in marshes near Forfar Loch; Otterton Loch, Fifeshire; about Mugdoch, Bardowie, and Douglaston Lochs; Loch near new Kilpatrick; and also near Glasgow, where it occurs in great abundance.

The root is perennial, tuberous, hollow, with many whorled fibres, and divided by transverse partitions into numerous cells. The stem, like the root, is very large, hollow, leafy, branched, furrowed, smooth, and rises to the height of three or four feet. The leaves are bi-ternate, of a bright green colour, and stand upon long foot-stalks; the radical ones pinnated; the leaflets deeply serrated, tapering at each end, from one to two inches long, and more or less decurrent. The flowers are produced in large, many-rayed umbels, partly terminal, and partly opposite to the leaves. The general bracteas are linear, seldom more than one or two, and frequently entirely wanting; the partial ones numerous, narrow, pointed, and unequal. The calyx consists of five ovate, acute, somewhat unequal, permanent leaves. The flowers are very small; the petals five, white, nearly heart-shaped, and incurved at the apex; the filaments are thread-shaped, spreading, about the length of the corolla, supporting roundish anthers; the germen hemispherical, ribbed; the styles two, filiform, at first short and erect, but subsequently elongated and spreading, with obtuse stigmas. The fruit is roundish, smooth, and divisible into two parts, having each one seed, convex, and marked with five flattish plane ribs, and on the other, with three prominent vittæ in the vallecules, which afford an excellent generic character.

Poisonous Effects and Morbid Appearances.—This violent poison produces the following symptoms:—Dazzling, obscurity of vision, vertigoes, cephalalgia, vacillating walk, agitation, dryness of throat, ardent thirst, eructations, vomiting of greenish matter, respiration frequent and interrupted, tetanic contraction of the jaws, lipothymia, sometimes followed by a state of lethargy, and coldness of the extremities; at other times a furious delirium, or attacks more or less approaching to epilepsy, especially in children, and young girls, which frequently terminate in death. In one or two cases, swelling of the face

has been noticed, with starting of the eyes. The most serious derangement of the nervous system has always been observed; and has been more or less severe, in proportion to the quantity that may have been taken; unless a part of the poison have been quickly ejected from the stomach. Wepfer, who wrote a work entitled "Historia Cicutæ Aquaticæ," narrates many cases of its effects on different men and animals. The following account is gleaned from his admirable treatise, and subjoined to it is one of the cases, in his own words:—

In the month of March, 1670, two boys and six girls found the roots of this plant in a meadow, and upon tasting them, perceiving that they were not unpleasant, all partook of them. The two boys, who ate a large quantity, were soon after seized with pains, loss of speech, an abolition of all the senses, and terrible convulsions. The mouth was so closely shut, that it could not be opened by any means. Blood was forced from the ears, and the eyes were horribly distorted. Both the boys died in half an hour from the first accession of the symptoms. The six girls, who had taken a smaller quantity of the roots, were likewise seized with epileptic symptoms, but in the intervals of the paroxysms some Venice treacle dissolved in vinegar, was given them; in consequence of which, they vomited and recovered: but one, the sister of the boys who died, after she had vomited, had a very narrow escape of her life; she lay nine hours with her hands and feet outstretched and cold. All this time she had a cadaverous countenance, aud her respiration could scarcely be perceived. When she recovered, she complained a long time of pain in her stomach, and was unable to eat any food; her tongue being much wounded by her teeth, during the convulsive fits.

Mr. A. S. Taylor observes, that Cicuta *virosa* has given rise to several fatal accidents—its roots having been mistaken for parsnips, and that Dr. Badgley has communicated some cases of poisoning by this plant to the Montreal Medical Gazette (June 1844):—Four children, between five and seven years of age, ate the roots of Water-hemlock by mistake for parsnips. Within half an hour, they were all seized with extreme nausea, burning pain at the epigastrium, and colicky pains in the bowels: they all complained, on reaching their homes, of sickness, for which warm milk was administered to them. Efforts to vomit were induced: in one, there was full vomiting, but in the other three nothing was ejected from the stomach. The pains gradually increased in two of them; and, in the space of about two hours from the time of their eating the roots, they were labouring under complete coma, with tetanic convulsions,—the jaws rigidly fixed, profound stertor, and the whole face puffed and bloated, having precisely the appearance of the head of a person who had been for some hours under water; pulse intermitting, sometimes imperceptible. Emetics were exhibited, but without effect; and enemata of castor-oil and oil of turpentine were employed with great relief. The child who had eaten most sparingly had taken warm milk, and had vomited freely. One died in three hours; the others recovered.

Dr. Schlesier met with the following case:—A girl, æt. eight, who had eaten this plant, was found lying quite insensible. Her respiration was feeble, and rattling; the pulse soft, small, and scarcely perceptible; the pupils dilated and fixed; the face pallid; limbs flaccid; abdomen distensed; and there was general coldness of the surface, with an entire loss of the power of swallowing. Stimulating embrocations and cataplasms were applied, and after some hours the pupils contracted; the body became warm; the breathing easier; but there were involuntary motions of the limbs. There was a slight return of consciousness and the power of speaking, but the difficulty of swallowing continued; and the patient died in about sixteen hours. (Canstatt's Jahresb. 1844, v. 296.)

Schwencke, a German writer, also gives an aceount of four boys, who partook of this plant, three of whom died. The internal surface of the stomach was highly inflamed, and the brain gorged with blood. Boerhaave narrates some cases, where those who were vomited with the sulphate of zinc, recovered.

"Trois soldats allemands périrent en moins d'une demi-heure on trouva les membranes de l'estomac perforées chez l'un des trois, corrodées chez les deux autres. L'estomac était rempli d'une écume blanchâtre. Les intestines, les poumons, et le cœur étaient flasques, et flétris, les vaisseaux veineux pleins d'un sang très-fluide."—*L'Histoire de l'Académie des Sciences de Paris, année* 1715.

Linnæus, in his Flora Lapponiea, gives a long aceount of a fatality which befel the cattle, and which he was enabled to arrest, by ascertaining the important fact, that it was entirely owing to their eating the Cicuta *virosa*.

Cleome speciosissima.

CLEOME SPECIOSISSIMA.—SHEWY CLEOME.

Class VI. HEXANDRIA.——Order I. MONOGYNIA.

Natural Order, CAPPARIDEÆ.——THE CAPER TRIBE.

Raised in the Garden of the Horticultural Society from seeds sent by Dr. Deppe from Xalapa. It is a tender annual, well adapted for planting among other border annuals in the summer, when it will ripen its seeds if the season is favourable; for a greenhouse it is less suitable, its leaves having little beauty; but it is always advisable to have a plant or two in reserve under glass to secure seeds, in case those in the open air should fail. Flowers late in the summer.*

Without affirming a plant to be a real animal, as some of the Grecian philosophers imagined, we shall best understand its true nature and construction, by considering it as an animal in the principle of its systematic form; but without being sentient or intelligent; and differing also in one essential point, in the matter of its composition. They are distinguished also by another general peculiarity in their material nature. Animal bodies seem, by some interior tho yet unknown process, to produce lime—plants, never; but these, as their appropriate function, appear to generate carbon instead. The absence of any intellectual quality makes their principle of life to be very dissimilar to, or at least very distinct from, that of animals.

Most vegetables have an upright body, with vessels ascending and communicating with each other, as in us, but with sap instead of blood; with woody fibres, instead of bone; with pith, instead of brain and nerve; with bark or rind, instead of skin or hide. Their leaves imbibe it, as we breathe it, and also light and moisture; and in their continual motion, answer the purposes of our respiration and exercise. They also imbibe and expire an aërial fluid, as we do, tho with this difference, that they emit oxygen gas, under the influence of the solar rays, while animals absorb and retain it. They require food, as we do, but their roots are their mouths. But all vegetables are fixed in their place of growth; they have no locomotive power. Where they are born, they live and die. This circumstance would alone make them a peculiar class of beings, if they had every other similitude to animal existences. They are living beings, but with no power of spontaneous moveability from their first station of development.

The seed contains the embryo plant in the little corculum, which all, on being carefully opened, display. It is familiarly called the heart of the walnut—the little figure at one end of all nuts and kernels. Vessels extend from this to the substance in which it lies, which has received the name of Cotyledon. If this be single, as in the grasses and corn, it is a mono-cotyledon seed and plant; if, as in the larger herbs and trees, it consists of two lobes, they are called di-cotyledons; if no such are discernible at all, they are termed acotyledon plants, which in some, and perhaps in most countries, are the most numerous. All plants consist of two substances, vessels and cellular tissue. In general language, what is not one, may be deemed the other.

The seed of plants resembles the animal ovum or egg. The access of a certain degree of heat is necessary to begin the activity and development in both; and when that occurs to the seed, in a proper soil and place, and with sufficient moisture, Vegetation begins. The cotyledons swell and rise in the seminal leaves. The corculum lengthens downwards in the germ of the radicle, and its upper part ascends in the plumula. A nutritious matter passes from the seminal leaves to the radicle, which daily elongates. The process of vegetation thus beginning from the cotyledons, steadily proceeds under its subsequent nourishment from the earth and air, until the perfect plant is formed.

* Botanical Register.

Nothing is more curious in nature than the persevering efforts made by the living principle in plants to force their radicle downwards; whatever efforts may be made to give it another direction, are constantly baffled by the growing power, which knows where its nutrition lies, and will go rightly to seek it. No animal can display a more persisting volition. Yet when circumstances become such, that its food is not downwards, but upwards, it will then, and then only, rest in that inverted and ascending position. Earth is not so essential to vegetable growth as moisture; for even trees will grow in water only. Earth is but the bed in which the vegetable nutriment is best prepared and presented to the absorbing roots.

When the plant develops in the fitting soil, the roots nourish it from below, and the leaves above contribute also their auxiliary supplies. Buds emerge in due time from the stem or branches, each of which may be considered as a new vegetable, growing from its parent, but living in unseparating union with it, yet only in close association, for it seeks its own independent nurture by its distinct, tho strictly combined root.

Plants with few and small leaves depend chiefly on the soil. Those with many and large ones, more on the atmosphere. But some can find nutriment, and grow, even from animals. Thus cryptogamic plants have been found vegetating on living wasps in the West Indies. This curious fact has been also noticed elsewhere. They will even grow in the stomach of living animals; for several instances of this have occurred, in which the force of vegetation has prevailed over the animal's digestive power; at least, in those who were entirely carnivorous.

Warmth and moisture usually commence the process of germination as soon as they concur to the seed: but if the due means for the further nutriment do not accompany the growth, the process stops, and the plant soon dies. Some vegetables—the parasitic tribes—fasten on a larger plant or tree, and fixing in that their roots, derive food from its nutritive juices. The living principle exerts itself with singular force and apparent judgment in searching for its nutrition when the ordinary sources and supply of it fail. The main fluid in vegetables is the sap. 'It is really the blood of the plant, by which the whole body is nourished, and from which the peculiar secretions are made.'

Vegetables are not generally affected by the narcotic poisons, but they will absorb arsenic by their vessels and cellular tissues. Iodine facilitates the germination of seeds much more than chlorine, if they be watered with a solution of it: even those which have apparently lost all vital power, may frequently be made to germinate by Iodine.

Light represses the evolution of the seed, but is essential to the production of the florification and fruit; yet, as if to show us that all things are but what they are specifically organized and actuated to be, and never are the chance productions of blind necessity, there is one plant which has been so formed as to flower *only* in the dark—the night-flowering Cereus. But all such exceptions in nature are never casual, but always regularly arise from a peculiarity of structure, which is adapted to cause the particular result, and which is always constant in the species in which it occurs. Plants will germinate in rarefied air, but not rapidly.

The parts of plants have a singular homogeneity, or sameness of nature and properties. Roots may be made to produce leaves, and buds of leaves may be transformed into buds of flowers. If a tree be inverted by planting it by the stalk, its roots then disclose leaves, and its branches send out roots. Plants grow most in the night and in cloudy weather: at noon, all increase is suspended. Between morning and noon, and noon and evening, it is but small. But flowers advance more in the day, and especially in the meridian light and heat. Some plants and trees will continue to vegetate, tho overflooded by sea water. So tenacious of its vitality and power, their living principle is often found to be.*

* Turner's Sacred History.

Cephaelis Ipecacuanha.

CEPHAËLIS IPECACUANHA.—IPECACUAN.

Class V. PENTANDRIA.——Order I. MONOGYNIA.

Natural Order, CINCHONACEÆ.——THE CINCHONA TRIBE.

Fig. 1. the interfloral bracteas; 2. the germen and calyx, styles and stigmas somewhat magnified; 3. fruit of the natural size; 4. corolla laid open to show the anthers; 5 corolla, calyx, and germen, a little magnified.

Although the root of Ipecacuan has been employed as a valuable article of the materia medica, yet the botanical characters of the plant which produced it remained unknown till professor Brotero, of Coimbra, determined the genus to which it ought to be referred, with the assistance of observations made in Brazil, on living plants, by Bernardo Gomez, a resident medical botanist. From his description and figure, published in the sixth volume of the Linnean Transactions, which we have copied, it is called Callicocca, but it has since been shown to belong to the genus Cephaëlis. The plant is perennial, a native of moist woods, near Pernambucco, Bahia Rio Janeiro, and other provinces of Brazil; flowering from November to March, and ripening its berries in May. It is called Picacuan, or Ipecacuanha, by the natives of some parts of Brazil; *poaia do mato* and *do botico*, by those of the southern provinces; and *cipo*, by others, which is the name often given it by the Portuguese settlers.

The root is simple, or somewhat branched, and furnished with a few short radicles; it is roundish, most frequently perpendicular, but rarely slightly oblique; from two to four inches in length, or more, and two or three lines in thickness: irregularly bent, externally brown, and divided into numerous prominent, unequal, somewhat wrinkled rings. The stem is slightly shrubby, procumbent or creeping at the base, then erect, and rising from five to nine inches in height; it is round, about the thickness of a common quill, smooth, and without leaves; below, brown and knotty, with the scars of fallen leaves, the internodes upwards gradually increasing in length; near the top, it is pubescent, green, leafy, for a year or two simple, then throwing out a few rather crooked, knotty runners, taking roots irregularly at the knots, and producing one or two new stems, about half a foot apart. The leaves are from four to eight, near the summit of the stem; they are almost sessile, opposite, spreading, ovate, pointed at both ends, three or four inches long, one or two broad, and perfectly entire; of a deep green above, besprinkled with roughish points, smooth, or rarely beset with a few scattered hairs; underneath, pale green, and the younger ones somewhat pubescent, with a rather elevated rib, and alternate, nearly parallel lateral veins, curved at the ends. The petioles are short, channelled and somewhat hairy. At the base of each pair of leaves are a pair of interpetiolar stipules, deeply cut into awl-shaped divisions, sessile, shrivelling, equal to the petioles in length, and with them embracing the stem, being the rudiments of the supplementary leaves, which when all developed, form whorls in the *Rubiaceæ*. The flowers are aggregated in a solitary head, a little drooping, set on a round downy footstalk, terminating the stem, and encompassed by a four-leaved involucre. The florets are sessile, from fifteen to twenty-four in number, and separated by chaffy bractes, the length of the florets. The bractes are pubescent, entire, sessile, green, varying in form, sometimes long, and egg-shaped, sometimes rather obtusely lanceolate, and sometimes, but rarely, in size and figure resembling the leaflets of the involucre. The leaflets of the involucre are subcordate, acute, entire, almost sessile, slightly waved, and hairy; the two outer ones largest, and all a little longer than the florets. The calyx is urceolate, and small, superior, membranous, persistent, and with five blunt teeth. The corolla is synpetalous, the border shorter than the tube, woolly about the throat, swelling upwards, and divided into five ovate, acute, spreading segments. The filaments are short, capillary, inserted into the upper part of the tube, and bearing oblong, linear, erect anthers. The germen is ovate, surmounted by a thread-shaped style, the length of the tube, surrounded at the base with a short nectariferous rim, and terminated by two obtuse stigmas the length of the anthers. The fruit is drupaceous, of a reddish purple colour, becoming wrinkled and black, and containing two smooth oval seeds.

It appears that the first European who brought Ipecacuanha into use, was a native of Brazil, whose name was Michael Tristam. He speaks of it as a remedy for dysentery. Piso afterwards describes it and speaks of two sorts, the white and brown. But we are indebted to Helvetius for bringing it into general use, under the patronage of Louis XIV. from whom he received a thousand pounds, to reveal the secret medicine with which he so successfully treated dysentery. Besides the brown Ipecacuanha, there is another sort, brought from Brazil, which varies in appearance from the former; and some have supposed that these differences are owing to accidental circumstances, such as the place of growth, the kind of soil &c.; but on the authority of M. Gomez, the common *brown* Ipecacuanha of the shops is yielded by the

Cephaelis *Ipecuacanha*, while the *white* is the root of the Richardsonia *Brasiliensis*, which is exported largely to Portugal. Besides these the name of *Ipecacuan*, which is a compound of *ipi*, the Peruvian word for root, and *Cacuanha*, the name of the district where this root was first procured, has come by a common license of language to mean *vomiting root*, and is given to various species of Cynanchum, Asclepias, Euphorbia, Dorstenia, &c., and with regard to their comparative power, De Candolle says, that vomiting is produced by twenty-two grains of the Cynanchum *I*; by twenty-four of the Psychotria *emetica*; and by from sixty to seventy-two of the Viola *calceolaria*.

Qualities and Chemical Properties.—The roots of ipecacuan consist of two parts, an internal ligneous axis resembling a thread, upon which the annulated bark seems strung like beads. The first is inert, the second contains the active principles; hence, for medical use these should be separated, the cortical portion alone being worthy of preservation. Pelletier found on analysis that 100 parts of the bark yielded 16 parts emetine, while the woody axis afforded only 1.15, so that the difference of the action is satisfactorily accounted for. Powdered Ipecacuan has a sickly odour, and a bitterish acrid taste; and on those who pulverize it, sometimes excites such powerful effects, as to produce nausea, faintings, and spitting of blood.

Medical Properties and Uses.—The utility of Ipecacuanha is generally known and very properly appreciated. As an emetic, it operates in doses of from five to thirty grains, surely and efficiently; without depressing the system at large, like many other emetics, or injuring the mucous membrane of the stomach; it is therefore, to be preferred as a mere evacuant of this organ; and if we wish to induce its speedy operation without exciting much nausea, we can give it in the fullest doses with perfect safety. Its power as an emetie has been rather undervalued in one particular view; for, if *opium* be taken, recourse is generally had to violent remedies, which by simple contact with the stomach, when in a torpid condition, cannot fail to produce injurious results. We remember, says Professor Burnett, to have heard Dr. Currie narrate a case of this kind, when the sulphates of zinc, and of copper, failed to produce their accustomed effects; he therefore poured some boiling water on a quantity of powdered Ipecacuanha, and as soon as it was cool enough caused large doses to be swallowed, which were the speedy means of causing vomiting, and of saving the life of the patient. Since then, we have borne this in mind: and in two or three similar cases, have found the *unstrained infusion* quite equal to its task.

Ipecacuanha is sometimes employed in a full dose on the accession of the paroxysm of intermittent fever; and by destroying the link which held the chain of diseased sympathies together, it has often succeeded in cutting short the disease. Paroxysms of spasmodic asthma, also, often yield to the same treatment; and in the more chronic form of that disease, small doses, advantageously produce both expectoration and perspiration. In chronic dysentery and diarrhœa, it is a most useful medicine, in small doses; and we think, says Professor Burnett, that its power over these diseases may be attributed to the following circumstances; in the first place, it has a tendency to excite *diaphoresis*, by which the circulation is equalized, and a great determination of blood to the diseased parts is taken off; secondly, it sometimes, even in *very* small doses, excites nausea, and gentle vomiting, which not only check arterial action in a powerful manner, but by this very inversion of the peristaltic motion of the intestines, destroy the harmony of disordered actions; and thirdly, when vomiting is not produced, it appears to promote secretion in the lining membrane of the bowels, whereby a healthy condition is eventually re-established. Given in doses of half a grain even, it produces the last-mentioned effects on the stomach; and is, therefore, frequently prescribed in cases of dyspepsia, attended by a foul tongue. Under the name of Dover's powder, they form one of the most powerful and useful sudorifics that can be employed for acute, or chronic rheumatism, and for eruptive diseases that are disposed to recede. Nauseating doses of Ipecacuanha are also useful for hooping cough, epilepsy, and amaurosis.

Preparation of Coloured Emetine.—Reduce Ipecacuanha to powder, and digest it in ether at 60° to dissolve the fatty odorous matter. When the powder yields nothing more to the ether, exhaust it again by means of alcohol. Place the alcoholic tinctures in a water-bath, and re-dissolve the residue in cold water. It thus loses a portion of wax, and a little of the fatty matter, which still remained. It is only necessary farther to macerate it on carbonate of magnesia, by which it loses its gallic acid; to re-dissolve it in alcohol, and to evaporate it to dryness. But pure emetine is not obtainable in this way, although it may serve for medical purposes. It presents itself in the form of transparent scales, of a reddish brown colour, having scarcely any smell, but a bitter though not disagreeable taste. It supports a temperature equal to that of boiling water, without any change: it is highly deliquescent, soluble in water, and uncrystallizable.

Action of Emetine on the Animal System.—Experiments have shown that this substance, given to dogs and cats, to the extent of from half a grain to two or three grains, produced vomiting, followed sometimes by long protracted sleep: but when given to a greater extent, such as ten grains, it produced upon dogs repeated vomiting, accompanied by stupor, in which the animal, instead of recovering, as in the other case, commonly died in the course of twenty-four hours. On opening the body, the cause of death was discovered to be a violent inflammation of the pulmonary tissue, and of the mucous membrane of the intestinal canal, from the cardia to the anus—phenomena very analogous to those described by Majendie, in a separate memoir on the action of tartar emetic. The same effects are produced whether the emetine be injected into the jugular vein, or simply absorbed from any part of the body.

Two grains taken on an empty stomach, gave rise to protracted vomiting, followed by a marked disposition to sleep. Sometimes a quarter of a grain will be sufficient to excite nausea and vomiting.

Off Prep.—Pulvis Ipecacuanhæ Compositus. *L. D.* Vinum Ipecacuanhæ. *L. E. D.*

Lobelia Fulgens.

LOBELIA FULGENS.—FULGENT LOBELIA.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Natural Order, LOBELIACÆ.

Fig. 1. The stamens exhibited, showing their union at the anthers. Fig. 2 The pistil with the corolla and calyx removed.

Lobelia: from Mathias de Lobel, a Flemish botanist, who was physician to King James I.

Generic Character.—*Cal.* Perianth one-leaved five-cleft, very small, growing round the germ, withering; toothlets nearly equal. *Cor.* one-petaled, irregular; the tube cylindric, longer than the calyx, divided longitudinally above; border five-parted; divisions lanceolate, of which the two superior ones are smaller, less reflex, more deeply divided, constituting an upper lip; the three inferior ones more spreading, frequently larger. *Stam.* Filaments five, awl-shaped, the length of the tube of the petal, connate above. Anthers connate into an oblong cylinder, gaping five ways at the base. *Pist.* Germ sharp-pointed, inferior. Style cylindric, length of the stamens. Stigma obtuse, hispid. *Per.* Capsule ovate two or three-celled, two- or three-valved, gaping at the top, girt by the calyx. *Seeds* many, very small. *Recept.* conic.

Specific Character.—*Leaves* oblong, lanceolate, rather serrate, slightly villose; flowers in a spike.

Root white and very fibrous. Leaves closely succeeding each other on the stalk; they are lanceolate, of a blueish green, with a kind of pubescence on its surface giving it an appearance of velvet. Stem erect, rising to the height of about three feet. The flowers are of a brilliant scarlet, and form a spike at the end of the stem.

The splendour of this herbaceous perennial is such as to call forth the admiration of every beholder. Whether it be intermixed in the herbaceous border, or in a bed forming a group of the hardy species of this genus, among which there are many possessing much beauty, it will nevertheless be prominent for brilliancy. It may be grown to great perfection in pots, for the purpose of ornamenting flower-houses during the summer months; for this purpose it should be cultivated by means of artificial heat in the early part of the season, and may by this method be made to obtain the height of five or six feet, although in the open border it rarely exceeds the height of three feet; its earliest flowers appear in July, with a succession until the end of August.

Every facility is afforded by this plant for rapid propagation and general cultivation: it freely increases by its roots, which may be separated in the month of March, very small portions of which will produce plants.

It thrives well in a light rich earth, composed of portions of light garden mould, decayed leaves, and rotten manure. It is a native of North America. The date of its introduction is not correctly ascertained.*

The milky juices of these plants, although often acrid, and sometimes poisonous, vary in the degree of their acridity, and are even occasionally mild and insipid, as is the case in *L. tenella*. Their milk, especially that of the species growing in warm climates, contains caoutchouc; and from one, hence called *L. caoutchouc*, this very useful substance is procured. *L. inflata* has been much commended for the relief it affords in difficulty of breathing, and it appears to have been administered in asthma, and even in croup, with much advantage; it is both emetic and diaphoretic, but it should be exhibited with caution, for several cases are on record in which death has been caused by too large doses: *L. longiflora* is also poisonous; and, from its destroying horses that feed upon it it has been called in St. Domingo *Chatta cavallo*; and in Spain where it

* Flora Conspicua.

is cultivated, *Rabienta cavallos*. The negroes resort to it occasionally as a poison; Jacquin says the juice, if accidentally applied to the eyes, brings on violent inflammation. *L. urens* is likewise a very noxious plant, but *L. Tupa* appears to be the most acrid and deleterious of the whole. Feuillée says, that even the odor of the flower will cause excessive vomiting; and, if applied to the skin, or taken internally, its acridity produces violent inflammation and pain, often followed by death. *L. syphilitica* has been much extolled for its influence in certain cachectic disorders, and *L. cardinalis* has been used as an anthelmintic, but neither of them are now held in much esteem. Thunberg mentions a species of *Lobelia*, a native of the Cape of Good Hope, the roots of which are eaten by the Hottentots, who call the plant *Karup*.*

The kindred nature of all plants is surprisingly shown by the power and effect of their growing and fructifying when GRAFTED on each other—one organization attaching its vascularity to that of another, and feeding on its sap. The Ancients took some pleasure in these experiments, for Plutarch saw and notices, in a garden on the Cephissus, an Olive upon a Juniper, a Peach upon a Myrtle; Pears upon an Oak, Apples on a Plane-tree, and Mulberries upon a Fig. In Holland a Rose was grafted on an Orange-tree; and, in our times, Carnations have been engrafted on fennel, and a Peach upon a Mulberry. So an inhabitant of Lyons inserted on the same stem red and white Grapes, Peaches and Apricots. Such facts prove the absolute similarity in nature of the different classes of the vegetable kingdom. Their general system and principle of life are the same. It is the specific and purposed variation of their organization which, from the same material elements, causes the specific diversities of their products to appear. No result is a random accident.

Plants have been manifestly designed and framed on the principle of improvability. This also highly distinguishes the latent powers of their living principle, and its vast superiority over inorganic matter. It is a truly wondrous faculty, for it is one of the greatest distinctions of man. Animals have it to a certain degree, but very limited; and apparently far less then Vegetables. The productivity of animals cannot be increased like that of plants. The human capacity for progression is not more clearly visible than that of which so many vegetables have been found susceptible, that it may not unreasonably be inferred to be a law of their constitution. Very agreeable, but surprising, transformations have arisen from this property. The ROSE is the product of cultivation. The orignal plant, from which all our beautiful varieties have proceeded, is considered by Botanists to be the common wild Brier. Our PLUMS are the cultivated descendants of the Sloe; the Peach and Nectarines, of the common Almond tree; Filberts are the improvements of the wild Hazel; the delicious Apples, whose species may be now reckoned by hundreds, are the cultured successors of the small austere Crabs and Wildings, which Swine will scarcely eat; the original Pear is a petty fruit, as hard and crude. Our Corn was once in a state very like Grass; our Cauliflowers, Cabbages, and other domestic vegetables are the artificial products of human skill and of vegetable improvability. But these improvements require continual cultivation to make permanent, or Nature will in time resume her pristine state.

It is this undiminishable and undecaying property in plants, which may rescue us from that chimerical dread of a superabundant population of the Earth, under which we have been labouring for the last thirty years, until Mr. Sadler's tables, calculations and reasonings, have at last rescued us from it. A great mistake has been prevailing on this subject. The true law of nature was misconceived. Partial effects were taken to be the general rule, and the real agency greatly overrated; and thereby an imaginary law has been assumed, which has never operated as was alleged. In nature, the law of population has never exceeded that of the productive power of vegetable life, and never will. All that concerns human beings, has been made upon a principle of benevolence. The same principle continues the system, and superintends the working, and will always adapt the provision to the necessity, and supply further assistance if new exigencies should require it. But nothing supernatural on this point is likely to be wanted. Cultivated produce has hitherto outrun population, in every country, and there is every appearance that it will always do so. Two laws are visibly in operation in nature; one, that it shall not produce spontaneously—the other, that its produce shall be always increasable by human labour and skill. Ordinary, but diligent, exertions of these have hitherto abundantly sufficed for all that has been needed. Local distress may arise from temporary seasons and want of intercourse, but never from a failure in the powers of vegetable nature.†

* Burnett's Outlines of Botany.

† Turner's Sacred History.

Chelidonium majus.

CHELIDONIUM MAJUS.—COMMON CELANDINE.

Class XIII. POLYANDRIA.——Order I. MONOGYNIA.

Natural Order, PAPAVERACÆ.—THE POPPY TRIBE.

Fig (*a*) represents a petal; (*b*) a stamen with its anther; (*c*) the stigma at two different periods of its growth; (*d*) the pod and seeds.

Common Celandine, or Greater Celandine, so named in contra-distinction to Ranunculus *Ficaria*, Pilewort Crowfoot, which was called by the old botanists Lesser Celandine, is a perennial plant, growing wild in hedges and uncultivated grounds, especially on chalky soils, in Britain and other parts of Europe. It delights in moist, shady situations, growing principally among rubbish, in the neighbourhood of villages, and flowering in May and June. "We perceived it," says Professor Burnett, "in the garden hedge at the Spaniards, on Hampstead Heath, and also near Downshire Hill; as well as by the road side near Richmond, in Surrey, plentifully." It is one of those plants to which, on account of the very acrid and poisonous qualities of its juice, we have allotted a place in the present volume.

The Celandine rises from a spindle-shaped root, with a round leafy, somewhat hairy, branched stem, swelled at the joints, to the height of two feet. The radical leaves are numerous, smooth, very deeply pinnatifid, or divided to the rib into two or three roundish and indented lobes, of which those of the extremities are the largest, of a bright green colour on the upper side, and glaucous or bluish-green underneath. The leaves arising from the stalks are of the same form, but of a paler colour, and placed alternately. The flowers, which are of a golden-yellow colour, are borne in small umbels on long, generally hairy footstalks, arising from the axillæ of the leaves. The calyx is inferior, consisting of two roundish ovate, concave, acute, deciduous leaves. There are four roundish, spreading petals; the filaments are numerous, usually about thirty, shorter than the corolla, having oblong, compressed, obtuse, erect, two-lobed anthers. The germen is superior, cylindrical, the length of the stamens, terminated by a small obtuse, heart-shaped, or cloven stigma, without a style. The seeds are numerous, ovate, smooth, with a crest along the upper edge, and contained in a linear, somewhat cylindrical pod, of one cell and two deciduous valves. They are disposed in two rows, on short stalks along a marginal receptacle, between the edges of the valves.

A variety with very hairy stalks, and laciniated petals, has been supposed by M. De Candolle, and Lamarck to be a distinct species. It is mentioned by Clusius, Bauhine, and several other of the old botanists; it was found plentifully in the former part of the last century, among the ruins of the Duke of Leeds seat at Wimbledon; and, according to Lamarck, was cultivated in the royal garden at Paris, a little before the French revolution.

The generic appellation Chelidonium, from χελιδον, a *swallow*, is said to be expressive of a popular tradition among the ancients, that swallows made use of its juice to restore the sight of their young if blinded. A more probable notion, however, is, that it derives its name from the circumstance of its flowering about the time when these birds make their first appearance in spring.

Qualities.—Both varieties of Celandine agree in their medical qualities. The whole plant is very brittle, and exudes, when broken or wounded, an orange-coloured, fetid juice. Its taste is intensely bitter and acrid, occasioning a sense of burning in the mouth and fauces, similar to that produced by Cayenne pepper, which lasts for a considerable time. Both water, and rectified spirit extract nearly the whole of the active matter, which is most powerful in the root. The juice of the leaves is yellow, and gives a green tincture to rectified spirit; that of the root is of a deep saffron colour, and tinges the same menstruum of a brownish yellow. The pungency they possess is not of a volatile kind, for hardly any of it rises in distillation; yet it is lessened by drying the plant, or by inspissating with a gentle heat the spirituous or watery infusions. The parts of the plant employed in medicine, are the roots and leaves, particularly the former.

Poisonous Effects.—The juice of this species is a violent acrid poison, producing inflammation in the textures to which it is applied. A writer on poisons, in the Edinburgh Encyclopedia, says he has seen

speedy death produced by it; and from the following experiments made by M. Orfila on dogs, it would appear that it proves fatal when introduced into the stomach, and applied to wounds.

1st. Three drachms of the watery extract of Celandine, were introduced into the stomach of a small, feeble dog, and the œsophagus was tied. At the end of six minutes the animal made violent efforts to vomit; four hours after, he was lying on the side; he made deep inspirations; sensibility and mobility were diminished to such a degree, that the organs of hearing and vision were no longer capable of receiving impressions; he was not able to stand, and died a very short time after. The stomach contained a small quantity of a fluid excessively viscid, and of a brownish colour: the mucous membrane was of a bright red throughout its whole extent, and of a blackish red in its folds; the intestinal canal was not altered; the lungs were of a reddish colour, crepitating, and appeared not to be affected.

2nd. At three o'clock, an incision was made in the inside of the thigh of a small dog, and a drachm and a half of the watery extract of Celandine dissolved in a small quantity of water, was applied to the wound. At five, the animal experienced nothing remarkable. The next day, at nine in the morning, he was found dead. The digestive canal exhibited no sensible lesion; the wound was inflamed, and the lungs somewhat livid.

3rd. Four ounces of the juice of Celandine obtained from the leaves, were introduced into the stomach of a dog of middle size; the œsophagus was tied. The animal made efforts to vomit, moaned, and became insensible. He died ten hours after. The mucous membrane of the stomach was inflamed, and the lungs presented, here and there, livid patches, somewhat distended with blood.

From the preceding facts it results: 1st, that Celandine and its extract produce serious symptoms, followed by death; 2nd, that their deleterious effects seem to depend on the local irritation they excite, as much as on their absorption and action on the nervous system; 3rd, that they appear to act on the lungs.

No remedy in the nature of an antidote has been proposed for this poison, beyond evacuation, diluents, and the usual antiphlogistic treatment.

Medical Properties and Uses.—Notwithstanding the extravagant eulogiums that have been bestowed upon this acrimonious plant by some of the modern, as well as ancient physicians, it is rarely administered internally. The virtues attributed to it are those of a stimulating aperient, diuretic, and sudorific. It was formerly regarded as a powerful deobstruent, and supposed to be particularly efficacious in the removal of obstructions of the liver and other viscera, in promoting expectoration, in dropsies, and in the cure of intermittents, in herpetic eruptions, and even in pulmonary consumption. Tragus greatly extols its virtues in plague; boiled in vinegar, with the addition of *theriaca*, he affirms that it produced a profuse perspiration, and immediately removed the disease. It is said to have obtained a considerable reputation during the "sweating sickness" in this country, in which disease it was esteemed a specific. It must, however be observed, that some writers have considered it a dangerous internal remedy if too large a quantity be administered; it will consequently require great caution in its use, beginning with small doses, and increasing them gradually. Some authors recommend an infusion of it in wine as the best preparation, which will take off a great deal of its acrimony.

Joseph Miller, in his "Botanicum Officinale, or Compendious Herbal," published in London, 1722, speaking of Celandine, says, "it is aperitive and cleansing, opening obstructions of the liver and spleen, and of great use in curing the jaundice and scurvy. Some reckon it cordial, and a good antidote against the plague. Some quantity of it is put into *aqua mirabilis*. Outwardly it is used for sore eyes, to dry up the rheum, and take away specks and films, as also against tetters and ring-worms, and scurfy breakings-out."

Externally the juice has been long known as a popular remedy, to destroy warts; and it is said to be very efficacious in stimulating and healing old and indolent ulcers, speedily removing fungous flesh, and restoring a great degree of activity to the torpid and indolent granulations. For the removal of warts, the method of applying it is, simply to break the stalk, and to touch the part affected with the yellow juice that exudes. Fabricius Hildanus employed this juice successfully in opacities of the cornea; while Ettmuller, Geoffroy, and all the writers of that day, attest its efficacy when diluted with milk or some other bland fluid, in the removal of specks from that membrane. A cataplasm formed of the bruised leaves, and stalks, was formerly supposed to be an infallible remedy in herpes, and has been extolled for curing the itch.

Dose.—Of the dried root from 3ss to 3j is a dose; of the fresh root infused in wine or in water the dose may be about ℥ss.

Geoffroya Inermis.

ANDIRA INERMIS.—SMOOTH BASTARD CABBAGE-TREE.

Class XVII. DIADELPHIA.——Order IV. DECANDRIA.

Natural Order, PAPILIONACEÆ.——THE PEA TRIBE.

The Smooth Geoffroya, Andira Inermis, or Bastard Cabbage-tree, universally known in the West Indies by the name of the Worm Bark-tree, is a native of Jamaica and Martinique, growing in the low savanhas. It is a lofty tree, whose wood is white, and so tough as to be preferred beyond all others for the shafts of carriages. It was first introduced into this country by Messrs. Lee and Kennedy, who cultivated it at Hammersmith about the year 1778.

This tree rises to a considerable height, sending off several branches towards the top of a straight, smooth trunk. The external bark is smooth and grey; internally it is black and furrowed. The leaves are pinnate, composed of six or seven pairs of lanceolate-acuminate, smooth leaflets, about three inches long, of a dark-green colour, standing in pairs on short foot-stalks, with a terminal one. The flowers are disposed in very large, much-branched, terminal, downy panicles. The calyx is bell-shaped, and divided into five obtuse segments. The corolla is papilionaceous, of a pale rose-colour, and is described by Dr. Woodville as consisting of a roundish, concave *vexillum*, notched at the apex, two oblong, obtuse, and somewhat shorter *alæ*, and an obtuse, divided *carina*. The filaments, nine of which are connected at the base, bear roundish anthers; the germen is oval, with a tapering, curved style, and hooked stigma. The fruit resembles a small plum, is pulpy, marked on each side with a longitudinal furrow, and contains a hard nut or seed, separated into two valves.

The generic name Geoffroya, was given by Jacquin, in honour of Stephen Francis Geoffroy, a Parisian physician, who wrote a treatise on materia medica, in which an analysis is given of every officinal plant, and who was author of several ingenious essays in the Mémoires de l'Acad. des Sciences. The trivial name, *inermis*, was applied to this species by Dr. Wright, to distinguish it from another (G. *spinosa*) which is armed with spines.

The bark of the cabbage tree has a disagreeable, sweet, mucilaginous taste, and a slight but disagreeable odour. The pieces, as they are imported into this country, are externally of a grey colour; internally blackish and furrowed; when reduced to powder resembling that of jalap. Its soluble parts seem to be composed chiefly of extractive, resin, mucus, a peculiar narcotic principle, and saccharine matter.

Medical Properties and Uses.—Cabbage tree bark was first brought into notice as a vermifuge by Mr. Peter Duguid,* and its properties as an anthelmintic have been fully confirmed by subsequent writers; but we are chiefly indebted to Dr. Wright, of Jamaica, for the fullest information, both in respect to the botanical character and virtues of this tree. "This bark, like most other powerful anthelmintics, has a narcotic effect, and on this account it is always proper to begin with small doses, which may be gradually increased till nausea is excited, when the dose for that patient is ascertained." It is also powerfully cathartic, and in an over dose excites violent vomiting, fever, and delirium: when these effects follow an over dose, the stomach must be washed with warm water; the patient must speedily take castor oil, and use plenty of lime-juice beverage for common drink; vegetable acid being a powerful antidote in this case, as well as in an over dose of opium. Care must be taken that cold water be not drank during the operation of this medicine, as it is apt to occasion the same untoward effects as an over dose. This bark (in powder) acts briskly cathartic in doses of thirty or forty grains; but its anthelmintic effects are more powerful when given in the form of decoction, of which an adult may at first take four table-spoonfuls, and gradually increase the dose if sickness be not excited: in this way it seldom fails in destroying worms, and bringing them away in great quantities. "It must not be concealed that fatal accidents have happened from the imprudent administration of this bark, chiefly from overdosing the medicine. But this cannot detract from the merit of the cabbage-bark, since the best medicines, when abused, become deleterious." Upon the whole the bark is considered a valuable anthelmintic, although in this country it is not held in general estimation. This bark may be taken in the form of powder, decoction, extract, or syrup. The decoction is prepared by boiling one ounce of (fresh dried or well preserved) bark in a quart of water over a slow fire, till the water is of an amber colour, then strain off and sweeten with sugar; this should be used immediately as it does not keep many

* Essays and Observations, Physical and Literary, vol. ii. p. 264.

days. Syrup of cabbage-bark: to any quantity of the above decoction add a double portion of sugar, and make a syrup; this will retain its virtues for many years. The extract is prepared by evaporating a strong decoction in balneo mariæ to the proper consistence.

The powder may be taken in doses of from thirty to forty grains, the syrup from three to four table spoonfuls, and the extract from three to four grains.

Off.—The Bark.

Off. Pp.—Decoctum Geoffroyæ Inermis, E.

"It is necessary," says Mr. Turner, "that we should have right notions of the system on which our earth has been framed, and of the plan and purposes of all its departments, in order to perceive what the Divine mind has intended by our terrestrial creation, and thereby to judge more soundly on the great component whole. This knowledge will assist us to appreciate His ends and operations in the course of nature which He has established, and in the direction and application of His providential economy to ourselves, as well as to our inferior fellow-creatures. The more fully we know and the more justly we think on the vegetable and animal kingdoms, we shall be the better prepared to comprehend the principles and the history of His dealings with the human race. This world is manifestly not our world only. We are linked in it with innumerable fellow-beings, of very varying kinds and qualities. They are co-tenants with us of our common earth. We cannot live in it without their association and services. Relations, therefore, subsist unceasingly between us, which cannot be destroyed without destruction to ourselves; and from this view of the real state of things, it is an object of great intellectual interest and importance to become acquainted with the most material phenomena of these classes of animated nature, however dissimilar and subordinate they seem to be to our more gifted order. Do not, therefore, think me tedious if I particularize a few facts on this curious subject.

From all the circumstances thus far enumerated, we may infer—

That the Vegetable classes have been created upon a system of progressive improvability—and also of an indefinite productiveness, which can be increased to the utmost extent of any probable human demands upon it.

That the application of human skill, care and diligence to educe these beneficial results, has been made the condition of their appearing; but that these valuable qualities will never be exerted in vain on this interesting order of beings.

That human welfare and comfort have been a principal object of the Creator in designing and producing His vegetable world, though it has been also made subservient to animal subsistence; and that these are peculiarly connected with the cultivation of it. Animal food leads to the animal habits of hunting and pasturage; both of which, though pleasing as occasional employments, yet when made the character and chief pursuits of a tribe or nation, tend to animalize our nature and arrest our social progress. Ancient Scythia, and the modern Tartars and Arabs, and North American Indians, are commentaries on this principle. Agriculture and gardening, and their consequential occupations, accustom the human mind to the quiet, patient, contented, domestic, social and civilizing habits, on which human happiness and improvement mainly depend.

The vegetable kingdom, in its varied flowers, foliage, stems and graceful and delicate expansions; in its playful branches and gentle movements, and in its multiplied fruits and useful products of numerous sorts and of universal application, display a peculiar goodness, liberality and kindness in the Divine mind towards His human race—a desire to please, to interest and to amuse us with the most innocent, continual, accessible, and gratifying enjoyments. For, plants peculiarly address themselves to three of our most used senses—the taste, the smell, and the sight; while the ear is also soothed by the whispering of the branches, and the touch by the softness of the verdant and floral foliage, and of most of the fruits. We see that the consolidated wood supplies us with numerous conveniencies of private and public use; and from plants has arisen that most needful and comfortable of all things beyond the limits of the torrid zone—the grateful warmth and use of our domestic fires. Even in this respect we may perceive that there has been a benevolent foresight and provision specially exerted, in order that this daily comfort might continue to accrue to us, after our diffusing population should have levelled the forests which supplied the fuel. Buried in the earth just deep enough to remain unknown till wanted, that primeval vegetation, which was overwhelmed and uprooted by the deluge, has during its long sepulture become converted into bituminous coal, sufficient to yield us fire for all our purposes, though every wood should be consumed, and mankind last for more ages than they are likely to continue. In this beneficial supply of a mineral so invaluable, we have an instance of a great destruction directed by a prospective benevolence, to prepare and produce for a future age, one of the kindest additions to human comfort. What a demonstration of the most deliberate goodness presiding amid the most awful displeasure."

Paris quadrifolia.

PARIS QUADRIFOLIA.—HERB PARIS, ONE-BERRY, OR TRUE-LOVE.

Class VIII. OCTANDRIA.——Order IV. TETRAGYNIA.

Natural Order, ASPHODELEÆ.—THE ASPHODEL TRIBE.

The figure represents an entire plant with its creeping root, four-leaves, and four-fold single flower; (*a*) the flower separate, with its 4 sepals, 4 petals, 8 stamens, and 4 stigmas; (*b*) the berry entire, with the persistent perianth; (*c*) a section of the same to show the 8 seeds; (*d*) the germen separate, with its 4 styles; (*e & f*) seeds.

Of the genus Paris two species only are known, Paris *quadrifolia*, which is a native of most countries of Europe, and Paris *polyphylla*, a plant which has lately been discovered in Nepal. The former is a perennial plant, growing in groves and moist woods in many parts of Britain, but rare. It occurs plentifully in a grove at Cossey, near Norwich, and was found by Mr. Miller, in a wood near Hampstead; by Mr. Blackstone, in Hanging-wood, near Hareford, Middlesex; at Selborne, in Hampshire, by Mr. White, at Kimbolton, by Mr. Fernie; and in Scotland, in a wood about a mile South of Newbattle, near Dalkeith, by Dr. Parsons. It flowers in May and June.

The rhizoma is creeping. The stem rises about a foot high; it is simple, erect, smooth, round and naked, except at top. The leaves, whose number is usually four, sometimes five or six, are ovate, pointed, entire, smooth, of a dull green colour, with three principal veins, and spreading horizontally in a sort of whorl on the top of the stem. The flower is solitary, on an erect angular peduncle, about an inch in length. The calyx consists of four lanceolate green leaves: the corolla of four linear acute ones, of a similar colour, and both remain till the fruit be ripe. The stamens, eight in number, have short filaments; the anthers, which are long, are inserted on both sides into the middle of the subulate threads, which continue beyond their apices. The germen is somewhat globular, of a violet colour, supporting four styles shorter than the stamens, with simple stigmata. The fruit is a purplish-black, four-celled berry, containing in each cell six or eight seeds in a double series. The generic name *Paris*, derived from *par*, equal, is said to have been given to the plant in reference to the regularity of its parts, four, or its multiples, prevailing both in the foliage, the flowers, and the fruit.

Qualities.—The leaves have a narcotic odour, and a peculiar taste, which is not disagreeable.

Medical Properties.—Herb Paris is one of the tribe of vegetables called narcotic, which, when received into the stomach in any considerable quantity, produces violent effects upon the nervous system, such as nausea, vomiting, vertigo, delirium and convulsions; hence it has been ranked by most writers on the materia medica, among the class of poisons. Every part of the plant seems to possess this property, but the leaves and berries are supposed to be the most active. Linnæus assures us that the root, in doses of twenty to forty grains, operates as a gentle emetic, like ipecacuanha. MM. Coste and Willemet, who have investigated, with considerable ardour and success, the properties of plants indigenous to France, also recommend the root, in doses of from one to two scruples, as a substitute for that useful medicine. They state, that it sometimes operates as a purgative. Gesner asserts that the berries prove noxious to poultry; and Krocker was credibly informed that a child died in consequence of eating them. Bergius recommends the herb to be used externally in fomentations as a discutient, and internally as an antispasmodic, in the hooping cough, and various convulsive diseases. Parkinson says, "the roots boiled in wine help the colic, and the leaves applied outwardly repress tumours and inflammations." The root of the exotic species, Paris *polyphylla*, is known to be a very active poison.

The vegetable system, says the Author of "The Phenomena and Laws of Vegetation," like the animal machine, is a curious structure, though its form be less complicated. The plant will be found admirably

supplied with the requisite organs, put in motion by interesting mechanism. There is an elegant symmetry in some, and in others singular and fantastique forms; yet in both the arrangement and adaptation are equally wonderful. The vegetable being is built up and nourished by certain materials, that it collects generally from the earth, where its roots are usually fixed, by means of certain organs, and, circulating through the pipes with which its system is supplied, are appropriated and assimilated: these peculiar organs perform their several functions, and, as in the animal economy, deposit their respective elaborations where the secreted substance is wanted, and no where else. In the animal machine, unless when morbid action supervenes, oseous matter is not precipitated among the muscles, nor muscle among the nerves; so in the other, the elaborate sap contributes what is essential to the formation of *alburnum* in its ascent; and in its descent, what is required for the growth of *liber*. The plant by these means increases in size and strength, and from an acorn becomes an oak, "whose seed is in itself." Through these curiously constructed system of pipes and cells, the noiseless and unobtrusive process of vegetation moves on, and the life of the plant is supported and continued. Its ultimate and external evolutions are subjects of interest and admiration, in the beautiful attire which adorns the plant; but the delicate and subtile chemistry, over which life immediately presides, is intercepted by a veil which defies the philosophy of man with all the keen scrutinies of his research.

Vegetable physiology is indebted to the labours of a multitude, who have successively interrogated many of the most elaborate phenomena of vegetation.

Botany is a simple term, but embraces a most comprehensive science. It is a grievous mistake to confine its application to mere nomenclature, and the limited knowledge of being able to discriminate one plant from another. If our studies terminate in these things, we are content with its alphabet, while the interest that pervades the natural history of vegetation, and its wondrous phenomena, are consigned to unmerited neglect. The simple acquisition of calling plants by their names, and distinguishing one from another, or even describing them in the barbarous jargon of latinity, so profusely displayed by some that bear the name, and effect the title of eminent botanists, excites our pity and regret for such a useless waste of time and talent, worse than misapplied, as it only serves to perpetuate the alchymy of science, and frighten, if not disgust, those who would otherwise enter upon the study, and pursue it with delight. Nomenclature is very well, and it is necessary; but we look for something more from those who *should* be qualified to give it. The petty details of a Latin description, in all the trifling of contemptible minutiæ, draws a little too much on passive obedience and forbearance, when unaccompanied with a single allusion to its physiology, its use or adaption. Is it too much to call these individuals learned and laborious triflers; "pleased with a feather, tickled with a straw?" They obstinately withhold the key of knowledge from the individual who would willingly enter in by the gates of science, and form one to the banquet. Like the cuttle-fish, they render themselves invisible by an obscurity of their creation, and flounder in darkness. At best they resemble, with their *hortus siccus* in store, a mere collector of butterflies and moths, accompanied with a parade of names; while the possessor still remains like one of the heroes described in Parson's "Book of Fools." Far different is it with those who wish their fellows to join them, and enjoy the advantages and pleasures of science. Natural history is at the present moment in a most deplorable and repulsive state, from a phalanx of uncouth names, incessantly changing and changed by the caprice or whim of the individual who may spend a little more time on any specific subject of enquiry than his predecessor had done: in this way many plants have more than a half-dozen of names, dressed in turgid Greco-Latin. It is indeed desirable that this folly were at an end: I have no doubt numbers, as well as myself, feel the difficulties to be almost insurmountable.

The physiology of vegetation does not stop short with a description of the structure and attire of plants in their visible form and exterior; it investigates not only their organs, but their functions: it penetrates the history of the life of the plant, in its various evolutions of phenomena, and traces the progress of its annals from that point in its history when it is committed to the earth, under the form of an acorn, until it becomes the hamadryad of the forest,—"the monarch of the woods."

Anthocercis littorea?

ANTHOCERCIS LITTOREA.—YELLOW-FLOWERED ANTHOCERCIS.

Class XIV. DIDYNAMIA.——Order II. ANGIOSPERMIA.

Natural Order, SOLANEÆ.—THE NIGHTSHADE TRIBE.

1. Outline of one of the toothed leaves. 2. Calyx spread open, to show the 5 segments. 3. Corolla spread open, to show the stripes on the inside of the tube. 4. The 4 fertile Stamens, inserted on the contracted part of the tube, with the rudiment of a fifth between the two longest. 5. Ovarium, terminated by the Style and capitate Stigma

Stem suffruticose, erect, branched, from 1 to 2 feet high: *branches* smooth, furrowed from one leaf to the next, and terminated in a panicle of flowers. *Leaves* obovate, scarcely acute, smooth on both sides, slightly viscous, some entire, others more or less toothed, attenuated at the base. *Flowers* yellow. *Bractes* small, sharp-pointed, deciduous. *Pedicles* slender, smooth, three times the length of the bractes. *Calyx* 5-cleft, the laciniæ subulate, about half the length of the tube of the corolla. *Corolla* campanulate, tube contracted at the base: limb equally 5-parted, the laciniæ spreading, linear, acute, with revolute margins, nearly double the length of the tube. *Stamens* 4, inserted in the base of the tube, two long and two short, with a rudiment of a fifth between the two longest: *filaments* flat and fringed at the base, and tapering upwards, the points recurved, inserted in the back of the anthers, which are two-lobed; *pollen* cream-coloured. *Ovarium* pyramidal, smooth. *Style* smooth, longer than the stamens. *Stigma* capitate, fimbriate.

It is a soft wooded small Shrub, and is deserving a place in every Greenhouse or Conservatory, as it makes a grand appearance when covered, with its elegant striped yellow flowers. It is a hardy Greenhouse plant, and we believe would succeed well in the open ground, by the side of a wall facing the south, so as to be protected with a mat or some other covering in severe frosty weather, thriving well in a light sandy soil, or an equal mixture of light turfy loam, peat, and sand, will suit it extremely well; the pots in which it is planted to be well drained, that the wet may pass off readily, as it is apt to become sodden with too much moisture in Winter. It strikes readily from cuttings, planted under bell-glasses, either in sand or mould; or if planted under hand-glasses, in the open air, in Spring, they will root readily.

When the command was issued for the Vegetable Kingdom to arise, the whole of its numerous races either appeared simultaneously in every part of the globe, in immediate diffusion and completion; or they emerged on such particular portions only of the surface, as sufficed for the production of every species; and from these primitive localities were disseminated gradually and successively over the rest of the Earth. The Sacred Record does not decide or elucidate this point. It has preserved the mandate for their general creation, and declared its fulfilment, but has not described the manner or the extent of the first formation. Satisfied with asserting that all plants were the special and appointed creation of the same God, who made the rest of our globe and the starry orbs which surround us, it leaves the chronology of every local Vegetation, to be investigated and ascertained by human inquiry and patient consideration.

If we consult our historical and geographical communications on this subject, we find that the Vegetation of many countries which have been examined, and of all newly formed islands that have lately arisen, has been, and still continues to be, a progressive process; and we may trace it ourselves on many places near our domestic residence. We see the lichen class arise as their minute seeds descend; and decay and re-appear

from new germinal matter, till they have formed enough of vegetable substance for the sporules of the mosses, which at their seasons of fructification float extensively in the atmosphere, to fix on and to grow from. These mosses in like manner vegetate and decay, and on their decayed remains a new vegetation of the same sort springs up in like manner to die and become a thicker mould for the passing seeds of other plants to find sufficient for their germination. This process may be noticed on roofs, and in part on palings, only the latter, being perpendicular, the new seeds do not sufficiently fasten on them, but drop off to the ground. It may be seen more clearly on inclined tiling, and partly on the common roofs. There, if the experiment be made and be patiently watched for a few years, the progression will be distinctly seen. I have found Mosses arise upon the decaying lichens and new mosses, of a thicker foliage, grow upon the dead matter of the former ones; and the grasses afterwards appear, as soon as the decayed remains had become a sufficient soil for their germination. Every year thus produces a new bed of vegetable matter, which is frequented by the seeds of new plants, and in time, of trees. Thus, in the course of a few years, every new coral island that is made by its petty architects, and every volcanic one that arises in the sea, become, in no long time, covered with plants and trees.

As vegetation has thus disseminated itself in our own experience from country to country, and still continues to do so from places where it abounds, to every new surface in which it is deficient, it seems to be a reasonable presumption, that at the epoch of its creation some similar system was adopted for its diffusion. In the appointed spot of the Garden of Eden and in its vicinity, on the suited soils, all the families of the Botanical Kingdom may have simultaneously appeared as soon as the order for their production was expressed. All the previous preparations having been made, they would emerge simultaneously to the command. One large district, or island, with mountain, hill, marsh, heath and valley, would have been quite sufficient for primeval evolution of a sufficient number of every species. In this space, with those differences in the nature and elevation of the surface, all the known classes of vegetation might germinate and grow. Such a region appears now in one single island within the torrid zone, where both the alpine and the equatorial herbs and trees have been observed and discriminated by the scientific Botanist.

From such an originating region as this, the various plants, if left to the operation of their respective qualities, and of the natural agencies, which in the established course of things are gradually acting upon them, would be progressively disseminated into every other country, according as its various localities should be adapted to receive them. Few, if any, plants are strictly confined to one zone or latitude on the earth. All may grow every where, although in some soils and climates they will spread more numerously and grow more luxuriantly than elsewhere. It has been observed of the rocky places, where only the lower and smaller classes of vegetable can subsist, that the seminal particles do not settle and spring up from some, but yet will evolve in others. But each as it floats along the even-moving breeze, selects, as it were, its own suited bed of nutrition, and there unfolds its efflorescence and produces its successor. Aqueous plants would in like manner arise as their seeds were wafted to watery places. And in this way Vegetation may have originally spread from the district where it was flourishing, to those which it had not before reached. This progressive diffusion would journey far beyond the disseminating process of animals or man, and would so far precede them, that, long before they could extend their dispersing colonies around, the earth would be every where abundantly clothed with all that either could require.*

* Turner's Sacred History.

Malva Mikuhana L.

MALVA MUNROANA.—MR. MUNRO'S MALLOW.

Class XVI. MONADELPHIA.——Order III. POLYANDRIA.

Natural Order, MALVACEÆ.——THE MALLOW TRIBE.

This plant was found by Mr. Douglas abundantly upon the barren plains of the Columbia, in July 1826, and is closely allied to Malva miniata of Cavanilles.

In our gardens it does not possess any very striking beauty, but this is probably owing to a want of the right mode of managing it, for Mr. Douglas speaks of it as one of the most beautiful of the plants he collected; and it appears from his dried specimens that it really is a far more showy plant when wild than when cultivated. It suffers much in beauty from rain, which discharges the rich vermilion of the petals, and gives the flowers a dirty red appearance. We have hitherto seen it cultivated in a rich border, or in peat earth, in such situations it does not thrive, it would perhaps be better in a coarse gravelly soil, among shaded rockwork.

Mr. Douglas named the species in compliment to Mr. Munro, the gardener to the Horticultural Society.

It does not ripen seeds, but is easily increased by cuttings; if allowed to form a single bush, its ascending branches root at the base, and increase plentifully.

Covered all over with whitish down. *Stem* ascending, from a foot and a half to 2 feet high, taper. *Leaves* roundish, cordate, somewhat 5-lobed, toothed; the middle lobe larger than the rest. *Flowers* panicled, arranged rather on one side. *Calyx* campanulate, 5-cleft, with an involucrum consisting of three setaceous deciduous leaflets. *Corolla* vermilion-coloured, roundish, with rounded, emarginate petals. *Cappella* very numerous, capsular, one-sceded, 2-valved, reticulated, arranged in a circle.*

The study of botany is not confined to the details of science, to the structure of plants, or even to an acquaintance with those curious facts which betoken that the hand of a Great Master has been occupied in their construction. It embraces a wider field, and has conferred incalculable blessings on the whole family of mankind; for if we except the inhabitants of the Arctic regions, who principally subsist upon the flesh of seals, there is scarcely any description of civilized human beings who may not gratefully acknowledge the innumerable benefits which they have derived from an acquaintance with its two most important branches; the virtues of different plants and their wonderful adaptation to the wants of animals and men. They have prepared the way for blessings of a more exalted character, and inclined the once wretched inhabitants of the Society and Friendly Islands, with the miserable rangers of Chickamaugah, and those of various other districts, not only to appropriate the unexplored riches of their soil, but also to receive with thankfulness the offers held out to them for ameliorating their moral as well as physical condition.

But not to multiply examples. "If you would behold an instance of what may be effected in any country by an acquaintance with the vegetable kingdom," quit for a moment the banks of the Seine, and ascend one of the steepest summits of the mountains of the Vosges. "Come and behold the Ban de la Roche: climb with me the rocks so sublimely piled on each other, which separate this canton from the rest of the world; and though the scene and the climate appear unfavourable and forbidding, I venture to assure you an ample recompense for the fatigue of the ascent."†

In the reign of Louis XV. the whole of the country was uncultivated, and almost inaccessible, containing fourscore hungry and naked families, a starving population on a barren soil. The ground was naturally sterile, and evergreens, such as the lichens, mosses, horsetails, hepaticæ, confervæ, and the families which delight in elevated situations with little mould, formed the principal clothing of the heights of Ban de la Roche.

By means of the introduction of agriculture and an acquaintance with the vegetable productions, which by ameliorating the condition of the people, led the way for the arts of civilized life, the once miserable population of the Ban now live in respectability and comfort. This wonderful amelioration has been produced under providence by the wisdom, the zeal, and the perseverance of M. Jean Frederic Oberlin.

Descended from a learned family of Strasbourg, and educated at the college of that city, M. Oberlin brought to the Ban de la Roche extensive and practical knowledge, with an ardent desire of appropriating his various attainments in science, philosophy, and religion, to the temporal and spiritual happiness of his parishioners. At the first glance which he threw over the mountains destined to the scene of his ministerial labours, he perceived the necessities of the people, and the difficulties which opposed their removal.

* Botanical Register.

† Speech of M. Le Comte Francois de Neuf Chateau to the Royal Agricultural Society of Paris. Authority, Ban de la Roche.

To conquer the barrenness of the soil and obviate the coldness of the climate, it was necessary to ensure a certain degree of knowledge. For this purpose schools were regularly organized, a library formed for the private use of the children, a collection of indigenous plants arranged, an electrical machine and mathematical instruments procured, and the whole organized under the Pastor's wise direction, formed a beautiful and perfect system. Even when mechanically employed, the minds of the scholars were occupied in acquiring knowledge while they sewed, knit, or spun, their teachers exhibited the most useful indigenous plants, designed either for the food of animals or of men, and taught them their names. Plants, apparently useless and poisonous, were also presented and described, that they might avoid and extirpate them by degrees; and when they walked in the spring and summer, they searched for the plants, the names and properties of which they had learned in the winter. In such a situation it is impossible to calculate the advantage of this judicious system; and, in fact, during the disastrous months of 1817, when the harvest failed, and potatoes were extremely scarce, the correct acquaintance of the people with the vegetable productions of their canton contributed to prevent the most distressing consequences.

In order to habituate the children to healthy and innocent amusements, they were inspired with a taste for botanical pursuits. By teaching them to draw the flowers which they collected, a desire was excited to cultivate the objects themselves, and their parents were requested to give them little gardens for the employment of their industry and skill. The scholars, of twelve and fifteen years of age, wrote after the dictation of their teachers, lessons on agriculture and the management of fruit-trees, extracted by M. Oberlin from the best authors, these they committed to memory.

With a view to facilitate the progress of agriculture, a road was formed through the rocky districts of La Roche, where rocks hanging on the steep sides of a chain of mountains, and torrents pouring from their summits would, to a less daring spirit, have presented insurmountable obstacles. But every difficulty vanished before the enthusiasm of the villagers, and the energy of their indefatigable leader; for the Pastor, who on the Sabbath, pointed out to them the narrow way that leads to life, and exhorted them not to be weary in well-doing, was seen on the Monday with a pick-axe on his shoulder at the head of two hundred of his flock with an energy that braved danger and despised fatigue. Barriers were raised to prevent the sliding of the earth, and the mountain torrents stopped or diverted in their course, enormous masses of projecting rocks were blasted, a wall constructed along the Brusche, and an intercourse permanently established between the five villages, which before, in the heavy snows, were entirely separated from each other. In the course of this arduous undertaking implements were wanting, he procured them; expences accumulated, he interested his distant friends, and, in spite of every obstacle in two years the work was completed, and his ulterior plans completely realized. The exportation of potatoes then commenced, and their quality insured an advantageous sale in the market of Strasbourg.

Thus by the indefatigable exertions of the worthy Oberlin, the savage and barren district of La Roche gradually assumed the appearance of cultivation and of plenty. Esculents were generally introduced, and artificial grasses, flax, and the finest apples, pears, plumbs, nut and cherry trees naturalized to the soil, which was rendered more productive by means of manure, obtained from different vegetable productions, such as the leaves of trees, the stalks of rushes, mosses, and fir-apples with old woollen rags and shoes. Some of the natural productions of the country were appropriated to the use and varied the provisions of the inhabitants, such as the stripe flowered cabbage, common chick weed, dandelion, mountain willow herb, plantain, pimpernel, dock, valerian, bladder campion, watercress, &c. Corn-cockle was plentifully sown, and the seeds mixed with corn made bread. A small wine called piquette, was procured from wild cherry, juniper and dog-rose trees. Brandy from the dwarf and common elder berry. An essential oil from carraway seeds and beech nuts.

A law suit between the lords of the soil and the peasantry had subsisted for eight years, which impoverished both parties and diffused a spirit of litigation and of intrigues. Oberlin terminated this disgraceful and mischievous contention. Here was the ascendancy and the reward of virtue. A grateful deputation waited on the pastor of La Roche, presented to him the pen with which the solemn treaty had been signed and intreated him to suspend it in his study, as a trophy of the triumph of habitual benevolence and christian charity.

M. Oberlin modestly acceded, and acknowledged that the day on which that pen was used was the happiest of his life. It was, indeed, a simple trophy, but more splendid than the brazen column of Austerlitz, or the banners that once proudly waved from the gilded dome of the metropolis.

Such have been the exertions of M. Oberlin, and verily he has had his reward. The miserable inhabitants of the Ban have become happy, their sterile soil is clothed with corn and fruit-trees, and their meadows are filled with flocks; contentment has succeeded to despair, abundance to abject poverty.

To maintain the energy necessary to the fulfilment of his duties, under circumstances frequently the most discouraging, celestial influence was sought for and cherished. Amidst all his cares and labours he still found time for private reading and pious meditation, and often whole hours to prostrate himself at the footstoo of that Being from whom he has derived strength "sufficient for his day."

Delphinium Staphisagria.

DELPHINIUM STAPHISAGRIA.—PALMATED LARKSPUR, OR STAVESACRE.

Class XIII. POLYANDRIA.——Order III. TRIGYNIA.

Natural Order, RANUNCULACEÆ.—THE CROW-FOOT TRIBE.

Fig. (*a*) represents the nectary; (*b*) the stamens; (*c*) the capsules.

This handsome plant is a native of Provence, Languedoc, and many other parts of the south of Europe. It is a biennial, and was cultivated here by Gerarde in 1596; it flowers from April to August.

Stavesacre grows to the height of one or two feet; the stem is round, downy, erect and simple. The lower leaves are nearly as large as those of the vine, palmated, and divided into seven lobes, which are oblong, ovate, veined, downy, sometimes acutely indented, and of a pale green colour: those on the upper part of the stem are gradually smaller, usually 5-lobed, and supported on long downy footstalks of the colour of the stem. The flowers are bluish or purplish, supported on long footstalks, and forms an elegant spiciform raceme at the extremity of the stem. The calyx is petaloid and deciduous, the upper sepal open, extended behind into a long tubular spur: the corolla is usually divided into four petals placed in front within the row or sepals; the two superior are narrow, small, and at the base drawn out into spurs like that of the sepal in which they are both inclosed; the outer two are roundish and plaited at the edges. The filaments are numerous, awl-shaped, and crowned with oblong yellow anthers; the germens are three, superior, close together, tapering, downy, and furnished with short filiform styles, terminated by simple stigmas. The three capsules are ovate-oblong, tapering, pointed, with one valve opening internally, and contains many rough, brown, triangular seeds.

Qualities and Chemical Properties.—The seeds of this species of Delphinium are rough and blackish without, and of a light yellowish colour within. Their odour is slightly fœtid: to the taste they are intensely bitter, acrid and nauseous, and when masticated powerfully excite the salivary secretion and inflame the fauces. MM. Lassaigne and Feneulle have discovered in the stavesacre a vegetable alkali which they have named *delphinia*, from a supposition that the acrid qualities of the whole family depended upon this principle: an opinion, however, which has not been confirmed by the analysis of other plants belonging to it.

It is thus obtained: The seeds, deprived of their husks and ground, are to be boiled in a small quantity of distilled water, and then pressed in a cloth; the decoction is to be filtered, and boiled for a few minutes with pure magnesia; it must be re-filtered, and the residuum left on the filter; when well washed, it is to be boiled with highly rectified alcohol, which dissolves out the alkali, and, by evaporation, it is obtained as a white pulverulent substance, presenting a few crystalline points.

It may be obtained also by acting with dilute sulphuric acid on the seeds, unshelled but well bruised; the solution is to be precipitated by subcarbonate of potash, and the precipitate acted on by alcohol: but, obtained in this way, it is very impure.

Delphine, when pure, is crystalline whilst wet, but, on drying, rapidly becomes opaque by exposure to air. Its taste is bitter and acrid. When heated it smells; and, on cooling, becomes hard and brittle like resin. If heated more highly it blackens, and is decomposed. Water dissolves a very small portion of it. Alcohol and ether dissolve it very readily. The alcoholic solution renders syrup of violets green, and restores the blue tint of litmus, reddened by an acid. It forms neutral salts with the acids, which are very soluble; the alkalies precipitate the delphine in a white gelatinous state, like alumine.

Sulphate of Delphine evaporates in the air, does not crystallize, but becomes a transparent mass like gum. It dissolves in alcohol and water, and has a bitter acrid taste. In the voltaic current it is decomposed, giving up its alkali at the negative pole.

Nitrate of Delphine, when evaporated to dryness, is a yellow crystalline mass. If treated with excess of nitric acid, it becomes converted into a yellow matter, little soluble in water, but soluble in boiling alcohol. This solution is bitter, is not precipitated by potash, ammonia, or lime-water, and appears to contain no nitric acid, though itself is not alkaline. It is not destroyed by further quantities of acid, nor does it form oxalic acid. Strychnine and morphia take a red colour from nitric acid, but delphine never.

The *acetate of Delphine* does not crystallize, but forms a transparent hard mass, bitter and acrid, and readily decomposed by cold sulphuric acid. The oxalate forms small white plates, resembling in taste the preceding salts.

Delphine calcined with oxide or copper gives no other gas than carbonic acid. It exists in the seeds of the stavesacre, in combination with melic acid, and in company with the following principles;—1. A brown bitter principle, precipitable by acetate of lead. 2. Volatile oil. 3. Fixed oil. 4. Albumen. 5. Animalized matter. 6. Mucus. 7. Saccharine mucus. 8. Yellow bitter principle, not precipitable by the acetate of lead. 9. Mineral salts.—*Annales de Chim.* xii. p. 358.

Poisonous Effects.—Hillefield, as recorded in Orfila, gave some infusion of stavesacre to dogs, and the animals died, after having had vomitings, involuntary dejections, and general trembling, accompanied by great debility. Orfila also gave the powdered seeds to dogs, which are stated to have died from their effects; but it appears that the operation of tying the œsophagus, would of itself be liable to produce all the symptoms that were observed. From its effects when applied to wounds that were made in the thighs of dogs, Orfila infers that stavesacre is not absorbed, and that it produces local irritation, and sympathetic lesion of the nervous system.

Medical Properties and Uses.—Stavesacre seeds produce vomiting, drastic purgation, and inflammation; and are never administered internally. Formerly they were used as a masticatory for tooth-ache; but they are too acrid to be recommended even for this purpose. Externally applied they are said to be efficacious in scabies, and fungous ulcerations; but their chief and most valuable virtue is that of destroying *pediculo* in the head, when mixed and used with hair-powder.

Delphine has not been employed as a medicine, nor are its effects on the animal economy known.

In one of those romantic spots usually denominated "Hollow ways," which diversify the mild scenery of the lower part of Dorsetshire, a Greek inscription was recently observed, written by some stranger on a rock. It was this :—

"Time passes rapidly away."

Underneath another hand had left the following:—

"Then improve it."

I was one evening (says the Author of "The Wonders of the Vegetable Kingdom") walking with a friend, who pointed out the rock and its inscription. Casual incidents sometimes make a powerful impression on the mind; whilst important ones of every day's occurrence are little heeded. Nature has also inscribed on her works, that time passes rapidly away: and she teaches by her various operations that we should continually improve the portion which is assigned us. Let us then, my friend, listen to her instructions, and in the words of Dr. Watts, "Learn something from every thing which we see and hear." Let us extract some intellectual improvements from "the mineral and metals, from the wonders of nature, among the vegetables and herbs, trees and flowers." If these excellent and practical regulations were properly attended to, the most careless hours would turn to a happy account both here and hereafter. We should continually bring home treasures of useful knowledge; and, by habituating ourselves to an attentive consideration of the glorious order of nature, we should improve in wisdom and virtue, and be more prepared to enter on that state of exalted happiness where a consideration of the wonders of creation, as well as adoration of their Almighty Author, will probably form no inconsiderable portion of the felicity of the blessed.

Linum mexicanum?

LINUM MEXICANUM.—MEXICAN FLAX.

Class V. PENTANDRIA.—Order V. PENTAGYNIA.

Natural Order, LINEÆ.—THE FLAX TRIBE.

Our drawing of this rare species of Flax was made at Mr. Tate's Nursery. It is a very pretty half-hardy perennial, native of woods near Santa Rosa, in Mexico, where it was found by Humboldt and Bonpland. Probably propagated by cuttings.

For the following remarks upon this, and some neighbouring species, we are indebted to Mr. Bentham.

"The coalition of the styles in this, and several other species of yellow Linums, is a character which appears to have been generally overlooked in the distinction of the species. It is very remarkable in the L. *Macrœi*, where the style is very long, and only slightly quinquefid at the apex: in the above L. *mexicanum* and in the L. *africanum* Linn. (L. *monogynum* Forst.) and L. *repens* Hamilt., the styles are connate up to about the middle of their length; and at the base only in the L. *æthiopicum* Thunb. (L. *africanum* Reichb. icon. exot. t. 46, non Linn.,) *rigidum* Pursh, *virginianum* Linn., and *mysurense* Heyne. In the L. *gallicum* Linn., *aureum* W. et K., *setaceum* Brot. (L. *bicolor* Schousb.,) *luteolum* Bieb., *nodiflorum* Linn., *strictum* Linn., *corymbiferum* Desf., *maritimum* Linn., *glandulosum* Mœnch., *quadrifolium* Linn., *trigynum* Roxb., and *tetragynum* Colebr., the styles are entirely distinct from their base.

In the L. *glandulosum*, *luteolum*, *nodiflorum*, and *corymbiferum*, the stigmates are not globular, as in most of the species of this genus, but elongated, and scarcely thicker than the styles.*

It is particularly desirable (says the Author of the Wonders of the Vegetable Kingdom) to connect botanical researches with the study of astronomy, as correctives of the apprehension which the latter is calculated to inspire, that our affairs are beneath the consideration of the great Creator of the universe. There is something inexpressibly awful and overwhelming in the thought, that the hosts of stars which shine above us are the suns of other systems; bestowing light, heat, and vegetation, on unnumbered worlds, which constantly revolve around them, calm, regular, and harmonious; peopled with myriads of intelligent beings, possibly endowed with like feelings as ourselves, and formed for endless progressions in perfection and felicity.

These perceptions of creative power tend not a little to depress the vanity of man, and to fill the mind with melancholy apprehensions; especially when we consider, that if the sun of this fair world was instantly extinguished, and the planetary orbs which attend him entirely annihilated, they would be no more missed than a grain of sand on the sea shore. The space which they occupy being so comparatively small, that "the chasm would be imperceptible to an eye that could take in the whole compass of nature, and pass from one end of creation to another."

It is scarcely possible to conceive a more humiliating thought, and the inference which arises from it is consequently this, that the great Author of nature, who has such a stupendous system under his care and superintendency, cannot be supposed to interest himself in the concerns of a finite creature. The human mind has a natural dread of being overlooked in the immensity of creation: its powers are inadequate to the right understanding of an Omnipresent Being, who upholds all things by his almighty power. David himself felt the force of this apprehension, though conscious that God was ever with him. "When I consider the heavens," said he, "the work of thy fingers, the moon and stars, which thou hast ordained. What is man, that thou art mindful of him? and the son of man, that thou visitest him?"

An attentive consideration of the minuter works of nature has a wonderful tendency to remove the melancholy impressions which such a view of things must necessarily excite. For who can observe the skill, beauty, and contrivance discoverable in the meanest flower, without being convinced that the Creator of the universe does not forget the humblest of his works. Hence it may be readily inferred, that if God has bestowed so much care and wisdom on an object of little worth, that he is not sparing of these in the concerns of reasonable beings, nor does he less regard order and fitness in the determination of their states. Dr. Price, in one of his "Dissertations," has admirably observed, "That there is not any thing which has a much greater tendency to give relief to a mind earnestly wishing to be satisfied of a wise superintendency in all that befalls it, than to contemplate the curious organization of an herb or flower, and the attention bestowed on even its outward figure; and then to consider whether it is probable, that the Being who so

* Botanical Register.

wonderfully wrought such a substance, can neglect an intelligent creature, or be inattentive to any circumstances of his existence; whether he, who has with perfect exactness adjusted the parts of dead matter to one another in the most trifling plant, must not be proportionably exact in what is of infinitely greater moment,—the adjustment of pain and pleasure to a human soul."

If unerring Wisdom so wonderfully manifests itself in the government of corporeal nature, what harmony may we not reckon upon in the direction of the intellectual world! What care and accuracy in disposing the states of individuals! What grandeur of plan, what perfection of order! Such are the conclusions which we are amply justified in forming from the wisdom discoverable in the whole creation. They are most consolatory, and perfectly consonant with the language of inspiration: "Consider the lilies of the field, how they grow. They toil not, neither do they spin. Wherefore, if God so clothe the grass of the field, which to day is, and to-morrow is cast into the oven; shall he not much more clothe you, O ye of little faith?" How animating was the effect produced by similar impressions on the mind of Mungo Park. He found himself in the midst of a vast wilderness, surrounded by savage animals, and by men still more savage. He was five hundred miles from the nearest European settlement, and, considering his fate as certain, he thought that he had no alternative, but to lie down and perish. At this moment the extraordinary beauty of a small moss irresistibly caught his eye, and, though the whole plant was not larger than the end of one of his fingers, he could not contemplate the delicate formation of its roots, leaves, and capsules, without admiration. Can that Being, thought he, who planted, watered, and brought to perfection in this obscure part of the world, a thing which appears of so small importance, look with unconcern upon the situation and sufferings of creatures formed after his own image? Thoughts like these would not allow him to despair. He started up, assured that relief was at hand, and he was not disappointed.

This striking anecdote forcibly recurred to my recollection during a solitary ramble on the seashore, while observing the *lolium arenaria*, or sea-mat, growing on a bank of sand; and considering how wonderfully this valuable plant was adapted to its place of growth, and designed to answer the most important purposes.

It was a beautiful evening. The mighty waters rushed impetuously to the beach, and again receded, as if they heard the fiat of Omnipotence proclaim, that so far should they go, and no farther. The sun was setting amid clouds of gold and purple, and seemed to be passing through the portals of the heavens into some unknown world of glory. The nearest waves rolled in fine undulations, and reflected as they passed the dazzling radiance of his beams. In the distance, a deep sleeping mist gave to the blue fluctuating ocean an awful character of grandeur and extent. All was still in earth and air; not a single moving object met the eye. I seemed to breathe alone, surrounded by the immensity of creation. At length the moon arose in peerless majesty, and threw her silver mantle over the vast expanse of waters. It was a moment of deep feeling. Lord, what is man, that thou art mindful of him! I turned to the *lolium arenaria*, and felt that the care of the Creator was extended to the lowliest of his works.

The train of ideas which had been thus pleasingly excited, still continued to occupy my mind, and led me to consider, as I returned home, how various kinds of plants are adapted to the sites they occupy, and the wants of the inhabitants.

It would be extremely interesting to divide the vegetable world into a natural classification; pointing out the various plants which in their medical and nutritious qualities are particularly appropriated to the use of man; those which are confined to the animal world; and such as afford food and shelter to an infinite variety of insect tribes. "Behold," said the Eternal, in the benediction which he bestowed on our universal parent, "I have given you every herb bearing seed, which is upon the face of all the earth, and every tree: and to every beast of the earth, and to every fowl of the air, and to every thing that creepeth upon the earth, I have given every green herb for meat." Such were the various uses which the great Creator assigned to the vegetable tribes, whilst at the same time he conferred on man the dominion of the whole creation. Linnæus has endeavoured to fill up the general outline; and judging that the various grasses and other plants, on which domesticated animals subsist, may be considered as subservient to the wants of man, he has appropriated to his use eight or nine hundred plants, the produce of his native country. Of these the cow consumes two hundred and eighty-six, in her usual pasturage; rejecting one hundred and eighty-four. The goat, four hundred and eighty-eight; rejecting ninety-two. The sheep, four hundred and seventeen; rejecting one hundred and twelve. The horse, two hundred and seventy-eight; rejecting two hundred and seven. The hog, one hundred and seven; rejecting one hundred and ninety. In this collection the plants which the animals eat with avidity are alone enumerated, with those which they carefully avoid; all the rest are indifferent, or eaten from necessity.

Prunus domestica.

PRUNUS DOMESTICA.—COMMON PLUM TREE.

Class XII. ICOSANDRIA.——Order I. MONOGYNIA.

Natural Order, POMACEÆ.——THE APPLE TRIBE.

The plum-tree is frequently found growing wild in our woods and hedges, bearing flowers in April and May; but the country from whence it originally came has not been ascertained. "Whether," says J. E. Smith, "all our cultivated plums may formerly have originated from the Prunus *insitia* (Wild Bullace-tree), its thorns having disappeared by culture, like those of the pear-tree, is a question which no botanist can ever solve." With respect to the varieties, Parkinson, in 1629, enumerates no fewer than sixty, "all of which," he says, "are to be had of my good friend Master John Tradescant, who hath wonderfully laboured to obtain all the rarest fruits he can hear of in any place in Christendom, Turkey, yea, or the whole world." Professor Martin, in his edition of Miller's Gardener's Dictionary, also enumerates sixty varieties of the plum. We have now, however, nearly three hundred garden varieties.

The Washington, a modern variety, which is stated in the Pomological Magazine not to be surpassed in richness of flavour, beauty, and other good qualities, by any, is curious in its origin. The parent tree was purchased in the market of New York, some time in the end of last century. It remained barren several years, till, during a violent thunder storm, the whole trunk was struck to the earth and destroyed. The root afterwards threw out a number of vigorous shoots, all of which were allowed to remain, and finally produced fruit. It is, therefore, to be presumed that the stock of the barren kind was the parent of this. Trees were sent to Mr. Robert Barclay, of Bury Hill, in 1819; and in 1821 several others were sent to the Horticultural Society by Dr. Hossack.

The plum-tree rises about fifteen feet in height, and is destitute of spines. The leaves are pale green, oval, serrated, on short footstalks, and when young, convoluted and pubescent underneath: the stipules are pointed and placed in pairs at the base of the footstalks. The flowers are large on short peduncles, with a bell-shaped deciduous calyx, and five obovate white petals. The filaments are numerous and inserted into the calyx; the germen is round and supports a simple style. The fruit is an oblong drupe, internally consisting of a sweet fleshy pulp, and inclosing a smooth almond-shaped nut or stone.

The plum and almost all its species is very apt to run under ground, and produce suckers from the roots. Duhamel says that if plums are grafted low and covered with earth, they push out shoots which may be transplanted.

Plums of various sorts appear to have been introduced into England as early as the fifteenth century. These varieties came to us from France and Italy. The "green-gage" is the *Reine Claude* of France, so called from having been introduced into that country by the wife of Francis I. It is called Gage in England, after name of the family who first cultivated it here. The "Orleans" probably came to us when we held possession of that part of France from which it takes its name. Lord Cromwell introduced several plums from Italy in the time of Henry VII. The damson or damascene, as its name imports, is from Damascus.

In some countries, particularly in Alsatia, a considerable quantity of alcohol is produced from plums and cherries by fermentation.

Although in deference to our collegiate authorities, who follow Linnæus in associating the cherries and plums in the same genus, the cherry-laurel has been treated of here as a species of *Prunus*, it may be as well to observe that modern botanists have found it advisable to separate the cherries from the plums, and to revert to those distinctions which were acknowledged by Mr. Miller, and which have always been popularly maintained; for not only do the cherries and plums differ in the shape of the stone, but the drupes of the former are smooth and shining, while those of the latter are pruinos, or covered with a resinous secretion, commonly called *bloom*. But even the cherries thus separated from the plums, both need and admit of a further subdivision, as they differ in properties and habit, as well as in structure.

Professor Taylor tells us in Poisons, page 720—"That fresh and dried cherries, as well as the kernels and stones, yield prussic acid by distillation. The quantity yielded by the pulp of the cherry is exceedingly small, amounting to mere traces, but it is much greater in the stones and kernels. From sixteen ounces of cherry-stone water, Geisler obtained 1·9 grains of cyanide of silver; and from cherry-kernel water, the kernels being to the water as 1 : 8 by weight, the cyanide of silver obtained from sixteen ounces, was equal to 2·36 grains. Twelve ounces of the *kernels* yielded 7· grains of hydrocyanic acid: but the proportion of prussic acid yielded by the same weight of cherry *stones*, according to Geiseler, was not more than 2·3 grains. (Pharm. Jour. Feb. 1846, 372). These kernels bruised are much employed for the purpose of giving a flavour to alcoholic liquids. It is not often that they are used in such quantity as to occasion accidents; but the following case, the details of which are somewhat imperfectly given, will shew that the eating of a large quantity of the kernels may operate fatally.

"A girl aged five years, ate a considerable quantity of the kernels of sweet cherries (prunus avium). Her brother (a few years older than herself) also ate some. After the lapse of a few hours symptoms of poisoning appeared. When a medical man was called the next day, he found the girl in such a stupor that she could not be roused. The eyes were closed, pupils considerably dilated, the skin moist and hot, respiration exceedingly hurried, pulse small and quick, &c., the child very restless. An effervescing mixture was ordered internally, and cold fomentations to the head externally; after a few hours vomiting of a greenish mass ensued, and was followed by retching, which continued until death; the body was spasmodically drawn backwards. The illness lasted forty hours. On a *post-mortem* examination the stomach was found intensely reddened; the intestines were strictured and invaginated, but there was not any inflammation. The liver, spleen, and large vessels contained black tar-like blood. The boy, who had eaten fewer cherry-kernels, became likewise ill, but recovered in the course of a month. An eruption, analogous to uticaria, came out on the fore-arms of both children; they were both perfectly well (according to the statement of the mother) before eating the cherry-kernels, and no other cause for the attack could be assigned. The kernel of the prunus avium (cerasus nigra) contains amygdaline, and produces prussic acid as well as essential oil in the stomach."

In (*Cerasus* or *Cerasophora*) the true cherry, the inflorescence is in tufts or sertula, not in racemes.

In (*Laurocerasus*) the cherry-laurel the flowers and fruit are in racemes, and the leaves are evergreen. While in *Padus*, a group sometimes separated from Lauro-cerasus, and sometimes combined with it, although the inflorescence is racemose, the leaves are deciduous. These subgeneric distinctions are at least as important, if not more so, in an economical as in a systematic point of view, for prussic acid, which abounds in the *Lauro-cerasi* even in their leaves, is almost absent from the true cherries, and in the intermediate *Padi*, it occurs only in very moderate proportions.

Qualities.—Three sorts of this fruit are ranked among the articles of the materia medica; they are all met with in our gardens, but the shops are supplied with them moderately dried from abroad. These are the Brignole plum, or Prunelle, brought from Brignole in Provence, of a reddish yellow colour and a very grateful sweet subacid taste; the common or French prunes, called by our gardeners the little black damask plum and damsons, the larger damask violet plum of Tours, which is seldom kept in the shops, its place having generally been supplied by the common prunes. All these fruits possess the same general qualities with the other summer fruits. When perfectly ripe they are pleasant to the palate, and moderately nutritive; but when eaten too freely they are apt to occasion flatulence, griping, and diarrhœa. They are nearly inodorous, and contain chiefly mucus, saccharine matter, and malic acid.

Medical Properties and Uses.—The dried fruit, or prunes, are gently laxative, and enter as an ingredient into the *Confectio sennæ* of our pharmacopœias. They are advantageously employed as an article of diet in costive habits, and in febrile and other diseases.

The fruit of the sloe (Prunus *spinosa*) is a powerful astringent, and the inspissated juice is a substitute for the Indian catechu. This juice is also largely used in factitious or adulterated port-wine, and the leaves are reckoned among the adulterations of tea in England.

A writer who signs himself "Crito," in the Truth Teller, No. 15, introduces us to an honest enthusiast, discoursing to his hearers on the flowers of the season and other offerings from Flora to the rolling year.

"Picture to your imagination a poor 'dirty' mendicant of the order of St. Francis, who had long prayed and fasted in his sanctuary and long laboured in his garden, issuing out on the morning of his first pilgrimage without money and without provisions, clad in his mantle and hood 'like a sad votarist in palmer's weeds;' and thus and in these words taking leave of the poor flock who lived round his gothic habitation:—'Fellow men I owe you nothing, and I give you all; you neither paid me tithe nor rent, yet I have bestowed on you food and clothing in poverty, medicine in sickness, and spiritual counsel in adversity. That I might do all these things I have devoted my life in the seclusion of those venerable walls. There I have consulted the sacred books of our church for your spiritual instruction and the good of your souls; to clothe you I have sold the embroidered garment, and have put on the habit of mendicity. In the intercalary moments of my canonical hours of prayer, I have collected together the treasures of Flora, and gathered from her plants the useful arts of physic, by which you have been benefited. Ever mindful of the useful object of the labour to which I had condemned myself, I have brought together into the garden of this priory, the lily of the valley and the gentian of the mountain, the nymphæa of the lake, and the cliver of the arid bank; in short I have collected the throatwort, the liverwort, and every other vegetable specific which the kind hand of nature has spread over the globe, and which I have designated by their qualities, and have converted to your use and benefit. Mindful also of the pious festivals which our church prescribes, I have sought to make these charming objects of floral nature, the timepieces of my religious calendar, and the mementos of the hastening period of my mortality. Thus I can light the taper of our Virgin Mother on the blowing of the white snowdrop, which opens its floweret at the time of Candlemas; the lady's smock and the daffodil remind me of the Annunciation; the blue harebell of the festival of St. George; the ranunculus, of the Invention of the Cross; the scarlet lychnis, of St. John the Baptist's day; the white lily, of the Visitation of our Lady; and the virgin's bower, of her Assumption; and Michaelmas, Martinmas, Holy Rood, and Christmas, have all their appropriate monitors. I learn the time of day from the shutting of the blossoms of the star of Jerusalem and the dandelion, and the hour of the night by the stars."'

Euphorbia officinarum L.

EUPHORBIA OFFICINARUM.—OFFICINAL EUPHORBIUM OR SPURGE.

Class II. DODECANDRIA.——Order III. TRIGYNIA.

Natural Order, EUPHORBIA.——THE EUPHORBIA TRIBE.

Fig. (*a*) the corolla magnified. (*b*) The germen and styles, magnified. (*c*) An anther magnified. (*d*) The calyx, magnified.

This species of Euphorbia is a perennial, shrubby, and very succulent plant. It is a native of Africa, where it grows in great abundance. This plant derived its name from Euphorbius, physician to Juba, King of Lybia, who named it in honour of his physician. The genus Euphorbia comprises a very numerous family of singular plants, upwards of one hundred and twenty species of which are cultivated in our botanic gardens. The Euphorbia Officinarum was first cultivated in this country about the year 1597.

The stem of this plant rises to about five feet in height, is simple or branched towards the top, erect, round and angled or furrowed, with eight or more longitudinal fissures; the branches are destitute of leaves, and go off first horizontally and then ascend; are more distinctly angled than the stem, scolloped and furnished with prickles, which are everywhere double; the flowers are sessile, on the extremities of the branches at each pair of spines, of a crimson or yellow colour; the petals are four, turbinated, gibbous, thick, truncated, and attached by claws to the margin of the calyx; the filaments are about twelve, capillary, longer than the petals, and support globular two-lobed anthers: the germen is roundish, three-lobed, with a simple short style, crowned with three spreading, obtuse stigmas; the capsule is tricoccous, elastic, and contains three roundish seeds.

Upwards of 200 species of Euphorbia are enumerated in Sprengel's catalogue, but, according to Merat and Lens, the genus includes about 400. Many of them are grotesque and curious looking plants, well worthy cultivation, at least for their strange appearance, if not for their beauty. They are all lactescent, and their milky sap, which contains more or less caoutchouc, is so acrid that it will redden or even blister the skin, and is used to destroy callosities, whence many species are called 'wart-worts.' Dioscorides states that in old practice this juice was dropped into the eye to remove opacity of the cornea, and also into wounds to destroy the venom of the scorpion. It is purgative and emetic, if taken internally in small doses, and the concrete juices of several species form the gum resin of medicine called '*Euphorbium.*'

The seeds yield a purgative oil, and all parts of the plants possess acrid and active properties, similar to those of the sap, but they are perhaps most powerfully concentrated in the roots of the succulent and perennial species; and especially in those which are the natives of warm countries. In Africa and Asia the leafless euphorbiæ are often planted as hedges, and most protective fences they form, their sturdy stems, prickly branches, and acrid juices, almost defying the passage of man or beast. During the wars in Hindostan such hedges were more feared by our troops than *chevaux de frise*, for soldiers not only got their flesh torn, but the wounds were filled with the burning sap; and when cavalry regiment were forced through them the horses became ungovernable.

A species of Cacalia (C.anti-euphorbium), enjoys the reputation of being able to remove the untoward effects which follow the internal administration of euphorbium, or the irritation consequent on its external use.

Euphorbium is principally obtained from three species, viz. *E. officinarum*, *E. Canariensis*, *E. antiquorum*, the latter of which alone was supposed by the ancients to yield their drug. This gum resin is useful as a rubefacient to assist the action of cantharides.

The sap of E. capitata is esteemed in Brazil as an application to serpent wounds, and that of our indigenous *E. Helioscopia*, and other species, is also used by the peasants as a caustic for the bites of vipers. In India the sap of E. capitata is applied to eruptions.

E. *corollata* and *Cyparissias* are both emetic and purgative; the former is used in North America to evacuate the collected fluids in dropsies; and the powder of its root is said by Drs. Kean and Coxe to be a very serviceable medicine. In some of the French provinces it is called "*rhubarbe des pauvres,*" for which drug, however, it is a miserable substitute, for La Motte mentions a case in which a woman was killed by its administration. When eaten in any quantity, it is poisonous to sheep and other animals, as is also *E. genistoides*, the feeding upon which is often followed by a fatal dysury.

E. heptagona, an Ethiopic species, is a violent poison, and its juice is said to be used by the Africans to anoint their arrows and spears, so as to render the wounds inflicted mortal.

E. ophthalmica has received its name from the employment of its juice, perhaps on the same principle, although unconsciously, by the natives in Rio Janeiro, as the lunar caustic unguent has been so successfully used here in the treatment of ophthalmia.

Some of the less acrid *Euphorbiæ*, as *Peplus* and *Lathyris*, might, if other cathartics failed, be safely

used. The former is said to act without producing nausea, and the latter is frequently taken on the continent, the dose being from 12-15 of its seeds. The cathartic properties of the seeds reside in an oil which is abundant in their fleshy albumen, and which, when expressed, exhibits the same qualities as the entire seeds, but in a more concentrated form, the dose being from 4-8 drops: so that it might become a cheap substitute for the oil of the *Croton Tiglium*. The seeds yield from 44-52 per cent. of this purgative oil, and, according to Merat and Lens, it may be prepared at so moderate an expense that enough might be bought for five sous to cleanse the *primæ viæ* of about 100 patients. Notwithstanding their acridity the seeds of *E. Lathyres* are not unfrequently pickled instead of capers, and eaten as a sauce with meat, whence it has been called the caper-spurge. Such diet can scarcely be considered safe or wholesome, although the process of pickling will lessen, and perhaps may remove, the more active principles: indeed, the ancients were accustomed to steep the *Euphorbiæ* in vinegar, and to expose them to heat, in order to moderate their acrimony.

E. dulcis and *edulis* are less acrid than most of their allies, and in Cochin-china the leaves of the latter are dressed and eaten with other green vegetables; and we are told that formerly it was the practice to mix the leaves of *Euphorbiæ* with common potherbs, in order to render them cathartic, and thus to take physic and food together.

Sensible and Chemical Properties, &c. Euphorbium is brought to us immediately from Barbary, in packages containing from 100 to 150 lbs. weight. It is in small drops of an irregular form, of a pale yellow colour externally, but somewhat white within, and breaks easily between the fingers. It is inodorous; when first chewed it has little taste, but soon gives a very acrid, burning sensation to the mouth and fauces, which is very permanent. It is soluble in ether, alcohol, oil of turpentine, oil of almonds, and partially so in acids and alkalies. When the ethereal tincture is evaporated on water, it leaves on the side of the glass a pellicle of transparent resin, resembling an officinal plaister. When triturated with water it renders it milky, but only one part in seven of the Euphorbia is dissolved. Alcohol takes up about one part in four, and forms a clear straw-coloured solution, which is rendered milky by the addition of water. It burns with an agreeable smell and a bright flame; its specific gravity is 1.124. Braconnot makes 100 parts of Euphorbium to contain 37.0 of resin, 19.0 wax 20.5 malate of lime, which was mistaken for gum, 2.0 malate of potass, 5.0 water, 13.5 woody matter, and 3.0 loss.

Medical Properties and Uses. Euphorbium is powerfully cathartic and emetic, hence it was formerly given as a hydragogue in dropsies, &c. but its effects are so violent, even when exhibited in small doses, that it is now very seldom given internally. It is also a powerful errhine, but requires dilution, for if used alone its action is so violent as to produce inflammation and hæmorrhage. When properly diluted with starch or some other inert powder, and used with discretion, it has been found an excellent errhine in lethargy, deafness, paralysis, amaurosis, palsy, &c.

Poisonous Effects. Euphorbium is ranked by toxicologists, among the acrid poisons. Orfila made many experiments on dogs to ascertain the effects of Euphorbium on the animal economy, and from them has drawn the following conclusion: First, That Euphorbium exerts a local action extremely violent, capable, of producing acute inflammation Secondly, That its fatal effects depend rather on sympathetic irritation of the nervous system than on its absorption. Thirdly, That it acts on the human species as on dogs.

In the Philosophical Transactions for 1760, a case is recorded of a Mrs. Willis, who took by mistake two ounces of the tincture of Euphorbium, prepared with two drachms of camphor and two of Euphorbium to two ounces of rectified spirit. Immediately after she experienced a violent suffocation, attended with a burning pain in the mouth and stomach; large draughts of warm water were immediately exhibited, which produced vomiting; the burning pain at the stomach continuing, she was ordered to drink oil and water alternately; the sickness continuing, an ounce of ipecacuanha wine was administered, after which an opiate and mild diluents soon produced tranquility. The violent effects produced by the tincture of Euphorbium in this case must be partly attributed to the camphor.

Professor Taylor tells us that in one instance a teaspoonful swallowed by mistake produced burning heat in the throat and stomach, with vomiting. The individual died in three days. (Christison, 588.) It is used in veterinary medicine, and may thus occasion poisoning by mistake. The seeds and root of several varieties are equally poisonous. The following is a case of poisoning by the Euphorbium Peplus (Petty Spurge). A boy æt. 6, ate the plant by mistake. He was seized with vomiting, spasms, small pulse, inability to swallow, insensibility and cold extremities. He sank under these symptoms, and on inspection, the tonsils, fauces, pharynx, and larynx were found much inflamed, and containing a green coloured mucus. The mucous membrane of the stomach and intestines was very red, but the large intestines were healthy, with the exception of the muscular coat, which was vascular. The bladder was contracted: the lungs healthy as well as the substance of the brain. The veins of the dura mater were distended. (Beck's Med. Jur. 832; and Med. Chir. Rev. vii. 275). Orfila quotes what appears to be a somewhat doubtful case, in which a woman died in half an hour from about twenty-five grains of the root. (Toxicol. ii. 104.) There is no doubt that euphorbium is a very acrid substance and that in all its forms, it possesses a strong local irritant action.

At Aurillac, in France, sixteen persons were seized with violent sickness after having drunk the milk of a *goat*. The animal became indisposed in two days, and died on the third day, with symptoms of irritation of the alimentary canal. This poisonous action of milk has been often referred to the animal having eaten the *Euphorbia esula*, but nothing certain is known on the subject. It is singular that the animal poison of rabies should be sometimes transmissible by the milk.

Grevillea punicea?

GREVILLEA PUNICEA.—SCARLET GREVILLEA.

Class IV. TETRANDRIA.—Order I. MONOGYNIA.

Natural Order, PROTEACEÆ.

This beautiful species, says Dr. Lindley, is very nearly related to G. sericea, with which it was confounded by Sir James Smith; but from which it differs in the greater length of the pistillum, and the much longer beard which clothes the inside of each division of the calyx. We scarcely know a more desirable green-house plant.

Mr Brown characterises it by the want of a mucro to the leaves; a circumstance in which it would, therefore, differ from G. sericea; but we do not find any variation in this particular between the two plants.

A branching *shrub*, with angular, hairy twigs. *Leaves* lanceolate, mucronate, recurved at the edges, silky beneath. *Flowers* downy outside; the calyx clothed internally with a long white beard. *Pistillum* smooth.

The entomologist boasts (says the author of the Wonders of the Vegetable Kingdom) that there is nothing analogous in the vegetable world to the metamorphosis of the butterfly; and, in poetic fervour, he resembles it to the emerging of the immortal spirit from its tabernacle of earthly clay. But let truth and nature speak for themselves. Turn your eye,——, to that Oriental poppy. It is just beginning to expand. The corolla is carefully folded up, and enclosed in a rough unvaried covering of green. Certainly in this state it is not particularly attractive. Wait, however, for a moment; the sun, even at this early hour, has absorbed the dews of night, and dried and warmed the mask of rough green which envelopes the head. Suddenly it opens, and falls off. As the butterfly burst from its dull dry case in all the pride of perfection, so does this brilliant flower instantly display its rich brown stamens, and unfold its brilliant orange wings; for such Linnæus elegantly terms the petals. In both the insect and flower, nature seems to have deviated from her usual slow gradations, as if impatient for, and glorying in, their charms.

—. You have pointed out an elegant and interesting phenomenon, which I have not observed before; and whilst I have been listening to you, I have also thought how much there is in this flower corresponding with the nature of man. The root, like the infancy of the human plant, contains the whole of the future being; but who can look at either, and form an estimate of their physical or moral beauty? The gradual unfolding of the leaves resembles the progressive stages of education; till at length the human plant stands forth in all the strength of his faculties, an intellectual and moral agent. Like the brilliant poppy, he is not the flower of a day. The seeds of piety to God, and benevolence to man, are ripened in his bosom, destined to germinate and blossom in a richer soil, the garden of immortality.

Let us change the idea, and consider how the varieties in the characters of our friends and acquaintance assimilate to the different productions of the flower-garden. A rose may be considered as the vegetable prototype of some distinguished female, whose worth is far superior to that of gold or rubies. Encompassed by the trials of mortality, she heeds them not, for her hopes are fixed on heaven. She lives only to diffuse happiness, to perfect good works, to leave a rich memorial of her virtues. What a striking contrast to the Venus-catchfly? Dressed in a gay drapery, and flaunting her head to the luxuriant breeze, attracting the summer-flies that skim around her, and blooming only for the vain and gay. Apt emblem of those careless daughters who live at ease apparently forgetful that they are reasonable beings, accountable for their conduct while in this probationary state, and formed for an endless progression in perfection and felicity. What a lovely picture of maternal tenderness, of a mother surrounded with her children, is afforded by the hen and chicken daisy. In the night-blowing stock, which emits its perfume only in the gloom of evening or the darkness of the night, do we not recognize that generous attachment which sheds around us the pure fragrance of affection, when the sun of prosperity is succeeded by the night of adversity? How beautiful is that Austrian brier; its richly variegated petals are embosomed in a cluster of verdant leaves. Reach not your hand to pluck it to your bosom, admire it only at a distance, regard not its inviting appearance, for it will wound you with invisible thorns; it will smile upon you, and pierce you to the quick. Look at that gumcistus: its blossoms are spread forth with an air of openness, and apparently, it stands firmly on its stem, promising a friendship of constancy and frankness. Alas! it is the emblem of fickleness; the first cold breeze dashes it to the ground: again and again, it opens its deceptive blossoms, to any who are ready to be deluded. How admirably does the mignonette designate a benevolent, modest, and unassuming individual, discoverable only by good works. Its odours fill the atmosphere around. The *argemone*, or prickly-poppy, is but too descriptive of many characters, of no use and little beauty. Behold yourself, —, in the fragrant woodbine. Its scent may be compared to a fountain of affection, always flowing, always full. It is not the

flower of a day, nor does the passing of a cloud occasion any difference, but its sweets continue, and even emit a richer perfume when the heavy shower is descending. One more simile and I have done. It will apply to our two mothers. Do they not resemble the lavender. It is beautiful in youth, fragrant in old age, sweet and delightful, when all its early bloom has faded.

It is delightful thus to connect the characters of those we love with shrubs and flowers. they bring to mind that happy land, where the names of the great and virtuous are fabled to be engraven on the blossoms of the trees.

It has been customary from the earliest times to dedicate certain stars and flowers to the honour of distinguished individuals. The latter were also frequently affixed as symbols to their portraits ; thus, to instance a familiar example, the lily is introduced in the oldest paintings of the Madonna, and in pictures of the annunciation it is placed in the hand of the archangel, thereby denoting the advent of the Messiah. The original consecration of this flower is of high antiquity. In the Song of Solomon it is mentioned with the rose as an emblem of the church. "I am the rose of Sharon, and the lily of the valley." This alone is sufficient to explain its appearance upon religious painting. There is however, another circumstance, which renders its connexion with pictures of a sacred nature peculiarly appropriate. The word Nazareth, in Hebrew, signifies a flower, and St. Jerome, who mentions the circumstance, considers it to be the cause of the frequent allusion made to a rose and lily in the prophecies respecting our Lord. Hence illuminated missals are often beautifully decorated with these distinguished flowers. The lily is also used as an heraldic emblem, a custom evidently derived from the Crusades. In the crown of Edward the Confessor it formed a conspicuous ornament, as appears from a coin engraved both in Speed and Camden.

The scientific botanists of antient and modern times have preserved the memory of benefactors to their science, by associating them with flowers of various descriptions. Thus the brilliant *gentiana*, an Alphine plant, which opens its bright blue petals in the summer months, and is confessedly one of the richest ornaments of the garden ; commemorates a King of Illyria, as the pale *euphrobia*, the physician of Juba, a moorish prince.

Linnæus particularly delighted in drawing fanciful analogies between botanists and their appropriate plants. Thus the delicate *Bauhinia* with its two-lobed or twin leaf, designates two distinguished brothers, celebrated for their science and affection. *Magnolia*, with its noble leaves and flowers, and *Dillenia*, with its beautiful blossom and fruit, commemorates the most meritorious and industrious among botanists. *Scheuchzeria*, a grassy Alpine production, perpetuates the name of the two Scheuchzers, one of whom excelled in the knowledge of mountain plants, the other in that of grasses.

Linnæus himself is represented by the *Linnæa-borealis*, an abject Lapland plant, flowering at an early period, but long unknown. This celebrated botanist who never deigned to notice the calumnies of his enemies, thought himself sufficiently revenged by giving their names to obnoxious plants, the qualities of which appeared consonant with their characters. Thus the henbane would have presented to his lively imagination the mental portraiture of a treacherous man, concealing, under the semblance of virtue and humility, a cruel and perfidious heart. On the contrary, plants of opposite qualities celebrated the virtues of his friends. The *Murræa exotica* was named after one of his favorite pupils, a foreigner of distinguished talents. In pursuance of the same idea, the *Browallia demissa* and *elata* preserve the memory of a botanist of humble origin, who afterwards became a bishop, in whose work upon water, Sir James Smith discovered the following quotation from Seneca, in the hand-writing of Linnæus: "Many might obtain wisdom, if they did not suppose that they had already reached it."

Dicksonia, a beautiful and curious fern, is well devoted to the late great cryptogamist. *Knappia*, a small and singular grass, to an author celebrated for his minute and curious drawings of that tribe. *Buffonia tenuifolia* is well known to be a satire on the slender botanical pretensions of the great French zoologist.

The elegant *Monsonia speciosa* was named in honour of Lady Ann Monson. The *Buddlea globosa*, so much admired for its beautiful clustered yellow blossoms, and strong scent of wax, commemorates Mr. Adam Buddle, the ingenious friend of Petiver, whose collection of dried plants is preserved in the British Museum, and still resorted to in doubtful cases.

The brilliant *Tradescantia Virginica* preserves the name of Tradescant, who first transplanted it from Virginia to the gardens of this country.

A magnificent and gigantic flower has been discovered in Sumatra, called the Raffiesia Arnoldi, in honour of Sir Stamford Raffles, and his lamented companion Dr. Arnold. The Corolla was nine feet in circumference, it measured one yard across, and the nectary alone was calculated to hold twelve pints. This strange corolla emerged from the earth with only a floral leaf, and before expanding bore some resemblance to a cabbage.

The *Calceolaria Fothergilla* was brought by Dr. John Fothergill, with several other rare plants, from the Falkland Islands, where it is a native. Hence the trivial name of Fothergilla, in honour of that truly great and excellent physician, who was an ornament to his profession, age, and country, and indeed to human nature.

Mercurialis perennis.

MERCURIALIS PERENNIS.—PERENNIAL, OR DOG'S MERCURY.

Class XXII. DIŒCIA.——Order VIII. ENNEANDRIA.

Natural Order, EUPHORBIACEÆ.——THE EUPHORBIUM TRIBE.

Fig. (*a*) represents the calyx; (*b*) a single fertile flower; (*c*) the capsule and seeds; (*d*) the stamens, with their anthers, and the calyx.

Two species of this genus are indigenous to Britain, viz. the perennial or Dog's Mercury, (Mercurialis *perennis*,) and the annual or French Mercury, (Mercurialis *annua*.) The former has obtained a place in our work on account of its poisonous qualities, and the latter was at one time in considerable repute as an article of the materia medica. Dog's Mercury is a common plant, growing everywhere in shady groves and hedges; flowering in April and May.

The root is creeping, white, and very fibrous. The stem is erect, perfectly simple, round, leafy, naked below, thickest at the joints, slightly winged alternately, and rises to the height of a foot or more. The leaves stand in opposite pairs, on short footstalks; they are ovate, acute, serrated, two or three inches long, with two small pointed stipules, at the base of the footstalks. The flowers proceed in slender, erect spikes, from the axillæ of the leaves, near the top of the stem; in the barren, or male plant, longer than the leaves; in the female, concealed among them. The flowers in the fertile plant are few; in the barren ones numerous, sessile, growing in a short, interrupted spike, and half surrounding the stem. The barren flowers have from nine to twelve capillary, erect stamens, bearing globular, two-lobed anthers: there is no corolla, and the calyx in both, is divided into three deep, ovate, concave, spreading segments. The germen is superior, roundish, compressed with a furrow at each side, supporting two spreading, inflexed, tapering, rough styles, having acute stigmas. Two awl-shaped bodies, found occasionally at the opposite side of the germen, and rising above the styles, are supposed to be the nectaries. The seed-vessel is two-lobed, globular; capsule two-celled, and containing a single roundish seed in each cell, of a brownish purple colour.

Qualities.—The whole herb has a very nauseous taste, and a heavy, disagreeable odour. When dried, the leaves often assume a bluish tint, indicating its affinity, as a distinguished writer in Rees' Cyclopedia has well remarked, to Croton *tinctorium*. Notwithstanding its strong unpleasant flavour, Dog's Mercury has been eaten boiled as a pot-herb, when mixed with mucilaginous and oily substances; yet instances are not wanting of the fatal consequences of its use occasionally in this country. The following case, where it was mistaken for common English mercury, (Chenopodium *Bonus Henricus*,) and had nearly proved fatal to a whole family, is recorded by Sir Hans Sloane, in the 3rd edition of Ray's Synopsis:—

"W. Matthews, his wife, and three children, have been lately very ill, and like to die; the occasion and manner of their sickness was very odd, and therefore I shall give you a particular account of both. About three weeks ago, the woman went into the fields and gathered some herbs, and, having first boiled them, fried them with bacon for her own and her family's supper. After they had been about two hours in bed, one of the children (which is dumb, and about seven years old) fell very sick, and so did the other two presently after, which obliged the man and his wife to rise and take the children to the fire, where they vomited &c. and within half an hour fell fast asleep. They took the children to bed as they were asleep, and they themselves went to bed too, and fell faster asleep than they had ever done before. The man awoke next morning about three hours after his usual time, went to his labour at Mr. Newport's, and so by the strength of his constitution carried it off; but he says he thought his chin had been all day in a fire, and was forced to keep his hat full of water by him all day long, and frequently dipt his chin in it as he was at work. The woman awoke awhile after her husband, and, being forced to it, got up to look after her little family concerns; but she was very sick, and has continued so till within these few days, since she is very well

recovered. One of their children slept from that night, (which was Thursday three weeks,) till Monday evening following, and then (having just only opened her eyes, and made two sprunts,* without speaking one word,) died immediately while she was asleep; endeavours were used to awaken her, but in vain. The other two children slept about twenty-four hours, and upon their wakening, fell a vomiting again, which I think saved their lives. By Mr. Newport's and my directions, they sent some of the same herb to the doctors and apothecaries in Salop, who generally say it is Dog's Mercury; but some say, it is a sort of night-shade: whatever it be, it is certainly poisonous, and it is observed that cattle never browse upon it: but I guess it to be a mistake.... I am no herbalist, but this I observed of the herb; It is branched and seeded something like spinage, or mercury, but leaved with lakeweed."—(*Philos. Trans., No.* 203 for *September*, 1693.) Sir H. Sloane was afterwards furnished with some specimens of the plant, and found it to be Dog's Mercury.

Mercurialis Annua.

Annual, or as it is sometimes called, French Mercury, with branched stems, and smooth, glossy leaves, grows wild in waste or uncultivated ground, chiefly in the more temperate parts of Europe. It occurs frequently near London, in Battersea Fields; It may be at once distinguished from M. *perennis* by its annual root, branched stem, and smooth leaves, and by its flowering in autumn. This plant is mucilaginous, and was formerly much employed in enemas and emollient fomentations. It is sometimes eaten as spinage, and when used in considerable quantities, it operates as a cathartic. A syrup made from the leaves, given in the dose of two ounces, is said to prove a mild and useful laxative. According to Lamarck, the seeds are very fattening to those small birds, which the Italians call *Beccaficos*, or *Fig-eaters*, and which are so much relished by the epicures of the south of Europe.

The bark of the Poison Ash, which grows naturally in Virginia, Pennsylvania, Carolina, and Japan, rising twenty feet and upwards, is brown, inclining to gray. The footstalks become of a bright purple towards the latter part of Summer, and in Autumn all the leaves are of a beautiful purple before they fall off. Professor Kalm says, "an incision being made into the tree, a whitish yellow juice, which has a nauseous smell, comes out between the bark and the wood. This tree is not known for its good qualities, but greatly so for the effect of its poison; which, though it is noxious to some people, yet does not in the least affect others; and, therefore, one person can handle the tree as he pleases, cut it, peel off its bark, rub it, or the wood, upon his hands, smell it, spread the juice upon his skin, and make more experiments, with no inconvenience to himself. Another person, on the contrary, dares not meddle with the tree, while its wood is fresh, nor even expose himself to the smoke of a fire which is made with its wood, without soon feeling its bad effects; for the face, the hands, and frequently the whole body, swell excessively, and are affected with very acute pain. Sometimes bladders or blisters arise in great plenty, and make the sick person look as if he was infected with the leprosy. In some people, the external thin skin peels off in a few days, as is the case when a person has scalded or burnt any part of his body. Nay, the nature of some persons will not even allow them to approach the place where the tree grows, or to expose themselves to the wind when it carries the effluvia, or exhalation, of this tree with it, without letting them feel the inconvenience of the swelling just described. Their eyes are sometimes shut up for one, or two, or more days together, by the swelling. I know (says the Professor) two brothers, one of whom could not come near it without swelling. I have known old people who were more afraid of this tree than of a viper, and I was acquainted with a person, who, merely by the noxious exhalations of it, was swelled to such a degree, that he was as stiff as a log of wood, and could only be turned about in sheets." In some places this tree is rooted out, on purpose that its poison may not affect the workmen. The natives are said to distinguish it in the dark, by its extreme coldness to the touch; and the thickened juice of this tree is said to be the fine varnish of Japan, with which they blacken their different utensils.

* To Sprunt, v. n. (*sprengen*, Teut.) to spring up; to germinate, to spring forward.

Anchusa Paniculata.

ANCHUSA PANICULATA.——PANICLED BUGLOSS.

Class V. PETRANDRIA.—Order I. MONOGYNIA.

Natural Order, BORAGINEÆ.—THE BORAGE TRIBE.

Root biennial or perennial. Stem round, hirsute; branches alternate; leaves lanceolate, entire, rough, very hairy; flower-buds purple on short pedicels, in expanding changes to bright blue; peduncles hairy; calyx five-parted, hairy; stamens on short filaments inserted on the bearded throat of the corolla.

This plant although introduced as far back as 1777, is by no means common in our gardens: this cannot be on account of a deficiency in point of attraction. The colour of the bloom is of a splendid blue, somewhat approaching to purple. In the herbaceous border it is evidently a showy plant; it shoots up with many branches to the height of about five feet, producing fine peduncles of flowers during the months of May, June, and July. It is considered in many works as a biennial, but it is known to last four or five years: when once established it is not very readily eradicated, from its dropping its seeds, as well as from the roots being so tenacious of life that small pieces being permitted to remain in the ground will spring up and produce plants.

It is a native of Madeira, and thrives best in sandy ground, but will grow very well in light garden mould. A large specimen of this plant may be seen in the herbaceous ground at Chelsea Botanic Garden, where it thrived for many years.

Several species of *Anchusa* have roots which abound in a red colouring matter, useful as a dye: this, which is considered a peculiar proximate principle, has been called by John *Pseudo-alkaunin*. *A. tinctoria* is the common *Alkanet* or *Orcannette*, much in request by druggists to color oils, wax, &c. Lipsalves, many plasters, and the composition often sold as port-wine, owe their tints to this dye-stuff, which is also used to stain corks, so as to give false circumstantial evidence of the *wine* having been some time in bottle. *A. Virginiana* and *Echium rubrum* have roots almost equally rich in colouring matter with the true *Alkanet*, and are used as substitutes for it.

It has been asserted that the entomologist has a decided advantage over the botanist in the arrangement of his cabinet, since he can preserve unfading the brilliancy of his various subjects. But Nature herself arranges the cabinet of the botanist, spares him the trouble of collecting, and furnishes it from year to year with living specimens of skill and beauty. She covers the rugged surface of the globe, broken into rocks and valleys with flowers, herbs, and forest trees; some of them minute and beautiful, others of a noble and commanding aspect; extending over all a canopy of light, which apparently embraces and defends the earth, on which it seems to rest. Sometimes light fleecy clouds fly rapidly across it, or dark imposing masses shade the face of heaven. Again they pass away, the clear blue sky appears, and all is bright and shining. Evanescent as the joys and sorrows of this transitory being, they are scarcely seen before they disappear. The mental eye receives instruction through the medium of objects peculiarly pleasing to the senses. It learns to look beyond this world, to fix its sole attention on those tranquil regions which never experience any change, however the view of them may be occasionally obscured by the passing clouds of this probationary state.

Linnæus has well observed, that every thing in nature celebrates its Maker's goodness, and is calculated to convey important lessons to the heart. The contemplation of the wonders of creation is, indeed, a noble and refined luxury, a rational delight, and one that charms us with continual variety.

It may be justly questioned whether works of art, however rare and splendid, can yield for any length of time, the pleasure which is continually excited by the renovation of flowers in the spring, when they come up with the smiling faces of old friends, and seem to look cheerfully on all around. How many feel-

ings and ideas are associated with them! Pure and innocent as themselves, they are the first objects of infantine regard; they offer to the youthful mind a never-failing source of rational enjoyment; they are cheering in old age, and yield a calm and elegant satisfaction, which pleases without agitation, and has a beneficial effect upon the health and mind. The old man, who walks abroad in a fine spring morning, when the air is fresh and the flowers are opening to the sun, feels his spirits renovated, and his heart expands with joy. The productions of the woods and hedges remind him of those which he has gathered with companions who have perhaps long since departed. Something of a melancholy feeling may be connected with the recollection of them; but it is a melancholy which bids fair to render the heart better. He recalls to mind the seasons in which he has seen them bloom and fade around him, and they appear as so many emblems of his own mortality. He may sigh to think that all flesh is but as grass, and the goodliness thereof as a flower of the field; yet they still remind him that as the loveliness of nature is restored by the breath of the vernal season, so shall the dead arise from the winter of the grave to light and immortality. He remembers that there is a country which the sacred writers compare to a garden, watered by the river of life, and producing a tree whose fruit shall never fail; in which the unfading flowers of kindness, benevolence, and piety, transplanted from the bleak and churlish atmosphere of this lower world; where even now they bring forth abundant fruits of refreshment and consolation shall blossom for ever with their beauty undiminished and their lustre unimpaired.

There is also a joyous feeling which sheds itself abroad, invests all nature with a power and a spell, fills the heart with gladness, and even prompts the tear which it is luxury to shed. From the cottage to the throne this influence is powerfully felt. Queen Elizabeth, surrounded with the restless anxieties of interest and ambition, and feeling strong within her that love of rural sights and rural sounds, which Cowper has happily denominated, "an inborn inextinguishable thirst," often wished that she was a milk-maid in the flowery month of May, because "untroubled with cares and fears such persons sing sweetly all the day, and sleep securely all the night." "How pleasante is the wholesome morninge walke," said the prioress, Lady Juliana Barnes, who, more than three centuries since, celebrated the pleasures of a country life, "to scente the sweete savour of meade flowers, and hear the melodious harmonie of fowles." It is, indeed, delightful to walk abroad into the gay creation, and derive agreeable ideas at every step; when the hawthorns and well-attired woodbines, bending over the dewy banks, appear to offer from their cups the richest fragrance to the passing traveller. All nature is then beauty to the eye and music to the ear, and, we may justly add, that it is fragrance to the smell. Yet all this beauty, melody, and fragrance are but so many voices in the mighty anthem which celebrate the greatness and benevolence of God. "All thy works praise thee," said the Psalmist, when in a strain of eloquence, perhaps, never equalled by mortal man, he calls upon the hosts of heaven, the stars of light, the mighty waters, and stormy winds, mountains, and all fruitful trees, cattle, and flying fowls, to join with him in praises to the Great Jehovah, whose glory is above the heavens and the earth. The mind, which has never been imbued with the spirit of devotion, cannot fully enter into the beauty and magnificence of the material system; but, to those who recognise a present Deity in all his works, what exquisite enjoyment and heart-felt pleasure is derivable from the various objects by which they are surrounded! The spacious vault of heaven is to them the temple of the living God, in which, from the earth's great altar, the incense of thanksgiving continually ascends; "things animate and inanimate are his worshippers," and the elements are the ministers of his will.

It has been elegantly observed, that the imagination of the poet can give animation to whatever he describes. "All the beauty and sublimity of the moral and intellectual world are at his disposal, and by bestowing on the objects of scenery the characters and affections of mind, he can produce at once an expression which every capacity may understand and every heart may feel." If the facilities for enjoyment possessed by the poet are equal to his descriptive powers, are they actually superior to such as are afforded to the botanist by his favourite pursuit? It is impossible for those who are unable to appreciate the pure and simple pleasures which the lavish works of nature continually afford, to imagine the elasticity of thought, the joy and energy that pervades his bosom, when ranging—

> "Vales and mountains to explore
> What healing virtue swells the tender veins
> Of herbs and flowers."

Sambucus nigra?

SAMBUCUS NIGRA.—COMMON ELDER.

Class V. PENTANDRIA.——Order III. TRIGYNIA.

Natural Order, CAPRIFOLIACEÆ.——THE HONEYSUCKLE TRIBE.

Fig. (*a*) represents a flower somewhat magnified; (*b*) the calyx, with the germen and stigmas; (*c*) the fruit.

The Common Elder is a well-known native tree, growing in hedges and woods, flowering in June, and ripening its berries in September. In Scotland it is called Boretre or Bourtree.

The black berried Elder rises with a woody trunk, that is filled with a white medullary substance or pith, and covered externally with a rough, ash-coloured bark, to the height of fifteen or twenty feet. The younger branches are smooth when young, and contain a very large proportion of a light spongy pith. The leaves are very long, of a shining green colour, and composed usually of two pair of leaflets, with an odd one, which are pointed, serrated, smooth, and nearly equal at the base. The flowers are numerous, cream-coloured, and form a large beautiful cyme, with five principal branches, and many small ones at the extremity of the stem and branches. The calyx is superior, permanent, and cut into five deep segments; the corrolla is synpetalous, nearly wheel-shaped, with five deep, obtuse, somewhat reflexed segments; the filaments are five, awl-shaped, about the length of the corrolla, and bearing roundish, heart-shaped, yellow anthers. The germen is ovate, without a style; but supporting three obtuse stigmas. The berries are spherical, of one cell, containing three, sometimes two seeds, convex on one side, angular on the other. The berries have at first a reddish hue; but become of a purplish black colour when ripe.

There are two principal varieties of the Common Elder, one of them with cut leaves, and hence called parsley-leaved elder; and the white-berried, Sambucus *acinis albis* of J. Banhin. The berries of both are whiter, and more pleasantly flavoured than in the original species.

The generic name, Sambucus, occurs in the writings of Pliny and other ancient Authors, evidently adapted from σαμβυκη, an instrument of music; in the construction of which, says De Theis, "the wood of this tree, on account of its hardness, was used."

Qualities.—The *inner bark* possesses little smell, but has a sweetish, bitter taste, that is succeeded by acrimonious effects. The flowers have an oppressive, sickly odour, which they yield to water; and, by distillation, an essential oil may be obtained from them. The berries, which are inodorous, have a sweet taste, and yield a purple juice, which is a delicate test for alkalies and acids.

Medical Properties and Uses.—The Common Elder is the ακτη of the Greek writers; and we are informed by Dr. Ainslie, that the Arabians and Syrians of the present day are well acquainted with it, and use the inner green bark as aperient, and deobstruent. On account of these properties, it was used also by Boerhaave and Sydenham, in dropsies; and is still a popular remedy with the poor in some parts of our own country. Boerhaave is said to have regarded the Elder with such reverence for its medicinal virtues, that he sometimes took off his hat in passing a tree of this species. Its action, however, both as an emetic and cathartic is occasionally so violent, that inflammation of the intestines has been produced, and death has been the result. The leaves and young buds are also purgative; and from the berries, which are supposed to be diaphoretic, a laxative syrup (olim *Rob Sambuci*) is ordered to be made, both by the Edinburgh and Dublin colleges.* The flowers, which according to Linnæus,† are poisonous to peacocks, were formerly administered in the form of infusion for erysipelas, rheumatism, small-pox, &c.‡ but whether says Professor

* The berries are said to be poisonous to poultry. *Barthol. Hist. anat. rarior, Cent.* iv. *p.* 284.

† *Flor. Suec. p.* 79.

‡ Usitatissimi sunt flores sambuci in praxi medica, atque sub forma infusi *frequenter* bibuntur in Erysipelate, &c. (*Bergius, fol.* 245.)

Burnett, the diaphoretic effects which followed their use, are to be attributed to them or to dilution we cannot determine. Externally, they are still much recommended for their soothing effects; but we are sceptical, and venture to assert, that both fomentations and ointments would be quite as efficacious without them: indeed, what is sold for Elder ointment in the shops is seldom a genuine article.

* Professor Taylor tells us that the berries in a crude state excite nausea and purging; and that Dr. Christison states that the *leaves* and *flowers* of the Common Elder (Sambucus Nigra) act as an irritant poison, having caused in a boy severe inflammation of the bowels, which lasted for eight days. (Op. cit. 607; and Ed. Med. and Sur. Jour. xxxiii. 73). The berries of this tree do not, however, appear to possess in the ripe state, any noxious properties. The following case of poisoning by the expressed juice of the *roots* is reported. (See Med. Gaz. xxxv. 96.) A weakly woman, 54 years of age, who had been sick all day, and thrown up a quantity of greenish matter, which she regarded as bile, was persuaded by her husband to take two tablespoonfuls of the juice of the fresh elder-root which he himself had dug up, shaved down and pressed. The woman soon after complained of pains in the abdomen. She was ordered some infusion of senna, but did not take it, as the bowels began almost immediately to act copiously. Next day the symptoms were those of enteritis, which proved fatal.

Œconomical Uses.—The ripe berries are in considerable repute, as affording a domestic wine, which, if properly prepared and drank warm, with spices and sugar, is an excellent cordial. For making this wine, Mrs. Hewlett, in a valuable work, entitled "Cottage Comforts," which no peasant should be without, has given the following plain and wholesome directions: "If two gallons of wine are to be made, get one gallon of elderberries, and a quart of damsons, or sloes: boil them together in six quarts of water, for half an hour, breaking the fruit with a stick flat at one end; run off the liquor, and squeeze the pulp through a sieve, or straining cloth; boil the liquor up again, with six pounds of coarse sugar, two ounces of ginger, two ounces of bruised allspice, and one ounce of hops; (the spice had better be loosely tied in a bit of muslin;) let this boil above half an hour; then pour it off; when quite cool, stir in a tea cup full of yeast, and cover it up to work. After two days, skim off the yeast, and put the wine into the barrel, and when it ceases to hiss, which will be in about a fortnight, paste a stiff brown paper over the bung-hole. After this, it will be fit for use in about eight weeks, but will keep eight years, if required. The bag of spice may be dropped in at the bung hole, having a string fastened outside, which shall keep it from reaching the bottom of the barrel."

The wood of the Common Elder is commonly made into skewers for butchers, tops for angling rods, and needles for weaving nets. The pith, being very light, is cut into balls used in electrical experiments.

Dose—The dose of the bark is from grs. x. to ʒss.; or half an ounce may be boiled in a pint and a half of water, down to twelve ounces, and divided into three equal doses.

Off. Prep.—Succus spissatus Sambuci nigræ, *E. D.*

Unguentum Sambuci, *L. D.*

Sambucus Ebulus.

Besides the *nigra*, there is another species, the Sambucus *Ebulus*, Dwarf Elder, or Danewort, which is not uncommon throughout Europe, in waste places, and by the sides of hedges, occasionally occurring in Great Britain, and flowering in July. It grows in many places near London, and is figured in "*English Botany*." *v.* 7, *t.* 475. It may be readily distinguished from the other species, by its low annual, herbaceous stem, leafy stipules, cymes with three principal branches, and its beautiful, dull purplish, or lilac-coloured flowers. The whole plant, with the exception of the flowers, has a nauseous, acrid, bitter taste, and a disagreeable smell. Every part of the plant, especially the bark, is violently cathartic, and sometimes emetic; being stronger and more unpleasant than the Common Elder. The berries are likewise purgative, but in a lesser degree. A syrup prepared from them has been given to the quantity of an ounce, as a laxative; in smaller doses, it is said by Haller, to be used in Switzerland as a deobstruent in chronic diseases. By some, the Sambucus *Ebulus* has even been regarded as an acrid poison.

* Taylor on Poison in relation to Medical Jurisprudence, page 513.

Bossiæa ensata?

BOSSIÆA ENSATA.——SWORD-STEMMED BOSSIÆA.

Class XVII. DIADELPHIA.—Order III. DECANDRIA.

Natural Order, LEGUMINOSÆ.—THE PEA TRIBE.

1. Calyx, showing the Bractes on the Pedicle. 2. Vexillum. 3. Wings. 4. Keel. 5. Stamens. 6. Ovarium, terminated by the Style and Stigma.

A DWARF upright bushy Shrub; *branches* numerous, crowded, branching in all directions, leafy on young plants, but leafless on old flowering ones; young branches flat, linear, nearly equal in breadth throughout, toothed, of a bright green, at first yellowish; old ones becoming nearly round, but winged. *Flowers* numerous, proceeding singly from the teeth of the branches, yellow marked with a brownish purple. *Pedicles* smooth, producing several bractes at the base, and two about the middle of the pedicle. *Bractes* small, ovate, concave, bluntish, the lower ones smallest. *Calyx* tubular, smooth, two-lipped, ciliate, upper-lip largest, slightly cleft, the segments broad and blunt: lower-lip three-cleft, the laciniæ ovate, acute, tipped with brown, spreading. *Vexillum* broad, rounded, with a notch in the centre, and a slender unguis tapering to the base, the upper side bright yellow, striated with numerous small lines, with a sort of crescent-shaped brownish purple mark near the base, which extends up through the centre; back of the same colour, all but near the margins. *Alæ* or *wings* spathulate, concave, with a slender unguis on one side at the base, yellow tinged with brownish purple or copper-colour. *Keel* about the length of or scarcely so long as the wings, notched at the point, blunt and bluntly keeled, brownish purple or dark copper-coloured, eared on one side at the base, with a slender unguis on the other. *Stamens* 10, connected about half way up with a longitudinal slit on the upper side: *filaments* slender, ascending, unequal in length, attached to the back of the two-lobed anthers. *Ovarium* linear, smooth. *Style* smooth, ascending. *Stigma* a simple point.

The present pretty species is a native of New South Wales, and has been introduced several years to our collections, where it has been confused either with B. *Scolopendria* or B. *rufa*, but it is very distinct from both; we have ascertained our plant by comparison with *Sieber's* specimens, preserved in Mr. Lambert's Herbarium. It forms a handsome bushy plant, and is a free bloomer; and when covered with its handsome flowers, makes a splendid appearance, flowering from April to June, and is a very desirable plant for the Greenhouse, being dwarf, and easily cultivated in a small pot; succeeding well in an equal mixture of light turfy loam, peat, and sand; and young cuttings, planted in pots of sand, and placed under bell-glasses, will strike root readily.*

Among the diseases of plants, blight is one of the most important, and at the same time one on which a great diversity of opinion prevails. The Greeks and Romans supposed it to arise from the wrath of the gods, manifested in some sort of atmospheric influence; and the Hindoos of the present day consider it a judgment upon the country for the profane eating of beef. Gardeners see it 'coming in the air,' and look upon the insects they find soon after devouring their crops as a consequence of the blight; while those who consider themselves more philosophical observers, laugh at the notion of atmospheric influence, and attribute the whole mischief to the entomological enemies of human industry.

Perhaps both theories may be to a certain extent correct. The state of the atmosphere cannot produce insects, but it may occasion their development and multiplication; just as blight, from the parasitic fungus commonly termed rust may arise from the farina of the parasite being carried to the destined victims by the wind, at a time when the pores of the plant are more than usually open. In Upper India, where the blights from this cause produce all the horrors of famine in vast districts of the country, it is observed that the mischief occurs during an easterly wind. The particles floating in the air which are carried at such times over the wheat crops, penetrate into the open pores, and spreading their minute roots, intercept the sap in its

* Botanical Register, page 51.

circulation till the plant sickens and dies. 'I have sometimes,' says Colonel Sleeman, 'seen the air tinted of an orange colour for many days by the quantity of these seeds which it has contained, and that without the wheat-crops suffering at all, when any but an easterly wind has prevailed; but when the air is so charged with this farina, let but an easterly wind blow for twenty-four hours, and all the wheat-crops under its influence are destroyed—nothing can save them! The stalks and leaves become first of an orange colour, from the light colour of the farina which adheres to them; but this changes to deep brown. All that part of the stalk that is exposed seems as if it had been pricked with needles, and had exuded blood from every puncture; and the grain in the ear withers in proportion to the number of fungi that intercept and feed upon its sap; but the parts of the stalk that are covered by the leaves remain entirely uninjured; and when the leaves are drawn off from them, they form a beautiful contrast to the others which have been exposed to the depredations of these parasitic plants. Every pore, it is said, may contain from twenty to forty of these plants, and each plant may shed a hundred seeds, so that a single shrub, infected with the disease, may disseminate it over the face of a whole district; for in the warm month of March, when the wheat is attaining maturity, these plants ripen and shed their seeds in a week; and consequently increase with enormous rapidity, when they find plants with their pores open ready to receive and nourish them.' Colonel Sleeman adds that he had seen rich fields of uninterrupted wheat cultivation, extending over an area of twenty miles by ten, in the Valley of the Nerbudda, so completely destroyed by this kind of blight, that even the stalks and leaves were considered unfit for fodder.

In England, the disease which is caused or increased by webs and soft insects is popularly called a blight while that in which snails and hard insects are the proximate evil-doers is a 'sneg.' The former comes in a warm south-east wind, and the latter in a cold north-east wind—both of which vehicles, according to a very amusing volume before us, have about as much to do with the vegetable disease as with a rise in the funds. The volume has a good deal of the air and character of the famous 'Natural History of Selbourne; and, together with other instructive and entertaining matter, it contains a great variety of information respecting the various insects whose depredations are set down as the real blight in plants.

The gooseberry-fly, which collects such heavy tithes of one of the wholesomest of our fruits, is a pretty and merry insect, which spends its brief life in sporting with its companions in the sunshine. Marriage, however, spoils his amusement and injures his morals; for his progeny are deposited where they have no business, the eggs dotting the back of the leaves, at regular intervals, like bead-work. In about a week the grubs come forth head foremost, leaving the skins of the eggs standing 'like a row of empty silver purses,' and straightway they begin eating; and this with such effect, that their first meal changes their smoke-coloured vest into

'A doublet of the Lincoln green.'

There are sixty or seventy of these devourers on one leaf: and as *each* grub will eat three leaves to his own share before he is satisfied, by destroying one leaf in proportion you save a couple of hundreds. If let alone however the grub goes on eat—eat—eating, without a moment's intermission, till he is about half an inch in length: here he pauses, apparently for want of skin-room. His black head separates like a mask from the neck, and splits down the middle, and a new head pops out of the opening, with which he looks about him, moving it slowly on all sides, and without any vulgar expression of surprise or other excitement. Being satisfied as to the locality, he next wriggles out his body; and having at length got fairly rid of the insufficient skin, he sets to work to fill the new one, eating without intermission for four or five days more. At the end of this time he casts his skin again, and comes forth of a pale, delicate, green colour. He eats no more. He descends to the earth, and burrowing in it like a mole, to a depth of from two to eight inches, he makes a little oblong cell, and surrounding himself with a tough black cocoon, awaits tranquilly his transformation into a chrysalis, and soon after into a fly. When the eggs are laid before the middle of May, the whole of this history, down to the appearance of the fly, comes within a space of about twenty-eight days; but when the eggs are late in the year, our grub does not think it worth his while to come forth from his subterranean abode, but dozes comfortably in his cocoon till the ensuing spring. If any gardener is so inhospitable as to desire to save his gooseberries from this amusing visitor, the best way would appear to be to beat down and harden the soil all round the plants, so as to convert his temporary retirement into a perpetual imprisonment.'

Fumaria Eximia f.

FUMARIA EXIMIA.—CHOICE FUMITORY.

Class XVII. DIADELPHIA.—Order II. HEXANDRIA.

Natural Order FUMARIACEÆ.—THE FUMITORY TRIBE.

Perennial root, which produces several stems about a foot and a half in height, terminated with numerous pink flowers at the extremity, which come out on short peduncles. Leaves of a blue green on the upper surface, of a paler green underneath; they are on long stalks, springing from the base, and surrounding the flower-stalks.

The leaves of this graceful little plant, form a handsome cluster close to the ground; while the flower-spikes, which rise to the height of about eighteen inches, are plentifully adorned with blooms during the months of May and June. The handsome style of growth renders this plant truly serviceable and a great favourite, either for borders of flower-beds or for tufts; the latter of which become compact and very ornamental when the plant is well established. The seeds rarely come to perfection in this country; but by separating the roots in the spring the plant is easily increased. Light garden mould suits the nature of this herbaceous perennial. It was introduced in 1812 from North America. This interesting genus of plants has been divided into two other genera, *Cysticapnoe* and *Corydalis*, among which latter is included the plant here figured. The old name is however here retained, as that bywhich the plant is better known. Some of the species of this genus are noticed in the Phamacopœias, The *Fumaria officinalis*, or Common Fumitory, is used in cutaneous diseases, but no mention is made of the present species as being in any degree serviceable in the Materia Medica. It is the Funus terræ of the older herbalists, so called from the light and smokelike cloudiness of its foliage.

Looking about us (says a popular Author) during a walk to see what subject we could write upon that should be familiar to every body, and afford as striking a specimeu as we could give, of the entertainment to be found in the commonest object, our eyes lighted upon a stone. It was a common pebble, a flint; such as a little boy kicks before him as he goes, by way of making haste with a message, and saving his new shoes.

"A stone!" cries a reader, "a flint! the very symbol of a miser! What can be got out of that?"

The question is well put; but a little reflection on the part of our interrogator would soon rescue the poor stone from the comparison. Strike him at any rate, and you will get something out of him:—warm his heart and out come the genial sparks that shall gladden your hearth, and put hot dishes on your table. This is not miser's work. What fires, what lights, what conflagrations, what myriads of *clicks* of trigggers—awful sounds before battle, when instead of letting his flint do its proper good natured work of cooking his supper, and warming his wife and himself over their cottage fire, the poor fellow is made to kill and be killed by other poor fellows, whose brains are strewed about the place for want of knowing better.

But to return to the natural quiet condition of our friend, and what can he do for us in a peaceful way, and so as to please meditation;—what think you of him as the musician of the brooks? as the unpretending player on those watery pipes and flageolets, during the hot noon, or the silence of the night? Without the pebble the brook would want its prettiest murmur. And then, in reminding you of these murmurs, he reminds you of the poets.

A noise as of a hidden brook
In the leafy month of June,
That to the sleeping woods all night
Singeth a quiet tune.—*Coleridge.*

Yes the brook *singeth*; but it would not sing so well,—it would not have that tone and ring in its music, without the stone.

Then 'gan the shepherd gather into one
His straggling goats, and drove them to a ford,
Whose cœrule stream, rumbling in pebble-stone,
Crept under moss as green as any gourd.
Spenser's Gnat.

Spenser's *Gnat*, observe; he wrote a whole poem upon a gnat, and a most beautiful one too, founded upon another poem on the same subject, written by the great Roman poet Virgil, not because those great poets wanted or were unequal to great subjects, such as all the world think great, but because they thought no care, and no fetching out of beauty and wonder, ill bestowed upon the smallest marvellous object of God's workmanship. The gnat, in their poems, is the creature that he really is, full of elegance and vivacity, airy, trumpeted and plumed, and dancing in the sunbeams,—not the contempt of some thoughtless understanding, which sees in it, nothing but an insect coming to vex its skin. The eye of the poet or other informed man, is at once telescope and microscope, able to traverse the great heavens, and to do justice to the least thing they have created.

But to our brook and pebbles. See how one pleasant thing reminds people of another. A pebble reminded us of the brooks, and the brooks of the poets, and the poets remind us of the beauty and comprehensiveness of their words, whether belonging to the subject in hand or not. No true poet makes use of a word for nothing. "*Cœrule* stream," says Spenser; but why *cœrule*, which comes from the Latin, and seems a pedantic word, especially as it signifies *blue*, which he might have had in English? The reason is not only that it means *skyblue*, and therefore shews us how blue the sky was at the time, and the cause why the brook was of such a colour (for if he had wanted a word to express nothing but that circumstance, he might have said *sky-blue* at once, however quaint it might have sounded to modern ears:—he would have cared nothing for that; it was his business to do justice to nature, and leave modern ears, as they grew poetical to find it out); but the word *cœrule* was also a beautiful word, beautiful for the sound, and expressive of a certain liquid yet neat softness, somewhat resembling the mixture of soft hissing, rumbling, and inward music of the brook.—We beg the reader's indulgence for thus stopping him by the way, to dwell on the beauty of a word; but poets' words are miniature creations, as curious after their degree, as the insects and the brooks themselves; and when companions find themselves in pleasant spots, it is natural to wander both in feet and talk.

So much for the agreeable sounds of which the sight of a common stone may remind us, (for we have not chosen to go so far back as the poetry of Orpheus, who is said to have made the materials of stone-walls answer to his lyre, and dance themselves into shape without troubling the mason.) We shall come to grander echoes bye-and-bye. Let us see meanwhile how pleasant the sight itself may be rendered. Mr. Wordsworth shall do it for us in his exquisite little poem on the fair maiden who died by the river Dove. Our volume is not at hand, but we remember the passage we more particularly allude to. It is where he compares his modest, artless, and sequestered beauty with

> A violet by a mossy stone
> Half hidden from the eye;
> Fair as the star, when only one
> Is shining in the sky.

Is not that beautiful? Can any thing express a lovelier loneliness than the violet half hidden by the mossy stone—the delicate blue-eyed flower against the country green? And then the loving imagination of this fine poet, exalting the object of his earthly worship to her divine birth-place and future abode, suddenly raises his eyes to the firmament, and sees her there, the solitary star of his heaven.

But stone does not want even moss to render him interesting. Here is another stone, and another solitary evening star, as beautifully introduced as the others, but for a different purpose. It is in the opening words of Mr. Keats's poem of Hyperion, where he describes the dethroned monarch of the gods, sitting in his exile:—

> Deep in the shady sadness of a vale,
> Far sunken from the healthy breath of morn,
> Far from the fiery noon, and Eve's one star,
> Sate grey-hair'd Saturn, quiet as a stone.

Quiet as a stone! Nothing certainly can be more quiet than that. Not a syllable or a sigh will stone utter, though you watch and bear him company for a whole week on the most desolate moor in Cumberland. Thus silent, thus unmoved, thus insensible to whatever circumstances might be taking place, or spectators might think of him, was the soul-stunned old patriarch of the gods. We may picture to ourselves a large, or a small stone, as we please—Stone-henge, or a pebble. The simplicity and grandeur of truth do not care which. The silence is the thing,—its intensity, its unalterableness.

Our friend pebble is here in grand company, and you may think him (though we hope not) unduly bettered by it. But see what Shakespeare will do for him in his hardest shape and in no finer company than a peasant's:—

> Weariness
> Can snore upon the flint, when restive sloth
> Finds the down pillow hard.

Sleeping on hard stone would have been words strong enough for a common poet; or perhaps he would have said "resting," or "profoundly reposing;" or that he could have made his "bed of the bare floor;" and the last saying would not have been the worst; but Shakespeare must have the very strongest words, and really profoundest expressions and he finds them in the homeliest and most primitive. He does not mince the matter, but goes to the root of both sleep and stone—can *snore* upon the *flint*. We see the fellow hard at it—*bent* upon it—deeply drinking of the forgetful draught.

Green, a minor poet, author of the "Spleen," an effusion full of wit and good sense, gives pleasant advice to the sick who want exercise, and who are frightened with hypochondria.

> Fling but a stone, the giant dies.

And this reminds us of a pleasant story connected with the flinging of stones, in one of the Italian novels. Two waggish painters persuade a simple brother of theirs, that there is a plant which renders the finder of it invisible, and they all set out to look for it. They pretend suddenly to miss him, as if he had gone away; and to his great joy, while throwing stones about in his absence, gives him great knocks in the ribs and horrible bruises, he hugging himself all the while at these manifest proofs of his success, and the little suspicion which they have of it. It is amusing to picture him to one's fancy, growing happier as the blows grow worse, rubbing his sore knuckles with delight, and hardly able to ejaculate a triumphant Hah! at some excessive thump in the back.

Juniperus Sabina?

JUNIPERUS SABINA.—COMMON SAVIN.

Class XXII. DIŒCIA.——Order XII. MONADELPHIA.

Natural Order, CONIFERŒ.—THE FIR TRIBE.

This shrub rises but a few feet in height; it is covered with a reddish-brown bark, and sends off many branches, which are numerously sub-divided; the leaves are numerous, small, erect, opposite, firm, and wholly invest the younger branches, which they terminate in sharp points. The flowers are male and female on different plants; the calyces of the male flowers stand in a conical catkin, which consists of a common spike-stalk, in which three opposite flowers are placed in a triple row, and a tenth flower at the end. At the base of each flower is a broad short scale fixed laterally to a columnar pedicle; there is no corolla; the filaments in the terminating flower are three, tapering, united at the bottom into one body, and furnished with simple antheræ, but in the lateral flowers the filaments are scarcely perceptible, and the antheræ are fixed to the scale of the calyx. The calyx of the female flowers is composed of three small permanent scaly segments growing to the germen; the petals are three, stiff, sharp, permanent; the germen supports three styles, supplied with simple stigmata: the fruit is a roundish fleshy berry, marked with tubercles, which are the vestiges of the petals and calyx; when ripe the berry is of a blackish purple colour, and contains three small hard irregular shaped seeds. It flowers in May and June.

Savin is a native of the South of Europe and the Levant; it has been long cultivated in our gardens. The leaves and tops of Savin have a moderately strong smell of the disagreeable kind, and a hot, bitterish, acrid taste; they give out great part of their active matter to watery liquors, and the whole to rectified spirit. Distilled with water they yield a large quantity of essential oil. Decoctions of the leaves, freed from the volatile principle by inspissation to the consistence of an extract, retain a considerable share of their pungency and warmth along with their bitterness, and have some degree of smell, but not resembling that of the plant itself. On inspissating the spirituous tincture, there remains an extract consisting of two distinct substances, of which one is yellow, unctuous or oily, bitterish, and very pungent; the other black, resinous, tenacious, less pungent, and subastringent.

Savin is a powerful and active medicine, it heats and stimulates the whole system very considerably, and is said to promote the fluid secretions. The plant we are told has been frequently employed, and with too much success, for purposes the most infamous and unnatural. It seems probable, however, that it has in this way been somewhat over rated, as it is found very frequently to fail as an emmenagogue, though this, in some measure, may be ascribed to the smallness of the dose in which it has been usually prescribed by physicians; for Dr. Cullen observes, "that Savin is a very acrid and heating substance, and I have been often, upon account of these qualities, prevented from employing it in the quantity perhaps necessary to render it emmenagogue; but I have been frequently disappointed in this, and its heating qualities always require a great deal of caution." Dr. Home appears to have had very great success with this medicine, for in five cases of amenorrhœa which occurred at the Royal Infirmary at Edinburgh, four were cured by the Sabina, which he gave in powder from a scruple to a dram twice a day. He says it is well suited to the debile, but improper in plethoric habits, and therefore orders repeated bleedings before its exhibition. Externally Savin is recommended as an escharotic to foul ulcers, syphillitic, warts, &c.

Professor Taylor says that,* "the Juniperus Sabina of botanists, is a well-known plant, the leaves or tops of which contain an irritant poison in the form of an acrid volatile oil of a peculiar terebinthinate odour. They exert an irritant action, both in the state of infusion and powder. They yield by distillation about three per cent. by weight of a light yellow oil, on which the irritant properties of the plant depend. The powder is sometimes used in medicine in a dose of from five to twenty grains. Savin is not often taken as a poison for the specific purpose of destroying life, but this is occasionally an indirect result of its use, and it therefore demands the attention of the medical jurist. From cases which have been referred to me, I believe that poisoning by it is much more frequent than is commonly supposed.

"The strong local irritant properties of the leaves, which depend on the essential oil, are well known from the uses of savin-ointment in pharmacy. The plant grows extensively in country places, and is easily accessible to the evil disposed. It does not appear to have attracted much notice on the continent, for Orfila is silent on the subject, except in so far as it affects dogs. Two cases of its fatal effects in the human female were communicated to Dr. Christison. In one, a dose of the strong infusion was twice taken by a female. She suffered from severe pain and strangury, aborted, and died five days afterwards. On inspection, there was extensive peritoneal inflammation, with the effusion of fibrinous flakes; the inside of the stomach was red, with patches of florid extravasation. The contents had a green colour, and savin was proved to be present by the microscope. In the second, a girl was seized with violent colicky pains, vomiting, tenesmus, dysuria, and fever. After suffering several days she died. The stomach and intestines were inflamed; the former in parts black, and at the lower curvature perforated. A greenish powder was also found in this case, and when washed and dried it had the pungent taste of savin.

"The dried powder, which, owing to the loss of volatile oil is less energetic than the fresh tops, is given in doses of from five to fifteen grains. The medicinal dose of the essential oil is commonly from two to six drops. The infusion and decoction, which are sometimes used for the expulsion of worms, are less energetic than the fresh tops, because they cannot be prepared without giving rise to a loss of the volatile oil. The oil is not so irritant as it is commonly supposed to be; but in those cases in which it has been said to produce no marked effects in large doses, it is very probable that it was much adulterated.

* On Poisons, page 519.

Analysis.—"When the poison has been taken in the form of decoction or infusion, no test can be applied. The fact of poisoning can then only be elucidated by the symptoms and by circumstantial evidence. If the oil has been taken, it may be separated by distillation, and obtained by agitating the distilled product with one-third of its bulk of ether. Perhaps the most common case is that where the *powder* has been taken. It will be remarked from a case reported by Dr. Christison, and from that which occurred to Mr. Lord, that in spite of great vomiting the powder remained in the stomach for a period of five days. The contents appear like green-pea soup. That the colour is not owing to bile may be proved by diluting a portion with water, when the green chlorophylle, from its insolubility, will subside in a dense insoluble stratum, whereas if the colour were due to altered bile, the whole of the liquid would remain coloured. By washing the green matter in water, and drying it on plates of glass or mica, evidence may be obtained under a good microscope, by the rectilinear course of the fibres and the turpentine cells, that the substance belongs to the fir tribe. The only other poison of the coniferous order is the yew (*Taxus baccata*), but this differs from savin in having a lancet-shaped termination to the top of the leaves, while savin has a sharply accuminated point. A portion of the green powder dried and well rubbed will give the peculiar odour of savin. When freed from organic matter, it will yield, by distillation with water, the essential oil of savin."

Oil of Savin.—This oil is of a light yellow colour, and it has a powerful terebinthinate odour, sufficiently peculiar to render this an easy means of identification. A greasy stain made by this oil on paper is entirely dissipated by heat, or only a slight trace of resin is left. It is lighter than water, but insoluble in it, giving to it, however, its odour and an acid reaction. It forms a milky solution with rectified spirit, but a clear transparent solution with ether. It is exceedingly soluble in ether, and by this menstruum it may be separated from watery liquids, as the ether floats with it to the top. Nitric acid in the cold, slowly gives to the oil a dark red-brown colour.

Gilpin, in his Forest Scenery, says that, "there is a tree in the island of Java, called the Upas or Poison Tree, which, in the history of curious trees, should not be omitted; though the accounts of it are so wonderful that some have esteemed them fabulous. They are given to the public by a surgeon belonging to the Dutch East India Company, of the name of Foersch, who was stationed at Batavia in the year 1774. Surprising, however, as these accountsmay be, they are accompanied with so many public facts and names of persons and places, that it is somewhat difficult to conceive them fabulous. The abridged narrative of this strange production is this:—

"The Upas grows about twenty-seven leagues from Batavia, in a plain surrounded by rocky mountains, the whole of which plain, containing a circle of ten or twelve miles round the tree, is totally barren. Nothing that breathes or vegetates can live within its influence. The bird that flies over it drops down dead; the beast that wanders into it expires. The whole dreadful area is covered with sand, over which lie scattered loose flints and whitening bones. This tree may be called the emperor's great military magazine. In a solution of the poisonous gum which exudes from it, his arrows and offensive weapons are dipped. The procuring therefore of this poisonous gum is a matter of as much attention as of difficulty. Criminals only are employed in this dreadful service. Of these several every year are sent, with a promise of pardon and reward if they procure it. Hooded in leathern cases, with glass eyletholes, and secured as much as possible from the foul effluvia of the air they are to breathe, they undertake this melancholy journey, travelling always with the wind. About one in ten escapes, and brings away a little box of this direful commodity.

"Of the dreadful and sudden effect of this poison the author saw many instances. He mentions among others, the execution of thirteen young ladies of the emperor's seraglio, who, having been convicted of infidelity, were condemned to die by the poison of upas, which is considered in Java, like the axe in England, as an honourable instrument of death. At eleven o'clock in the forenoon these unhappy victims were led into a court in the palace, where a row of thirteen posts had been erected. To these they were bound. As they stood trembling, they were oblige to confess the justice of their sentence, which each of them did by laying one hand on the koran and the other on her breast. When these confessions were finished, and a few religious ceremonies, on a sign given by the judge, an executioner stepped forward, who bared their breasts, and, amidst their cries and shrieks, with a poisoned lancet made a slight incision in each. The author says, he stood by with his watch in his hand. In five minutes they were seized with convulsive spasms, excruciating agonies succeeded, and in sixteen minutes they were all dead. A frightful change came on. From being objects of beauty, they became spectacles of horror. Livid spots broke out upon them, their faces swelled, their cheeks became blue and their eyes yellow."

The history of the Upas affords, says Professor Burnett, a melancholy instance of the degree to which a love of the marvellous, and a passion for telling mysterious tales, by which a short-lived fame may be enjoyed, to be succeeded however by enduring contempt, will mislead even well-educated men; for in the relation of Foersch falsehood was so craftily blended with truth, that his story, although received at first with caution, was, from its very circumstantial details, for years esteemed, notwithstanding its wonderful character, as an authentic record. But, since his many wilful misrepresentations have been detected, even those parts of the narration which are true, or based on truth, have been doubted, and the whole regarded as a cunningly devised fable. The researches of modern travellers of credit have, however, established the existence of the Upas-tree; and other very recent investigations have assured us of the reality of the Upas-valley also. The collation of these two series of facts will put us in possession of the chief materials whence Foersch composed his tale, and expose the temptation by which he was seduced to declare that he had himself seen those things of many of which he had only heard, and which, marvellous enough as they are, the ignorance and superstition of the narrators had probably in the first place exaggerated, but which he seems to have conjoined for the sake of effect, and to have still further estranged from truth.

Billardiera scandens.

BILLARDIERA SCANDENS.—CLIMBING BILLARDIERA.

Class V. PENTANDRIA.——Order V. PENTAGYNIA.

Natural Order, PITTOSPOREÆ.

1. Calyx. 2. One of the Petals. 3 The five Stamens. 4. The woolly Ovarium, terminated by the smooth Style and simple Stigma.

A small slightly climbing evergreen shrub; branches slender, tinged with red, and thickly clothed with villous spreading hairs; leaves alternate, variable, oblong, lanceolate or oblongly linear, acute, very much undulate at the edges, hairy on both sides; petioles short, hairy, more or less reddish. Flowers solitary or sometimes in pairs, terminal, pendulous, straw-coloured; pedicles short, hairy; bractes narrowly linear, taper-pointed, hairy, deciduous; calyx of five sepals, that are lanceolate, taper-pointed, erect, thickly clothed with villous hairs; petals five, oblong, acute, reflexed at the points; stamens five, distinct, inserted on the receptacle and alternate with the petals; anthers blue or purple; ovarium densely clothed with soft woolly down, terminated by a smooth simple style; berry about the size of a hazel-nut, obtuse at both ends, densely tomentose, full of fleshy pulp, and containing numerous seeds in four series.

The present plant forms a small climbing shrub, well adapted for a conservatory or greenhouse where it is not wanted to attain a great height; it is one of the very few eatable fruits that are native of New Holland, and is of itself not very agreeable to the palate. It succeeds well in a mixture of light sandy loam and peat; and young cuttings, planted in sand under bell-glasses, strike root readily; it may also be raised from seeds, which are produced in great abundance.

The genus was named by Sir J. E. Smith, the late President of the Linnean Society, in honour of J. J. Labillardiere, the celebrated French Naturalist, who accompanied the expedition in search of La Peyrouse.*

It sometimes happens that without any particular cause for anxiety or depression, the mind is unaccountably perplexed and weighed down; and at such seasons even a dream of the night may produce a painful effect, while our sad memories or futile regrets cannot altogether be dispelled even by the strongest exertion of our reasoning powers. I had arisen one morning to fulfil the daily round of appointed duties, but in a spiritless, discontented, and repining mood. Feelings of the kind usually hold their sway in the silent and secret recesses of the heart; for we know that it is weak and wrong to indulge in them, and we are ashamed to seek for sympathy, which indeed can be but sparingly accorded in such cases. Towards the afternoon I sallied forth to try the effect of a solitary ramble, knowing this to prove frequently the best restorative for a nervous or morbid temperament. In a secluded spot, from whence a gentle pastoral valley was visible, between the spreading branches of old linden-trees, overshading the pathway, which led onward amid a collection of mossy hillocks, on whose broken surface scanty heather tufts and delicate wild flowers were scattered, an object attracted my attention. It moved slowly and with apparent difficulty, now disappearing behind the hillocks, then emerging and stooping down, and altogether presenting a very peculiar appearance. I saw presently that it was a human figure, which I supposed at first to be some poor misshapen child seeking for flowers. But although correct as to the employment, I found on nearer approach, that the gatherer was no child, but an unsightly and deformed cripple of mature years.

She supported herself on crutches, and besides the hideousness of the most unnatural distortion it is possible to imagine, added to a dwarf-like stature, her wan but placid face was rendered yet more ghastly by heavy linen bandages bound around it, and across her forehead. Her well-patched coarse garments were scrupulously clean, while her long thin white fingers were eagerly stretched forth to pluck the flowers, which she added to her store with childish delight.

I volunteered my assistance, and soon not one more flower was to be found. She thanked me in a sweet low voice, and quietly set herself down on a bank of moss, and began to arrange her humble nosegay: at first I had fancied that she was imbecile, but that thought was quickly dispelled on hearing her speak, and meeting the earnest intelligent gaze of her deeply-sunken but bright black eyes.

On sitting down to rest beside her, and inquiring if she was fond of flowers, as she took such pains to collect them, "Oh yes, ma'am!" she answered, "I love them dearly; they do me so much good with their happy looks and sweet scents. I take them home with me, for they ease my pain when I have them near me to speak to. I am but a silly one, though I often remember Him who made both me and the flowers."

* Flora Australasica.

I asked where she suffered the most pain. "In my head, ma'am; it has been so ever since I can remember —sometimes better, sometimes worse: but I will sing you a song if you please, for helping me to gather this pretty nosegay."

It was useless my requesting her to desist from the exertion, she began without heeding my remonstrance, and as if it were the return she habitually made for kindness, warbling the words of a bygone and very beautiful ballad. An attempt at sentimental description, when speaking of this poor creature, would be ludicrous and unfeeling; yet her voice was so low and touching, and so full of gentle pathos, that as I listened to the plaintive strain and the old sad words, many painful but treasured memories were called up, and I could not restrain my tears.

Unfortunately I had no money about me, nor could I succeed in prevailing on the songstress to call at my home, which I found she must pass on returning to her temporary lodging. 'She disliked entering any house, unless obliged;' but she promised to be there again to-morrow, where the blue-bells grew, and when the lengthening shadows of the pale autumnal afternoon would mark the time for her.

Her story, as she told it to me, was a short and simple one, and yet not commonplace; nor could I doubt its truth for a moment, for 'the eye never deceives.'

She had been an orphan since the age of sixteen. Her father, who was a woodman, had been killed by an accident before her birth when engaged in felling trees in the New Forest. The widow supported herself and her child by singing about the country, and working in the fields when she could get work to do; for as the daughter of a wandering Welsh harpist, the gift of song and the love of roving were in her hereditary. The unhappy circumstances, however, attending the birth of her infant had fallen heavily on the little innocent, occasioning, it was supposed, some organic derangement of the complex vessels of the head, and owing to the ignorant treatment of quacks, to whom her mother resorted, and a fall received in early infancy, making her, in her own sad words, "What you see, ma'am."

When her mother died, a benevolent physician to whom her case became known, had given her a recommendation to a London hospital, defraying her expenses thither; naturally concluding that clever and multiplied advice, together with care and judicious management, might do much towards effecting a cure, or at any rate ameliorating her condition. "But after a long time," she added, "all the doctors agreed that my case was an incurable one, and that fresh air and perfect freedom were the only things they could recommend as likely to ease my pain."

She told me the name of the worthy practitioner who had originally befriended her, and who had continued to allow her a small sum weekly, sufficient for her maintenance, until two years previous to this period, when death had deprived the orphan cripple of her benefactor.

Since then, walking all over England and Wales, she had supported herself by singing, when able to do so, and by the gifts of the charitable. The open air was as necessary and nutritious to her as daily food, while her childish delight in gathering wild flowers formed the sole recreation and solace of her lonely existence—lonely as that of the lepers of old.

The outcast added in a gentle deprecatory tone, but far removed from the whine of the common mendicant, and putting her hand involuntarily on her bandaged brow, "God is very good to me, for I have never wanted; and though He sees fit to send me pain, yet with the pain there is healing, for I often forget all when I look upon the beautiful things of His making. Indeed I am very happy; for if such fair flowers are to be found on earth, where the birds sing and the waters are so clear, and the trees are so grand, how much more beautiful our home in heaven will be!"

"But are we so sure of seeing heaven?" I hesitatingly said, wishing to hear the answer. Her answer was a silent smile, but a serious and solemn one, only faintly lighting up her pallid suffering countenance; and when I parted with her, it was in the earnest and full conviction that this destitute cripple was indeed, as she affirmed, *very happy;* and passing rich also in the possession of the priceless graces of patient cheerfulness, resignation, and faith.

This little adventure had given me a lesson and administered a reproof, which all discontented and repining individuals may not have the good fortune to encounter so opportunely. For my own part, the light of that poor cripple's smile is to this day upon my heart; and in the midst of all the sorrows and anxieties of life, whether real or imaginary, my harassed thoughts often flit away to employ themselves happily and beneficially in—gathering flowers.

Gratiola officinalis.

GRATIOLA OFFICINALIS.—HEDGE-HYSSOP.

Class II. DIANDRIA.—Order II. MONOGYNIA.

Natural Order SCROPHULARINEÆ.—THE FIGWORT TRIBE.

Fig. (*a*) represents a flower, spread to show the two fertile and two abortive stamens; (*b*) the pistil; (*c*) the capsule; (*d*) a section of ditto; (*e*) a seed.

This plant, the Gratiola of the Dispensatories, derives its generic appellation from the diminutive of gratia, grace or favour; and the epithet *gratia Dei*, by which it was formerly distinguished, is sufficiently expressive of the high estimation in which it was held by the ancients for its salutary qualities. It is a low perennial, not indigenous to this country, a native of the south of Europe, growing in most pastures and flowering in June and July.

Haller observes that, about Yverdun it is frequently found in such abundance as to be very injurious to the cattle, and that many meadows in the environs are rendered quite useless as pasture grounds from the excessive prevalence of this plant.

From a cylindrical, white, creeping, jointed rhizoma, rise several slender, smooth, round, erect stems, to the height of a foot or eighteen inches. The leaves are numerous, lanceolate, opposite, sessile, pointed, serrated towards the ends, of a bright green colour, two inches long, nearly half an inch broad, and obscurely punctured. The flowers are inodorous, about an inch long, axillary and solitary; the calyx consists of five elliptical pointed segments, with a pair of lanceolate spreading bracteas; the corolla is tubular, divided at the lip into four obtuse segments, the uppermost of which is broadest, emarginate and reflexed, the others straight and equal; the tube is yellowish, with reddish streaks; the limb pale lilac or purple. The filaments are four, awl-shaped, shorter than the corolla, only two of which are furnished with anthers; the two perfect ones are shorter than the others, and are inserted at the base of the uppermost segment, about the middle of the tube of the corolla: the germen is ovate, superior, supporting a slender erect style, with a divided stigma. The capsule is ovate, bilocular, and contains numerous small seeds.

Qualities and Chemical Properties.—It is inodorous, but impregnated with a bitter nauseous taste, which it is said sometimes produces a sense of constriction in the tongue. Marcgraaf states that its watery extract is bitter, but that the bitter principle exists most abundantly in the resinous extract. Vauquelin has analyzed it, and obtained a bitter, active, uncrystallizable, resinous principle, which is soluble in alcohol, and requires a very large quantity of boiling water to dissolve it. "When sulphuric acid is added to the unstrained infusion, it emits the odour of tamarinds; and when the infusion is filtered and slowly evaporated, spicular crystals are formed, which appear to be tartaric acid."

From a paper read some time since by Dr. Whiting, at a meeting of the Medico-botanical Society of London, it appears that Veratria, the active principle of Colchicum, and white Hellebore, has been most unexpectedly discovered in Gratiola. This will readily account for its violent effects when given in over doses. It is a curious coincidence that the Eau Medicinale which was made from the Gratiola, should have been imitated by spirituous infusions of Colchicum and Veratrum, both containing the same active principle, and that the modern Vinum Colchici should have superseded this old Vinum Gratiolæ, formerly esteemed a specific in gout.

Poisonous Effects.—Given in over doses, it produces violent vomiting and hypercatharsis.

"At a quarter past ten, three drachms and a half of watery extract of Hedge-Hyssop were introduced into the stomach of a small strong dog, and the œsophagus was tied. At eight in the evening the animal had not exhibited any remarkable phenomenon. The next day at ten in the morning he uttered plaintive cries; he was lying down on the side, and expired an hour after: his breathing had not been impeded. The mucous membrane of the stomach exhibited throughout its whole extent, a cherry-red colour; it was black wherever it forms the folds observed in the interior of this viscus; it was easy to be assured that this last alteration was the consequence of a certain quantity of black extravasated blood, within the space which separates it from the subjacent muscular coat. This last was nearly in its natural state; the interior of the rectum was evidently inflamed; all the remaining portion of the alimentary canal was a little red. The lungs did not appear affected; there was no serosity in the ventricles of the brain; the exterior cerebral veins were distended with black blood. The pia mater was injected and of a vermillion red colour.

"Twenty-eight grains of the same poisonous substance, dissolved in four drachms of water, were injected into the jugular vein of another robust dog of middle size. An hour after the animal had a motion; he experienced some giddiness, and became as it were insensible, lay down and expired two hours after the injection. It was impossible to discover the least trace of alteration in the texture of the digestive canal."

M. Orfila concludes from numerous experiments:—

"1st. That an extract of Hedge-Hyssop produces a local irritation extremely violent.

"2nd. That it appears to be absorbed, and that its effects depend on the sympathetic lesion of the nervous system.

"3rd. That it is much more active when injected into the veins."

The Gratiola Officinalis is commonly known, says Professor Taylor, under the name of Hedge-Hyssop. Observations made on animals and on man, show that it is a strong local irritant when given in decoction or infusion. A series of cases observed by M. Bouvier are reported by Orfila, in four of which this plant was used, under the form of decoction, as an enema. In this state it had been prescribed for four females by some herb doctors. The result was, that in one instance violent vomiting and purging, with syncope, were induced. In another case there was constriction of the throat, with hydrophobic symptoms and convulsions. The patient died in two days (Toxicologie. ii. 128). The leaves of this plant might be in some instances identified botanically, but in the state of decoction or infusion there are no tests which would determine its nature.

Medical Properties and Uses.—This medicine was formerly prescribed on the continent as a hydragogue purgative and diuretic; and Heurnius, Ettmuller, Hartmann, Joel, and others, have administered it successfully for dropsy of the cellular tissue; likewise of the peritoneum when unaccompanied by inflammatory action, and unallied with flaccidity of the muscular fibre or with paleness. It has likewise been given in some other affections, as hypochondriasis, atonic gout, rheumatism, &c. which were accompanied or appeared to be produced by inactivity or torpor of the intestinal canal, while others have administered its resinous part in small doses, to promote vomiting, or as a substitute for ipecacuanha in dysentery. Dr. Kostrzewski, of Warsaw, has offered some remarkable instances of its powerful influence in soothing and suspending irritation, and asserts that three maniacs in the hospital at Vienna, were recovered by its use.

Dr. Perkins, of Coventry, states that it forms the basis of the Eau Medicinale, and that the recipe was given to him by the Count of Leiningen, who paid five hundred ducats for it. This nobleman was a person of extensive reading, and a munificent patron of the arts, and had been in early life a martyr to the gout; an exemption from which for several years, he attributed to the use of this medicine. The following is the form:—

℞ "Herbæ gratiolæ officinalis siccatæ unciam
Radicis ejusdem Herbæ semunciam incisæ, et contusæ: adde
Vini Hispanici uncias sedecim.
Digere leni calore per dies octo, et cola."

"Of this vinous tincture, a tea-spoonful is to be taken at bed-time, drinking after it half-a-pint of beef tea; and if after the lapse of twenty-four hours all pain has not vanished, half a tea-spoonful more of the Gratiola wine is to be taken in a similar manner. Dr. Reece, who has paid particular attention to the preparation of this drug, and to its administration, very properly observes that, 'a tea-spoonful is at all times a very definite measure, and liable to vary with fashion,' and therefore recommends forty-five drops as the dose to begin with. This gentleman also remarks, 'that in producing its effect of allaying irritation in gout and rheumatism, it was done without disturbing the system, or producing those effects on the general health which attend the use of opium;' he has therefore, with a laudable zeal, extended its use to allay morbid irritation of the intestines and of the lungs, and has found that an oxymel made with the herb, is very efficacious in asthma, constitutional or winter cough, &c. He adds that, 'in the use of the Gratiola, it must always be exhibited in the first instance so as to nauseate the stomach, or to produce an aperient effect on the bowels, and then kept as near to this dose without producing any further unpleasant effect.' According to Bergius, the dose of the herb in substance is from fifteen to thirty grains, but he states that a scruple often acts on the bowels, and produces nausea and vomiting. He also affirms that ten grains united with five of powdered gentian, administered twice a-day, has been useful in autumnal quartan agues. Of an infusion, made with ʒij of the dried herb, to half-a-pint of boiling water, from f ʒiv to f ʒi may be given three times a-day. Gratiola is not admitted into the list of Materia Medica of the London College. The German physicians have long thought much more highly of the medicinal powers of Gratiola than their brethren of the British schools. Hufeland commends it for being 'extremely efficacious in jaundice, for example—and in ascarides; a circumstance which, as Thompson adds, is like to be the case, from its operating on the rectum. In France, Gratiola is a favourite medicine among the peasantry, who use it both as an emetic and purgative; and its provincial synonyme is 'Herbe à pauvre homme.'"

Anagallis arvensis.

ANAGALLIS ARVENSIS.—SCARLET PIMPERNEL.

Class V. PENTANDRIA.——Order I. MONOGYNIA.

Natural Order, ROTACEÆ.

Fig. (*a*) exhibits a single stamen; (*b*) the calyx, germen, and pistil; (*c*) the fruit.

This is a low, annual plant, with elegant scarlet flowers, and a procumbent stem; resembling common chickweed. It is indigenous to Britain; growing plentifully in cultivated grounds, particularly in rich garden soils; and flowering nearly the whole summer.

Pimpernel has a small fibrous root. The stem is square, much branched, smooth, slender, and clothed with small ovate, shining green leaves, which are either placed opposite in pairs, without foot-stalks, or four together, and marked with purplish spots underneath. The flower-stalks are angular, opposite, one flowered, bending downwards after flowering. The calyx is five-parted, acute, keeled, and permanent. The corolla is bright scarlet, violet coloured at the mouth, syn-or-gamo-petalous, wheel-shaped, and divided into five ovate segments, the margins of which are slightly notched, or beset with minute glands. The stamens are five, purple, hairy, and supporting yellow heart-shaped anthers. The germen is globular; the style purple, filiform, with a capitate stigma. The pyxidium is spherical, about the size of a pea, opening horizontally, and containing several small, brown, angular, roughish seeds.

The name *Anagallis*, retained from the old Greek and Roman authors, is by some, supposed to be deduced from the verb γαγελαω, to smile, because the plant is conspicuous for the beauty of its flowers; others believe it to refer to the former reputed properties of the plant, which is extolled both by Dioscorides and Pliny, for removing obstructions of the liver, which they considered the cause of low-spirits and despondency. The flowers expand only about the middle of the day, and close at the approach of rain; and from this circumstance it is denominated the *shepherd's, or poor man's weather glass.*

It likewise forms one of the Floræ horologicæ, opening its flowers regularly, about eight minutes past seven in our latitude, and closing them about three minutes past two in the afternoon.—*(Loudon.)*

Properties and Uses.—Pimpernel formerly held a place in our pharmacopœias, and was considered to be detergent, vulnerary, and cephalic; and by the ancients it has been extolled for its virtues in gout, gravel, convulsions, and the plague. Gelin and others have asserted its success in hydrophobia; and had subsequent experience confirmed its powers in this disease, we should view it not merely as a pretty flower, but as one of the most useful in the vegetable kingdom. It is not now employed, but the following account from Orfila, will prove its poisonous effects.

"At eight in the morning, three drachms of the extract of Pimpernel, dissolved in an ounce and a half of water, were introduced into the stomach of a robust dog. At half-past twelve he had a motion. At six in the evening he was dejected. At eleven, sensibility appeared diminished. The next morning at six, he was lying upon the side, and appeared to be dead: he might be displaced like an inert mass of matter. He expired half an hour after. The mucous membrane of the stomach was slightly inflamed: the interior of the rectum was of a bright colour; the ventricles of the heart were distended with black coagulated blood; the lungs presented several livid spots, and their texture was preternaturally dense. Two drachms of the same extract, applied to the cellular texture of a dog's thigh, produced death in twelve hours: and the heart and lungs presented the same appearance as in the other.

Birds of the passerine kind, are said to feed on the seeds with avidity.

The term 'marsh' naturally suggests to the mind the image of a greenish lake, shallow, miry, and ill-odorous, enamelled with water-lilies and waving rushes, and swarming with frogs in the summer, and with snipes in winter. This, however is not a description of the locality called the Marsh, in the environs of Paris; it was doubtless at a former period, the receptacle of seasonal inundations, which, having no outlet, gave it the character from whence it derived its present name; it has long however, been drained and cultivated, and transformed into a vegetable garden.

Destined solely for the culture of edible plants and roots, these marshes or market-gardens, surround the capital on every side, both within and without the enclosure of the walls. By whatever barrier you leave the city,—whether you follow the dusty route of the castle of Vincennes, or the imposing avenue of Neuilly —whether you visit the funeral shades of Pere-la-Chaise, or the sandy plain of Grenelle—the scene that everywhere meets the eye, is a series of interminable parallelograms, planted with salads, spinage, carrots, cabbages, horse-radish, and harricot-beans. Not an inch of land is wasted in these inclosures. The pathways running between the squares, are scarcely wide enough to afford a passage to a single pedestrian; the glazed sashes which cover the melons, sparkle in the sun like plates of silver. The neatness which reigns in these plots of ground, the vigour of the vegetation, the exquisite condition of every little bed and border —all announces that the art of cultivation is there carried to the highest point of developement.

In a corner of the enclosure, rises some few feet above the soil, a cabin covered with thatch. Judging by the taste which presided at the erection of such a habitation, by its ruinous condition, but ill-concealed

by the undulating branches of the vine, and by its miserable aspect, one would imagine it not the dwelling of a French citizen, at the gates of the French Capital, but the squalid lair of a savage, reared a hundred leagues from all examples of civilised life. The interior is void of flooring and papering, and nearly so of furniture. From a hook over the chimney-piece hangs horizontally, a flint-gun, with ponderous butt and rusty barrel; here and there a few queer images hide, but do not adorn, the dilapitated walls; near this vile domicile, stands a shapeless shed, which serves as a stable, a cart-house and a magazine; and near the dwelling is the smallest of possible pleasure-gardens, evidently spared with regret from more profitable cultivation, where, at the foot of an apricot-tree, the violet, the rose, the clematis, and the sweet bazil diffuse their welcome odours.

Let us now glance at the inmate of this undesirable dwelling-place. The animals which are considered the symbols of labour and industry—the beaver which builds his cabin, the ant which digs his sinuous granary beneath the sward, the bee which labours profitably from dawn to sunset, the woodpecker whose patient beak perforates the bark of the oak—are inactive beings, indolent, torpid, compared to the marsh-gardener.

It is hardly two o'clock in the morning when he leaves his bed. The roots, plucked and tied in bundles the evening before, are methodically arranged in the well-worn vehicle. The cultivator makes the best of his way to market, and, transformed into a merchant till seven o'clock in the morning, divides his commodities among the fruiterers, market-women, and hotel-keepers of the capital.

The method of watering adopted by the marsh-gardener, is of ingenious simplicity. The well is situated in the centre of the grounds, and surmounted by an axle-tree or cylinder, round which, the rope is entwined; a couple of old cart-wheels, placed horizontally at about four feet distance from each other, and united by laths, ordinarily compose the cylinder. A living skeleton of a horse, causes the vessels attached to the rope, to ascend or descend alternately, according as his movements are directed to the right or the left. To obtain from the poor animal this mechanical docility, they cover his eyes with a cowl—blind him, in short—that he may not go astray, but perform with more certainty his monotonous revolution. Alas! it is easy to see, by his meagre flanks and melancholy aspect, that the starved steed is already oppressed with the presentiment that his present position is but the antechamber to Montfaucon and the knacker's yard!

The toil of his long days and wakeful nights procures him but a scanty remuneration. In vain he practises economy to the verge of avarice; in vain he sells his miserable horse at the approach of winter, to buy another in the spring; in vain he lives upon vegetable food, to avoid the expense of butcher-meat; it rarely happens that he can amass sufficient to provide for the necessities of old age, but continues in harness, so to speak, to the last, watering and weeding to the day of his death; and dies at length, pitcher in hand, and, like the Emperor Vespasian, on his legs. Perhaps he had dreamed of a retreat from toil; perhaps he had often yearned after a shelter, like that so ardently desired by Rousseau—a white cottage with green shutters; but it is seldom more than a dream. Outworn and broken down with fatigue, the marsh-gardener, for the most part, dies on the field of his labours, and rests but in the grave.

The wife of the marsh-gardener, his sons and daughters, dig, sow, and cultivate the ground in company with him. The only alien auxiliaries that they admit, are the soldiers of the garrison of Paris, whom they hire at three-halfpence an hour, during the great heats of summer. On this subject we offer the reader a curious and authentic anecdote.

It was on the 14th Thermidor, in the year 5; or, on Thursday the 1st of August 1797. Some detachments of the army of the Sambre and Meuse, sent for to Paris by the Executive Directory, came to manœuvre in the enclosure of Saint Lazare. The general had alighted from his horse, and was walking with some officers, when at the end of the Faubourg Poissonniére, he stopped at the gate of a marsh-garden. Without troubling himself at the presence of so dignified a personage, the cultivator, an old philosopher, continued drawing his water.

'Good-day, Father Cardin,' cried the general.

'What! you know me?' said the old fellow amazed, respectfully baring his white head.

'To be sure old friend, ever since '87. I was then but nineteen. I served in the regiment of the French Guards, of which Marshal Biron was then colonel; and was quartered at the barrier Poissonniére. Have you forgotten me?'

'Faith I have then. Let me recollect: there were then at the barracks two companies of fusiliers, and one of grenadiers: to which did you belong?'

'To the grenadiers: you used to employ many of them occasionally to assist in watering your garden. Do you recollect, amongst others, the son of the kennel-warden at Versailles?'

'Stop a bit! Was he not recommended to me by his aunt, a fruit-seller at the same place?'

'Precisely.'

'Hadn't he the trick of buying books with the money I paid him, and paying another man to mount guard for him, that he might have time to study them?'

'Your memory is returning, Father Cardin.'

'He used to warble like a nightingale; I recollect he told me one day, that when a child, he used to sing in the choir at Saint-Germain-en-Laye. Ah, I remember him well now! What is become of him?'

'He is become general-in-chief of the army of the Sambre and Meuse; I am the self-same man, old comrade.'*

* Chambers' Journal.

Epilenrum Cucullatum

EPIDENDRUM CUCULLATUM.—HOODED EPIDENDRUM.

Class XX. GYNANDRIA.—Order II. DIANDRIA.

Natural Order, ORCHIDEÆ.——THE ORCHIS TRIBE.

This very curious species of Epidendrum, which we believed flowered for the first time in this country * in the bark stove of Edward Woodford, Esq., Vauxhall, rises with a single stem, clothed with two or three alternate ash-coloured scale-like spathes, so closely adpressed as to be scarcely discernible. From the top of the stem issues one leaf (perhaps, as in the figure of Plumier, sometimes more) fleshy, linear, acute, convex at the back, and slightly grooved in front. From the bosom of this leaf rises a round scape, at first swelling, then attenuated upwards, bearing a solitary flower, perfectly white when newly opened, but becoming tinged with a yellowish green, consisting of three external and two internal petals, of similar length and shape, linear, somewhat undulated, the two inner ones exactly opposite, and a nectary surrounding the parts of fructification shaped like a friar's cowl, far-acuminate, fringed, continuing of a snow-white after the petals have changed their tint. Nearly scentless.

Being a native of the West Indies, and naturally a parasitical plant, its culture is difficult, and it is of necessity a constant inhabitant of the bark stove in our climate.

Gardens.—The word suggests a summer theme, but, like gardening, it has a portion for all seasons, and an interest for almost every mind; few there are who cannot find pleasure in the exercise of that primitive art; and those few, generally speaking, will be found themselves uncultivated within. The love of gardens is a feeling at once the most universal in its extent and the most salutary in its operation, of any that has been retained by modern society; it belongs to the primeval times, and keeps the freshness of old rustic nature about human hearts and homes through ages of dusty toil and mechanical civilisation. We cannot conceal from ourselves that much of life as it now appears has the artificial stamp upon it; our daily business, our habits of action and even of thought, our social arrangements, and our domestic manners, all bear the impress of machinery and making up: they were made up for us, in fact, before we knew them, or so much as entered this living world. But the roses that summer flushes so brightly in the rich parterre, the woodbine that blooms on the cottager's garden wall, or the bed of snowdrops that delights the cottage child, when the days are lengthening and the robin begins to sing—these are the forms renewed that come and go with the seasons, and are nursed beyond human comprehension or control.

The fields are far off to the inhabitants of cities, and those of the country know them to be the meadows or harvest ground that must be reaped and sown, the domains of utility tilled by laborious strength: beautiful are they in the first green of the corn, and rich when it waves wide and yellow in the autumn's sun and breeze. The trust, the life of the world are there; but the garden is the cultivator's own demesne, to which his leisure is given where his taste finds scope, and over whose wealth he rejoices as that which comes without either risk or misgiving; hence from the earliest date of history and civilisation men have delighted in gardening—the sage and the simple have found it equally attractive. It has been the amusement of princes, poets, and philosophers; minds of the highest order, in both ancient and modern times, have made it their chosen study, and unlettered hard-working men, in the rough by-ways of life, have selected it for their only relaxation. He was a curious, though not unphilosophic observer, who remarked, that wherever taste and care were exhibited in the garden, whether pertaining to cottage or castle, the traveller might fairly reckon on civility and refinement in the household. Gardens are entirely unthought of by savage tribes. Those of them who plant roots or sow grain have no idea of the small enclosure for mingled ornament and use which is generally understood by that term among us. The garden occupies a large space in most people's home recollections: all whose childhood has been passed in the country will remember some little spot in which their earliest attempts at planting were made—how often the first roots were pulled up to see if they were growing; and when at length sounder principles of horticulture were acquired by the expanding mind, with what cheerful and earnest industry were the weeds removed, the flowers trimmed, and, more than all, the requisite duties done to that first estate—better kept perhaps than the patrimony or the acquisitions of after life; and when it grew to prosperity and bloom, under shower and shine, and hopeful labour, oh how great was the triumph, and how rich seemed the reward.

The fathers of the church were in the habit of comparing the soul to a garden; probably the monastic custom made the simile familiar to their minds. 'Cultivate thy soul,' says one, 'as thou wouldst thy garden ground; root out the weeds year after year, for the seasons will renew them; cherish the flowers, and see that thou bestow most care on that which is most likely to fail.' Gardens figure conspicuously in the mythology of all nations living under a warm or temperate climate. The Mohammedan paradise is represented under that symbol. The Chinese speak of the gardens of the immortals, which are said to be situated among the mountains of Thibet, and blest with perpetual summer: nothing within their

* It was in the royal collection at Kew in 1794. *Mart. Mill. Dict.*

bounds can die or grow old, and several ancient sages are believed to have retired to dwell among their bowers; but for centuries mankind have lost the way, and no traveller has ever succeeded in finding it, though the Chinese poets celebrate many who made the attempt; but few of them returned to their homes, and those who did so, could rest no more. There is a wild tradition among the Arabs concerning the gardens of the desert, which are believed to have been formed by an ancient tyrannical king at enormous expense and labour. They say that he had conquered all the nations of the East, and boasted he would conquer the sands also; but having at length completed his design, of which the Arabic legend retains a dazzling description, the gardens suddenly became invisible in the pomp of their richest bloom, and neither the monarch nor any of his successors ever again beheld them; but bewildered travellers have caught glimpses of them at times through the falling twilight, and given splendid though vague accounts of their gorgeous trees and flowers. The Hindoos believe that the widow who consumes herself with the corpse of her husband will expiate the sins committed by him and all her relations, and dwell with them in a magnificent garden for ten thousand lacs of years. In the legends of the north gardens have no place; the Scandinavian and Icelandic traditions speak only of halls and forests; and the old superstitions of Russia bear the same character. In those lands of pines and snow, gardens must have been unknown in earlier times, but civilization has brought them in its train. The Norwegian cottager now cultivates a garden of his own, fenced round with firs, furnished with peas and turnips; and if the owner be tasteful, perhaps a bed of daffodils, or yellow crowsfoot, varied with the foxglove and a rose bush or two; for it is remarkable that some variety of the rose is to be found in almost every climate south of Greenland. The Royal Garden at Stockholm contains one of the best collections of plants now in Europe; and it is well known that more pine-apples are produced in the neighbourhood of Petersburg, in spite of its nine months' winter, than in that of any other capital in Christendom.

About the close of the seventeenth century, a mode of gardening was invented by Le Notre in France, which was soon adopted over all Europe, and of which the gardens of Versailles present the best specimen. The chief characteristic of Le Notre's style was excessive regularity—trees were cut into fantastic shapes, beds were squared, walks and hedges were made straight by rule and line: if water was introduced, it was as a formal *jet-d'eau*, or a pond resembling a canal; where the ground sloped, it was laid out in a succession of terraces; and at every available point there was stuck the figure of a heathen god or goddess. While this stiff style ran its course on the continent, it was ridiculed by Addison in England, and gave place to a modified system of gardening, in which artificial wildernesses were interspersed with all sorts of oddities. A writer on gardens of this new style of art thus describes their appearance:—'What in nature is dispersed over thousands of miles, was huddled together on a small spot of a few acres square; urns, tombs; Chinese, Turkish, and Hindoo temples; bridges which could not be passed without risk; damp grottos, moist walks, noisome pools which were meant to represent lakes; houses, huts, castles, convents, hermitages, ruins, decaying trees, heaps of stones—a pattern-card of everything strange, from all nations under heaven, was exhibited in such a garden. Stables took the place of palaces, kennels of Gothic temples, and this was called natural.' Pope, at Twickenham, had a garden of this character, which was adopted as a model.

Perhaps the natural taste for gardening was never more strikingly exemplified than in the case of Saabye, a Danish missionary, who, with his wife, resided many years on the coast of Greenland. The missionary's house was surrounded by high rocks, which partially sheltered it from the fury of the northern storms and sea; but the mould on the stony soil in its vicinity was not deep enough for any root, and Saabye and his wife were obliged to transport the requisite additions from a considerable distance in a tub, having no other utensil suitable for the service. Thus the first garden in Greenland was formed; and the missionary planted it after the manner of cottage gardens in Denmark, with seeds sent him by the ship that came annually at midsummer. The results of his gardening experience in the polar regions are curious. It was not till the beginning of July that the frost of the long winter was sufficiently thawed to commence operations; there was then a summer of two months' duration and continual day, the vegetation being proportionally rapid; cabbages flourished remarkably well, turnips grew to the size of a teacup, lost their bitter taste, and acquired an agreeable sweetness; but Saabye's carrots were never larger than the stalk of a tobacco pipe. Celery and broad beans would not grow at all; peas ran into bloom but did not set: and the missionary seems to have regarded these as the only flowers of his garden. Yet in that dreary and remote solitude, surrounded by the natives of the north, whose language they were years in acquiring, the devoted exiles found pleasant occupation and familiar memories of their far old home in the spot so hardly redeemed from sterility, and yielding at the best such scanty returns for their labour. Nor can the subject be wound up without recalling the observations of Lord Bacon in his essay on gardening:—'God Almighty first planted a garden; and indeed it is the purest of human pleasures; it is the greatest refreshment to the spirits of man, without which buildings and palaces are but gross handiwork; and a man shall ever see that when ages grow to civility and elegancy, men come to build stately, sooner than to garden finely, as if gardening were the greater perfection.' Yes, gardens are clearly significant of elegancy. He cannot be a bad man who loves either flowers or gardens.

Magnolia Purpurea L.

MAGNOLIA PURPUREA.—PURPLE MAGNOLIA.

Class XIII. POLYANDRIA.—Order VII. POLYGYNIA.

Natural Order, MAGNOLIACEÆ.——THE MAGNOLIA TRIBE.

Magnolia, so named by Plumier in honour of Pierre Magnol, Professor of Medicine and Prefect of the Botanic Garden at Montpelier.

Generic Character.—*Cal.* Perianth three-leaved; leaflets ovate, concave, petal-shaped, deciduous. *Cor.* Petals nine, oblong, concave, blunt, narrower at the base. *Stam.* Filaments numerous, short, acuminate, compressed, inserted into the common receptacle of the pistils below the germs. Anthers linear, fastened on each side to the margin of the filaments. *Pist.* Germs numerous, ovate-oblong, two celled covering a club-shaped receptacle. Styles recurved, contorted, very short. Stigmas villose, perpendicular with the style. *Per.* strobile ovate, covered with capsules, which are compressed, roundish, scarcely imbricate, clustered, acute, one-celled, two-valved, sessile, opening outwards, permanent. *Seeds* two or one, roundish, berried, hanging by a thread from the sinus of each scale of the strobile.

Flowers six-petalled, the exterior of the petals purple.

Branches long and somewhat pliant; the bark of the young shoots smooth, shining, of a bright green, and with small white spots. The flowers at the extremity of the young shoots, solitary; petals six, ovate, concave, narrowing towards the base, the exterior of which are of a lively purple, the interior whitish. Calyx of two or three dark brown concave leaflets, which are deciduous. Leaves ovate, entire, of a bright green, and much veined. Stamens and pistils seated upon a conical receptacle, which afterwards supports the pericarp composed of numerous cells placed in an imbricated form, each of which contains one or two small ovate or roundish seeds.

The grandeur and magnificence of this tribe of shrubs mark them as truly conspicuous objects in the pleasure-ground. Amongst them are found all the qualifications for decorative shrubs;—a grand and ornamental style of growth, bold and conspicuous foliage, with flowers of corresponding magnificence, possessing a most delightful and fragrant odour. The *M. Grandiflora*, though it deservedly ranks as the most princely shrub in our gardens, yet surpasses by little only the present species. The hardihood of the *M. purpurea* makes it well adapted to this country, and its free disposition to flower renders it peculiarly ornamental. It is generally cultivated against a wall or trellis, but will flourish in the open ground, although its flowers in such a situation are not so luxuriant and numerous. It is found to flourish in a soil composed of peat and loam, and is increased by layers, which should be put down in a portion of sand towards the end of March. It is a native of China, and was introduced in 1792.

"Until of late," says a Naturalist, "it has been the universal opinion that indications of vegetable instinct must be denied to vegetables; but with progressive discovery, and of the several facts about to be related, this belief is giving way to what seems a perfectly allowable deduction from these facts—an opinion of precisely the opposite character, however startling it may appear to many who have hitherto regarded plants as only a grade above the inorganic kingdom. A short consideration of the subject, in the following manner, may prepare the way for the admission; and we believe few who will discuss the question, will leave it with a doubt upon the mind. If the evidence can scarcely be considered as conclusive, it is at all events of such a remarkable, plain-speaking character, as to call for a certain amount of credence and attention.

"It is scarcely necessary to remind the reader, that at what may be called the confines of the zoological kingdom, there exist certain simple forms of animalcules, in which no nerves are, by our present instruments, to be discerned; but we can hardly conceive these creatures to be destitute of them, when we find that they execute movements of a character bearing the most precise analogy to those of higher orders of created beings. Thus they chase their prey through the water; in turn they themselves flee from their enemies: they possess the liveliest powers of locomotion, at the complete control of the creature; are endowed with the power of digestion, and of the perception and discrimination of their appropriate nutriment; which are all functions in nobler creations, dependent upon the existence, if not of centres of sensation, at any rate of nervous fibres. It is easy, therefore, to believe that in their case nerves, and a stimulable tissue not necessarily identical with ordinary nerves and muscles, do exist, but are imperceptible, owing to our defective and limited powers of investigation. But when these analogical inferences are developed to a point yet further, when they are made to embrace confervæ, the humblest of vegetable forms, a difficulty arises in the admission of the existence of nerves or muscles, for which no other cause can be adduced than that, in the more complex structures of the same kingdom, such an apparatus is not to be found; physiologists hesitating to admit the existence of other excitable tissues than animal muscle, and of other stimulus-conveying fibres

than animal nerves. An assumption like this is not absolutely necessary. It is impossible to say that certain vegetable organs and tissues only discharge one function; it is perfectly conceivable that they may be endowed with two or more, abstractedly. Who, for example, could witness an oscillatorial filament wriggle itself out of a plate, and move towards the light with an invincible pertinacity, and could feel a doubt that it possessed the instinct that light was good for it; in obedience to which impulse, it was using every effort in its power to reach it? Place by its side a humble animalcule, which, with movements of equal vivacity, dances hither and thither in its native element, and let science put her finger upon the point where sensation ceases on the one side, and some new faculty commences on the other.

"Here are plants folding close their delicate organs from the cold evening air, expanding them again to their genial sunbeam; here are plants shrinking from the drenching rain, or opening to welcome the refreshing shower, as their different constitutions may suggest; here are some casting forcibly off every intruder to the honey cell; here are others, on the contrary, spreading their leafy traps for the capture of such offenders, here are a few abashed and shrinking from the touch; and finally, were St. Vitus's Dance a vegetable malady too, here is one—the Desmodium gyrens—which is decidedly a victim to it.

"Leaving, however, the discussion to another and more befitting arena, we would proceed to indicate that, putting aside the question of the amount of sensation involved in the motions referred to, there are other and even more remarkable points of view from which to contemplate the subject.

"There is a class of poisons which may be shewn to operate purely upon the sensation of animals, causing no chemical or physical disorganisation of their structure; these are opium, belladonna, Prussic acid, nux vomica, tobacco, &c. If now, it can be shewn that these agents act in a deleterious manner upon plants, we have the presumptive evidence of strong analogy in support of the idea of vegetable sensation. M. Marcet has set the question at rest. From his experience it has been found that, even in minute quantities, the poisons specified are destructive to vegetable life. If a leaf of the sensitive plant is cut off, and placed in pure water, it curls up its leaflets, but in a short time they again expand, and retain their irritability for several days, expanding and shrinking up as on the plant itself, when untouched with the finger or with a needle; but if another leaf is cut off, and placed upon water, to which a solution of belladonna has been added, the leaflets collapse, and subsequently expand; but after this it seems paralysed—its life is extinct, and even if it is then put into pure water, it no longer can be made to contract. Electricity, extreme cold, mineral poisons, arsenic, &c. are productive of similar consequences. Every one is familiar with that simple experimental, the fumigation of a rose-tree, to destroy the insects which infest it. It affords us an instance of the action of a narcotic poison not only upon the insects, but also upon the plant itself. The little creatures tumble from the branches, stupified with the tobacco fumes. And at the same time it may be observed that the leaves of the rose droop, some of its youngest and tenderest branches hanging down, and only recovering, after exposure to a purer atmosphere, their former position and healthy aspect. The effect of these poisons obviously indicates that all plants possess an occult principle, having a certain analogy to sensation. It is found, also, that when certain chemical substances in solution are presented to their roots, the foreign matter is carried into the circulating system of the plant, but is almost invariably, if it is unsuitable for its nutrition or for the formation of its secretions, carried down again, and thrown off by the roots. Even in the selection of its proper food by the delicate spongiole of the root, it would seem as if some kind of discerning faculty were in operation, which at any rate may be compared to animal instinct.

The struggle which plants growing in a cellar or darkened room make towards the light, however small the glimmer which may pierce the darkness, and the sedulous manner in which the radicle and plumule of the germ respectively avoid and seek the same influence, seem to speak in similar language. Every one who has watched the growth of the tendril of the vine, or the stem of the creeping-plant, must have observed that neither make any turns until they come into contact with some object around which they can twine; so that, up to a certain point, the stem of the most inveterately-twisting plant remains as straight as possible; but at the point of contact with another body, a volution immediately commences, and thenceforward it proceeds in a spiral direction around the object held in its embrace. In the case of the briony, simple contact with the object is not sufficient to cause the twisting of the stem. To prove this, the experiment of tying it with a string at a certain point has been made; but the plant made no attempt to twist at that point. A small weight was then attached to the string, and the tendril immediately began to shorten itself by making several spiral turns. This seems to indicate that the tendril of the briony, naturally, will twist only when it has the weight of the stem to support. The writer who records this experiment, and whose striking phraseology is almost indicative of his name, adds, 'it is a hand seeking in the dark, and grasping what it has felt by the action of muscles remote from the sensible point.'

"The remarkable manner in which plants search for their food, within certain limits comparable to that of animals, appears to imply the existence of some higher impulse than mere fortuity. The strawberry plant will thrust its 'runners' completely across a garden walk, on to a bed of soil on the opposite side, where it will for the first time, as it were, perceiving its object to be gained, push out roots, and form a new plant. It is not uncommon to find travellers relating the most singular freaks played by trees and plants in quest of nutriment. Trees are sometimes found which have taken root on one side of a deep ravine, and having exhausted the sterile soil on that side, have pushed forth roots completely across the abyss, which have gained its opposite side, and there struck deep into more fertile ground. Plants are often to be found which have rooted in old walls; but soon experiencing the want of soil, extend long roots in the direction of the ground, which they penetrate, and then form radicles. If the roots of a plant are accidentally denuded, and there happens to be some moist substance, as wet moss, in their neighbourhood, they direct themselves towards it, and eventually succeed in reaching it."

Cytisus Laburnum.

CYTISUS LABURNUM.—COMMON LABURNUM.

Class XVII. DIADELPHIA.——Order III. DECANDRIA.

Natural Order, LEGUMINOSÆ.——THE PEA TRIBE.

Laburnum, (a name formed from the Alpine name of the tree L'Aubours.) Calyx campanulate. Legume many-seeded, not dilated at the upper suture. Flowers yellow. Branches unarmed, leafy. Branches terete, whitish: leaves petiolate: leaflets ovate-lanceolate, pubescent beneath: racemes pendulous, simple: pedicels and calyxes clothed with adpressed pubescence: legume linear, many-seeded, clothed with adpressed pubescence. Native of Europe, frequent on the lower mountains. The laburnum, often called golden blossoms by country people, is a tree dear to the child at school, because its pendant clusters unfold just before the Midsummer vacation, and whose opening buds have erewhile made the young hearts within us beat with joy and hope.

"The Laburnum is a large growing tree, and although," says Gilpin in his Forest Scenery, "we have not frequently seen it assume that character which would make its form an object of desire for the artist, yet its rich leguminous golden flowers give it great value for the pleasure ground. It is, moreover, a hardy tree, and we can answer, from our own experience, that the timber, when made into chairs and other pieces of furniture, and allowed to darken, is sometimes hardly distinguishable from rosewood. If not allowed to get dark, the outer wood remains of a delicate yellow; the heart wood is always of a deep hue. It is extremely hard, and so heavy, that it will sink in water; and the French, who make great use of it, call it the Ebony of the Alps, because it is a native of the valleys of these mountains. The timber of this tree is indeed the highest in price of any that grows in Britain. A considerable quantity of laburnum was sold by public sale at Brechin Castle and Panmure, in 1809, at fully half a guinea per foot. The tree is very abundant in that neighbourhood, the roads being often bordered with it. There is a shrub variety of the laburnum, which, in its department is no less beautiful. The true sort is easily distinguished from the shrub by the greater size of the leaves, and the superior length of the bunches of papilionaceous flowers.

A laburnum, which was cut at Greenlaw in Edinburghshire, in the year 1763, measured four feet six inches in girth, and furnished a plank of beautiful red wood fourteen inches broad. It was planted in the end of the seventeenth century, when laburnum trees were first introduced into Scotland. We are persuaded that many much larger laburnums now exist in the country.

The shrubby stems of C. *Scoparius* are sought after, on account of their beauty when cut into veneers. Goats are fond of browsing on the herbaceous twigs of this plant, which is believed to be the *flowering Cytisus* of Virgil; and its branches, when young and tender, are often used in this country as well as in Italy, as fodder, and sometimes substituted, on account of their bitterness, for hops in brewing. They are also said to be capable of tanning leather, and of being made into a coarse kind of cloth. In our provinces, the older plants are frequently employed as thatching for cottages, sheds, and ricks. The seeds have a very bitter taste, and, as well as a decoction of the young twigs, called "broom-tops," are esteemed as a diuretic. When burned they afford a considerable quantity of vegetable alkali, upon which their medicinal properties chiefly depend; but their bitterness is also, in dropsical habits, where strength is in general greatly reduced, a further recommendation.

The seeds of the common *Laburnum* (C. *Laburnum*,) were observed by Haller to be violently emetic and cathartic; but they are now known to be absolutely poisonous. Several serious cases have occurred, both in this country and in France, from children swallowing laburnum flowers and seeds.

Professor Taylor (in his work on Poisons, p. 759) tells us that "Dr. Traill met with two cases of poisoning by the seeds, and an interesting case, which was the subject of a trial at Inverness, has been more recently reported by Dr. Christison. (Ed. Med. and S. J. Oct. 1843.) A youth, with the intention of merely producing vomiting in one of his fellow-servants, a female, put some dry laburnum-bark into the broth which was being prepared for their dinner. The cook, who remarked a "strong peculiar taste" in the broth, soon became very ill, and in five minutes was attacked with violent vomiting. The account of the symptoms is imperfect; for the cause of them was not even suspected until six months afterwards. The vomiting continued thirty-six hours; was accompanied by shivering,—pain in the abdomen, especially in the stomach,—and great feebleness, with severe purging. These symptoms continued, more or less, for a period of eight months; and she fell off in flesh and strength. At this period she was seen by a physician, who had been called on by the law authorities to investigate the case. She was then suffering from gastro-intestinal irritation, vomiting after food, pain in the abdomen, increased by pressure, diarrhœa, tenesmus, &c., with other serious symptoms. The medical opinion was that she was then in a highly dangerous

state. The woman did not eventually recover until the following April. There was no doubt, from the investigation made by Dr. Ross and Dr. Christison, that her protracted illness was really due to the effects of the laburnum-bark.

"Some experiments were then made on the action of the poison on animals. A teaspoonful of the powder of dry laburnum-bark was administered to a cat. Soon afterwards it writhed, apparently in great pain; in a short time it vomited violently, and, although languid and dejected for the rest of the day, it quickly recovered. Sixty-nine grains of the same powder were given to a dog. In ten minutes it whined and moaned, vomited violently, and soon got well. On a second occasion, twenty grains were found to act as a powerful emetic upon the animal. An ounce of the infusion of laburnum-bark, containing the active matter of sixty-two grains, was introduced by a catheter into the stomach of a full-grown rabbit. In ten minutes the animal looked quickly from one side to the other, twitched back its head twice or thrice, and instantly fell on its side in violent tetanic convulsions, with alternating emprosthotonos and opisthotonos, so energetic, that its body bounded with great force upon the side, up and down the room. Suddenly, however, all movement ceased, respiration was at an end, the whole of the muscles became quite flaccid, no sign of sensation could be elicited, and the animal died within *two minutes and a half* after the poison was injected into the stomach. The body was opened in two minutes more, and the heart was found gorged with blood, but contracting with some force. The stomach was filled with green pulp, soaked with the infusion. No morbid appearance was visible anywhere. In repeating this experiment, one rabbit died in half an hour, another in three quarters of an hour, after small doses of the infusion were injected into the stomach; and a third rabbit speedily died after eating greens merely impregnated with the infusion. In all these instances convulsions were the leading symptoms produced. The same effects are popularly ascribed to the leaves, young pods, and seeds of the tree; but no experiments have been performed with these. The facts here detailed show that laburnum-bark is a most energetic poison—as powerful, even, as nux vomica.

"Analysis.—There are no chemical means of detecting the nature of this poison, especially when administered in powder or infusion; or when a decoction of the bark is given in food. A decoction of the bark yielded a clear light brown infusion with a slight acid reaction. It was not precipitated by albumen, or a solution of tartarized antimony; hence it contained no tannic acid. With a persalt of iron it acquired a dark greenish-brown colour,—of a deep red by transmitted light. Strong nitric acid caused it to acquire a lighter colour. It gave a very copious gelatinous precipitate with acetate of lead, which was almost entirely re-dissolved by acetic acid. On decomposing this precipitate by sulphuric acid, filtering and applying a persalt of iron to the filtered liquid, a greenish-brown precipitate fell (gallate of iron) without any red tint whatever. A much stronger decoction of the bark, as well as a decoction of the tops, yielded similar results.

"The bark has been said to contain meconic acid; but these results prove that none of this peculiar acid is present. The only plan for determining with certainty the deleterious properties of the substance, would be by exhibiting a portion of the suspected decoction or infusion to animals.

"It has been recently announced that meconic acid is actually contained in the bark of the common laburnum tree, and that the iron-test strikes, with a decoction or infusion of this bark, a deep red colour, characteristic of meconic acid. The writer has further asserted that in testing for meconic acid, laburnum and laudanum would give precisely similar results. The improbability of laburnum bark or its decoction being found in the stomach, unless it had been intentionally administered as a poison, would be sufficient to take away the practical force of this objection, admitting it to be valid.

"Laburnum is a most powerful poison, and destroys life under symptoms widely different from those produced by opium; but the result of many experiments with the concentrated and diluted decoction and infusion of the bark procured in the metropolis as well as at a distance in the country, is that I have not been able to detect in it the slightest trace of meconic acid, or of any acid that could possibly be mistaken for it. The iron-test gives at first a deep reddish colour when added to the decoction, but this colour speedily changes to a dingy greenish-brown, instead of remaining of a clear red like the meconate of iron. It is quite certain that a person used to the analysis of opium could not mistake this chemical change for that produced by meconic acid. As tannic acid gives no precipitate with the decoction, the effect is probably due to gallic acid combined or mixed with organic matter. The clear liquid obtainedfrom a decomposition (by sulphuric acid) of the precipitate formed in the decoction by a salt of lead, did not acquire any red colour upon the addition of the iron-test.

The deleterious properties of this plant (says Professor Burnett,) depend upon a peculiar proximate principle, discovered by MM. Chevalier and Lassaigne, and called by them Cytisine; small doses of it, when given to various animals, produce vomiting, convulsions, and death. The same principle, or a very similar one, appears to be present in the flowers of *Arnica montana*, (the Leopard's bane;) and in Asarum Europeum, (the Asarabacca.) Notwithstanding the poisonous quality of the seeds, and the purgative effects of the young shoots, the latter form a very favourite food with hares and rabbits, who, it is said, will touch no other plant while a twig of laburnum remains; and hence it is frequently sown in plantations to protect young trees, until they are large enough to resist all leporine assaults.

Aloe vulgaris.

ALOE VULGARIS.—YELLOW-FLOWERED ALOE.

Class VI. HEXANDRIA.—Order I. MONOGYNIA.

Natural Order, ASPHODELEÆ.——THE ASPHODEL TRIBE.

Fig. (*a*) represents a flower with its bractea; (*b*) the pistil with the base of the corolla; (*c*) the same with the corolla removed.

The derivation of this name is uncertain. Beginning with the syllable Al, it is, perhaps, of Arabian origin; especially as the plant is much venerated in the East. In the Hebrew, a cognate language, it is called ahalah: some derive Aloes from the Greek *als* [the sea]; others from the Latin, *adolendo*; but this can only refer to the Aloe-wood, which is used in sacrifices for its fragrance. On the whole it is probable the name was first applied to the aloe-wood, and hence transferred to the common Aloes, on account of their bitterness. Its medicinal virtues were made known to us by Dioscorides, the physician of Cleopatra; and it is also mentioned by Plutarch. The name Aloe is retained by all the European nations.

From the specimens we are in the habit of seeing in this country, we should be inclined to think that the utility of the Aloe far surpassed its beauty, and to rank it, as a vegetable, with the camel and elephant in animal life. Like the larger animals, it is confined to hot, or comparatively uncivilised countries. Its appearance, which resembles a collection of huge leathern claws, armed with prickles, is very formidable; and even the smaller species have a sort of monstrosity of size in their parts, though small as whole. But notwithstanding the extraordinary utility of the Aloe, those who have seen it in its native country, and in full flower, describe it as scarcely less remarkable for elegance and beauty. The larger and more useful kinds appear to be also the most beautiful.

"Nature seems to have treated the Africans and Asiatics as barbarians," says St. Pierre, in speaking of the Aloe, "in having given them these at once magnificent, yet monstrous vegetables; and to have dealt with us as beings capable of sensibility and society. Oh, when shall I breathe the perfume of the honeysuckle?—again repose myself upon a carpet of milk-weed, saffron, and blue-bells, the food of our lowing herds? and once more hear Aurora welcomed with the songs of the labourer, blessed with freedom and content?"

The Aloe *vulgaris*, which is the species that Sloane describes in his History of Jamaica, as producing the Barbadoes extract, is a native of the Levant and Barbary. Though generally known under the name of Barbadoes Aloe, it is said not to be very common in the West Indian islands, where the plants are propagated on the poorest soil for the purpose of obtaining the Hepatic aloes of the shops. It is the αλοη of the ancient Greeks, and was found by Dr. Sibthorpe growing spontaneously in the island of Cyprus.

The stem is short, thick, shrubby, branched, and, like the rest of the plant, abounding in a clammy, bitter, fetid, yellowish juice. The leaves are about four inches broad at their base, crowded, sessile, nearly erect, or somewhat spreading, a foot long, lanceolate, acute, fleshy, smooth, succulent, concave above, of a sea-green colour, and when young spotted with white. The flower stem rises about three feet in height; it is round, thick, erect, smooth, of a brownish purple colour, branched at top, and terminated by the flowers which form a slender, loose pike, and are of a bright yellow colour. The flowers are numerous, spreading horizontally in an elegant spike, and stand on short, smooth footstalks, each flower being accompanied by a single bractea. The bracteas attached to the flower stems are triangular, membranaceous, and of a deep brown colour. The perianth is hexapetaloid, the pieces connate, the tube long, the limb deeply 6-cleft, cylindrical, and oblong; the outer segments are larger than the inner, ovate, blunt and spreading at the border. The stamens are thread-shaped, as long as the corolla, or longer, exserted from the receptacle, and furnished with oblong, incumbent anthers. The germen is oblong-ovate, angular, bearing a style nearly of the length and shape of the stamens, with a small, simple stigma. This species and A. *stricta*, are the softest and most succulent of all the Aloes; the former is the only species whose flowers are yellow.

Lavaysse, in his 'Venezuela,' says, "The leaves of the different specimens of Aloe, are highly serviceable to the natives of the countries where they grow. The negroes in Senegal make excellent ropes of them which are not liable to rot in water; and of two kinds mentioned by Sir Hans Sloane, one is manufactured into fishing-lines, bow-strings, stockings, and hammocks; while the other has leaves, which, like those of the wild pine and the banana, hold rain-water, and thus afford a valuable refreshment to travellers in hot climates. The poor in mexico derive almost every necessary of life from a species of Aloe. Besides making excellent hedges for their fields, its trunk serves instead of beams for the roofs of their houses, and its leaves supply the place of tiles. From these they obtain paper, thread, needles, clothing, shoes, stockings, and cordage; from the juice they make wine, honey, sugar, and vinegar.

Such of the Aloes as do not require a stove will bear the open air in our climate, from the end of March to the end of September. During the winter they should be watered about once a month; in the summer, when the weather is dry, once a week or ten days; but when there is much rain, they should be sheltered from it, or they will be apt to rot. If the weather be mild, they may be placed where they may receive the fresh air in day-time for a month after they are housed; after that the windows should be closed. They should not be put into large pots, but should be removed into fresh earth every year, which should be done in July. As much of the earth should be shaken away as possible, the roots opened with the fingers, and such as are decayed taken off; but great care must be taken not to break or wound those which are young and fresh. Water them gently when newly planted, place them in the shade for three weeks, and if the weather is hot and dry, water them in a similar manner once or twice a week. Most of the species may at this time be

increased by offsets, which should be planted in very small pots; and if, in taking off the suckers, you find them very moist where they are broken from the mother-root, they should lie in a dry shady place for a week before they are planted. When planted, treat them like the old plants. Such kinds as do not afford plenty of offsets may generally be propagated by taking off some of the under leaves, laying them to dry for ten days or a fortnight, and planting them, putting that part of the leaf which adhered to the old plant about an inch or an inch and a half into the earth. This should be done in June.

There are few things, I believe, more venerable, more eloquently impressive in their antiquity, than an old tree. The ruins of an old and noble edifice, of which every shattered fragment, every gaping cranny, complains of the destructive hand of time, is young and modern in our eyes, compared with that which still survives its touch,—the old ivy, that still, with every succeeding year, moves slowly on, knitting its creeping stalks into every crevice, and carrying its broad leaves up to the very summit. What can be more venerable than the far-spreading roots of an old elm or oak tree, veining the earth with wood! Cross but that little piece of wood, called the wilderness, leading from Hampstead towards North End, where the intermingled roots are visible at every step, casing the earth in impenetrable armour, and forming a natural pavement, apparently as old as time itself—can all the antiquities of Egypt command a greater reverence?

Qualities and Chemical Properties.—Barbadoes aloes is generally deeper coloured and more opaque than the Socotrine; it is more tough, and when broken, presents surfaces less shining; while its odour is very strong and highly offensive. Its colour when powdered is dirty yellow, and it is said to be more active than Socotrine aloes; and hence, though its price usually exceeds that of the other, it is principally employed in veterinary practice. It is composed of 42 parts of resin, 32 of extractive, the remainder consisting of a matter analogous to albumen.

Aloes, when pure, is completely soluble in water and alcohol; but the hepatic aloe only affords 86 parts of soluble matter to these menstrua. Aloes puffs up and crackles while burning, and gives out much thick smoke, that smells strongly of the aloes. When boiled in water and reduced to an extract, it loses much of its purgative property. It is stated by Murray, that the substance of the leaves does not partake of the qualities of the extract, which is contained only in vessels situate immediately under the epidermis; and this explains why it is that the inhabitants of Cochin-china are able to prepare a wholesome fecula from them. The aloes examined by Braconnot appeared to that chemist to have some particular qualities, which induced him to consider it as a distinct substance, for which he proposes the name "*amer resineux.*" Trommsdorf, on the other hand, and Bouillon La Grange, and Vogel, consider it as composed of resin, and a peculiar extractive matter. M. Fabroni, in the Ann. de Chimie, (vol. xxv.) states that he procured from the leaves of the A. *Socotrina* var. *angustifolia*, a violet dye, which resists the action of oxygen, acids, and alkalies. This juice, he says, produces a superb transparent colour, which is highly proper for works in miniature, and which, when dissolved in water, may serve, either cold or warm, for dyeing silk from the lightest to the darkest shades; and he reckons it one of the most durable colours known in nature. Aloes was used among the ancients, in embalming, to preserve bodies from putrefaction. Of this kind interpreters understand the aloes to have been, which Nicodemus brought to embalm the body of Christ. (John xix. 39.)

"This well known inspissated juice," says Professor Taylor, "of several varieties of plants, acts as a purgative in doses varying from five to twenty grains. When given in larger doses, or frequently repeated, it excites violent purging. It requires often many hours for its operation: it is less irritating than jalap or scammony, and it appears to act especially on the large intestines.

"Aloes, mixed with gamboge and colocynth, are said to be the basis of a certain quack medicine, sold under the name of Morison's Pills. These have proved fatal in many instances from the exhaustion produced by excessive purging, owing to the large quantity of these pills, taken in frequently-repeated doses. Our knowledge of the symptoms and post-mortem appearances produced by these irritants, is, indeed, chiefly derived from the cases which have proved fatal under this pernicious treatment. In the seventeenth volume of the Medical Gazette, will be found four cases of this description. The most prominent symptom was excessive diarrhœa, with the discharge of large quantities of mucus and blood; the individual became emaciated, and slowly sank from exhaustion. In some instances, the symptoms are those of inflammation and ulceration of the bowels. In 1836, a man was convicted of having caused the death of a person by the administration of these pills; in this instance the death of the deceased was clearly due to the medicine,—and on inspection, the stomach was found inflamed and ulcerated; the mucous membrane of the small intestines was injected and softened, and there was the appearance of effused lymph upon it. An ingenious attempt was made in the defence to draw a statement from the medical witness, that the good effects of some medicines invariably increased in proportion to the quantities taken!—this anti-homœopathic proposition was, however, very properly rejected. In all cases, it must be remembered, that these drastic purgatives may cause serious symptoms, or even death, when administered to young infants, or to persons debilitated by age or disease; nor is it necessary that the dose should be very large for fatal effects to follow. The medical question here may be, whether the medicine caused death directly, or whether it simply accelerated it. Hicrapicra appears to be a popular aloetic compound, and one death is recorded to have been produced by this in 1837-8. In another instance death was caused by an individual taking aloes in nitric acid, in which case the mineral acid was most probably the destructive agent. A singular case occurred in Germany a few years since, wherein a medico-legal question was raised respecting the poisonous properties of aloes. A woman, aged 43, not labouring under any apparent disease, swallowed *two drachms* of powdered aloes in coffee. Violent diarrhœa supervened, and she died the following morning, twelve hours after having taken the medicine. On inspection the stomach was found partially, and the small intestines extensively, inflamed. There were no other particular appearances to account for death, and this was referred to the effect of the aloes.

"This case appears to show that aloes possesses an irritant action. A large dose given to a person debilitated by disease, might easily cause death as the result of exhaustion from hypercatharsis."

Astragalus Verus

ASTRAGALUS VERUS.—TRUE ASTRAGALUS.

Class XVII. DIADELPHIA.—Order III. DECANDRIA.

Natural Order, LEGUMINOSÆ.——THE PEA TRIBE.

This species of Astragalus is a native of the north of Persia, where it is called Kurn, flowering in July and August; we are indebted to Oliver for the discovery of this plant, which furnishes the Gum Tragacanth of commerce.

This is a low tree, seldom exceeding three feet in height; the stem is about an inch in diameter; the branches numerous and crowded together, and covered with imbricated spines and scales formed of the petioles of the preceding year; the leaves are pinnate, consisting of six or eight pairs of leaflets; the pinnæ are nearly opposite, villous, stiff, and pointed; the flowers are small and of a yellow colour, and arise from the axilla of the leaves; the calyx is divided at the brim into five pointed segments; the corolla is of the papilionaceous kind.

Tournefort tells us, that the naked hillocks of Mount Ida in Candia produce this plant abundantly. The gum exudes spontaneously towards the end of June and in the following months, during which period the nutritious juice of the plant, thickened by the summer heat, bursts most of the vessels in which it is confined. This juice coagulates in threads, which make their way into the pores of the bark, through which being pushed forward by fresh juice they issue forth, and are at length hardened in the air, either in irregular lumps, or in long vermicular pieces bent into a variety of shapes. The best sort is white and semi-transparent, dry, but somewhat soft to the touch. It is extremely different in many of its properties to gum arabic; one part of this diffused in one hundred parts of water affords a fluid of the same consistency as one part of gum arabic dissolved in ten parts of water. Water is, however, but an imperfect solvent to it, not forming the same intimate union with it as with other gums. When tragacanth is put into water it slowly imbibes a great quantity, swells into a large volume, and forms a soft but not fluid mucilage. On the addition of more water, and if the mixture be agitated, the gum will be more generally diffused throughout the liquor, which will appear turbid. If left at rest the mucilage will again separate and subside; the supernatant water appearing limpid, and holding only a very small portion of the gum.

This is more costly than gum arabic or senegal, but its employment is highly beneficial in topical dyeing, when the mordant is prepared with nitrous acid; since other gummy solutions are coagulated by the application of this active alterative.

In 1830 the quantity of tragacanth retained for home consumption was 29,725 lbs. It is admitted on a duty of 1s. per lb.; its price being from £16 to £18 per cwt.

Sensible and Chemical Properties. Gum Tragacanth when good is inodorous, and as it dissolves in the mouth imparts a slight bitter taste: the best gum is semi-transparent, and of a clear whitish colour, and in small, thin, wrinkled, vermicular pieces or lumps; the larger lumps are of a yellowish colour, and more bitter to the taste. This gum differs from all other known gums, in giving a thick consistence to a much larger quantity of water, and at the same time being much more difficult of solution, or rather, dissolving only imperfectly, unless triturated after digestion with a larger portion of water; for although the liquor looks turbid, on standing the mucilage subsides, the water on the surface retaining little or none of the gum. If the water be acidulated with any of the mineral acids, a small portion of the gum becomes dissolved. Tragacanth is reduced to powder with much difficulty, unless thoroughly dried. According to Neumann, it gives nothing over in distillation, either to water or alcohol; it is also insoluble in alcohol or ether. The mucilage is precipitated by the sulphate of copper, superacetate of lead, and oxymuriate of tin; but not by silicated potass or the oxysulphate of iron: in these circumstances the mucilage of tragacanth differs from that of gum arabic.

Mr. Field, in his Treatise on Colours, says that, "Tragacanth is of excellent use when colours are required to lie flat, or not bear out with gloss, and also when a gelatinous texture of the vehicle is of use to preserve the touch of the pencil and prevent the flowing of some colours; or to fix drawings executed with the black-lead pencil."

Medical Properties and Uses.—Gum tragacanth is demulcent, hence it is very useful for allaying tickling coughs and sheathing the fauces in catarrhal affections; and for these purposes (from its great viscidity) it is preferable to gum arabic: it is seldom given alone, being generally combined with more powerful medicines, more especially in the form of troches, for which purpose it is very well adapted. Tragacanth may be taken in powder, from ten grains to one drachm or more, in any suitable vehicle.

Off. The Gum.

Off. Pp. Mucilago Astragali Tragacanthæ, E. D.
Pulvis Tragacanthæ Compositum, L.

A superstitious veneration for particular flowers—in other words, flower-worship—is an ancient, and, in some respects, a poetical variety of the depraved systems of religious homage into which certain of the human family have fallen. It is to be traced ages back in the religious observances of the Hindoos, and among the more enlightened Chinese: it formed an important part of the mysteries of Egyptian idolatry; and it is remarkable that the past and present monuments of the Mexicans exhibit, and with great promi-

nence, the same feature; while at an earlier period than the present, certain flowers were regarded even by some Europeans with a degree of veneration only too closely approximating the more declared feeling of flower-worship. There is a love for these beautiful creations innate in the constitution of the human being, and participated in equally by civilised and savage men. Their exquisite attributes of painting and perfume address themselves directly to our more refined feelings, while they have a tendency to direct upwards to the God that made them: the grievous error lay in not stopping short before these feelings became idolatry. It will be easily conjectured that no temperate region was the parent of the superstition. It arose in those warmer latitudes where the vegetable world has been endowed with a vigour of growth, and gorgeousness of apparel, of which austerer climates are ignorant. Its aspect indeed is most imposing, and, to be fully realised, must be beheld. In the few exiles which pass an artificial existence in our stoves, we are supplied with some faint and feeble types of the vegetable glories of the tropics; and even these will produce an impression not soon effaced from any cultivated mind. But there, where the Indian, penetrating the hot, damp jungles of his forests, suddenly comes upon a great, glowing, wonderfully-formed and tinged orchid, squatting like some animated being upon a shaggy trunk, or where the Hindoo paddles across a blue lake, literally paved with lotus flowers, it is not a violent supposition that the spectacle will impress him with feelings akin to awe. The next step is not difficult to be foreseen. As flower-worship took its origin, so, alas! it retains its existence, only among the most ignorant of the human family.

Humboldt and Bonpland, in their splendid work on Equinoctial Plants, give an account of a very curious tree called by the Mexicans by the dreadful title of the Macpalxochiquaukitl!—which signifies *hand, flower, tree.* Its botanical title is almost as long, but is a trifle more euphonious—the *Cheirostemon platanoides.* There existed only one specimen of this sacred tree in all Mexico, at least to the knowledge of the Mexicans; and this circumstance, added to the really remarkable aspect of the flowers, appears to have won for it the veneration of the Indian population. From the centre of the flower there springs a columnar tube, which may be supposed to represent an arm and wrist; and this then breaks into five stamens, coloured blood-red, and disposed after a manner not very dissimilar to the arrangement of the fingers and thumb of the human hand. The very points of these vegetable fingers are curved, and somewhat resemble the formidable ungulated talons with which painters delight to ornament the hands of witches and demons. These parts of the flower are of a considerable size, and project in a menacing manner some distance above the petals. It may easily, therefore, be conceived that a high and noble-looking tree—for such it is—laden with flowers of such marvellous configuration, brandishing aloft, in fact, a thousand gory hands, was an object likely to excite in no ordinary degree the superstitions, and even the terrors, of the ignorant. The tree was worshipped by thousands; it was believed to be the only specimen in the world of its kind; and the opinion was common that any attempt to propagate it would prove abortive. A great number of seeds was procured by our travellers, planted, and watched over with the most sedulous care, but not one of them succeeded. So great, say they, was the veneration paid to it by the Indians, and so eagerly were the precious flowers thereof sought after, that they were frequently plucked long before their expansion; and the tree was consequently never suffered to ripen its fruit. In spite, however, of the firmest convictions of the indivisibility of this tree—the Manitas, as it is commonly called—it has been propagated by cuttings, some of which are at this moment thriving in some of the larger stoves of our modern collectors. In Lyon's 'Journal of a Residence in Mexico,' he mentions having seen this famous tree, and confirms all that has been above written concerning it, adding, that as if to make the resemblance to a hand complete, the points of the fingers are terminated by processes resembling claws! Whilst the resemblance to the human hand was recognised in this instance, it would have been most strange had the remarkable race of mimics—the orchids—escaped observation or veneration. These plants, which have no parallel in nature for singularity, beauty, and fragrance, and which, in some of their species, imitate the most wonderful diversity of objects, are held in high veneration by the Mexicans. The Queen of the Orchids especially is inestimably prized; and others receive a subordinate measure of respect. Those who have access to Mr. Bateman's splendid work on the Orchidaceæ of Mexico and Guatemala, will find there several interesting particulars relating to this subject. In other countries, orchids have been objects of veneration.

The famed lotus flower has a world-wide reputation for sanctity. The *Nelumbium* is a splendid water-flower, and is found floating in the pools and ditches of Asia, and in the Nile: it yields a nut which is supposed to be analogous with the sacred bean of the ancients. The flowers of both tribes are glorious objects—some are blue, white, yellow, rose-coloured; and they appear lovely in the extreme when resting on the bosom of the wave. The flower was worshipped alike in Egypt, taking a place in the mysteries of Isis and Osiris, as in India in those of Brahma. The sculptural remains of ancient Egypt abound with the sacred plant in every stage of its development, the flowers and fruit being represented with the utmost accuracy. Among the Hindoos it was considered an emblem of the world, and the flower was looked upon as the cradle of Brahma. It was used to decorate the temples of their idols, and laid as a most acceptable votive offering upon their altars. Sir George Staunton writes—'The Chinese always held this plant in such high value, that at length they regarded it as sacred. That character, however, has not limited it to useless or ornamental purposes. Their ponds, to the extent of many acres, are covered with it, and exhibit a very beautiful appearance when in flower.' When Sir William Jones was on one occasion at dinner on the borders of the Ganges, desiring to examine the sacred flower, he despatched some of his people to procure him a specimen; it was brought to him, and immediately all his Indian attendants fell on their faces and paid adoration to it.

Without multiplying examples, this may suffice to direct the reader's attention to an interesting, but, to every right mind, a sad and painful subject of thought.

Lopezia Racemosa.

LOPEZIA RACEMOSA.—MEXICAN LOPEZIA.

Class I. MONANDRIA.—Order I. MONOGYNIA.

Natural Order, CIRCÆACÆ.——THE ENCHANTER'S NIGHTSHADE TRIBE.

Lopezia named in honour of Thomas Lopez, a Spanish botanist, who is said to have directed his attention to the natural history of the New World.

Stalk five or six feet high, branched almost to the bottom, square, of a deep red colour, smooth towards the bottom, slightly hairy above: *Branches* like the stalk; leaves alternate, ovate, pointed, toothed on the edges, more so on the larger leaves, slightly beset with soft hairs, veins prominent on the under side, usually running parallel to each other and unbranched: *Leaf-stalks* hairy; flowers numerous, from the alæ of the leaves, growing irregularly on hairy leafy racemi, standing on long slender peduncles, which hang down as the seed-vessels are produced; Calyx: a *Perianthium* of four leaves sitting on the Germen, leaves narrow, concave, reddish, with green tips, the lowermost one widely separated from the others, and placed immediately under the nectary; Corolla four Petals of a pale red colour, forming in their mode of growth the upper half of a circle, the two uppermost linear, of a deeper colour near the apex, jointed below the middle, with a small green gland on each joint, standing on short round foot-stalks; Nectary situated below the Petals, perfectly white, somewhat ovate, the sides folding together, before the flower fully expands, nearly upright, embracing and containing within it the Pistillum and Stamen. Stamen *Filament* one, tapering and very slender just below the Aathera, arising from the same part as (and placed opposite to the base of) the Nectary, the lower part of it broader, somewhat fleshy, cartilaginous, and of the same nature as the inferior part of the Nectary, with a groove as that has on the inside, so that before the flower expands, the bases of each are like two half tubes, the sides of which, nearly touching each other, wholly enclose the Pistillum; Pistillum *Germen* below the Calyx, round, smooth, and green; *Style* filiform, white, length of the Filament; *Stigma* forming a small villous head.

Some plants have a claim on our attention for their utility, some for their beauty, and some for the singularity of their structure, and the wonderful nature of their economy; in the last class we must place the present plant, the flowers of which we recommend to the examination of such of our readers as may have an opportunity of seeing them; to the philosophic mind, not captivated with mere shew, they will afford a most delicious treat.

A VISIT TO A VEGETABLE GIANT.

This huge tree which spreads out its great branches over a large area of ground, formerly overshadowed the royal palace, and was the wonder of the whole city; and now, when palace and city are only constituents of the dust around it, the tree flourishes, and commands the admiration of the traveller, and the adoration of the majority of the Javanese nation. The place where it is found is now known as Batatulies. At its foot is a small wooden structure, where a few Mohammedan priests officiate, to whose care is committed the conservancy, of this monarch of the forest, and of some supplementary relics, upon the proceeds of the exhibition of which, and on the fees for the attendant religious ceremonies, they contrive to pick up a tolerable livelihood; for the tree is in an odour of sanctity beyond all other trees in the island. Wo and bad success to that miserable peasant who goes to market without paying his adorations and coin at the shrine of the giant tree! Besides this, the fame of the tree has spread far and wide, and many come to behold and wonder, who may pay the customary offerings without adoring the deity of the place. The subsidiary relics consist of some pieces of old Padjajarian tombstones, and a marvellous bit of rock, into which some Hercules of old is said to have set his foot. These are held in equal veneration with the great tree, and their worship is commingled with the services of the mighty vegetable idol which towers above them. The tree stands at no considerable distance from the wayside, and forms an imposing feature of a landscape, by no means deficient in grandeur. It is placed upon an elevated plain, and is conspicuous from all sides of it, and attracts the attention of every one even at some distance. So noble is its appearance, so majestic its port, that it has been said if once beheld, it cannot soon be forgotten. Coffee plantations crown the fields and the sides of the hills, offering a striking contrast of feebleness and colossal strength in the vegetable kingdom. Shining rivers, waving rice-fields, woods and mountains, with a fuming volcano in the distance, complete the picture of its situation.

The trunk of the tree is of dimensions so vast, that very many men, by their united hands, cannot embrace it; botanical data do not exist for the determination of its age; the tree is too sacred probably to allow of the requisite steps for that examination. The trunk at first sight almost appears, as if it consisted of a number of trees all intimately united together; and from all sides of it huge irregular boughs jut up of all sorts of shapes, and in every direction, while the deep furrows and hollows consequent upon extreme vegetable old age contribute to give the monster a grandeur and awfulness of character not easily conceivable. perhaps the greatest marvel about the tree is the remarkable fact, that it is actually made up of two trees united into one; and most curious to relate, two trees of the same genus, but of *different species!* Both have grown together, so as to form one indivisible trunk of enormous size; but the distinctive features of each species come out in the branches, and appear, even to the eye of the casual observer and untutored savage, in the remarkable difference in the colour of the foliage. At a little distance the spectacle is very

peculiar. The leaves of one species are of the most lively and beautiful green, while those of the other are dark green on the upper surface, and a very pale green on the under. The one species has long, slender, drooping branches, adorned with elegant foliage, refreshing even to look upon; from its majestic appearance this kind is commonly planted before the palaces of the Indian princes; its larger branches puts forth facicles of roots, which, instead of descending as they commonly do to the earth, have crept along the aged trunk, wrapped their strong arms around it, and have ultimately blended themselves with its substance. The other species, less graceful in growth, has shorter, more rugged, and lustier branches, and by these and the colour of its leaves was readily distinguished from its twin sister. Below, both were as it were, fused into one vast mass, mingling its juices and fibres together. The trees both belong to the natural family *Moraceæ*, a race of trees which has given birth to some of the giants of the vegetable world, they are of the genus *Ficus*. This genus is held very sacred in Java, for it is believed the spirits of the departed delight to make their habitation in the grateful shadows of its branches.

It was in the latter part of the year 1818, that the author of the "Flora Javoe" made his visit to this celebrated wonder. The visiting party determined on setting out on the expedition before sunrise, which is the pleasantest period for travelling, impelled not merely by the idle curiosity excited by the thousand fables current relative to this marvel-doing, marvellously-great tree, but instigated by the more praiseworthy desire of ascertaining its scientific character and standing. Since, however, the natives regarded the tree with a superstitious awe of no common intensity, and considered it a heinous degree of sacrilege for a European so much as to break off the smallest branch, it was probable they would resist all botanising attempts upon its sacred boughs, and it became expedient, therefore, to get the authority of the Indian prince then having power in the island to sanction the meditated investigation. This was readily granted, and with it the assistance of a military convoy; and so all started before day-dawn. The route lay for the most part along the military road; and after passing long rows of the huts of the natives, the party at length emerged upon the plain on which the tree stands. Immediately to the right was the vast object of attraction, its aspect imposing in the extreme, which was heightened by the dim shadows of a departing night, still covering hill, valley, mountain, and plain in a dusky mantle of vapour, through which the first beams of the sun were now struggling. Even at this early hour, the belief of the wonderful blessings which were bestowed upon the worshippers who made the proper offerings to the leafy god, had drawn a considerable number of them together, some of whom were lost in contemplation of the green idol, while others were humbly kneeling before the pieces of stone, and the giant's footmark in the bit of rock in the chapel. On perceiving their occupation, the expedition halted, not wishing to disturb their devotions; but these were instantly stopped when the visitors were descried, the devotees rising from their knees, and quitting the chapel. The priests then approached, and stood near the entrance of the chapel, waiting to learn the purpose of the invaders. They were addressed by an Indian interpreter, who, after saluting the venerable fathers in the oriental fashion, gave vent to a long harangue, which stated in a good many words what we may express by a very few. The principal visitor had recently arrived in Java, from the most distant regions of the earth, to examine the plants of the island, and more particularly to make himself acquainted with this venerable and most sacred tree. Their lord the prince, himself a real lineal descendant of the most noble and ancient race of Padjajarian kings, having therefore a hereditary right over the tree, on being acquainted with the visitor's intentions, had been pleased to vouchsafe his consent to the expedition, and had given orders that the visitor might cut with his own hand a few of the smallest branches of the sacred tree. It was also intimated that nothing would please the prince more than if the departed spirits who dwelt in the tree would suffer the visitor to remove a few of the precious flowers growing upon it.

This rather startling proposition was attentively listened to by the priests, who seemed puzzled to comprehend its entire import. They held an earnest conference together, and commenced pronouncing in a gentle whisper certain mysterious verses; after which kindling some rice chaff, they threw upon it a quantity of incense, the smoke of which went up in a dense cloud, and filled the tree with its sweet odours. Every eye was fixed upon the curling wreaths rolling from branch to branch; and when at length the whole mass of the foliage was enveloped in the cloud, the chief-priest, an aged, awful-looking person, stood forth, and after bidding the stranger welcome, proceeded to inform him of the result of their sacrifice. Never had the priests of this most holy tree beheld a better omen in the rise of the sweet-smelling vapours, and their dispersion through its branches, than on this happy occasion. The visit of the illustrious stranger was most agreeable to the spirits of the departed; they were most willing to grant his requests, and to give him many additional blessings; while those who with sacrilegious hands should presume to desecrate this holy tree, disease and evil should fall upon and utterly destroy. The great difficulty was thus removed: the full permission of the priests being gained, and the customary offering made at the shrine, the visitor proceeded to scramble in a most irreverent manner up the aged sides and lateral branches of the tree, the priests themselves urging several peasants who were at hand to ascend also, and assist the stranger in collecting what he required. On ascending, words can scarcely describe the scene which presented itself. The tree was clothed all over with elegant flowers and parasitic plants. Orchids, in a multitude of species; crawled up its withered branches, and flung down flowers, and roots, and leaves, in one waving mass of fantastic fragrance and elegance. Lichens scaled up the wooden cliffs, and ferns of many species grew up from the dark hollows, while loranths sucked the vital juices, and scrophulariads covered the branches in a patchwork of brilliant hues. The tree was, in fact, a garden in the air; the rain of ages had washed down into its cavities, dead leaves and decaying material, and thus a rich vegetable mould existed in them, which was highly fitted for, and gave exuberant nourishment to the host of plants which, in some inexplicable manner, had found their way thither. After remaining in the tree for some time, and fearing to exhaust the patience of the priests, the visitor descended, together with his delighted coadjutors, bringing down with them a large collection of flowers from this parterre of nature—if the phrase is not too violent—and even then perceiving, to their regret, that fully half the species had not been gathered by them.

Amanita muscaria, var.

AMANITA MUSCARIA.—VARIETIES OF FLY AMANITA.

Class XXIV. CRYPTOGAMIA.—Order IV. FUNGI.

Natural Order, FUNGI.——THE MUSHROOM TRIBE.

Gen. Char. *Pileus* furnished with a stem and *volva*, and bearing on its inferior surface straight sporuliferous *lamellæ*. *Stem* either with a ring-like veil, or naked.

Spec. Char. Margin of the *pileus* striated, shining, warty, rarely naked; *warts* and *lamellæ* white; *volva* vanishing, scaly; *stipes* bulbous.

The pileus is from three to six inches in diameter, convex at first, striated at the margin, varying very much in colour, being mostly bright red, orange, or green, but sometimes liver-coloured, yellowish, or even whitish, and beset with downy, angular warts. The warts are white, or yellowish, prominent, pretty regular, scattered over the surface, but sometimes wanting. The lamellæ are flat, adnate with the stipes, very numerous, broad, and whitish. The flesh is thick, and white, partaking to a small depth of the colour of the pileus. The stipes is cylindrical, smooth, white, very straight, subsolid, from four to eight inches high, and bulbous at the base. The volva, according to Dr. Greville, is perfect only in extremely young plants, cracking immediately into pyramidal warts, which become less elevated, and more distinct, as the pileus expands, and generally leave a few traces upon the bulb, at the base of the stem.

Withering believed the *A. cæsarea* and *xerampelina* to be one, or merely varieties, of the same species. From this opinion, however, Dr. Greville dissents. From a mere verbal description of this Agaric, it is evident that its appearance must be rich in the extreme. The stipes is columnar, slightly tapering upwards, about five inches high and half an inch in diameter, of a rich buff colour shaded with red; the pileus is about twelve inches round, convex, and bossed in the centre, with the circumference bent down. The upper surface is at first of a beautiful carmine, which changes after a time to a rich orange, and ultimately becomes buff; the hymenium is of a bright golden yellow, tending to orange at the extremities of the gills, where they meet the red tunic of the pileus.

Amanita nivalis, which Dr. Greville says is the most alpine fungus he is acquainted with, and which grows on the bleak summits of the Grampians, enlivening by its symmetry and extreme whiteness the few turfy spots that occur in those desert regions, is found also in Italy, according to De Candolle, who quotes from Michelli, and says that it is eaten by the Tuscans, and by them called *Fungo marzuolo*, or *dormiente*. *Amanita ovöidea* is also said to be delicious; and A. vaginata is fed upon by the poor in Muscovy: but cases are on record in which it has proved poisonous.

The *Amanita imperialis* has long been notorious for its intoxicating and poisonous properties. It has sometimes been eaten by mistake, and the results have proved fatal. Linnæus tells us that in Denmark the natives cut it in pieces, which they steep in milk, and it then proves as destructive to flies as arsenic; hence it has received its present specific name, *Muscaria*. Dr. Johnston corroborates this fact, by stating that he has observed flies which sip the dirty yellow liquor into which the Amanita dissolves die almost immediately. Haller mentions the cases of six Lithuanians, who perished at one time by eating this Amanita. And Christison, among other instances, relates those of four French soldiers, who were killed, and others who were much disordered, by a similar fatal repast. Orfila likewise records similar examples of its virulence, in one of which a whole family was poisoned, and although some were recovered by speedy remedies, two died. The Amanita is nevertheless employed by the Ostiacks of Siberia, the Kamtschatdales, and Koriacks, for the purpose of producing intoxication. These infatuated people "sometimes eat it dry, sometimes immersed in a fermented liquor made with the epilobium, which they drink, notwithstanding the dreadful effects that inevitably follow. At first they are seized with convulsions in all their limbs, then with a raving, such as attends a burning fever; a thousand phantoms, gay or gloomy, according to their constitutions, present themselves to their imaginations; some dance, others are seized with unspeakable horrors. They personify this mushroom; and if its effects urge them to suicide, or any dreadful crime, they say they obey its commands. To fit themselves for premeditated assassinations, they take the *Mouchomore*, the Russian name of this Agaric; and, such is the fascination of drunkenness in this country, that nothing can induce the natives to forbear this dreadful poison."—(*Pennant.*)

The most complete and satisfactory account of this fungus, and its extraordinary effects, will be found in a German essay, by Dr. Langsdorf, in *Annalen der Wetterauischen Gesellsrchaft fur die gesammte Naturkunde*. This essay has been quoted by Dr. Greville, in his treatise on the esculent Fungi of Great Britain, and from his translation the following are extracts.

"The variety of *Amanita muscaria*, called *Kamtschatica*, is used by the inhabitants of the north-eastern parts of Asia in the same manner as wine, brandy, arrack, opium, &c. are by other nations. These fungi are found most plentifully about Wischna, Kamtschatka, and Mitkowe Derewna, and are very abundant in some seasons, and scarce in others. They are collected in the hottest months, and hung up by a string in the air to dry; some dry of themselves on the ground, and are said to be far more narcotic than those artificially preserved. Small deep-coloured specimens, thickly covered with warts, are also said to be more powerful than those of a larger size and paler colour.

"One large or two small fungi, is a common dose to produce a pleasant intoxication for a whole day, particularly if water be drank after it, which augments the narcotic effect. The desired effect comes on from one to two hours after taking the fungus, in the same manner as from wine or spirits: cheerful emotions of

the mind are first produced; the countenance becomes flushed; involuntary words and actions follow, and sometimes, at last, an entire loss of consciousness. It renders some remarkably active, and proves highly stimulant to muscular exertion: with too large a dose, violent spasmodic actions are produced.

"Poisoning by Mushrooms" says Professor Taylor, (on Poisons, p. 768) "is by no means unusual as the result of accident. Modern writers on this subject have described no less than forty species, of which only a few can be safely eaten in this country. Among them the *Agaricus Campestris* and *Esculentus* are perhaps most commonly employed as articles of food. It is a curious fact, that the poisonous properties of mushrooms vary with climate, and probably with the season of the year at which they are gathered. Another circumstance deserving of notice is, that by idiosyncrasy, some individuals are liable to be seriously affected even by those species which are commonly regarded as innocent. Some species which are poisonous in this country, are used freely by the Russians; although it appears they are in the habit of salting, boiling, and compressing them before they are eaten;—this may in some instances suffice to account for their having no noxious effects. Dr. Badham states that the Agaricus Compestris or common mushroom, which is largely eaten in England, is regarded as poisonous in Rome, and is accordingly rejected; while many varieties, which in this country would produce symptoms of poisoning, are eaten with impunity. There do not appear to be any satisfactory rules for distinguishing the mushrooms which are wholesome from those which are poisonous. The best test is that assigned by Dr. Christison—namely, that the poisonous vegetable has an astringent styptic taste, and perhaps also a disagreeable, but certainly a pungent odour. All mushrooms that are highly coloured, or grow in dark and shady places, are generally poisonous.

"The noxious species of mushrooms act sometimes as narcotics, at others as irritants. It would appear from the reports of several cases, that when the narcotic symptoms are excited, they come on soon after the meal at which the mushrooms have been eaten, and that they are chiefly manifested by giddiness, dimness of sight, and debility. The person appears as if intoxicated, and they are singular illusions of sense. Spasms and convulsions have been occasionally witnessed among the symptoms where the case has proved fatal. Dr. Peddie has related three cases of poisoning by mushrooms, in which the poison acted as a pure narcotic; there was no pain in the abdomen, nor irritation in the alimentary canal. The narcotic symptoms began in half an hour with giddiness and stupor; the first effect with one patient was, that every object appeared to him to be of a blue colour. The three patients recovered, two of them rapidly. When the drowsiness passes off, there is generally nausea and vomiting; but sometimes vomiting and diarrhœa precede the stupor. If the symptoms do not occur until many hours after the meal, they partake more of the characters of irritation;—indicated by pain and swelling of the abdomen, vomiting, and purging. Several cases, in which the symptoms did not appear until after the lapse of fourteen hours, are reported in the Medical Gazette (vol. xxv. p. 110.) In some instances the symptoms of poisoning have not commenced until after the lapse of thirty hours, and in these narcotism followed the symptoms of irritation. It might be supposed that these variable effects were due to different properties in the mushrooms, but the same fungi have acted on members of the same family, in one case like irritants, and in another like narcotics. In most cases recovery takes place, especially if vomiting be early induced. In the few instances which have proved fatal, there has been more or less inflammation in the stomach and bowels, with turgescence of the vessels of the brain. Balardini states, that of sixty-eight cases of poisoning by mushrooms, which occurred in the province of Brescia during a period of twenty years, twenty proved fatal. The principal symptoms were nausea, uneasiness in the abdomen, vertigo; a state resembling intoxication; vomiting and diarrhœa; loss of power of locomotion, with convulsions. In six cases which occurred to Dr. Keber, in which the *Helvella esculenta* had caused symptoms of poisoning, the patients became jaundiced as soon as the vomiting had ceased. The principal symptom was urgent vomiting, but one girl, age 18, fell into a state of coma, from which she did not recover for three days. It was probable that in this instance the noxious effects were due to season. The common truffle (*Morchella esculenta*) has been known to give rise to severe symptoms of irritant poisoning. In some cases lately reported (Ed. Med. and Surg. Journ., Oct. 1845, 530), it is probable that the truffles had undergone decomposition before they were eaten.

"Ketchup, a liquor made from mushrooms, has occasioned faintness, nausea, and severe pain in the abdomen, disappearing only after some hours. (Dub. Med. Press, Sep. 24, 1845, 195.) There are two ways of explaining this effect: 1st, either that the individual labours under an idiosyncrasy with respect to mushrooms in general; or 2ndly, that noxious, have been gathered by mistake for esculent mushrooms. A case is on record which shows that a medical jurist may be easily misled when any active poison is mixed with and administered in a dish of mushrooms. A servant-girl poisoned her mistress by mixing arsenic with mushrooms. This person died in twenty hours, after suffering severely from vomiting and colicky pains. On dissection, the stomach and intestines were found inflamed. Death was ascribed to the effects of the mushrooms, which were considered to have been unwholesome, and the fact of poisoning only came out many years afterwards, by the confession of the prisoner. This shows with what a watchful eye such cases should be examined; in the absence of poison from the stomach, it would be extremely difficult to develope the truth.

Analysis.—The discovery of portions of the fungus in the matter vomited, or the description of the food eaten, will commonly lead to a diagnosis of this form of poisoning. The poisonous principle contained in mushrooms is called *Fungin;* it appears to be of a volatile nature, and soluble in water, for some varieties of noxious mushrooms may be eaten with impunity when they have been well boiled in water and afterwards pressed. One of the most poisonous in this country, *Amanita muscaria*, or Fly-mushroom, renders the water in which it is boiled so poisonous, that animals are killed by it, while the boiled fungus itself has no effect upon them.

Anemone sylvestris.

ANEMONE SYLVESTRIS.—SNOWDROP ANEMONE.

Class XIII. POLYANDRIA.—Order III. POLYGYNIA.

Natural Order, RANUNCULACEÆ.——THE CROW-FOOT TRIBE.

The Anemones are natives of the East, from whence their roots were originally brought; but they have been so much improved by culture, as to take a high rank among the ornaments of our gardens in the spring. As they do not blow the first year, it will be more convenient to purchase the plants from a nursery than to rear them at home; on another account also it will be better, for they vary so much that it is impossible to secure the handsomest kinds by the seed; and when in flower they may be selected according to the taste of the purchaser. They should be sheltered from frost and heavy rains, light showers will refresh them, and in dry weather they should be watered every evening, but very gently. When the roots are once obtained, they may be increased by parting.

Parkinson very accurately notices the striking characters of Anemone Sylvestris, which are its creeping roots, its large white flowers standing on the tops of the flower-stalks, which sometimes grow two together, but most commonly singly; the leaves on the stalk, he observes, are more finely divided than those of the root, and its seeds are woolly.

Miller describes it as having little beauty, and therefore but seldom planted in gardens; it is true, it does not recommend itself by the gaudiness of its colours, but there is in the flowers, especially before they expand, a simple elegance somewhat like that of the Snowdrop, and which affords a pleasing contrast to the more shewy flowers of the garden.

It flowers in May and ripens its seeds in June. It will grow in almost any soil or situation, is propagated by offsets from the root, which it puts out most plentifully, so as indeed sometimes to be troublesome. Is a native of Germany.

*"The Narrow-leaved Garden Anemone grows wild in the Levant. In the islands of the Archipelago the borders of the fields are covered with it in almost every variety of colour; but these are single, culture has made them double.

"Of the double varieties of this species there are nearly two hundred. To be a fine one, a double Anemone should have a strong upright stem, about nine inches high; the flower should be from two to three inches in diameter: the outer petals should be firm, horizontal, unless they turn up a little at the end, and the smaller petals within these should lie gracefully one over the other. The plain colours should be brilliant, the variegated clear and distinct.

"The Broad-leaved Garden Anemone is found wild with single flowers in Germany, Italy, and Provence; the single varieties are sometimes called Star-Anemones: they are very numerous, as are also the double varieties, of which the most remarkable are the great double Anemone of Constantinople, or Spanish marygold, the great double Orange-tawney, the double Anemone of Cyprus, and the double Persian Anemone.

"There is a species called the Wood-Anemone, which grows in the woods and hedges in most parts of Europe. In March, April, and May, many of our woods are almost covered with these flowers, which expand in clear weather, and look towards the sun, but in the evening and in wet weather, close and droop their heads. When the Wood-Anemone becomes double, it is cultivated by the gardeners, and were the same pains taken with this as with the foreign Anemones, it would probably become valuable.

"Anemone roots may be planted towards the end of September, and again a month later, some plant a third set about Christmas. The first planted will begin to flower early in April, and continue for three or four weeks, the others will follow in succession. As soon as the leaves decay, which of those first planted will be in June, the roots should be taken up, the decayed parts and the earth cleared away, and, having been dried in the shade, they should be put in some secure place where they may be perfectly dry, and particularly where mice, &c. cannot find access to them. This opportunity may be taken to part the roots for increase, and provided each part has a good eye or bud, it will grow and flower, but they will not flower so strong if parted small. The roots will be weakened if suffered to remain long in the earth after the leaves decay. They will keep out of the earth for two or even three years, and grow when planted. The single, or Poppy Anemone, will in mild seasons, blow throughout the winter.

"Earth proper for the Anemone may be procured from a nursery, the roots may be planted in pots five inches wide, the earth an inch and a half deep over the top of the roots, and the eye of the root upwards. They must be kept moderately moist, shaded from the noon-day sun, and exposed to that of the morning. In the winter they should be placed under shelter, but should have plenty of fresh air when not frosty."

The Abbé la Pluche relates a curious anecdote of M. Bachelier, a Parisian florist, who, having imported some very beautiful species of the Anemone from the East Indies to Paris, kept them to himself in so miserly a manner, that for ten successive years he never would give to any friend or relation whomsoever the least fibre of a double Anemone, or the root of one single one. A counsellor of the parliament, vexed to see one man hoard up for himself a benefit which nature intended to be common to all, paid him a visit at his country house, and in walking round the garden, when he came to a bed of his Anemones, which were at that time in seed, artfully let his robe fall upon them; by which device he swept off a considerable number of the little grains, which stuck fast to it. His servant, whom he had purposely instructed, dexterously wrapped them up in a moment without exciting any attention. The counsellor a short time after communicated to his friends the success of his project, and by their participation of his innocent theft the flower became generally known.

* Flora Domestica.

Tournefort, who also relates this story, says that this ingenious flower-stealer took with him three or four of his friends to visit M. Bachelier, and that when they drew near to the place where the Anemones were placed, they began to amuse him, and engage his attention by relating different tales and anecdotes, to prevent his observing what was passing around him.

Rapin, in his poem on gardens, ascribes the birth of the Anemone to the jealousy of Flora, who fearing that the incomparable beauty of a Grecian nymph would win from her the love of her husband Zephyr, transformed her into this flower. But to this tale he adds an account better authorised, of the Anemone having sprung from the blood of Adonis and the tears of Venus shed over his body; and it is but common justice to Flora to observe that this is the generally received opinion of the origin of the Anemone. Cowley gives it this parentage in his poem on plants. Ovid describes Venus lamenting over the bleeding body of her lover, whose memory and her own grief she resolves to perpetuate by changing his blood to a flower, but less poetically than some others; he substitutes nectar for the tears of Venus, not even hinting that the said nectar was the tears of the goddess.

"But be thy blood a flower. Had Proserpine
The power to change a nymph to mint?—Is mine
Inferior? or will any envy me
For such a change? Thus having utter'd, she
Pour'd nectar on it, of a fragrant smell;
Sprinkled therewith, the blood began to swell,
Like shining bubbles that from drops ascend;
And ere an hour was fully at an end,

From thence a flower, alike in colour, rose,
Such as those trees produce, whose fruits enclose
Within the limber rind their purple grains;
And yet the beauty but awhile remains;
For those light-hanging leaves, infirmly placed,
The winds, that blow on all things, quickly blast."
SANDYS' OVID, book x.

"By this, the boy that by her side lay killed,
Was melted like a vapour from her sight;
And in his blood, that on the ground lay spilled,
A purple flower sprung up chequered with white,

Resembling well his pale cheeks, and the blood
Which in round drops upon their whiteness stood."
SHAKSPEARE'S VENUS AND ADONIS.

The Spanish poet, Garcilasso, attributes the red colour only of the Anemone to the blood of Adonis:

"His sunbeam-tinted tresses drooped unbound,
Sweeping the earth with negligence uncouth;
The white anemones that near him blew
Felt his red blood, and red for ever grew."—WIFFIN'S Translation, p. 273.

The Greek poet, Bion, in his epitaph on Adonis, makes the Anemone the offspring of the goddess's tears.

Mr. Horace Smith, in his poem of Amarynthus, supports the first reason for naming this flower the wind-flower—that it never opens but when the wind blows:

"And when I gather'd rushes, and began
To weave a garland for you, intertwined
With violets, hepaticas, primroses,
And coy Anemone, that ne'er uncloses
Her lips until they're blown on by the wind."—AMARYNTHUS, p. 46.

It seems more usual, as well as in character, for the presence of the sun to unclose the lips of the Anemone, which commonly close when he withdraws; but when he shines clear,

"Then thickly strewn in woodland bowers,
Anemones their stars unfold."

Sir W. Jones has translated an ode from the Turkish of Mesihi, in which the author celebrates several of the more sweet or splendid flowers:

"See! yon anemones their leaves unfold,
With rubies flaming, and with living gold."

"The sweetness of the bower has made the air so fragrant, that the dew before it falls is changed into rose water."

"The dew-drops, sweeten'd by the musky gale,
Are changed to essence ere they reach the dale."

An Anemone with the motto, "Brevis est usus,"—"Her reign is short," admirably expresses the rapid decline of beauty.

Dr. Taylor observes (Poisons, p. 509) that, "This is a genus of plants comprising several species, all possessed of irritating properties in the moist state, but which they appear to lose in great part when dried or exposed to heat, owing to the presence of a volatile principle, *Anemonine*. These plants have a strong acrid burning taste, which is stronger in the roots than in the leaves. The *Anemone Pulsatilla* (*Wind Flower*), and *Anemone Pratensis*, are the two principal varieties. Small doses of the extract of the latter produced, according to Stork, pain in the abdomen and diarrhœa. The different parts of these vegetables have a local irritant action. All that is known concerning their operation on the human subject, is comprised in the following cases. Haller and Bockler remarked that they caused vesication of the skin, and that the distilled water produced nausea and vomiting. Orfila relates that an apothecary suffered from irritation of the eyes, colic, and vomiting, after having bruised some anemone pulsatilla. (Toxicologie, ii. 133.) Bulliard reports the case of a man who applied the bruised leaves of the plant to the calf of his leg. There was great pain for ten or twelve hours, and the local irritation was so severe that inflammation and gangrene followed. (Orfila, ib.; also Wibmer Die Wirkung der Arzneimittel, i. 178.) No instance is recorded of the plant having destroyed human life, but experiments on animals show that it will act fatally like other irritants; and that it causes most violent inflammation in all parts of the alimentary canal. In some instances symptoms indicative of an affection of the nervous system appeared.

ANALYSIS.—The nature of this poison can only be determined by the botanical characters of the plant.

In the language of Flowers, Anemone is the emblem of Forsaken.

Polypodium Filix mas.

ASPIDIUM FELIX MAS.—MALE SHIELD FERN.

Class XXIV. CRYPTOGAMIA.—Order I. FILICES.

Natural Order, FILICES.——THE FERN TRIBE.

Gen. Char. *Fructification* in roundish points, scattered, not marginal. *Involucre* umbilicated, open almost on every side.

Spec. Char. *Frond* nearly bipinnate. *Pinnæ* obtuse, notched. *Stipe* chaffy.

This species of Fern is the Οηλυπτερίς of Dioscorides; it is a native of Britain, and is found in great abundance about the borders of woods, rivulets, and in stony rocky places, flowering in June and July. This species of fern (with others of the same family,) was ranked by Linnæus under the genus Polypodium, or Polypody tribe of plants; but modern botanists have separated the shield-fern from the Polypody, and formed a distinct genus of the shield-fern under the generic title Aspidium.*

The root is perennial, large, long, firm, and covered with thick brown imbricated scales, and furnished with numerous long fibres; the general leaves are pinnate, large, from one to four feet in length, lance-shaped, broader in the middle and gradually decreasing to each extremity, terminating above in an acute point; the partial or second leaves are from fifteen to twenty pair, remote on the lower part, gradually approaching nearer as they advance upwards, and running together at the top; the pinnæ are from seven to fifteen pair, which are largest at the bottom, and gradually decrease towards the top, where they unite in a point, they are of an oval form, and somewhat crenate at the upper extremity; the seed vessels are placed in two rows on the back of the pinnæ or lobes, in number from three to six, and covered with a pellicle; when the seeds are ripe, the pellicle bursts, and after the discharge of the seeds, the vessels become brown and appear as if covered with dust.

The Brakes or frondose ferns, Professor Burnett tells us, are not very extensively employed by man, either as food or in medicine. One species only finds a place in our national pharmacopœias, although several are possessed of curative powers, and are esteemed officinal plants in our provinces, and are entered by authority in the continental lists of the vegetable materia medica. Even the Aspidium felix mas, the only fern our colleges retain, is very rarely used; and yet, from its having been celebrated as an anthelmintic from time immemorial, and more especially from its never having been lauded as a panacea, like many fashionable medicines, which run their course and are forgotten, but always possessing a certain degree of reputation, it is not unreasonable to believe that it deserves it; and, if so, that it does not merit the neglect that it meets with here. The so-called male fern was recommended as a vermifuge by Theophrastus, Dioscorides, and Galen; and its administration formed the ostensibly specific, if not the most energetic, part of the treatment recommended by Madame Noufer in cases of tape-worm. But it cannot be overlooked that she accompanied its exhibition with a strong dose of calomel, gamboge, and scammony, the very ingredients that formed the famous "Pulvis Trium Diabolorum," and which were thought, in their alliance, to be powerful enough to discomfit even a more stubborn enemy than tænia.

The Scythian or Tartarian lamb is a species of Aspidium. Of this fern so many wonderful tales have been told, and supported by such evidence, that the world has doubted whether to discredit or believe them. Struys, who travelled through Russia, Tartary, &c., in the middle of the seventeenth century, gave one of the earliest and best accounts of this curious plant, and the following extract is almost a literal translation from his work.

* By mistake Polypodium was put on our drawing, and the error discovered too late to rectify.

"On the western side of the Volga there is an elevated salt plain of vast extent, but wholly uncultivated and uninhabited. On this plain, which furnishes all the neighbouring countries with salt, grows the *Boranez* or *Bornitsch*. This wonderful plant has the shape and appearance of a lamb, with feet, head, and tail distinctly formed. Boranez, in the language of Muscovy, signifies a little lamb, [Kæmpfer says that the sheep of the country are called by the people dwelling on the borders of the Caspian Sea, Borannek;] and a similar name is given to this fern. Its skin (continues Struys) is covered with a very white down, as soft as silk. The Tartars and Muscovites esteem it highly, and preserve it with great care in their houses, where I have seen many such lambs. The sailor who gave me one of these precious plants, found it in a wood, and had its skin made into an under-waistcoat. I learned at Astracan, from those who were best acquainted with the subject, that the lamb grows upon a stalk about three feet high; that the part by which it is sustained is a kind of navel, and that it turns itself round, and bends downwards to the herbage which serves for its food. They also said that it dries up, and pines away, when the grass fails. To this I objected, that the langour and occasional withering might be natural to it, as plants are accustomed to fade at certain times. To this they replied, that they had also once thought so, but that numerous experiments proved the contrary to be the fact; such as cutting away, or by other means corrupting or destroying the grass all around it; after which, they assured me, that it fell into a languishing state, and decayed insensibly. These persons also added, that the wolves are very fond of these vegetable lambs, and that they devour them with avidity, because they resemble in taste the animals whose name they bear; and that, in fact, they have *bones*, blood, and flesh; and hence they are called zoophytes, *i.e.* plant-animals. Many other things I was likewise told, which might however appear scarcely probable to such as have not seen them." *Struy's Travels*, vol. ii. pp. 28—31.)

This wonderful tale of Struys, like many other similar stories, although very much perverted, is based on truth. The rhizoma of the *Aspidium Baromez* does present, when the fronds are removed, a rude resemblance in its shape to the figure of an animal. It is covered by a soft downy substance, which may be compared to a silky fleece, but from which no under-waistcoat could be made. This fleece is of a reddish-brown colour, and not white. Like the stems of other ferns, the inner parts are soft and pulpy; and it so happens that they have something of a flesh colour, and that the sap is of a rich red hue, resembling blood. From these materials the fable has been composed; and from far less truth much more wonderful histories have sprung. Ferns often grow in barren soils; and, as these vegetable lambs are found on the salt plains, it is not improbable that in such situations they are often seen without grass in their vicinity: but that the herbage is consumed by the fern, or the plants devoured instead of lambs by wolves, although speculations which the wonder-seeking traveller might be tempted to indulge in, it need not be said are ornamental additions, introduced to suit the taste of the narrator, and to pander to that love of the marvellous which prevailed in the age in which he lived.

The Baromez possesses astringent properties, which are common to all ferns, in a somewhat greater degree than many other species. Hence it was formerly much in repute as a styptic, but it is now seldom, if ever, used. Fresh plants are often brought to the markets at Macao, but none have ever yet reached this country alive.

The *Aspidia*, or shield ferns, have been so named from the resemblance their indusia bear to little bucklers (ασπιδιον). *Aspidium fragrans* has been employed as a substitute for tea; and Dr. Buchanan states that the roots of *Nephrodium esculentum*, one of the species in a subgenus of *Aspidium*, are eaten in Nipaul. Mathiole attributes to Aspidia the virtue of inspiring prophetic dreams.

In the language of Flowers, Fern is the emblem of Reverie.

Amaryllis Undulata

AMARYLLIS UNDULATA.—WAVED-FLOWERED AMARYLLIS.

Class VI. HEXANDRIA.—Order I. MONOGYNIA.

Natural Order, AMARYLLIDEÆ.——THE NARCISSUS TRIBE.

The name of Amaryllis is supposed to be derived from a Greek word signifying splendour; "and is given," says Mr. Martyn, "with great propriety, to this splendid genus." In the flowers of this species of *Amaryllis*, a native of the Cape, and introduced about 1767, by John Blackburne, Esq., there is a considerable degree of beauty, and still more of singularity; and the plant is rendered more desirable, from its producing those flowers towards the close of autumn, so late as October and November, and that too both readily and abundantly. Being a tender bulb, it is usually kept during the winter in the greenhouse, or a well-secured frame. Is propagated by offsets, which are plentifully produced.

The Yellow Amaryllis, or Autumnal Narcissus, is a native of the South of France, Spain, Italy, and Thrace. The flowers seldom rise above four inches high; and somewhat resemble the Yellow Crocus. Like that, too, its leaves grow all the winter, after the flowers are past. It flowers in September, is very hardy, and increases fast by offsets. They may be transplanted any time from May to the end of July, but not later.

This plant prefers a light dry soil, and an open situation. It must not be under the dripping of trees. In mild seasons, there will often be, from the same root, a succession of flowers from September to the middle of November. It should be kept moderately moist. The Turks frequently plant this flower about the graves of their deceased friends.

The Alamasco Lily is a native of Virginia and Carolina, where it grows plentifully in the fields and woods, and makes a beautiful show. At their first appearance the flowers are of a fine carnation colour outside, but they fade almost to white: they blow from May to July or August.

It may be increased by offsets: the bulbs should be removed every second year, and if they begin to shoot while out of the earth, should be planted immediately. It should be kept moderatelymoist.

The Jacobœa Lily—in French, *le lys de St. Jaques* [St. James's lily]; *la croix de St. Jaques* [St. James's cross]; *la belle amarillis:* and in Italian, *giglio narciso giacobeo*—produces its flowers two or three times in the year, not at any regular season. It furnishes plenty of offsets, which should be taken off every year: the best time is in August, that they may take good root before winter. In removing the roots, great care should be taken not to break off their fibres. This flower may stand abroad in the summer, but in the winter should be lodged in an inhabited room. It must be kept moist.

This Lily is a native of South America: the flowers are large, of a deep red, and bend gracefully on one side of the stalk. Parkinson calls it the Indian Daffodil.

The Belladonna Lily—called by the French, *lis de Mexique* [Mexico lily]; *la belle dame;* and by the Italians, *narciso bella donna* [fine lady narcissus]—is a native of the West Indies, and grows on shady hills, and by the margins of streams. It is of a pale purple colour, inclining to white towards the centre. It was first brought to England from Portugal, and is very common in the Italian gardens, particularly in the neighbourhood of Florence, where it is sold in the markets under the name of Narcissus-belladonna. This Lily is very fragrant. It flowers about the end of September or the beginning of October, and, if the weather be favourable, will continue in bloom a month, or more. In June the leaves decay, and the root should be transplanted soon after: for, if it remains till July, it will send forth new fibres; and removal then would injure it. It should remain in the house in the winter, and be kept moderately moist.

The Superb, or riband Amaryllis, is supposed to be a native of the Cape: the flowers are very beautiful; a white ground striped with red. Unless hastened by artificial heat, they open in April or May. As this bulb rarely produces offsets, it should be procured in a pot, and treated as the last.

The long-leaved Lily, or Amaryllis, is a native of the Cape of Good Hope. The flower stem is seldom more than four inches high, but bears a profusion of purple flowers, opening in December. It may be treated as the Jacobœa Lily.

The Guernsey Lily, called in France *le lis de Japon,* is extremely handsome; it is a native of Japan, but has long been naturalized at Guernsey, from which place it is named. There are from eight to twelve flowers on one plant; the circumference of each flower about seven inches. When in full beauty it has the appearance of a fine gold tissue wrought on a rose-coloured ground; and when it begins to fade it is pink. If beheld in full sunshine, it seems studded with diamonds; but by candle-light looks rather as if it were spangled with fine gold-dust. When the flower begins to wither, the petals assume a deep crimson colour. The flowers begin to appear towards the end of August, and the head is usually three weeks gradually expanding.

The different species of Amaryllis are more or less poisonous, and *Hæmanthus toxicarius,* the old A. toxicaria, is the plant with which it is said the Hottentots poison their arrows. Weapons wetted with the juice of the bulb convey certain death by the slightest wound; dissolution is preceded by violent struggles, and efforts to vomit. The flesh of animals thus slain is not deteriorated, but is eaten by the natives. *Nerine sarniensis,* the Guernsey lily, which became naturalized in the islands of Jersey and Guernsey many years ago, by the wreck of a vessel from the Cape, is also reputed to be poisonous. Amaryllis ornata is said to be astringent; *Alstrœmeria salsilla* is considered useful as a diuretic and diaphoretic: and A. Ligtu is esteemed for its scent, it being as grateful as mignionette. A. salsilla is cultivated in the West Indies and in America,

especially in Peru, for the sake of its roots, which are there eaten as the tubers of the potato are in Europe. It is worthy of note that the Amaryllidæ lose much of their fragrance when the flowers become double, which is precisely the reverse of the multiplication of the petals in Rosaceous plants.

Great care ought to be taken by those unacquainted with botany in eating any plant which is not known to them. In many cases the scent, or the dingy appearance of the foliage in flowers, is sufficient to show the dangerous nature of the plant; yet it is unwise to presume on the absence of any visible indications.

The botanist indeed possesses infallible means of distinction, by which, under any circumstance of country or climate, he can detect the presence of poison by an examination of the structure of the vegetable. This knowledge is of incalculable value to the traveller in strange countries.

There prevailed at one time a great mortality among the cattle in some parts of Lapland, for which their owners were quite unable to account. Linnæus discovered that it was caused by the cattle having eaten of the water-hemlock (*Cicuta virosa*).

Animals are, however, provided with an instinct which enables them in most cases to perceive what kinds of food are wholesome for their own species. If a horse be placed in a pasture where the most noxious plants are growing, he will reject them; as is the case when he meets with the Œnánthe Phellándrium, which he will not touch.

The various objects of nature are not placed before us that we may extend our hand to gather them, and without any thought or pains to receive from them all their advantages; but to man are given intellectual powers to study, and bodily strength to labour for the extension of their value. All that is necessary to be known respecting our destiny for a future world, is revealed with great plainness by the Scriptures; but for our comfort in this world we are required to exert the capacities with which we are endowed in order to make the requisite discoveries. We may remark, in favour of cultivation, that even the soils most friendly to vegetation, commonly become by it more productive as the nature of the product is rendered more valuable. In every important attainment each one of us should endeavour to leave the world better than we found it, that, even as regards others, we may not have lived in vain.

It is a singular fact respecting plants containing poison, that some of their parts are not only free from an unwholesome quality, but are very nutritious. The potato, which when boiled is so valuable a vegetable, bears poison upon its branches. The leaves and flowers of the peach-tree contain a bitter and poisonous juice; while its fruit is wholesome and delicious, and its gum is of a gentle and mucilaginous nature.

Poisonous plants very generally present, either in their blossoms or leaves, a dingy uninviting appearance. The hemlock has its stem spotted with brownish purple, and its foliage of a dull green. The flowers of plants whose nature is deleterious are very often of a dark purple colour; but, as a proof that this distinction is not invariable, we may mention the hellebore or Christmas-rose. Few who looked upon it would think that a flower whose appearance was so pure and lovely could contain a quality so pernicious; for if it is taken in large quantities it produces giddiness, and even death; yet the botanist upon a slight inspection would feel assured of its dangerous nature.

There are around the centre of this flower a number of stamens or small threads. When blossoms have these numerous stamens inserted on the receptacle, we may conclude the plant to be of an unsafe nature. A familiar instance of this is the common buttercup (*Ranunculus A'cris*). The blossom of the apple-tree, of the plum, the peach, and other fruit-trees, have also a number of stamens, but these are seated on the calyx. If the leaves of the flower-cup and the white petals of the Christmas-rose be carefully pulled off one by one, you will find that the stamens remain behind. If the petals of the apple-blossom be thus used, the stamens will almost all come off with them; and this circumstance determines whether or not flowers thus formed are poisonous.

Two species of hellebore (*Helléborus viridis* and *Helleborus fœtidus*) grow wild in woods. Their flowers, which are of a dull yellowish green, have a very unpleasant scent, and the latter species has its calyx edged with a dingy purple, its leaves remaining green through the winter. Altogether its appearance is such that you would probably guess it to be a poisonous plant.

The Greek hellebore (*Helléborus officinális*) was thought by the ancients to invigorate the powers of the mind; and when they were about to engage in any undertaking which required a greater portion of mental energy than usual, they were accustomed to take a small dose of it. It derives its name from two Greek words which signify "to injure" and "food."

The purple foxglove (*Digitális Purpúrea*), perhaps the most beautiful ornament of our summer woods and hedges, is extremely deleterious in its nature; and although when used in small quantities it is a valuable remedy for some diseases, yet in the hands of the unskilful it is replete with danger. Its purple bells are large, and their white and spotted interior very handsome, but its colour is rather of a suspicious character, and to those accustomed to notice plants would indicate probable danger.

The monkshood (*Aconitum Napéllus*), found wild in some parts of England, but so common in gardens as that you can scarcely walk in one during summer without meeting it, is a very noxious plant. It is certainly the most gloomy, forbidding-looking flower in the whole parterre. You have perhaps often pulled off the purple hood or helmet of this flower to see the two long thread-like parts placed underneath, which children call the doves of Venus's chariot. This plant contains so much poison as that its scent alone is very injurious, and it ought upon no account to be smelled to, or rubbed over any part of the face. Indeed, were its properties more generally known, we should not have it so often in gardens to which the children of careful parents have access. This flower is called also wolfsbane, because the hunters who chase the wolves upon the Alps dip their arrows in an extract procured from the plant, which ensures the death of the wounded animal.

Hæmatoxylum Campechianum

HÆMATOXYLUM CAMPECHIANUM.—LOGWOOD TREE.

Class X. DECANDRIA.—Order I. MONOGYNIA.

Natural Order, LEGUMINOSÆ.——THE PEA TRIBE.

Logwood, or *Hæmatoxylum campechianum*, is a native of the western world, having been first discovered in the bays of Campeachy and Honduras, growing in the greatest luxuriance and abundance.

This tree seldom exceeds twenty or twenty-five feet in height; the trunk and branches are usually extremely crooked, the former does not often measure more than twenty inches in diameter: both trunk and branches are covered with a rough bark of a brownish colour; the smaller branches, which are very numerous, are beset with sharp spines; the leaves are abruptly pinnated, and consist of four or five pair of obcordate, obliquely nerved, sessile leaflets; the flowers are produced in terminal spikes or racemes; the calyx is divided into five oblong, obtuse segments, of a brownish purple colour; the corolla consists of five obtusely lanceolate, spreading petals, of a deep yellow colour; the stamens are downy, shorter than the petals, and crowned with smaller oval anthers; the style is about the length of the filament; the germen is obovate, and becomes a large double-valved pod, containing four or five kidney-shaped seeds.

It was known as a dye-wood as early as the reign of Elizabeth, but its use was forbidden by an Act of Parliament for "abolishing certain deceitful stuffs employed in dyeing cloths." The act sets forth "that logwood, or blockwood, of late years brought into this realm, is expressly prohibited to be used by dyers, the colours thereof being false and deceitful to the Queen's subjects at home, and discreditable beyond seas to our merchants and dyers." The injunction against the use of this valuable dye was rigorously enforced, and all logwood found was seized and condemned to be burnt. The English were probably at that time ignorant of the manner of applying this dye with proper mordants. The prohibition was continued until the year 1661, the words of the act by which it was then repealed stating "that the ingenious industry of these times hath taught the dyers of England the art of fixing colours made of logwood, so that by experience they are found as lasting and serviceable as the colour made with any other sort of dye-wood."

Immediately after this repeal logwood became in great request, and adventurous individuals were induced to make exertions to obtain a supply. This tree is one of the productions of the province of Yucatan, where the possessions of the Spaniards for a long time consisted only of the port of San Francisco de Campeachy, and two other inconsiderable towns, Merida and Valladolid. These could boast of but few inhabitants, and the rest of the province was wholly desolate, without any indication of the abode of man. The English, from the north continent of America, in the year 1662, tempted by the desire of pursuing a profitable occupation, ventured to cut down some of the logwood trees, which grew in great abundance on the uninhabited parts of the coast of Yucatan, and more especially in the bay of Campeachy. These persons soon formed a small colony in a spot remote from any Spanish settlement. They first raised their huts near Cape Catoche, and afterwards at Laguna de Terminos, which was found to be a more eligible situation. A few settlers thus continued to cut logwood unmolested by the Spaniards, but always with the feeling that they were intruders on the soil of other colonists.

After the treaty of Madrid in 1667, which was principally made for adjusting our commerce with Spain in Europe, British subjects were led to imagine that the respective interests of the two countries in the western hemisphere had also been accurately defined by the same treaty, and that the right of the English to cut logwood in those places of the Honduras, uninhabited by the Spaniards, was now clearly established. Many other persons were therefore in consequence induced to become logwood-cutters at Laguna de Terminos, so that in a year or two the number of settlers was greatly increased, and they transported large quantities of wood both to Jamaica and New England. The Spaniards for many years made no expostulations or complaints, and the English logwood-cutters continued to increase and flourish.

At first a sufficiency of wood was found near the coast, but when this after a time became exhausted, the settlers gradually penetrated farther into the country, where they planted Indian provisions and built houses. The jealousy of the Spaniards was at length excited by this growing colony, and suddenly evinced itself very unceremoniously by the seizure of two English ships laden with logwood. The settlers of Laguna immediately made reprisals by taking possession of a Spanish bark. These mutual acts of violence were only the commencement of a series of hostilities, and after suffering much annoyance, the English settlers were, in 1680, forcibly ejected by the Spaniards from the island of Trist and from Laguna de Terminos. This triumph on the part of their adversaries was, however, but transitory, and in two or three months the English were again cutting their logwood, and trading in it more extensively than ever. Notwithstanding the continued opposition of the Spaniards, the indefatigable settlers still contrived to increase their supply of that article, for whose possession they hazarded so much. Independent of the vexatious warfare by which they were constantly harassed, the lives of these poor wood-cutters were marked with hardship and privation; sometimes they worked up to their knees in water, and they were always tormented by the stings of innumerable insects.

We learn from Dampier that the commodities sent from Jamaica to procure a return cargo of logwood from Campeachy, were rum and sugar, "and very good commodities," says the sailor, "were these for the logwood-cutters, who were then (1675) about 250 men, most English." * * * "Neither was it long," he adds, "before we had these merchants come on board to visit us; we were but six men and a boy in the ship, and all little enough to entertain them: for besides what rum we sold by the gallon or firkin, we sold it made into punch, wherewith they grew frolicksome. We had none but small arms to fire at their drinking healths, and therefore the noise was not very great at a distance, but on board the vessel we were loud enough till all our liquor was spent. We took no money nor expected any, for logwood was what we came hither for, and we had of that in lieu of our commodities after the rate of five pound per ton, to be paid at the place where they cut it."

This occasional festivity, a prospect perhaps of making more than by regular labour in the British colonies, and the entire freedom from all restraint, were circumstances likely to recommend the life of a logwood-cutter in spite of its frequent hardships. It had such charms to the adventurous Dampier himself, that he soon returned and settled for ten or twelve months at Campeachy, and left that place with the intention of again returning for a longer stay. He thus quaintly describes the manner in which the logwood men lived.

"The logwood-cutters inhabit the creeks of the east and west lagunes in small companies, building their huts by the creeks' sides for the benefit of the sea breezes, as near the logwood groves as they can, removing often to be near their business: yet when they are settled in a good open place, they choose rather to go half a mile in their canvas to work than lose this convenience. Though they build their huts but slightly, yet they take care to thatch them very well with palm or palmet leaves, to prevent the rains, which are there very violent, from soaking in.

"For their bedding they raise a barbecue or wooden frame, three foot and a half above ground, on one side of the house, and stick up four stakes at each corner one to fasten their curtains, out of which there is no sleeping for moskitoes. Another frame they raise covered with earth, for a hearth to dress their victuals, and a third to sit at when they eat it. During the wet season, the land where the logwood grows is so overflowed, that they step from their beds into the water, perhaps two foot deep, and continue standing in the wet all day till they go to bed again; but nevertheless account it the best season for doing a good day's labour in.

"Some fell the trees, others saw and cut them into convenient logs, and one chips off the sap, and he is commonly the principal man; and when a tree is so thick that after it is logged it remains still too great a burthen for one man, we blow it up with gunpowder. The logwood-cutters are generally sturdy strong fellows, and will carry burthens of three or four hundred weight; but every man is left to his choice to carry what he pleaseth, and commonly they agree very well about it, for they are contented to labour very hard. * * * In some places, especially in the west creek of west lagune, they go a hunting wild cattle every Saturday, to provide themselves with beef for the week following. * * * When they have killed a beef they cut it into quarters, and taking out the bones, each man makes a hole in the middle of his quarter just big enough for his head to go through, then puts it on like a frock, and trudgeth home; and if he chanceth to tire, he cuts off some of it and throws it away."

The hides of these wild cattle, and many which they killed merely for their hides, were another valuable article of commerce to these hardy adventurers. Many of these men made considerable sums of money; and Dampier remarks, generally, that those who had the advantage of some education, were careful to improve their time, industrious and frugal; but that those who did not possess this advantage, "would extravagantly squander away their time and money in drinking and making bluster."

The logwood-tree grows abundantly throughout whole districts in Jamaica. Besides being cultivated as a dye-wood, it is used for other purposes. It is found well adapted for making strong full hedges, and is constantly planted for this purpose, no other fences being seen in many parts of the island. It is excellent for fuel, and, according to Dampier, is advantageously used in hardening or tempering steel. The wood of this tree is very hard and heavy; it is of a deep orange red colour; it yields its colour both to aqueous and spirituous menstruæ, but the latter extracts it the most readily and copiously. A decoction of this wood is of a deep violet or purple colour, which after a time changes to a yellowish tint, and becomes finally black. Like that of Brazil-wood it is made yellow by acids and deepened by alkalis. Although an adjective dye, it can be made very durable by the judicious application of mordants. With alum and tartar it produces a violet dye; with acetate of copper, a fine blue. But its principal use is in dyeing black, to which it gives a superior lustre, and in the production of all the different shades of grey. It contains a large proportion of gallic acid, whence it is that in combination with acetate of iron, the black colour is produced.

Logwood is imported into England in large blocks, at the very small import duty of three shillings per ton; that brought from foreign countries is chargeable with fifty per cent. higher duty. The average annual importation for the last five years has been 14,092 tons. The average price for the best logwood during that time has been £8 10s. per ton.

Several other vegetable substances are capable of producing a violet, purple, or claret colour. They are not used extensively, if at all, in modern manufactures.

Oxalis Caprina.

OXALIS CAPRINA.—GOAT'S-FOOT WOOD SORREL.

Class X. DECANDRIA.—Order IV. PENTAGYNIA.

Natural Order, OXALIDEÆ.——THE WOOD-SORREL TRIBE.

The Cape of Good-Hope, the most fertile source of curious and beautiful plants, affords numerous species of Wood Sorrel, and among others the present one, which is distinguished for the largeness of its blossoms; they are of a fine yellow colour, and when expanded by the influence of the sun, make a very conspicuous figure in the green-house; it begins to flower early in April, and continues about two months in bloom, many flowering stems arising from the same root.

This species is of free growth, and increases plentifully by bulbs, which are produced on the crown of the root as well as on its fibres; these when the plant decays should be taken up, and two or three of the largest planted in the middle of a pot filled with a mixture of bog earth and rotten leaves, well incorporated; towards winter the pots should be placed in the green-house, or in a frame so secured as perfectly to keep out frost.

Toxicologists (says Dr. Taylor on Poisons, p. 523) have not enumerated these plants among vegetable poisons; they have been commonly treated as pot-herbs. Wibmer states that they have a slightly irritant action on the stomach. Mr. Hanks has reported two cases, in one of which very serious symptoms were induced in a child who had eaten common sorrel (Rumex acetosa). A child, ætat. 6, suddenly lost his appetite, complained of sickness and heaviness in the head, and soon afterwards fainted. When he recovered he was unable to stand, and vomited a quantity of greenish-coloured matter. Insensibility came on with convulsions of the extremities. The cause of his illness was not then suspected, and the patient continued to suffer for several days, complaining of soreness of the epigastrium, and pain extending from the fauces to the stomach. There was also great thirst, and he occasionally vomited green vegetable matter. He recovered under treatment in about ten days. In the second case the patient suffered chiefly from severe pain in the bowels. The symptoms were soon relieved by the action of an emetic—which in this, as in all other cases of vegetable irritant poisoning, is the appropriate remedy. (Med. Gaz. vol. xl. page 69).

It appears somewhat difficult to refer these effects to the small quantity of binoxalate of potash present in these plants, yet, as in other instances, the recent vegetable may have a more powerful action than the quantity of the poisonous salt actually contained in it, would indicate. In the first of the two cases it was remarked by Mr. Hanks that four leeches which were applied to the skin, dropped off dead. A similar fact has been observed in poisoning by oxalic acid. This gentleman refers to a case of recent occurrence in Bath, in which the plant proved fatal to a child. Sorrel was found in its stomach, the lining membrane of which was injected and diffusely tinged.

Analysis.—The leaves and shoots of these plants admit of identification only by their botanical characters. If the quantity eaten be large, binoxalate of potash may be separated from the contents of the stomach by making a decoction. This must be filtered hot, as six-sevenths of the salt are precipitated from a hot solution by cooling.

"There is in Professor Kalm's Travels in North America, an account given of a species of Sumach called the poison-ash. Of this tree you may have perhaps heard, as its noxious qualities are supposed to have suggested the many tales that formerly obtained belief respecting the upas-tree. The shadow of this tree was said to cast death or sickness upon all over whom it fell; and every living creature who unwisely wandered under it was reported to fall an almost immediate victim to its dangerous properties. Several species of Sumach are planted in England, but the *Rhús toxicodéndron* will not, I believe, flourish in our country, although it has been successfully cultivated in France, and used there medicinally.

"An incision being made into the tree," says the Professor, "a whitish-yellow juice, which has a nauseous smell, comes out between the bark and the wood. This tree is not known for its good qualities, but greatly so for the effect of its poison, which, though it is noxious to some people, yet does not in the least affect others; and therefore one person can handle the tree as he pleases,—cut it—peel off the bark—rub it, or the wood, upon his hands—smell it—spread the juice upon his skin, and make more experiments with no inconvenience to himself; another person, on the contrary, dares not meddle with the tree while its wood is fresh; nor can he venture to touch a hand which has handled it, nor even to expose himself to the smoke of

a fire which is made with this wood, without soon feeling its bad effects, for the face, the hands, and frequently the whole body, swells excessively, and is affected with very acute pain. Sometimes blisters arise in great quantity, and make the sick person look as if he were infected with the leprosy. In some persons the external skin or cuticle peels off in a few days, as is the case when any person has burnt or scalded any part of his body. Nay, the nature of some persons will not allow them to approach the place where the tree grows, or to expose themselves to the wind when it carries the effluvia or exhalations of this tree with it, without letting them feel the inconvenience of the swelling which I have just now described. Their eyes are shut up for one or two days together by the swelling. I know two brothers, one of whom could, without danger, handle the tree in what manner he pleased, whereas the other could not come near it without swelling. A person sometimes does not know that he has touched this poisonous plant, or that he has been near it, before his face and hands show it by the swelling. I have known some old people who were much more affected by this tree than a viper; and I was acquainted with a person who, merely by the noxious exhalations of it, was swelled to such a degree that he was stiff as a log of wood, and could only be turned about in sheets.

"I have tried experiments of every kind with the poison-tree on myself. I have spread its juice upon my hands—cut and broke its branches—peeled off its bark, and rubbed my hands with it—smelt it—carried pieces of it in my bare hands, and repeated all this frequently without feeling the baneful effects so commonly annexed to it; but I, however, once experienced that the poison of the Sumach was not entirely without effect upon me. On a hot day in summer, when I was in some degree of perspiration, I cut a branch of the tree, and carried it in my hand for about half an hour together, and smelt at it now and then. I felt no effects from it in the evening, but next morning I awoke with a violent itching of the eye-lids and the parts thereabouts. It ceased after I had washed my eyes for awhile with cold water, but my eye-lids were very stiff all that day. At night the itching returned, and in the morning when I awoke I felt it as ill as the morning before, and I used the same remedy against it. However it continued almost for a whole week together, and my eyes were very red, and my eyelids with difficulty recovered during that time."

The Professor adds that he never had heard that the effects of the tree were more lasting than a few days. In some places the tree is destroyed, that it may not injure those who are obliged to labour near it.

This Sumach, whose pernicious influence was indeed scarcely exaggerated by the accounts of the Upas-tree, is a native of Pennsylvania, New Carolina, and some other places both of the eastern and western hemispheres, and is described as a tall and beautiful tree.

The fragrance of flowers is a source of continual delight to all accustomed to seek their enjoyment in the open air, either of the field or the garden. It affords surely as plain a manifestation of the goodness of God towards us as may be evinced by any indication of the usefulness of plants; since it proves that it is the design of God that life should not only be supported, but enjoyed. James Montgomery has beautifully said that "Flowers are in the book of Nature what the words 'God is love' are in that of Revelation." Yet the poisonous effluvia that I have mentioned as proceeding from some plants, and the offensive scents emitted by others, may at first sight appear to be at variance with my remarks on the benevolence by which the usual operations of nature are directed.

With regard to the poisonous influence diffused on the air, I may remark that it is evidently designed as a warning that we may not eat the plant; that the poison itself is in many instances very useful in medicine, when judiciously administered; and that in many cases, where it appears to render no service to man, it his owing to his ignorance of the purposes to which it might be applied. Many new and interesting discoveries are daily occurring which should convince us, that in the application of poisons there is yet much for the investigations of other days to reveal.

The scent of the carrion plants may, as Sir James Smith observes, be agreeable to the Hottentots, in whose country they abound; and you will not consider this surmise improbable, when you remember that to the Chinese a dish of rotten eggs, however revolting to our tastes, offers a dainty repast. Even where it is impossible to account for fetid odours by these means, we must consider that they are so placed as that it is in our power to avoid them; and that they do not, like the various sweet plants with which our earth is covered, meet us at every step of our country walk. Above all, we must never forget that this world is not in the state in which it came out from the hand of God, when, having looked upon all the works which he had made, he pronounced them "very good." There were no poisons in the Garden of Eden, for death or sickness would never have entered there; and it was not until God had cursed the earth for man's transgression that it bore briers and thorns. Beautiful and pleasant to the eye and ear as is nature, even yet,—retaining much to win our love and admiration of its beneficent Author,—it yet bears the traces of man's disobedience and consequent punishment.

Cuminum Cyminum

CUMINUM CYMINUM.—CUMIN.

Class V. PENTANDRIA.——Order II. DIGYNIA.

Natural Order, UMBELLATÆ.

Fig. (*a*) the seed.

This plant, which is the only species of Cuminum yet discovered, is thought to be the Κυμινον of Dioscorides. It is a native of Egypt and Ethiopia, but much cultivated in the islands of Sicily and Malta, from whence we are supplied with the seeds. It was cultivated in England in 1594, but our climate is not congenial to the growth of this plant. In its native soil it rises to the height of about nine or ten inches, "but I have never seen it grow more than four in England, where I have sometimes had the plant come so far as to flower very well, but never to produce good seeds." The root is annual, simple, and fibrous; the stalk is round, slender, branched, and often procumbent; the leaves are numerous, narrow, linear, pointed, grass-like, and of a deep green; the flowers are produced in numerous small umbels, which are usually composed of four radii, each supporting a partial umbel of the like number of flowers; both the general and partial involucre consist of three or four subulate unequal leaflets; the corolla is composed of five petals of a purple colour, unequal, bent inwards and notched at the apex; the filaments support simple anthers; the germen is ovate, large, and inferior; the two styles are minute, and terminated by simple stigmas; the fruit is ovate, and consists of two oblong, striated seeds, flat on the side by which they are united, and convex and striated on the other.

Qualities, &c.—Cumin seeds have a strong heavy odour, and a bitterish warm taste, accompanied with a slight aromatic flavour. They give out great part of their smell by infusion in water, but very little of their taste. In distillation with water, a considerable quantity of a yellow pungent oil rises, in the proportion of twelve ounces from twenty-five pounds of the fresh seeds. This essential oil has a strong ungrateful smell and flavour, like the seeds. Rectified spirit takes up both odour and taste, and yields, when evaporated, an extract containing the sensible qualities of the seeds.

Medical Properties and Uses.—Cumin seeds are said to be carminative and stomachic; and from the large proportion of essential oil they contain, we should be led to suppose them equal, if not superior, to many of the umbelliferous tribe. But they are seldom given internally, and almost the only use to which they are applied is as an external stimulant in discussing indolent tumours.

Off.	The Seed.
Off. Pp.	Emplastrum Cumini, L.

You often walk into the country, and it is well for you that you do; "God made the country, but man made the town," said one who looked upon Nature with the eye of a lover and a poet. What can be more exhilarating than the breezes that blow upon you as you wander upon the hill? When can you gaze upon aught that shall present to your mind so many new and beautiful images, as when your eye rests upon the wild scenes of nature? Whether you look upon the soft green carpet at your feet, or watch the changing and pillowy clouds that pass over the azure sky: whether you lie among the wild flowers beside the rippling stream, or actively pursue your way through the wood amid the entangling branches,—all is beauty and delight. Even though the remembrance of the falling leaf and the fading flower should intrude, yet can you never forget that spring will again revisit the earth to stock it with loveliness, and that what to you hall appear in the season of winter to have perished will flourish again in renewed youth and beauty; an emblem of that more glorious spring which shall one day renew with fresh-born powers and splendour the frail bodies of those whom we mournfully number with the dead.

Those parts of Africa immediately under and about the torrid zone, are remarkable for several instances of plants of a prodigious size; but none can exceed the immense baobab (*Adansonia digitata*), which flourishes in those countries bordering the Gambia, and some other parts of Africa. This tree received its name from M. Adanson, a French naturalist, who first described it. This gentleman resided several years in Africa, and greatly contributed by his information to our knowledge of African botany.

The French have called this tree the calabash-tree, and named the fruit which it produces monkey's-bread; but the natives of the countries near the Senegal denote it by the appellation of boui.

We are struck with surprise and admiration when we read of the beautiful and useful banian-tree of warm climates; a tree whose frequent description must have made you acquainted with its extraordinary size and nature; yet the baobab exceeds even this tree in size; for, although its branches do not extend to so great a distance, the dimensions of its trunk are far greater than that of any other tree.

Time seems to have little effect upon the baobab. Ages roll over it, and it still preserves its strength of frame and youthful appearance. It is yet young while nations which have arisen since its shoot first rose from the ground are known only by their names and past history: and cities have originated, crumbled to dust, and been forgotten, while it has gradually been advancing to maturity. It possesses the faculty of living for many centuries, and not only do its leaves remain green and beautiful, but the heart of its wood is light and tender. Its immense trunk, which is often 100 feet in circumference, though attaining to the height only of thirty feet, has in its interior a great quantity of pith, and when a mouldiness commences, as it frequently does in the internal part of the tree, caverns of twenty feet high and as many in diameter, are formed in the pith. In these caverns are deposited the bodies of the musicians, and of those bards who are found in most uncivilised countries, and who wander from place to place reciting verses and tales which their rude imaginations have framed. Yet it is not, as you may suppose, from a love and reverence to what they might deem the remains of genius, that they give them a resting-place which a poet might deem so appropriate; it is because they fancy that their superior endowments must have been imparted by an evil spirit; and, though honouring and fearing these bards while living, they imagine that the presence of their dead bodies would defile the land and render it unfruitful, and so contaminate the sea as that the fish would perish.

Many are the purposes to which the baobab is applied by the negroes. They use the leaves for giving a flavour to their broth, and for seasoning their meats. The fruit, which is in shape something like a cucumber but much larger, is when ripe full of a pleasant acid substance, which when dried in the sun becomes of a pulpy and spongy nature, and is still nutritious. When the fruit is in this dried state its rind is quite black and highly polished.

The Africans consider the fruit of this tree of great value as a remedy in many complaints, and as a preventive to indisposition in general. The negroes about Cape Verd possess the exclusive privilege of collecting the leaves and fruit of the baobabs which grow in that neighbourhood, and it is to the possession of this right, and their frequent application of its advantages, that the strength and courage for which they are remarkable are attributed by the Africans.

The blossoms of the baobab are extremely beautiful. They are of a bright white colour and immensely large. They spread open their surfaces as soon as the day has fully dawned upon them, and close again at the approach of night, so that they have, by a French naturalist, been called belles de jour (beauties of the day.)

The natives of Africa, though sunk in ignorance and accustomed to the daily sight of this phenomenon of nature, seem not so destitute of observation and natural taste as to behold it without interest; but, assembling in little groups during their season of flowering, they stand around the baobabs to await the rising of the sun; and as soon as the flowers, according to their own language, awake from their sleep, they address them with the words, "Good day, sweet lady!"

Not less remarkable than the tree which rises above, is the root which spreads its branches beneath, affording to the baobabs that firmness and support, without which the shock of one of the tempests, which in the course of ages must fiercely blow over its widely-extended surface, would level it with the dust. The central root is of an immense diameter, and extends below the ground to an unknown distance; though the depth of the root is generally supposed to be greater than the height of the tree. But when we consider the great extent of surface which is presented to the winds by the foliage and branches of this tree, we must perceive that this central root, however firm, would not alone have been enough to keep the tree upright. Very large fibres or branches, extending to the distance of 100 feet, and being often three feet in diameter, spread from the main root, and thus by this arrangement the baobab is enabled to resist the elements. In the valley of the Two Gagnacks, a place at some distance from the Gambia, M. Golberry, a French traveller, met with the largest tree of this kind that he saw throughout Africa. Its circumference was 104 feet, but the height of its trunk was not above thirty feet. Its branches extended in every direction, and were profusely covered with most beautiful foliage. The appearance of this astonishing tree was that of an arch, the surface of the baobabs being generally of a concave form. One part of the trunk of this patriarch of vegetation had been severed by the hand of decay, and presented an opening to one of those caverns before mentioned, of twenty feet high, which are formed by the pith.

"The entrance of this cavern," says our author, "was about seventeen feet high, and the negroes of the valley had given it a very regular form. The upper part was composed of two curved lines which formed an angle somewhat resembling the Gothic arches. On the two sides of this entrance were carvings of flowers and animals. The representations were indeed of an uncouth nature, but their very imperfection gave a kind of impressive effect which was felt on contemplating this antique monument, which was entirely the work of nature, except those savage ornaments which seemed to indicate an antiquity far more remote than the discovery of Africa by the Europeans. The negroes had also filled up the interior of the cavern, and, though they had left the rough and rugged forms which characterise such a place, they had nevertheless polished the surface, and in many places had carved the figures of men and animals."

Swietenia febrifuga

SWIETENIA FEBRIFUGA.—FEBRIFUGE MAHOGANY-TREE.

Class X. DECANDRIA.——Order I. MONOGYNIA.

Natural Order, CEDRELEÆ.

Fig. (*a*) represents the germen in outline magnified; (*b*) the capsule.

This plant is a native of the East Indies, growing in the mountainous parts of the Rajahmundry Circar, north of Samulcotah and Peddapore. The tree was first brought to the notice of European practitioners by Dr. Roxburgh, who discovered that its bark was a valuable astringent and tonic in intermittent fever. It is cultivated with three other species in the botanical garden at Calcutta. The Telingas call it *Soymida*, but on the Coromandel Coast it is commonly under the name of Red-wood tree, which its Tamool name implies. It flowers about the end of the cold, or beginning of the hot season, and ripens its seeds three or four months after.

The Febrifuge Mahogany is a lofty tree, with a straight trunk of great thickness, and covered with a gray, scabrous, cracked bark. The branches are numerous, the lower ones spreading, the upper ascending, forming a very large shady head. The leaves are alternate and abruptly pinnate, about a foot long, composed of three or four pairs of opposite, petioled, oval, obtuse or emarginated leaflets, each from three to five inches long and from two to three broad, smooth, shining, the lower side extending a little further down the petioles than the upper side, and of a bright green colour. The flowers are very numerous, middle-sized, whitish, and inodorous, and disposed in racemes which rise from the axillæ of the upper degenerate leaves, and hence may form very large, terminal, diffuse panicles, furnished with small bracteas. The calyx is inferior, synsepalous, 5-cleft, oval, deciduous; the nectary formed by the union of the lower part of the filaments is scarcely half the length of the petals, and bellied. The petals are five, obovate, obtuse, concave, and expanding. The filaments are ten, very short, inserted just within the mouth of the staminiferous tube. The germen is conical, surmounted by a thick tapering style, crowned with a large targetted stigma, shutting up the mouth of the nectary. The capsule is large, ovate, and 5-valved, with the valves gaping from the top. The receptacle in the centre is large, spongy, and 5-angled, the angles being sharp and connected with the sutures of the capsule. The seeds are many in each cell, imbricated, obliquely wedge-shaped, and enlarged by a long membranaceous wing, inserted into a brown speck, on the upper part of the excavations of the receptacle. The albumen is fleshy, the embryo straight, and the cotyledons flat and foliaceous.

The generic name Swietenia, was given to this tree by Jacquin, in honour of the celebrated Baron Van Swieten, first physician to Maria Theresa of Germany, author of some botanical tracts, and well known by his voluminous Commentaries on Boerhaave's Lectures.

The wood of this tree is of a dull red colour, remarkably hard and heavy; it is reckoned by the natives the most durable timber with which they are acquainted; on that account it is used in the building of their temples, and for various other useful purposes. The wood of another species of this genus, the common Mahogany (*Swietenia mahogoni*) is perhaps the most majestic of trees, for though some rise to a greater height, this tree, like the oak and the cedar, impresses the spectator with the strongest feelings of its firmness and duration. In the rich valleys among the mountains of Cuba, and those that open upon the bay of Honduras, the mahogany expands to so giant a trunk, divides into so many massy arms, and throws the shade of its shining green leaves, spotted with tufts of pearly flowers over so vast an extent of surface, that it is difficult to imagine a vegetable production combining in such a degree the qualities of elegance and strength, of beauty and sublimity. The precise period of its growth is not accurately known, but as when large it changes but little during the life of a man, the time of its arriving at maturity is probably not less than two hundred years. Some idea of its size, and also of its commercial value, may be formed from the fact that a single log, imported at Liverpool, weighed nearly seven tons, was in the first instance sold for 378*l.*, resold for 525*l.*, and would, had the dealers been certain of its quality, have been worth 1000*l.* It is a native of South America and the West India islands; has an aromatic, agreeable smell; its excellency for domestic purposes is well known in England, and its bark has been said to possess similar medicinal powers to the S. *febrifuga*.

As is the case with much other timber, the finest mahogany trees, both for size and quality, are not in the most accessible situations; and as it is always imported in large masses, the transportation of it for any distance overland is so difficult, that the very best trees, both on the island and on the main land—those

that grow in the rich inland valleys—defy the means of removal possessed by the natives. Masses of from six to eight tons are not very easily moved in any country; and in a mountainous and rocky one, where much attention is not paid to mechanical power, to move them is impossible. In Cuba the inhabitants have neither enterprise nor skill adequate to felling the mahogany trees, and transporting them to the shore, and thus the finest timber remains unused.

The first mention of it is that it was used in the repair of some of Sir Walter Raleigh's ships, at Trinidad, in 1597. Its finely variegated tints were admired, but in that age the dream of El Dorado caused matters of more value to be neglected. The first that was brought to England was about the beginning of last century; a few planks having been sent to Dr. Gibbons, of London, by a brother who was a West India captain. The Doctor was erecting a house in King Street, Covent Garden, and gave the planks to the workmen, who rejected it as being too hard. The Doctor's cabinet maker, named Wollaston, was employed to make a candle-box of it, and as he was sawing up the plank he also complained of the hardness of the timber; but when the candle-box was finished, it outshone in beauty all the Doctor's other furniture, and became an object of curiosity and exhibition. The wood was then taken into favour. Dr. Gibbons had a bureau made of it, and the Duchess of Buckingham another; and the despised mahogany now became a prominent article of luxury, and at the same time raised the fortune of the cabinet-maker by whom it had been at first so little regarded.

In the earliest periods it was much used by the Spaniards in ship-building. When first introduced by them it was very dark and hard, and without much of that beautiful variety of colour which now renders it superior to all other timber for cabinet work; but it was more durable, and took a higher polish with less labour. At that time it was called Madeira wood, though it appears to have come from San Domingo (Hayti) and the Bahamas. Of course it was wholly unknown to the ancients. It was first introduced in the sixteenth century, but it was not generally used in England till the eighteenth.

Qualities.—The bark is brittle, compact, of a light red colour internally; externally it is covered with a rough grey epidermis. Its taste is very bitter and astringent, at the same time not in any way nauseous or disagreeable; it yields its virtues to water both by infusion and decoction, and forms an admirable tincture prepared after the same way as the Tinctura Cinchonæ. The wood yields an extract very similar to Kino, but it is bitter and less astringent.

Medical Properties and Uses.—This bark, which was first recommended as a tonic by Dr. Roxburgh, has excited little attention amongst European practitioners, but in India it is highly prized by our army surgeons, who use it in all those cases which have been usually benefited by Cinchona. Mr. Breton, who published a paper on it in the eleventh volume of the Medico-Chirurgical Transactions, says, "In a number of cases of confirmed remittent bilious fevers (commonly called jungle fever), I have put this bark to the fairest possible test, and as success was uniformly the result of my repeated trials, I think I am warranted in concluding it to be an efficient substitute for the Peruvian bark. In common intermittent fevers, I have employed this bark very extensively, and with invariable success. I have also put this drug to the test of trial in three cases of grangrene and mortification, and in a case of suppurated liver; but as it was accompanied with auxiliaries, I cannot speak so positively of its actual efficacy in these instances. The uniform result, however, of so many experiments, satisfied my own mind that the Swietenia *febrifuga* answers every purpose of Peruvian bark in allaying irritability and restoring strength..... I trust I shall not be accused of being visionary or enthusiastic, when I avow my own conviction, after having long employed this bark in every case where Cinchona is indicated, that it forms a completely efficient substitute for the American drug, and that time alone is required to extend the general conviction of its efficacy, which every succeeding experiment will assuredly impress."

In a letter from Dr. Roxburgh, which accompanies Mr. Breton's paper, he states his continued belief in its efficacy, and recommends the bark to be collected when the sap begins to ascend freely, at which period it separates readily. He also believes the small, or rather, middling-sized branches, to yield the bark best suited for medical purposes; and it may be used as soon as it is dry enough for powdering. Messrs. Cochrane, Cheese, Grant and Davidson, &c. have tried it very extensively in India, and confirm all that has been advanced in its favour; and they seem to agree in its being better retained in the stomach when in substance, and in greater quantities than Cinchona usually is. Dr. Ainslie also recommends it to the extent of four or five drachms in the twenty-four hours, as a very efficacious medicine; but beyond that quantity, in every instance in which he tried it, it appeared to derange the nervous system, occasioning vertigo and subsequent stupor.

Doses.—Its dose in substance is from one to four, five, and six drachms a day.

Narcissus Angustifolius.

NARCISSUS ANGUSTIFOLIUS.—NARROW-LEAVED NARCISSUS.

Class VI. HEXANDRIA.—Order I. MONOGYNIA.

Natural Order, AMARYLLIDÆ.——THE NARCISSUS TRIBE.

Flowers solitary, cup of the nectary very short, membranous and notched at the edge, leaves bluntly keeled, with reflected edges. Flower pure white; the nectary edged with crimson; fragrant. Perennial; flowers in May; grows in dry open fields in England.

Under the name of Poeticus three different species of Narcissus, appearing perfectly distinct, though familiar in many respects, and regarded as such by the old botanists, viz.:

Narcissus albus circulo purpureo, v et vi. .....
Narcissus albus magno odoro flore circulo pallido, } C. Bauh.
Narcissus pallidus circulo luteo .....

Narcissus medio purpureus præcox....
Narcissus medio purpureus serotinus,.. } Park Parad.
Narcissus medio luteus vulgaris .....

The first of these, the one here figured, is evidently the poeticus of Linnæus, judging by the authors to whom he refers in the third edition of his *Spec. Pl.* which are indeed few in number, and confined chiefly to *Baub. Pin.* and *Dodonæus;* of the second and third he takes no notice.

The two former ones of these have the greatest affinity, inasmuch as they both produce for the most part only one flower, of a white colour, having a very short nectary, edged with red; to both of these Linnæus's specific description is equally applicable, as well as the trivial name of poeticus, given them indiscriminately by several of the old botanists, some regarding the first, some the second, as the plant mentioned by Theocritus, Virgil, and Ovid; unfortunately both of them are found to grow in the same meadows, and have the same obvious appearances, it is therefore utterly impossible to say which of the two was the Narcissus of the poets; if we have the greatest difficulty in ascertaining what the plants were of the botanists of those times, how are we to discover what the poets meant, who with very few exceptions have been unpardonably inattentive to the appearances of nature. The term Poeticus is equally suitable to both.

Ovid, in his Metamorphoses, tells us of the fate of the lovely Narcissus. A thousand nymphs loved the handsome youth, but suffered the pangs of unrequited love. Viewing himself in the crystal fount he became enamoured of his own image.

For as his own bright image he surveyed,
He fell in love with the fantastic shade;
And o'er the fair resemblance hung unmoved.
Nor knew, fond youth! it was himself he loved.—Ovid.

In consequence of this error he slighted the love of Echo, who witnessed his fruitless vows to the deceitful image. Addison thus translates the passage:—

She saw him in his present misery
Whom, spite of all her wrongs, she grieved to see;
She answered sadly to the lover's moan,
Sighed back his sighs, and groaned to every groan;
"Ah, youth! beloved in vain," Narcissus cries—
"Ah, youth! beloved in vain," the Nymph replies.

"Farewell," says he; the parting sound scarce fell
From his faint lips, but she replied, "Farewell."

Then on the wholesome earth he gasping lies,
Till death shuts up those self-admiring eyes.
To the cold shades his flitting ghost retires,
And in the Stygian waves itself admires.

For him the Naiads and Dryads mourn,
Whom the sad Echo answers in her turn!
And now the sister-nymphs prepare his urn;
When looking for his corpse, they only found
A rising stalk with yellow blossoms crowned.

The cup in the centre of the flower is supposed to contain the tears of Narcissus, to which Milton alludes; and Virgil in the following, where he is speaking of the occupations of the bees:—

——— ———"Pars intra septa domorum
Narcissi lacrymam, et lentum de cortice gluten,
Prima favis ponunt fundamina, deinde tenaces
Suspendunt ceras."———Virgil, Georgic 4.

"Some within the house lay tears of daffodils, and tough glue from the barks of trees, for the foundations of the combs, and then suspend the tenacious wax."—Martyn's Translation.

Thomson celebrates the sweetness of the Narcissus:

"No gradual bloom is wanting; from the bud,
First-born of Spring to Summer's musky tribes;
Nor hyacinths, of purest virgin white,
Low bent, and blushing inward; nor jonquils,
Of potent fragrance; nor Narcissus fair,
As o'er the fabled fountain hanging still."
Thomson's Spring.

"Narcissus, drooping on his rill,
Keeps his odorous beauty still."*

* *Translation from* Milton.

Virgil, in one passage in the fifth pastoral, speaks of the Narcissus as purple; and Mr. Davidson, in a note on that passage, observes that Dioscorides also speaks of a species of Narcissus which is purple:

"Pro molli violâ, pro purpureo narcisso."

"In lieu of the soft violet, in lieu of the empurpled Narcissus."—Davidson's Translation.

Several of them have a ring of purple:

"Bring rich carnations, flower de luces, lilies,
The checqued and purple-ringed daffodillies."—Ben Jonson.

The narcotic odour of the Narcissus was known to the ancients, indeed its name is said to be derived from (ναρκη) stupor; and hence it was one of their funereal flowers. The smell of many is, however, exceedingly grateful; but in confined apartments their exhalations are reputed to be noxious. The bulbs of these plants abound more or less in farina, containing an emetic principle, which in some, as the N. poeticus, N. Jonquilla, &c. is predominant, that they were called *bulbi vomitarii* by the older herbalists. *N. odorus, Pseudo-narcissus,* and *Tazetta,* have similar properties, and are administered on the continent in doses of five or ten grains to produce nausea, and thirty grains as an emetic.

The extract is the best form in which the active principle of the Narcissi can be exhibited medicinally. Two or three drachms of this preparation will destroy life in the course of a few hours. In doses of two or three grains it is regarded by some persons as almost a specific in hooping-cough. But Laennec says, in speaking of its effects in pertussis, "I have used this extract much, and have occasionally seen it effect surprisingly rapid cures; for instance, in five or six days; but this result is rare, and as a general remedy I find it much less efficacious than Belladonna."

A watery extract of Narcissus [Dr. Taylor on Poisons, p. 512] administered to dogs was found by Orfila to cause vomiting and other symptoms of local irritation, followed by death. It acts upon the nervous system, as well as locally upon the mucous membrane of the stomach, which was found deeply reddened in some of the experiments.

* The lover of either the garden or the country landscape, cannot have failed to remark the effect of the seasons upon the gradual development of its leaves and blossoms. Each month has its peculiar floral ornaments; and although the warmth or the coldness of the atmosphere has an influence in accelerating or retarding, by a short period, the unfolding of flowers, yet each month is so far constant in its processes that we look with confidence for the plants which generally grace it. January has its snowdrops, and June its roses. In the coldest weather the laurustinus and Christmas-rose are blooming in our gardens, and the furze gives its lustre to the lone moorland. Then that "bonnie gem" the spring-daisy—the morning-star of the flowers—appears here and there, and the groundsel puts forth its yellow blossoms. The garden beds present the fair snowdrop, and the rich golden luxuriance of the crocus. The boughs of the mezereon are clothed with lilac clusters; the hepaticas venture to unfold their small rose-coloured or blue flowers; the daffodils hang down their yellow cups; and the brilliant vases of the anemonies are open to the vernal showers; and then follow the many lovely blossoms of spring and summer.

The trees, as they resume their foliage in the early part of the year, exhibit, each month, a greater richness and variety of colour. The young buds of the honeysuckle often unfold in January; the gooseberry and lilac about February; and the hawthorn is getting gradually covered during April, and preparing for its show of May flowers, while the lime is as yet scarcely producing a leaf. Then, when the lilac-tree is full, not only of its foliage, but covered with its flowery clusters, and the birch leaves quiver to the winds, the elm and ash open their young buds, and a small leaf or two appears here and there on their branches. The garden acacia remains many days longer before it shews one token of spring, and the summer foliage has lent a rich glory to wood and garden before one full green leaf decks the stately walnut tree.

It was the opinion of Linnæus that the agriculturist might be guided in sowing his grain by the leafing of trees, and several naturalists have agreed with him. The old proverb, often acted upon by farmers, is founded on a similar principle.

"When the sloe-tree is white as a sheet,
Sow your barley whether it is dry or wet."

Mr. Templeton, in his Naturalist's Report, thus remarks upon this subject:—"As plants vegetate according to the temperature which prevails, and flowers blow in a regular and never-varying order, we have certain means which can never fail, for directing us when to begin and leave off the various operations of husbandry and gardening. Should we therefore find, after a few years' experience, that the best crops were uniformly produced when we sowed or planted at the time a particular tree or plant flowered, we have ever a sure guide, independent of astronomical revolutions, and can direct others to pursue the same plan in whatever country they are placed. Thus, if we have found that on sowing peas, or other seed, when the gooseberry flowered, they are ready for gathering when the corn-marigold flowered, we are pretty sure that each succeeding year the same uniformity will prevail." It is well known that our ancestors named some months according to their natural appearances: thus February was termed Sprout-kale, and March, Stormy-month; and Mr. Loudon tells us that the Indians of America plant their corn when the wild-plum blooms, or when the leaves of the oak are about the size of the squirrel's ears. The names of some of their months are also given according to their observations of vegetable changes. Thus, one is called by the poetical name of the budding-month, and one rather later is termed the flowering month; while the autumn is mournfully characterized by a word which signifies the fall of the leaf.

* Flowers and their Association.

Acacia Catechu.

ACACIA CATECHU.—CATECHU, OR MEDICINAL ACACIA.

Class XXIII. POLYGAMIA.—Order I. MONŒCIA.

Natural Order, LEGUMINOSÆ.—THE PEA TRIBE.

Professor Willdenow, who established the genus to which the subject of the present article belongs, first separated it from the Linnean Mimosa, by the characters of the fruit. Under Mimosa, he leaves such species as have a *lomentum*, or legume, separating into single-seeded joints. Of these he defined thirty-two, but the list now exceeds seventy; and to many of them being sensitive, the name Mimosa is very appropriate. Willdenow enumerated a hundred-and-two species of Acacia, but since his time, the discoveries of modern travellers have augmented the catalogue, so that upwards of three hundred now are known. They are all shrubby, perennial plants, with the exception of two or three species, which are herbaceous.

The Acacia *Catechu*, called in the province of Bahar, *coira* or *caira*, grows in great abundance in most of the mountainous districts of Hindustan. It is a large shrub or tree, fifteen or twenty feet high, covered with a thick, scabrous, ferruginous bark, which is very red within, remarkably astringent, and somewhat bitter. The branches are round, spreading irregularly, and downy when young; the older ones beset with numerous pairs of small recurved spines, originating in the stipules. The leaves are placed alternately on the younger branches, and are composed of from fifteen to thirty pair of pinnæ, about two inches long, each having numerous linear leaflets, (often forty pair,) hardly a quarter of an inch long, covered with short hairs, and of a green colour. The common petiole is sometimes furnished with a few recurved prickles, and a small gland is placed between the bases of each pair of the pinnæ. The flowers are hermaphrodite and male; axillary, on slender cylindrical spikes, three or four inches long, hairy, stalked, and of a pale yellow colour. The calyx is tubular, hairy, and 5-toothed; the corolla of one piece, whitish, divided into five segments, and twice the length of the calyx. The filaments are numerous, crowned with roundish anthers, and united at the base with the germen, which is oval, supporting a slender style, and terminated by a simple stigma. The fruit is a straight, smooth, pointed legume, or pod, three or four inches long, and less than one broad, containing six or eight roundish seeds.

Catechu was formerly supposed to be an earth, found in Japan; and the name *Terra Japonica*, by which it is still designated occasionally, tends to perpetuate the error. Mr. Kerr, assistant surgeon to the Civil Hospital in Bengal, was the first to describe the catechu tree, in Vol V. of "Medical Observations and Enquiries," which contains also a very correct figure. He says, that it is one of the most common trees to be met with in the uncultivated mountains of Rotas, and Pallamow, which are districts of Hindustan, in the province of Bahar, westward of Bengal; and is frequent in many other parts of that country, in various soils. The following is the mode of preparing the Extract, as described by that gentleman:—

"After felling the trees, the manufacturer carefully cuts off all the exterior white part of the wood. The interior coloured wood is cut into chips, with which he fills a narrow-mouthed unglazed earthen pot, pouring water upon them until he sees it among the upper chips: when this is half evaporated by boiling, the decoction, without straining, is poured into a flat earthen pot, and boiled to one third part; this is set in a cool place for one day, and afterwards evaporated by heat of the sun, stirring it several times in the day; when it is reduced to a considerable thickness, it is spread upon a mat or cloth which has previously been covered with the ashes of cow dung; this mass is divided into square or quadrangular pieces by a string, and completely dried by turning them frequently in the sun, until they are fit for sale.

"This extract is called *cutt* by the natives, by the English *cutch*, by authors *terra Japonica, catechu, cadtchu, cashow, cachou, caitchu, caitjoe, cachore, kaath, cate, &c.* In making the extract, the pale-brown wood is preferred, as it produces the fine whitish extract; the darker the wood is, the blacker the extract, and of less value. They are very careful in drying their pots upon the fire before they are used; but very negligent in cutting their chips upon the ground, and not straining the decoction; by which, and the dirty ashes they use, there must be a considerable quantity of earth in the extract, besides what avarice may prompt them to put into it. This the learned have proved from their laborious chemical decompositions. The extract thus prepared, is bought from the manufacturer for twelve or fifteen shillings the eighty pounds weight. I could never learn that the *terra Japonica* was produced from the *areca* or *betel-nut;* nor is it indeed credible that it should, notwithstanding that this is the general and received opinion, for the *betel-nut* is scarce ever so low in price as the *terra Japonica,* and was it to be extracted from thence, the price would be twenty times dearer than the present sales. Where the *areca nut* is in great plenty, they may perhaps join some of the fruit in making the extract, to answer a double purpose, for the most frequent use of both is in chewing them together as Europeans do tobacco; to these two substances they add a little shell lime, and a leaf called *pauw.* Here I am obliged to have recourse to the natives, whom from experience I have found to be very fallacious, therefore I will not answer for their veracity.

"The extract is much used in dyeing and painting chintz, and other cloths; combined with vitriolic salts, a black colour is produced; mixed with oil, they paint the beams and walls of houses to preserve them, and to defend them from the destructive white ants; it is sometimes mixed with their wall plaister.

"The black physicians of this country divide the diseases of mankind, as well as their medicines, into hot and cold; to the cold disease they oppose a hot medicine, and to the hot disease a cooling medicine, among which last, this Extract is supposed to be very powerful.

"The extract is a principal ingredient in one of their ointments of great repute, composed of blue vitriol four drachms, Japan earth four ounces, alum nine drachms, white resin four ounces; these are reduced to a fine powder, and mixed with the hand, adding olive oil ten ounces, and water sufficient to bring the mass to the proper consistence of an ointment. This ointment is used in every sore, from a fresh wound. A gentleman (Mr. Robert Hunter, Surgeon to the Patna Factory) of great practice, told me, he used this ointment with success beyond expectation; and he remarks, that whether it is owing to the laxity of the solids in this hot climate, or to some other cause, he is clearly of opinion, that our greasy ointments have not the desired effect. Certain it is they avoid that *empyreuma* which our ointments often receive in boiling which cannot be a promising application to a tender sore. As to the virtues of this Extract in European practice, I must be silent; they are already better described than I can pretend to do."

Qualities and Chemical Properties.—There are two kinds of this extract; one is sent from Bombay, the other from Bengal; but they differ from each other more in their external appearance, than in their chemical composition. The extract from Bombay is of a uniform texture, and of a red brown tint; its specific gravity being generally about 1.39. The extract from Bengal is more friable, and less consistent; its colour is like that of chocolate externally, but when broken its fracture presents chocolate and red-brown streaks. Its specific gravity is about 1.28. Their tastes are precisely similar, being astringent, but leaving in the mouth a sensation of sweetness. They do not deliquesce, or apparently change, by exposure to the air. Solutions copiously precipitate gelatine, and speedily tan skins. The strongest infusions of the two kinds do not differ sensibly in their nature or composition. Their colour is deep red-brown, and they communicate this tinge to paper; they slightly redden litmus paper; their taste is highly astringent, and they have no perceptible smell. The strongest infusions act upon the acids, in a manner analogous to the infusion of galls. Sulphuric and muriatic acids precipitate them. With strong nitrous acid they effervesce, and lose their power of precipitating solutions of isinglass and the salts of iron. The pure alkalies enter into union with their tannin, so as to prevent it from being acted upon by gelatine. Solutions of lime of strontia, and of barytes, poured into the infusions of catechu, produce copious precipitates. If carbonate of magnesia be added to the infusion, it loses its power of precipitating gelatine. The carbonates of potash, of soda, and of ammonia, also deprived them of their power of acting upon gelatine: though this power is restored by an acid. Solution of muriate of tin acts upon the infusion of catechu, in a manner similar to that in which it acts upon the infusion of galls. Both kinds of catechu are almost wholly soluble in large quantities of water; and to form a complete solution, about eighteen ounces of water, at 52°, are required to a hundred grains of extract. A considerable portion of both kinds of catechu is soluble in alcohol; but, after the action of the alcohol upon it, a substance remains, of a gelatinous appearance, and a light brown colour, which is soluble in water, and is analogous in its properties to gum or mucilage.

The peculiar extractive matter of the catechu, is much less soluble in water than the tanning principle; and when a small quantity of water is used to a large quantity of catechu, the quantity of tannin taken up is much greater than that of the extractive matter. The extractive matter is much more soluble in warm water than in cold; and when saturated, solutions of catechu are made in boiling water, a considerable quantity of extractive matter, in its pure state, falls down as the liquor cools. An aqueous solution of the extractive matter, when mixed with solutions of nitrate of alumine, and of muriate of tin, becomes slightly turbid. Nitrate of lead gives a dense brown precipitate. It is not precipitated by the mineral acids. Two hundred grains of Bombay Catechu, afforded 109 of tannin, 68 of extractive matter, 13 of mucilage, and 10 of sand, calcareous earth, and other impurities. The variety from Bengal gave, by a similar analysis, 97 of tannin, 73 of extractive matter, 16 of mucilage, and 14 of residual matter, and sand, with a small quantity of calcareous and aluminous earth, in two hundred grains.

Medical Properties and Uses.—Catechu is largely employed in the East, medicinally; but especially when used with the *betel-nut*, for chewing, a practice almost universal over the Indian continent.

In this country it is extensively employed for all those disorders in which a mild, unirritating, powerful astringent is required; such as chronic diarrhœa and dysentery; hœmorrhoids, &c., and the Bombay catechu, as containing the greatest portion of tannin, is that which is best adapted for medicinal use. It is one of the most valuable medicines of the class, and may be advantageously used in all cases where we wish to restrain immoderate discharges, especially when not attended by inflammatory action, or produced by congestion. With this indication, it is usually combined with the bitter tonic and aromatic barks. It is also used in the form of troches, mixed with gum-arabic and sugar, to dissolve slowly in the mouth; and in this form it often much assists the clearness of the voice in persons that have occasion to speak long in public. As a topical astringent it is used in scorbutic affections of the gums, and aphthous ulcerations of the mouth and fauces. Dr. Thompson has found the slow solution of a small piece in the mouth, "a certain remedy for the troublesome cough induced by a relaxed uvula, hanging into, and irritating the glottis."

Dose.—From gr. x. to ʒi. of the powder; or, ʒi. to ʒiij. of the Tincture

Off Prep.—Infusum Catechu, L. E. Tinctura Catechu, L. E. Electuarium Catechu compositum, E. D.

"The distilled water of the leaves of the Acacia contains prussic acid. The water has a strong smell of bitter almonds, and eight ounces of it, precipitated by nitrate of silver, yielded 4.15 grains of cyanide. The dried leaves gave no prussic acid on distillation."—[*Dr. Taylor on Poisons, p.* 719.]

Calendula Fragus.

CALENDULA TRAGUS.—BENDING-STALKED MARYGOLD.

Class XV. SYNGENESIA.—Order IV. POLYGAMIA NECESSARIA.

Natural Order, CORYMBIFERÆ.

The derivation of *Calendula* is uncertain: some say it is from the Calends. In English the old name for these flowers is Golds, or Rudds. Golds, or Gouldes, is a name given by the country people to a variety of yellow flowers; and the name of the Virgin Mary has been added to many plants which were anciently, for their beauty, named after Venus, of which the Marygold is one: Costmary, the Virgin Mary's Costus, is another. The French name it souci du jardin [garden marygold]; in Provence they call it gauche fer [left hand iron]; perhaps from its round form, like a shield which is borne on the left arm, in contradistinction to the sword, used in the right. The Italians call it calendula ortense, cappuccina, fiorrancio, a corruption of fiore arancio (orange flower) and fiore d'ogni mese, or flower of every month; which latter name gives countenance to the derivation of Calendula from the Calends.

This species of Marygold, a plant not uncommon in our collections of greenhouse plants, is a native of the Cape, and was introduced by Mr. Masson in 1774. It flowers in May and June, and is raised with facility from cuttings.

The Field Marygold is a native of most parts of Europe, and differs but little from the Garden Marygold, except in being altogether smaller.

The Garden Marygold grows naturally in the vineyards of France, the cornfields of Italy, and the orchards, fields, and gardens of Silesia. It was esteemed for its dazzling splendour long before its uses were discovered: it is a common ingredient in soups; and is said, as the old authors express it, "greatly to comfort the heart and the spirits." It has also been recommended as a medicine, but has not obtained much reputation in this way. Formerly it was considered as a wholesome ingredient in salads, but there is an acrimony in the whole plant which has even caused it to be commended as a destroyer of warts. Infused in vinegar, the Marygold is supposed to prevent infection, even that of the plague itself; and, so infused, both the leaves and flowers are found a powerful sudorific. It is, however, very probable that the efficacy of the infusion, in cases of infection, is more in the vinegar than in the flower infused in it. It has been asserted that the sting of a wasp, or a bee, is effectually cured by rubbing the part affected with a Marygold-flower.

Linnæus has observed, that the Marygold is usually open from nine in the morning to three in the afternoon. The circumstance attracted early notice, and on this account the plant has been termed *solisequa* (Sun-follower); and *solis sponsa*, Spouse of the Sun.

There is an allusion to this daily closing of the Marygold in the poems of Chatterton:

"The mary-budde that shutteth with the light."

Another in the Pastorals of W. Browne:

"But, maiden, see the day is waxen olde,
And 'gins to shut in with the marygold."

And a most beautiful one in Shakspeare's Winter's Tale:

"The marygold, that goes to bed with the sun,
And with him rises weeping."

And again in Cymbeline:

"Hark! hark! the lark at heaven's gate sings,
And Phœbus 'gins arise,
His steeds to water at those springs
On chaliced flowers that lies.

And winking marybuds begin
To ope their golden eyes;
With every thing that pretty bin,
My lady sweet arise."

Chaucer compares the effect of joy upon a person in sorrow to that of the morning sun upon these very sun-loving flowers:

"But right as floures through the colde night
Inclosed stoupen in her stalke lowe,
Redressen hem ayen the sunne bright
And spreden in hir kindlie by rowe;
Right so began his eyen up to throwe
This Troilus."

Shakspeare says of a beautiful woman sleeping:

"Her eyes like marygolds had sheathed their light,
And canopied in darkness sweetly lay,
Till they might open to adorn the day."

Herrick entreats the Daisy—

"Shut not so soon; the dull-eyed night
Has not as yet begun
To make a seizure on the light,
Or to seal up the sun:
No marygolds yet closed are,
No shadows yet appear;
Nor doth the early shepherd's star
Shine like a spangle here.
Stay but till my Julia close
Her life-begetting eye:
And let the whole world then dispose
Itself to live, or die."

There are many varieties of the Garden Marygold; one of which, the Proliferous, called by Gerarde the Fruitful Marygold, is, as he says, "called by the vulgar sort of women, Jack-an-apes-on-horseback."

Although this Marygold is generally yellow, there is a variety with purple flowers. The Cape Marygolds, specifically so called, as well as some others, natives of the Cape, have a deep purple centre or disk; and the florets around it, which are called the rays of the flower, are of a violet colour without, and a pure white within.

These kinds, like our common Garden Marygold, open when the sun shines, and close in the evening, and in cloudy weather. Two of these, the Grass-leaved, and the Shrubby, are perennial plants: the others are annual.

The Garden Marygold, and the Great, the Little, and the Naked-stalked Cape Marygolds, may be sown in April or in March; the first singly; the others, four of them, or five, in a pot ten inches wide. If they all come up, the two most promising should be preserved, and the rest rooted out; they will not bear transplanting. The Grass-leaved kind is best raised by a gardener; and should be housed, but not kept too warm, in the winter. The Shrubby Marygold is increased by cuttings planted in any of the summer months, and shaded from the sun until they have taken firm root, which will be in five or six weeks. In winter, this must be treated as the last.

The Marygolds must not be suffered to remain dry, but must have but little water at a time. Most of them flower from June till August; but the Garden Marygold continues in bloom till stopped by the frost.

Madame Lebrun in one of her charming pictures has represented grief as a young man pale and languishing; his head appears to be bowed down by the weight of a garland of marygolds. All the world knows this gilded flower, which has been made the emblem of distress of mind; or rather, we should say of that inquietude which is caused by uncertainty as to the sentiments of the *one* we love with a peculiar affection. The lover longs to know whether there be a reciprocal feeling in the heart of his mistress towards himself, or whether he has been buoying himself up with false hope. We verily believe that there are few who would not prefer to receive the dread intelligence that his suit is rejected than remain in this uncertain state. Anon he speculates on the glance of kindness he thought she gave him as she passed, for as Byron says,

"Glances beget sighs,
Sighs wishes, wishes words, and words a letter,
Which fly on wings of light-heeled Mercuries,
Who do such things because they know no better."

It has been observed that these flowers were formerly called Golds, a name by which Chaucer repeatedly mentions them: we are told, in the glossary, that Gold means a Sun-flower, but it has been remarked that this title also was formerly bestowed upon the Marygold: and the following passage is an additional argument for supposing Chaucer to have intended this flower rather than the enormous Sun-flower now so called:

"Eke eche at other threwe the flouris bright,
The prymerose, the violete, and the gold."—Court of Love.

He also bestows a garland of them upon Jealousy, yellow being the colour emblematical of that passion:

——————— "and Jalousie,
That wered of yelwe goldes a gerlond,
And had a cuckowe sitting in her haud"—The Knight's Tale.

It is rather an awkward circumstance, that the same flower should be emblematical both of jealousy and marriage. We learn from an old ballad, that

"Marygold is for marriage,
That would our minds suffice,
Lest that suspicion of us twain,
By any means should rise."

This flower should surely have been dedicated to Juno, the goddess of marriage, and certainly the most jealous of all beings, mortal or immortal.

The mournful signification of the marygold can be modified in various ways. United with roses it is the emblem of the sweeter pains of love; alone it expresses inquietude or ennui. Woven with other flowers it represents the inconstant chain of life, ever good and evil interwoven. In the East a bouquet of marygolds and poppies expresses this thought, "I will allay your pains." It is especially by these modifications that the sentiment of flowers renders the interpretation of our thoughts understood.

Margaret of Orleans, maternal ancestor of Henry IV., had for her device a marygold turning towards the sun, with these words, "*Je ne veux suivre que lui seul.*" That virtuous princess wished to express by this device that all her thoughts and all her affections turned towards heaven, as the marygold does to the sun.

During the months of July and August, the marygold emits small luminous sparks during the night. This quality it possesses in common with the nasturtium and many other flowers of the same colour.

The Marygold was at one time much employed as a carminative. Its use has, however, now become almost obsolete; and its chief consumption is to adulterate saffron, and by dairy-maids to give a rich color to their cheese and butter.

Rubia Tinctorum

RUBIA TINCTORUM.—DYER'S MADDER.

Class IV. TETRANDRIA.—Order I. MONOGYNIA.

Natural Order, STELLATÆ.—THE MADDER TRIBE.

Fig. (*a*), the flower magnified; (*b*), the calyx; (*c*), the pistillum; (*d*), the anther; (*e*), the fruit.

This species of Rubia is the Ερενθοδανον of Dioscorides. It is a perennial plant, a native of the South of Europe, the Levant, and Africa, flowering in June. It was first cultivated in this country by Gerarde, since which period its cultivation has become an object of national importance, from the immense consumption of the roots as a dye-stuff, by the calico printers and dyers.

The root of this plant is long, round, jointed, composed of succulent fibres, from which proceed numerous small thready side roots, which extend a considerable distance under the ground, and throw up many shoots, from which the plant may be propagated; the stems are procumbent, quadrangular, jointed, four or five feet in length, and covered with short hooked points, by which they adhere to the neighbouring plants for support, and subdivide into numerous branches, proceeding from the articulations; the leaves are placed in whorls, from four to six together, elliptical, pointed, rough, ciliated, and arise from the joints of the stems and branches; the flowers are small and terminal; the calyx is divided into four teeth; the corolla is of a yellow colour, campanulate, and cut at the brim into four ovate segments; the four filaments are short, and support simple erect anthers; the germen is inferior, double, supporting a slender style, dividing at the top into two globular stigmata; the germen becomes two round black berries, each containing an ovate seed.

The madder imported from Smyrna is more esteemed than the best Dutch madder, which ranks the first of that grown in Europe. The madder produced in the lower part of the Rhine is considered by Berthollet as not inferior to that of Zealand.

This is an adjective dye, but affords a permanent colour to cloth which a few days previously has been boiled for two or three hours in a solution of alum and tartar. Linen takes this dye with more difficulty than cotton. It is seldom used for silk, but is one of the most valuable dyeing drugs for a variety of purposes. It is an agent for dyeing many colours, and is therefore peculiarly adapted to the process of calico-printing, since by the use of different mordants, a variety of hues may be produced by immersion in the madder bath. One mordant in combining with it precipitates the colouring matter red, another purple, another black, and so of every possible shade from lilac to black, and from pink to deep red. If a portion of weld or quercitron be added to the madder, every shade from brown to orange may be produced. Tin, iron, and aluminous bases, as well as other mordants, are used for this purpose, dependant on the colour required. It is a matter of doubt and speculation with chemists whether these various colours are produced by the combination of the colouring principle of madder with the different mordants, by which a chemical change takes place, or whether several colouring matters are not really contained in the substance itself, and severally precipitated or retained by the varying action of the different agents to which it may be subjected. It is, however, certain that it contains at least two distinct colouring matters, a fawn and a red, and that the admixture of the former with the latter very much injures its clearness and beauty. In consequence of this, two kinds of red are obtained from madder. The first is simply called madder red, which contains the whole of the colouring matter. The other possesses far more lustre, and is much more valued; it is called Turkey red, because first obtained from the Levant. Its superior brilliancy is imparted in consequence of the red colouring matter being alone preserved; and while the tint communicated excels in brightness, it has the additional and great advantage of extreme durability.

The manner of producing this desirable effect was for a long period of time a subject of much interest and inquiry, the process used in Turkey being enveloped in mystery. The industry of the French artisans was stimulated by the interest which their government took in the discovery. Yet attempts at imitating this beautiful dye were long fruitless, and when at length they proved successful, this success was limited to one or two dye-houses. It was only by very slow degrees that it became more diffused, and then each individual who acquired the knowledge jealously guarded his own peculiar secrets which he had introduced in the process.

In 1804 the gold medal of the Society for the encouragement of Arts, &c. was voted to Sir H. C. Englefield, for his discovery of a pigment prepared from madder. He obtained a fine lake by many different processes, and found that the colour produced from the Smyrna was of a deeper and richer tint than any prepared from the Dutch madder. In pursuing his experiments he discovered that the colouring matter might be extracted from fresh madder, and thus not only all the expenses and difficulty attendant on the process for prepared madder might be avoided, but the cost of carriage would be one fourth less than for the roots; while separated from these the colouring matter might be kept for any length of time without danger of being spoiled. A further advantage would also arise in the quantity obtained, as *all* the colouring matter could be extracted; while in the manner which the dyers use the roots, a very considerable part of the colour is left in the refuse matter, and consequently wasted.

Mr. Field, in his valuable work "Chromatography," (page 179,) says—Superior red lakes are prepared from cochineal, lac, and kermes; but the best of all are those prepared from the root of the *rubia tinctoria*, or madder plant. Of the various red lakes the following are the principal:—

1. Rubric, or Madder, Lakes. These pigments are of various colours, of which we shall speak at present of the red or rose colours only; which have obtained, from their material, their hues, or their inventor, the various names of rose rubiate, rose madder, pink madder, and Field's lakes.

The pigments formerly called madder lakes were brick-reds of dull ochrous hues; but for many years past these lakes have been prepared perfectly transparent, and literally as beautiful and pure in colour as the rose; qualities in which they are unrivalled by the lakes and carmine of cochineal. The rose colours of madder have justly been considered as supplying a desideratum, and as the most valuable acquisition of the palette in modern times, since perfectly permanent transparent reds and rose colours were previously unknown to the art of painting.

These pigments are of hues warm or cool, from pure pink to the deepest rose colour;—they afford the purest and truest carnation colours known;—from permanent tints with white lead; and their transparency renders them perfect glazing or finishing colours. They are not liable to change by the action of either light or impure air, or by mixture with other pigments; but when not thoroughly edulcorated they are, in common with all lakes, tardy dryers in oil, the best remedy for which is the addition of a small portion of japanner's gold-size; or, as they are too beautiful and require saddening for the general uses of the painter, the addition of manganese brown, cappagh brown, or of burnt umber, as was the practice of the Venetian painters in the using of lake, adds to their powers and improves their drying in oils.

Notwithstanding they are equally beautiful and durable as water-colours, they do not work therein with the entire fulness and facility of cochineal lakes: when, therefore, permanence is of no consideration, the latter may still be preferred; but in those works in which the hues and tints of nature are to be imitated with pure effect and permanence, the rose colours of madder are become indispensable, and their powers in these respects have been established by experience from the palettes of our first masters during upwards of a quarter of a century. With respect to the future, too, there is this advantage attending these pigments, that they have naturally the peculiar quality of ultramarine, of improving in hue by time—their tendency being to their own specific prismatic red colour.

These pigments have been imitated on the Continent with various success, and in many instances by the lakes of lac, cochineal, and carthamus. The best we have seen is the *laque de garance*, the brightest of which was evidently tinged by the rouge of safflower, and proved inferior in durability to the genuine lake of madder. As, however, the colours of safflower, cochineal, and lac, are soluble in liquid ammonia and alkalies in general, which the true madder lakes or rubiates are not, the latter may be as easily tested by an alkali as ultramarine is by an acid; and if pure ammonia do not extract colour from a lake so tested, we may with general certainty pronounce it to be a true madder lake.

2. Liquid Rubiate, or *Liquid Madder Lake*, is a concentrated tincture of madder of the most beautiful and perfect rose colour and transparency. It is used as a water-colour only in its simple state diluted with pure water, with or without gum; it dries in oil by acting as a dryer to the oil. Mixed or ground with all other madder colours with or without gum, it forms combinations which work freely in simple water, and produce the most beautiful and permanent effects. The red of the definitive scale is of the pigments 1 and 2 combined. Liquid rubiate affords also a fine red ink, and is a durable stain which bears washing, for marking, painting, or printing on cotton or linen cloth, &c., and is peculiarly suited to the tinting of maps and charts permanently.

Sensible and Chemical Properties, &c.—The roots of madder have a bitter and somewhat austere taste: the odour is not strong, but rather unpleasant; the infusion made with boiling water is of a deep reddish brown; to cold water, alcohol, and the essential oils, the roots impart a bright red colour. Both the taste and odour of madder is imparted to the watery and alcoholic infusions. The colouring matter of madder is precipitated of a brownish red, by a solution of alum; of a deep lake or blood red colour, by lime water and the alkaline carbonates; and brown, by acetate of lead. The colouring matter of madder roots appear to differ from most other substances used for the purpose of dyeing, in having the peculiar property of tinging with a red colour the milk and bones of those animals which have fed upon it; a circumstance which was first noticed by Antoninus Mizaldus, and subsequently by Mr. Belchier, who published an account of a pig and a cock, whose bones became red by eating madder mixed with their food; since which time (from various experiments that have been made) it has been ascertained, that the colouring matter affects the bones in a very short time, and that the most solid part of the bones first receives the red colour, which gradually extends through the whole osseous substance.

Medical Properties and Uses.—Madder has been long regarded as a deobstruent, detergent, and diuretic, and more latterly as an emmenagogue. It has been chiefly used in jaundice, dropsy, and diseases proceeding from obstructions, particularly those of the liver and kidneys; but its efficacy in any disease scarcely warrants the encomiums that were formerly bestowed upon it. Its diuretic effects do not appear to be constant, and as an emmenagogue, its powers are neither uniform nor powerful. The roots of madder, when powdered, may be given in substance, in doses of from twenty to thirty grains three or four times a day; or in decoction, two ounces to a pint and a half of water, of which from one to three ounces may be taken three times a day.

Off. The Roots.

Monsonia lobata

MONSONIA LOBATA.—BROAD-LEAVED MONSONIA.

Class XVIII. POLYADELPHIA.—Order XI. DODECANDRIA.

Natural Order, GERANIACEÆ.—THE GERANIUM TRIBE.

The genus of which this charming plant is the most distinguished species, has been named in honour of Lady Anne Monson. The whole family are natives of the Cape, and in their habit and fructification bear great affinity to the geranium.

Mr. Colvill was so obliging as to inform us, that he had succeeded best in propagating it by planting cuttings of the root in pots of mould and plunging them in a tan-pit, watering them as occasion may require; in due time buds appear on the tops of the cuttings left out of the ground.

It is a native of the Cape, and was introduced by Mr. Masson, in 1774. Flowers in April and May.

Have you ever reflected (says a celebrated author) on the desolate appearance which the earth must have presented, at that eventful period, when the Almighty caused a wind to pass over it, and the waters were dried up; or that the crust of the earth having been broken, lifted up and overturned in a thousand different ways, large masses of bare projecting rocks must have remained entirely destitute of vegetation; though undoubtedly a sufficient quantity of herbage was rapidly produced for the pasturage of cattle, in those situations where a deposition of mould enabled such seeds to germinate as had been left on the receding of the waters.

But how was it possible for the necessary quantity of earth to accumulate on the barren flanks of those precipitous rocks, which are now mantled with a luxuriant drapery of herbs and flowers, or clothed with large forest trees? By means of that gradual deposition of vegetable mould, which is occasioned by the decay of crustaceous lichens, those insignificant productions which encrust the walls of ancient buildings, and vary the faces of the rocks with their multifarious tintings. They grow in the most inaccessible and arid situations, are nourished by such supplies of moisture as the air and the rain afford; and their decay produces a small quantity of fine earth, on which the tiled lichens fix themselves. These, in their turn, become a thin and meagre soil, on which the seeds of mosses are deposited by the wind, that random sower, where they grow and produce a pleasant green turf, fit for the reception of smaller plants. Grasses and flowers then begin to spring, and are succeeded by shrubs and trees, till at length, after the lapse of many ages, extensive woodlands sometimes clothe the boldest and most precipitous descents. This curious result is particularly observable in one of the passes of the Alps, near Inspruck. The mountains on each side are nearly perpendicular; and the vast forests which grow from their sides, cast a dismal shade over the road; but when loaded in winter with a weight of snow, they appear ready to fall, and crush the traveller as he passes beneath.

The beautiful vale of Tempe, on the contrary, offers a pleasing instance of the fine effect produced by progressive vegetation. Towards the lower part of this enchanting spot, the cliffs are peaked in a very singular manner, and form projecting angles on the vast perpendicular faces of rock which they present towards the chasm. Wherever the surface renders such an effort possible, nature, according to the depth of mould produced by the decay of lichens and of vegetables, has covered the summits and the ledges of the rocks with small oaks, arbutus's, and flowering shrubs. Whilst every interval between the water and the cliffs, is deeply shaded by the rich and widely spreading foliage of the plane, oak, and other forest-trees, many of which have attained to a remarkable size, and extend their shadows far over the margin of the stream.

Thus are we indebted to the gradual progress of vegetation for some imposing, and many graceful varieties in nature. A bare and rugged rock may, in some situations, produce a grand, but never a beautiful effect; tinged with mosses and lichens, its sterile aspect disappears, and it becomes an object of interest to the painter and botanist; when its rugged sides are mantled with flowers and foliage, it acquires a considerable degree of beauty; but when clothed with a deep and ancient wood, it becomes, especially if reflected by a sheet of water, one of the sublimest objects connected with natural scenery.

In the mountainous regions of the globe, this gradation of vegetable life assumes a decided character, and varies in grandeur and luxuriance according to circumstances and situation, a gradation which is particularly observable in many parts of Switzerland and Norway. In the former, the vallies and lower parts of the mountains are beautifully enriched with corn-fields, vineyards, and meadows. To these succeed forests of larch and pine; next, short grass, with several species of herbs adapted to the pasturage of cattle; then, mosses and lichens; and lastly, bare, rugged, and frowning rocks, covered with eternal snow. M. Esmark, member of the Norwegian Council of Mines, has in a tour in Norway, made many interesting experiments in order to determine the boundary line of vegetation towards the regions of perpetual ice. For this purpose he ascended Schnechuttun. It was shrouded with snow, and at one point where a partial thaw had taken place, discovered twenty-five layers, each of them separated by a rind of ice. The surface of the snow resembled waves, and the hollows were of an amethyst colour, an appearance which is often remarked on the Alps. The boundary line of vegetation differed considerably on the sides of the mountain, as likewise the kind of trees and shrubs, according as they were capable of bearing a greater or less degree of cold. Fruit trees throve and became productive, at the height of one thousand feet; barley and oats, in sheltered situations, from fifteen to eighteen hundred above the level of the sea. To these succeeded forests of pine, fir, and birch-trees, in regular gradations; higher up the mountain a few stunted birches, willows, and juniper trees were alone discoverable, and towards the frozen regions vegetation entirely disappeared.

Cryptogamous plants, in the northern parts of the temperate zone, are the first that cover the stony surface of the globe; these humble plants peep forth from beneath the snowy mantle which envelopes them, and are succeeded by other vegetable productions. On the borders of the torrid zone, and in the countries between the tropics, or approximating to them, the order of vegetation considerably varies, there, as in the Canary islands, Guinea, and on the rocky coasts of Peru, the pioneers of Flora's kingdom are the succulent plants, the pores of which, provided with an infinite number of orifices and cutaneous vessels, deprive the ambient air of the water which it holds in solution. Fixed in the crevices of volcanic rocks, they form the first layer of vegetable mould with which the currents of lava are encrusted, but when these lavas are scorified and retain a shining surface, as in the basaltic moulds of the north of Lanzarotta, the unfolding of vegetation is extremely slow, and ages roll away before shrubs and trees are enabled to take root. When, on the contrary, volcanic islands are covered with ashes and scoria, they lose the appearance of desolation which mark their origin, and robe themselves with a rich and brilliant covering.

The island of Teneriff exhibits five zones of plants, those of vines, laurels, pines, shrubs, and grasses. These zones are arranged in stages one above the other, and occupy, on the steep declivity of the Peak, a perpendicular height of one thousand seven hundred and fifty toises, while fifteen degrees farther north, on the Pyrenees, the snows already descend to thirteen or fourteen hundred toises of absolute elevation. If the plants of Teneriff do not reach the summit of the volcano, it is not because the perpetual snows, and the cold of the surrounding atmosphere, lay down limits which they cannot pass; it is the scorified lava of the Malpays, the powdered and barren pumice stone of the Piton, which offer insurmountable barriers to the vegetable tribes, and imperiously forbid their further migration towards the brink of the crater.

Pistacia Terebinthus

PISTACIA TEREBINTHUS.—CHIAN TURPENTINE TREE.

Class XX. DICŒCIA.—Order V. PENTANDRIA.

Natural Order, MACARDIACEÆ.—THE CASHEW TRIBE.

This tree affords the Chian, or Cyprus Turpentine. It is a native of the south of Europe and the north of Africa. It is cultivated in the islands of Scio, (the Chios of the ancients,) and Cyprus, and has been long known in this country as an ornamental plant. There is a fine tree in Chelsea Garden, near the gate, from which the accompanying figure was designed.

The Pistacia *Terebinthus* is a tree of low stature, seldom attaining the height of thirty or thirty-five feet. The trunk and branches are invested with a dark grey or rugged blackish bark, and bent in all directions. The leaves are pinnate, and consist of three pair of ovate-oblong, entire, smooth leaflets, with an odd one, all of a dark green colour, and somewhat curved backward. They are, in our climate, deciduous, and according to Sir James Ed. Smith appear by Dr. Sibthorpe's drawings, to be so in Greece. The young leaves have a beautiful reddish hue, and are thin, smooth, and shining. The flowers, which appear in May and June, are on different trees, in large, very compound panicles. In the stamineous ones the calyx consists of one leaf, and is divided into five deep equal segments. There is no corolla. The filaments are four or five in number, capillary, very short, and supporting large, brown, erect, oblong quadrangular anthers, of two cells bursting lengthwise. The pistilline flowers are placed on a common peduncle in alternate order, consisting of a calyx in three small squamous segments, and a roundish somewhat triangular germen, supporting three erect styles, with obovate, reflexed, clubbed stigmas. The fruit is a drupe, scarcely bigger than a large pea, ovate, smooth, a little compressed, and of a reddish colour. Galls of the same shape are found on the leaves, and very large pod-like ones, are often produced from the young branches, as the figures of the older botanists represent.

Cyprus or Chian turpentine, which is furnished by this tree, is procured by wounding the bark of the trunk in several places, during the month of July, leaving a space of about three inches between the wounds; from these the turpentine exudes and is received on stones, upon which it becomes condensed by the coldness of the night, so as to admit of being scraped off before sunrise. To free it from extraneous substances, it is again liquefied by the sun's heat, and pressed through a strainer, when it is fit for use. The quantity produced is so very inconsiderable, that large trees, sixty years old, are said to yield on an average only two pounds nine ounces and six drachms a piece; but in the eastern part of Cyprus and Chio, the trees afford somewhat more, though still so little as to render its price high, on which account it is much adulterated with the other turpentines.

Qualities.—The best Chio turpentine is generally about the consistence of thick honey; is very tenacious, clear, and almost transparent; of a white colour inclining to yellow, and of a fragrant smell; moderately warm to the taste, but free from acrimony and bitterness.

"*Volatile Oils,*" says Mr. Field, [Chromatography, p. 370], "procured by distillation from turpentine and other vegetal substances, are almost destitute of the strength of the expressed oils, having hardly more cementing power in painting than water alone, and are principally useful as solvents, and media of resinous and other substances introduced into vehicles and varnishes. In drying they partly evaporate, and partly by combination with oxygen form resins, and become fixed. They are not, however, liable to change colour like expressed oils of a drying nature; and, owing to their extreme fluidness, are useful diluents of the latter: they have also a bleaching quality, whereby they, in some degree, correct the tendency of drying and expressed oils to discolourment. Of essential oils, the most volatile, and nearest in this respect to alcohol is the oil of Sassafras, but that most used in painting is the *Oil of Turpentine;* the rectified oil, improperly called Spirit of Turpentine, &c. is preferable only on account of its being thinner, and more free from resin. By the action of oxygen upon it water is either generated or set free, and the oil becomes thickened, but is again rendered limpid by a boiling heat upon water, in which the oxygen and resin are separated from it. When coloured by heat or otherwise, oil of turpentine may be bleached by agitating some lime powder in it, which will carry down the colour."

Medical Properties and Uses.—The writings of Dioscorides, Pliny, and Aretæus, prove that the ancients admitted all the varieties of the turpentines into their materia medica. The first-named author, in his second book, classifies them as moist and dry. Pliny adopts the same arrangement; and both enume-

rate very fully the different species from which each variety is obtained. "Summæ species duæ, sicca et liquida. Sicca é pinu et picea: liquida è terebintho, larice, lentisco, cupresso." This enumeration accords very nearly with that of Tœniæ; by giving two ounces at a time, and repeating it in ounce doses if necessary; purging is generally produced, and the worm is usually evacuated lifeless. Its operation on the bowels, says Dr. Murray, as a cathartic in these large quantities, seems to prevent its absorption, and therefore obviates its action on the organs; and it has been stated in conformity to this, that the action, giving rise to strangury, is more likely to happen from small than large doses. Analogy leads to the employment of the same remedy, for the expulsion of other worms, and in some cases *lumbrici* have been expelled. It has also been employed under the form of enema, half an ounce being diffused in mucilage, or in water, by the medium of the yolk of an egg. The nauseating effect on the stomach is thus avoided, but this mode is frequently productive of pain.

Externally it is also employed as a rubefacient; and, what is very curious, if applied to the skin of a horse, dog, cat, and some other animals, it acts like scalding water, blisters the skin, and produces intense pain.

Its most important use, however, as a topical application is, as a remedy for extensive burns and scalds, when recently inflicted. Dr. Kentish, of Newcastle, appears to have been the first to introduce the oil of turpentine; and has published several cases, in which it was employed with the most beneficial effect. In applying this remedy, the great object is to avoid the *cooling process of evaporation*, and we are directed to proceed in the following manner; the injured parts are to be bathed two or three times over with the oil, or with spirits of wine, which answers the same purpose, heated by standing in hot water. After this a liniment, composed of the unguentum resinæ, softened with oil of turpentine, *(Linimentum terebinthinæ,)* is to be spread on soft cloth, and applied. This liniment is to be renewed only once in twenty-four hours, and, at the second dressing, the parts are to be washed with proof spirits. When the secretion of pus takes place, milder applications must be had recourse to, till the cure is effected. During the use of the turpentine it is of the utmost importance that the injured surface should be left uncovered as little as possible; it is therefore recommended to let the fresh plasters be quite ready before the old ones are removed, and then only to take off one piece at a time. When the inflammatory action has somewhat abated, the exciting means should also be diminished, and warm proof spirits or laudanum, may be substituted for the oil, and the unguentum resinæ flavæ is to be mixed with oleum camphoratum instead of turpentine. If this should be found too irritating, Dr. Kentish recommends ceratum plumbi acetatis, or the common calamine cerate. When this mode of treatment is adopted, æther or alcohol, and other stimulants, with opium, are to be immediately given in proportion to the degree of injury, and repeated as circumstances may require. In slight burns, in which the action of the part only is increased, he has not found any thing better for the first application than the heated oleum terebinthinæ and ceratum resinæ thinned with the same.

"*Oil of Turpentine.*—This very common liquid," says Dr. Taylor, [on Poisons, p. 528,] "which is so easily identified by its powerful odour, does not appear to exert any strong action as an irritant poison. It is often given with impunity in large doses to young children as a vermifuge. In the following case, reported by Dr. Evans, an infant, æt. fourteen months, swallowed four ounces by mistake, and recovered. The child was found two hours after the occurrence in a comatose state, pulse 130, tunica conjunctiva injected, pupils dilated, eyes watery, face flushed, breathing hurried—strangury, bowels painful, particularly along the course of the spermatic vessels. He was ordered an emetic of ipecacuanha. Vomiting was soon excited, and briskly kept up by tepid water. The contents of the stomach had a strong odour of turpentine. After the operation of the emetic, cold was applied to the head, and flannel cloths wrung out of hot water, to the epigastrium. At 6 p.m., ten hours after the accident, he was much improved, was quite lively, pulse 120; had passed eight small worms. On the following day he was decidedly better, slept well during the night; slight pain in the bowels on pressure. Castor-oil was given. From this time he improved daily, suffering only from a little excitement about the brain, and in four or five days he had perfectly recovered. (Brit. Amer. Journ. of Med. and Phys. Science, Nov. 1846.) The treatment contributed to recovery in this case. When this poison has been swallowed, it will be indicated by the odour of the breath.

"Although I believe there is no case on record of the destruction of life by oil of turpentine, it may excite a violent irritating action on the kidneys, tending to strangury. It may also cause hypercatharsis. The oil can hardly be called a poison, yet it may in some instances seriously affect the constitution.

"Analysis.—Oil of Turpentine would be sufficiently identified by its odour and inflammability. The fact of poisoning by it would be indicated by the odour in the breath, &c.

"Another kind of turpentine, the Balsam of Copaiba, has been known to cause serious symptoms. Half an ounce was administered to an adult as an enema. This was soon followed by pain in the stomach, vomiting, and general uneasiness. The man had convulsions, and for three days he was unable to speak. He slowly recovered. (Brit. and For. Med. Rev. xvii. Jan. 1840, 268.)"

Cardamine Pratensis

CARDAMINE PRATENSIS.—CUCKOW FLOWER.

Class XXV. TETRADYNAMIA.—Order II. SILIQUOSA.

Natural Order, SILIQUOSÆ.

Gen. Char. *Pods* opening elastically, with revolute valves. *Stigma* entire. *Calyx* somewhat gaping.

Spec. Char. *Leaves* pinnate. *Pinnæ of the radical leaves* roundish, dentated, or irregularly angular. *Pinnæ of the stem leaves* lanceolate.

This species of Cardamine (Σισυμβρίον ἕτερον of Dioscorides,) is indigenous to Britain, common in moist meadows and pastures, producing its flowers in April and May; it thrives best in shady situations. In the colour of its blossoms it is subject to much variation, they are usually white with a slight tinge of purple.* It probably acquired its common English name of Ladies-smock, from the white appearance which its blossoms give to the meadows where it abounds, resembling linen bleaching on the grass; a practice very general formerly, when most families spun and bleached their own linen; and that of cuckow flowers, from their blowing early in the spring. Old Gerarde says of it, "It flowers when the cuckowe doth begin to sing her pleasant notes without stammering." This plant also gives name to one of our most beautiful species of butterfly, the *Papilio Cardamine*, or orange-tip butterfly of Linnæus, the caterpillar of which feeds upon it.

The root is perennial, branched, and sends off many long, round fibres; the stalk rises about nine or ten inches high, upright, round, or very slightly angular, smooth, and a little branched towards the top; the radical leaves are frequently imperfect or altogether wanting; when present, spreading in a circular form, pinnated, the pinnæ roundish, slightly and irregularly angular, and stand upon very short petioles; the leaves upon the stem are erect, and consist of several pair of pinnæ, with an odd one; the pinnæ are opposite, spear-shaped, concave, pointed, and of a bright green; the flowers terminate the stem in a corymb; the peduncles are smooth and round; the calyx a perianthium, deciduous, composed of four leaves, which are oval, obtuse, membranous at the edge, hollow, and the alternate one gibbous at the base; the corolla is cruciform, the petals are inversely ovate, white, or very pale purple, veined, slightly emarginate, claws of a yellowish colour; the filaments are six, four long and two short, bearing small, oblong, incumbent yellow anthers, and invested at their base with four nectarious glands; the germen is round, slender, about the length of the filaments; style very short; stigma globular; seed vessel a cylindrical pod of two valves, about an inch in length, which opens elastically when the seeds are ripe, and rolls back in a spiral form; the seeds are numerous, round, somewhat flat, and of a yellowish colour.

We are told by Miller, that there are four varieties of this species of cardamine, viz., the single blossom, with white and purple flowers, and the double flower of both colours. These varieties are frequently intermixed in the same meadows. The leaves of this plant are gathered by the country people and eaten as salad, and was formerly called Bitter-cress.

Sensible Qualities. This plant has the same sensible qualities as water-cress; every part of the plant is inodorous; its taste is slightly bitter and pungent. A decoction of the flower is bitter.

Medical Properties and Uses. The officinal part (the flowers,) was first brought into notice as an anti-spasmodic, on the authority of Sir George Baker, who read a paper in the year 1767, at the London College, recommending these flowers as a remedy in convulsive disorders. In this account Sir George relates five cases wherein the flowers were successfully used, viz., two of chorea sancti Viti, one of spasmodic asthma, one of hemiplegia, accompanied with convulsions on the palsied side, and a case of remarkable spasmodic affections of the lower limbs; the two first were cured in less than a month; the two second were also happily restored, but in the last case the patient had only experienced some relief from the flowers, when she was seized with a fever which proved fatal. In the *Manuel Médicine Pratique*, &c. a case of in-

* This plant has occasionally been seen with double blossoms.

cubus is related by Dr. Odier, of Geneva, in which the flowers of cardamine proved efficacious after several other anti-spasmodic medicines had failed. We are told by Greeding, who exhibited it in large doses, that he experienced but one instance of its good effects out of a great number of cases. At present they are seldom used. They are said to be slightly diuretic and diaphoretic, but have otherwise little sensible operation. The leaves were formerly considered antiscorbutic. The dose of the flowers when dried and powdered, is from half a drachm to two drachms, given from two to four times in the twenty-four hours.

Off. The Flowers and Leaves.

April is full of the beauteous evidences of Spring. March has enough of them to make us grateful, but April, with her profusion of white and green, of her songs, and her bright little wings, confirms the promise. She may be said to have four charming manifestations of nature's wealth to herself,—the blossoming of the fruit trees, and leafing of the trees in general, the return of the singing birds, and the re-appearance of the butterflies. She is the elder and slenderer sister of May, dressed in more virgin apparel, and her fingers are dabbled with wet; but her colder cheek has still a bloom on it, and she prepares the country for her buxom sister with a world of good will.

"I never walk abroad at this season of the year, without feeling a sort of silent rupture in observing the gradual progress of vegetation; and fancying that every thing around me is susceptible of happiness.

"The productions of the vegetable kingdom excite in many but little interest, and they even deem them beneath the consideration of a philosophic mind. Yet the flowers of the earth can raise our thoughts to God, as effectually as the stars of heaven. He is their Creator, and surely nothing which he has made is undeserving the attention of a finite being.

"The rapid or gradual unfolding of a leaf, or flower, is scarcely less wonderful, when properly considered, than the formation of a world. 'Let there be light,' said the Eternal, 'and there was light.' He commanded 'that the earth should bring forth grass, the herb yielding seed after its kind, and the fruit-tree yielding fruit; and it obeyed him.' Each was affected by the fiat of Omnipotence; and shall man, weak man! to-day crawling on the earth, to-morrow consigned to oblivion, carelessly or scornfully disregard the minor wonders of creation,—the flowers of the field! They are beautiful, and infinitely varied; they have neither voice nor sound, yet they silently proclaim the guardian care of their Creator. Who can fully comprehend the skill with which they are contrived, for the hand which made them is divine! What art can imitate their tints and delicate proportions; for though they toil not, neither do they spin, Solomon in all his glory was not arrayed like one of them!

"The celebrated Herschel has conjectured that new worlds are continually forming, and he founds his opinion on the different aspects, and annually changing condensation of the nebulæ; some of them having gradually become less extended, till nuclei were formed in the midst, and assumed the appearance of fixed stars. This overpowering idea fills the mind with silent awe; yet the progress of vegetation continually proceeds around us, without exciting sentiments of either surprise or admiration: it is on our right hand and on our left, before us and behind us; but we perceive, or rather we regard it not.

"'But wandering oft, with brute unconscious gaze,
Man marks not God, marks not the mighty hand,
That, ever busy, wheels the silent spheres;
Works in the secret deep; shoots, streaming, thence,
The fair profusion that o'erspreads the spring:
And, as on earth this grateful change revolves,
With transport touches all the springs of life.'

"Virgil has elegantly given to the vernal season the epithet of blushing, as the shoots and buds of trees assume a ruddy appearance previously to throwing out their leaves. This is particularly observable in the beech. Nothing can be more striking than the effect produced by this interesting tree, when the bright blue sky, unbroken by a cloud, is seen through the waving branches, spangled with buds of various kinds; some of a light bronze colour, others clothed with silvery down, whilst here and there a light green leaf is just beginning to appear.

"The gradual formation and expanding of a leaf is one of the most beautiful processes in nature. It has been investigated with the assistance of a solar microscope, and is described by Mrs. Ibbetson, whose elaborate researches are well deserving of attention."

Arbutus Uva Ursi.

ARBUTUS [ARCTOSTAPHYLOS] UVA URSI.
TRAILING ARBUTUS; OR, RED BEAR-BERRY.

Class X. DECANDRIA.—Order I. MONOGYNIA.

Natural Order, ERICEÆ.—THE HEATH TRIBE.

Fig. (*a*) represents the calyx; (*b*) a flower cut open to show the stamens; (*c*) a stamen, with its anthers; (*d*) the berries; (*e*) a berry divided transversely, to show the seeds.

This pretty evergreen shrub is met with both in the old and new continents; for, in the northern parts of Europe, it abounds in Sweden, Lapland, and Iceland; it is extensively diffused over Scotland and the north of England, and extends southerly to the shores of the Mediterranean. It is also found in Siberia, and is represented as abundant on the banks of the Wolga; while in North America it grows from Hudson's Bay, as far south as the central parts of the United States.

With us, it occurs only in dry, stony, subalpine moors, covering the ground with beds of considerable extent, at the height of 1,500 feet and upwards above the level of the sea. It is common throughout the Highlands, and Western Islands of Scotland, and abounds at Dunkeld and Blair, the seats of the Duke of Athol, in Perthshire.

The root is perennial, long, and fibrous; sending off several round, woody, branched, spreading, procumbent stems, covered with a smooth deciduous bark. The leaves are not unlike those of the Box, alternate, evergreen, obtuse, ob-ovate, entire, attached by short stalks, coriaceous, smooth, convex, dark green, and wrinkled above; concave, finely reticulated and paler beneath, with the margin rounded, and in the young ones pubescent. The flowers which are produced in June, grow in small clusters at the extremity of the branches, each supported on a short red footstalk, and furnished with many acute coloured bracteas. They are usually five or six on each branch, drooping, and of a rose-red colour. The calyx is small, obtusely 5-toothed, and persistent. The corolla is ovate, smooth, transparent at the base, contracted at the mouth, with five short reflexed segments. The filaments are awl-shaped, downy, inserted at the base of the corolla, and crowned with reddish incumbent anthers, of two oval cells, opening by two terminal pores, and bearing a pair of short horns or spurs. The germen is roundish, bearing a cylindrical erect style, the length of the corolla; with a simple stigma. The fruit is a small, globular, smooth, depressed scarlet berry, containing a mealy pulp of an austere taste, and four or five angular seeds.

The plants of this genus are very nearly allied to those of the *Vaccinium*, or Whortle-berry, from which they differ principally in the situation of the berry, which in the Arbutus grows above the calyx; and in the Vaccinium below it. The present species may be distinguished from the Arbutus *alpina*, or Black Bear-berry, by the figure of the leaves, which in the former are smooth, and entire, while in the latter they are rugged, and serrated.

Qualities and Chemical Properties.—The leaves of this plant, which are the parts used in medicine, are slightly bitter, and astringent to the taste. The result of Dr. Bigelow's chemical trials with them, shows that they abound in tannin. A solution of jelly occasioning a copious precipitate; sulphate of iron an equally copious one of a black colour. Nitrate of mercury gives a percipitate of a light green colour: lime-water, of a brownish colour. The existence of gallic acid is somewhat problematical; and the quantity of resin, mucous matter, and extractive, provided they reside in the plant, must be minute; since the decoction is not rendered turbid by the addition of alcohol, or ether, nor the tincture by the addition of

water. Muriate of tin produced no precipitation from the decoction, though it did from the tincture. Acetate of lead, and nitrate of silver, gave large precipitates. Water takes up a larger portion of soluble matter than alcohol, and may therefore be considered the best menstruum. Professor Murray, of Gottingen, prefers the decoction to the infusion for medical purposes.

Medical Properties and Uses.—The Arbutus *Uva-ursi* is supposed by Clusius to be the *αρκτου σταφυλη* of Galen, celebrated by him as a remedy in hæmoptysis, and described as follows; "Uva-ursi in Ponto nascitur, planta humilis et fruticosa, folio Memæcyli, fructum ferens rubrum, rotundum, gustu austerum." But this description is too imperfect to satisfy us as to the identity of the plant.

As a diuretic, uva-ursi has been employed for calculous affections, especially when attended by purulent discharges. De Haen speaks very favourably of it in such cases; and as it has a tendency rather to decrease arterial action, than to augment it, it may be exhibited in almost every state of the system, and in nearly every variety of diseases. To its great efficacy in some of these affections, Ferrier gives his decided testimony. "I have," says he, "given this medicine in a considerable number of nephritic affections in very moderate doses, and always with manifest advantage. When the pain is very acute, and the pulse quick, I begin the cure with bleeding, and a gentle purgative composed of manna, and neutral salts. This purgative I repeat twice a week, and on the intermediate days direct the patient to take five grains of the uva-ursi, and half a grain of opium, three or four times a day, according to the urgency of the symptoms. This method always relieves, and generally effects a cure. Of sixteen patients treated in this manner, I have discharged twelve cured. On reckoning the cures, I do not rest on the cessation of a single fit, but require a permanent relief from pain. Many of my patients have used this remedy for several months together, before this end was attained. The fits became slighter, and at length ceased."

Conjoined with soda it is an admirable remedy for catarrhus vesicæ and for strangury, arising from blisters. It is frequently resorted to for diabetes, and after the febrile symptoms which usually attend that disease, have been reduced by copious bleeding, &c.

It was in consequence of its apparent virtue in counteracting a protracted disease attended with emaciation, and all the characteristics of hectic fever, that Dr. Bourne, of Oxford, was induced to make trial of its efficacy in phthisis pulmonalis, and other affections rendered in some measure analogous to genuine pulmonary consumption, by the decided existence of hectic irritation. After a recital of the case above alluded to, Dr. Bourne, in his work, minutely details the symptoms and method of treatment in sixteen separate cases, which are arranged under four general heads. The first eight are supposed to be instances of "true pulmonary consumption in its first stage," the ninth, tenth, and eleventh of this disorder in a confirmed state, attended with purulent expectoration; the two succeeding, some affections of the lungs attended with expectoration of pus, but which, nevertheless, were not genuine phthisis; and the three last were cases of hectic, in which the lungs appeared not to be primarily affected, or not at all. In the majority, however, of the above cases, the uva-ursi was not had recourse to without auxiliary combinations, and in some instances its employment was for a time entirely suspended. In the cases which are recited in the Appendix, the medicine appears to have received a fairer trial, and to have been attended with more decided effects. Extreme candour and moderation pervade the pages of Dr. Bourne's work; and although our own experience of uva-ursi in pulmonary affections does not authorize an opinion independently of that formed by a perusal of this book, Mr. Davie, of Framlingham, Suffolk, has given cases of its decidedly curative powers; and there can be little doubt of its being capable of allaying irritability of system; for, according to experiments instituted on the pulse by Dr. Mitchell, of Philadelphia, the beats were sometimes, not always, slightly increased after taking it, but in every case they soon sunk below the natural standard, and remained so for some time.

Of the powder of the leaves of uva-ursi, from one to two scruples may be given to most patients; and of a decoction, made from half an ounce of the leaves, boiled for ten minutes in a pint of water, and a wineglassful may be taken every hour.

The fruit of the Arbutus Uredo, taken in too great quantity, is said to be narcotic.

Ixia Longiflora

IXIA LONGIFLORA.—THE LONG FLOWER IXIA.

Class III. TRIANDRIA.—Order I. MONOGYNIA.

Natural Order, GLADIOLEÆ.

The spatha (or sheaths,) which inclose the germen is oblong, permanent. The flowers, which are produced in July, have six petals which are equal; three awl-shaped stamina. The germen oval, three-cornered, situated below the flower, with a single style.

There are many species of Ixia, varying in colour; they have bulbous roots, and may be increased by their offsets; but they will not flower well if parted oftener than every third year. In the autumn the stalks and leaves decay; the roots should then be put under shelter for the winter, unless it is designed to remove them; in which case they may be treated in the same manner as the Hyacinth, and bulbs in general, and may be replanted any time between October and January. They may stand abroad in the summer, and should then have a little water every evening: they should be sparingly watered in the winter, when left in the earth. Pots three inches in diameter, and five in depth, will be large enough for these plants: the bulbs should be covered about an inch deep.

The Cape of Good Hope, which is so fertile in bulbous flowers, gives birth to a great variety of Ixias. Thunberg mentions two in particular: "The *Ixia bulbifera*, a bulbous plant, with a red flower, grew here in the greatest abundance. When one approached the place where it grew, it seemed to be but thinly scattered over the field, but at a distance, the ground appeared as if it were covered with scarlet cloth. . . . . Here and here only was found, beside the brooks, a green variety of the *Ixia maculata*, another tall bulbous plant, which is as elegant as singular, with its long cluster of green flowers, growing out like an ear of corn, and is extremely scarce all over the world."

There is scarcely any situation, unfavourable to vegetation, where plants and flowers are not occasionally found. On one of the highest points in Europe, upwards of eight thousand feet above the level of the sea, at the foot of the Grand Jorasse, far up the stupendous glacier of the Mer de Glace, is a verdant garden, surrounded with snows that never melt. It is called Le Jardin, and is covered with Alpine plants, and a luxuriant herbage in quest of which the Swiss peasantry drive their cattle, at certain seasons of the year, over the icy sea.

Mr. Raffles mentions several instances of a similar description in his elegant and animated "Tour to the Glaciers of Savoy." In speaking of the vale of Chamouny, he notices the striking appearance of meadows surrounded by woods of unchanging verdure, and ice that never melts. This beautiful valley afforded a grand and imposing spectacle; it was eighteen miles in length, and about one in breadth, environed by mountains of appaling height, and presenting an endless variety of grand and terrific forms. Bare and rugged rocks were every where discoverable, the peaks of which, covered with snowy mantles, seemed to prop the heavens, and to forbid the daring footsteps of man, while from their sides and their brows were rolled down vast accumulations of ice, to blend their fantastic shapes and mingling hues with the softer scenery below; and, in the midst of all, the life and business of husbandry and pasturage, proceeded at an elevation of more than three thousand feet above the level of the sea.

The ocean has also its peculiar flora; "Millions of plants," says an elegant writer, "form shades to innumerable fishes, that never quit their native beds; all of which speak a language far more emphatic than the thunders of the Vatican. They have their mountains and their vallies, their plains, recesses, and coves, in which to strike root: inhabitants to wonder at their calyxes, petals, and corollas, and to feed upon their redundancies." In the Red Sea, and upon the coasts of Patagonia, as well as in the Atlantic, these plants rise from the bottom of the sea to the top; and are so numerous in some places as to interrupt the sailing of the largest ships.

Neither the extremes of heat nor cold are able entirely to impede the progress of vegetation. Lichens have been discovered near the margin of sulphureous volcanoes, and even on the icebergs of the Polar regions.

Plants have also been found growing on animal productions, which resemble in their construction those of the genus clavaria, the stalks and branches being generally terminated by tubercles, or little clubs. One

of this description is often found on the chrysalis of the cicada, sometimes even on the cicada itself. The root of the plant in general covers the body of the insect, and occasionally extends over its head. When these singular productions have been for some time preserved in spirits, the plant and chrysalis may be readily separated from each other.

The vegetable fly of the Caribbee islands is of a similar description. It was formerly supposed to be entirely an animal production, and that in the latter end of May the insect, resembling a drone in colour and appearance, buried itself in the earth, from whence it rose again in a vegetable form.

Dr. Hill having carefully examined several vegetable flies, ascertained the incorrectness of this opinion, and has thus stated the result of his investigation. The cicada is common to Martinique, and in its state of a nymph, in which the old authors call it lettigometra, it buries itself under dead leaves to wait its change; and when the season is unfavourable, many perish. The seeds of the clavaria find a proper bed in the body or chrysalis of the insect, and soon begin to germinate, whence the untaught inhabitants conjectured that the fly itself sprang up into a little tree, and some naturalists have figured the cicada flying with a trefoliate plant upon its back.

A variety of interesting plants of various descriptions are peculiar to bog-soil, and will not grow in any other. One of the most elegant of these is the *Andromeda polifolia*, or marsh-cistus. It is found in the north of England, and grows profusely in the marshy grounds of Lapland, which it decorates in the most agreeable manner. The flowers are blood-red before they expand, but when full grown the corollas are of a flesh-colour. It would be scarcely possible for any painter's art to imitate the lovely hue of this captivating little flower. When Linnæus observed it in the marshy lands of Lapland, he could not help comparing it to Andromeda, as described by the poets; and the more he considered their descriptions, the more applicable they appeared; so much so, indeed, that had the antient poets been acquainted with the marsh-cistus, they could scarcely have contrived a more apposite fable. The plant is always found on some little turfy hillock, in the midst of swamps, as Andromeda herself was chained to a rock in the sea, which bathed her feet, as the fresh water does the roots of the cistus. Dragons and venemous serpents surrounded her, as toads and other reptiles the abode of her vegetable prototype, and throw mud and water over its leaves and branches. As Andromeda cast down her blushing head through excessive affliction, so does the rosy-coloured flower hang its head, growing paler and paler till it withers away. At length Perseus, in the shape of summer, dries up the surrounding water, and destroys the monsters, restoring the damsel to liberty who then carries her head (the capsule) erect.

Many of our native plants appear independant of soil and situation, and are apparently endowed with instinctive motions, by means of which they are enabled to obviate every local inconvenience. The *bryonia dioica*, or red-berried bryony, which so often wanders over stony banks, and forms a beautiful drapery of lively green, gracefully diversified with small yellowish white flowers, is furnished with voluble stems, and twines round other plants from east to south-west. This is also invariably the case with the *humulus lupulus*, or common hop; the *lonicia periclymenum*, or common honeysuckle; the *tamus communis*, or lady-seal, and many others; whilst different kinds of creeping plants, such as the *convolvulus arvensis*, and *sepium*, or small and great bindweed; *phaseolus*, or kidney bean, &c., turn their spiral stems from west to south-east.

The branches of the honeysuckle shoot longitudinally, till they become unable to bear their own weight, and then strengthen themselves by changing into a spiral form. When they meet with other living branches of the same kind, they coalesce for mutual support, and one spiral turns to the right and the other to the left; thus seeking, by an instinctive impulse, some object on which to climb, and increasing the probability of finding one by the diversity of their course; for if the auxiliary branch be dead, the other uniformly winds itself round from right to left.

The seeds of the *cuscuta Europœa*, or greater dodder, open when ripe, and put forth a little spiral, which does not seek the earth to take root, but climbs up other plants, from which, by means of vessels, it draws its nourishment. When sown in a pot the dodder produces seeds, but the plants invariably die, unless they can attach themselves to something else. As soon as the roots have twined round an adjoining plant, they send out from their inner surface a number of little vesicles or papillæ, which fix themselves to the bark or rind. By degrees the longitudinal vessels of the stalk, which appear to have accompanied the vessels, shoot forth from their extremities, and make their way into the foster-plant, by dividing the vessels and insinuating themselves into the tenderest part of the stalk, in so intimate a manner as to be united with it.

Thus throughout the vegetable world a perfect system of mutual dependence every where subsists. The strong assist the weak, and the helpless plant which is unable to support itself, never seeks, without obtaining, the assistance of the great and powerful. What a beautiful and important lesson for the human race!

Convolvulus Scammonia.

CONVOLVULUS SCAMMONIA.—SYRIAN BINDWEED, OR SCAMMONY.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Natural Order, CONVOLVULACEÆ.—THE BINDWEED TRIBE.

Fig. (*a*) represents the corolla removed to show the stamens; (*b*) the germen and style.

This species, which amongst all the generic mutations that have been made still remains a convolvulus, much resembles our great Bindweed (*C. sepium*), it is a native of Turkey, Syria, Greece, Persia, and Cochinchina. According to Dr. Russell, it grows in abundance on the mountains between Aleppo and Latachea, from whence the greater part of the Scammony of commerce is obtained. It is a perennial plant, and is reported to have been cultivated in England by Gerarde in 1597.

The root is fleshy, tapering, from three to four feet in length, and from three to four inches in diameter, covered with a light grey bark, branched at the lower part, and abounding with a milky juice. It sends up several slender, cylindrical, somewhat villous stems, which entwine themselves round the plants in their neighbourhood, or spread themselves on the ground, and frequently extend to the length of fifteen or twenty feet. The leaves are arrow-shaped, alternate, smooth, pointed, of a bright green colour, with a tooth on the inner side of each, and supported on long pedicels. The flowers grow upon slender erect stems, of about six inches long, divided near the top into two small pedicles, an inch or two in length, each supporting a yellow bell-shaped flower, with its margin turned outwards and undivided. These flowers begin to be sent off from the stalk within about two feet from the root, and so continue through the whole length of the plant. The segments of the calyx are emarginate; bracteas awl-shaped, spreading remote from the flower. The form and structure of the other parts of the flower do not differ materially from the other species of convolvulus. The capsule is two-celled, containing two small pyramidal seeds.

Medical Properties and Uses.—Scammony was employed as a drastic purgative by Hippocrates and other Greek physicians; and although Ætius, Mesue, and many of the Arabians, aver that it ought never to be used, Rhazes appears to have formed an opinion in accordance with what modern experience teaches: he allows it to be taken cautiously, and adds, "bilem rubeam vehementer expellit." Those of the ancients who did employ it, prescribed it for gout, rheumatism, and many other chronic diseases; and they were also in the habit of ordering an acetous decoction of it to be mixed with meal, and applied in the form of a poultice to painful affections of the joints. Celsus expressly recommends it for worms, and practitioners of the present day frequently adopt his advice. Van Swieten ordered it to be given some hours before the accession of a fit of the ague; and it was supposed to change, or modify the particular disposition that led to the paroxysm, by the action that it excited; but it is a violent and unjustifiable method, and now very properly forgotten. Scammony is considered to be a valuable drastic purgative in cases of dropsy, torpor of the intestinal canal, hypochondriasis and mania; and when aloes produce unpleasant effects on the hæmorrhoidal vessels, it may generally be substituted with advantage; but it sometimes excites the intestinal canal too violently, the ancients, aware of this, attempted to modify its action by sulphur; while the moderns employ sugar, gum, or almonds; or what is preferable, combine it with other purgatives.

Scammony is an important article in the materia medica of *empirics*; and a combination of scammony, cream of tartar, and antimony, being recommended by Robert Dudley, Earl of Warwick, to Marcus Cornachinus, of Pisa, the latter wrote a work in favour of it, which passed through several editions; by which means its virtues became so notorious, that in France it is called *Poudre Cornachine, Poudre des Tribus, or Poudre des Trois Diables.*

Dose.—Scammony may be given in doses of from five to ten grains; but in smaller quantities when combined with other cathartics.

Off. Prep.—Confect Scammoneæ, *L. D.*
Pulv. Scammoneæ Comp. *L. E.*
Pulv. Sennæ Comp. *L.*
Extractum Colocynthidis Comp. *L. D.*

Scammony (says Dr. Russell) grows naturally on all that chain of mountains which extend from Antioch to Mount Lebanon, and on that part of Mount Taurus which is near to Maraash. I have also seen it in the plains between Latachia and Tripoly Syria, wherever there was any cover for it from the intense heat. From these places it is chiefly collected and brought to Aleppo; but as I have also seen some plants of it on the Mountain Amanus, I imagine it might probably be found on most of the hills in Syria, that produce any verdure; but the plundering disposition of the inhabitants renders it very unsafe to venture amongst them in search of it. The time of collecting the scammony is in the beginning of June. The people employed in it are only a few peasants, who travel over the country on purpose at that season. For as the plant grows entirely without culture, the scammony is the property of any person who will be at the pains to collect it. In many villages, about which it grows in the greatest plenty, the peasants either do not know it, or are unwilling to take the trouble of gathering it. The method of collecting it is this:—having cleared away the earth from the upper part of the root, they cut off the top in an oblique direction, about two inches below where

the stalks spring from it. Under the most depending part of the slope they fix a shell, or some other convenient receptacle, into which the milky juice generally flows. It is left then about twelve hours, which time is sufficient for the drawing off the whole juice; this however is in small quantity, each root affording but a very few drams. This milky juice from the several roots is put together, often into the leg of an old boot, for want of some more proper vessel, when in a little time it grows hard, and is the genuine scammony. It is the root only that produces this concrete; for the stalks and leaves near the root even when pressed, afford no signs of a milky juice; though, at the superior extremity of the plant, the leaves and stalks, when strongly pressed, do emit a very thin milky liquor: yet both the quantity is inconsiderable, and, according to the best observation I could make, the quality of it is different; for neither stalks, leaves, flowers, nor seeds, seem to have any purgative quality. Of this entirely pure scammony, but very little is brought to market, the greatest part of what is to be met with, being adulterated, if not by those who gather it, by those who buy it of them abroad; for the chief part of what is brought hither, passes through the hands of a few people chiefly Jews, who make it their business to go to the villages of any note, near which the scammony is collected; as Antioch, Shogre, Elib, Maraash, &c. and then buying it while is is yet soft, they have an opportunity of mixing it with such other things as suit their purpose best; as wheat-flour, ashes, or fine sand, all of which I have found it mixed with; but there seems to be some other ingredient (possibly the expressed juice) which makes it so very hard and indissolvable, that I have not been able to discover it to my satisfaction.

Qualities and Chemical Properties.—"Pure scammony is light, shining when broke, and crumbles with the least force when rubbed between the fingers. If a wetted finger but touches it, it turns immediately milky; and if broke and put into a glass of water, it soon dissolves into a milky liquor of a greenish cast; which, though it lets fall a small sediment after a little time, yet the liquor still retains its milky colour. The colour of scammony seems to be a mark of little consequence, for it is seen of all degrees, from almost jet black to a yellowish white, and all equally good in every respect upon trial; but though it differs so much in colour when in large pieces, yet all good scammony, when powdered, is nearly of the same colour, a brownish white. Those who gather it assert, that the difference of colour proceeds from the different methods of drying it; alleging, that what is dried in the sun will differ widely from what is dried in the shade." (*Russell.*) This description applies only to what is known in the markets by the name of Aleppo Scammony; but another sort brought from Smyrna is said to be the produce of the Periploca *Scammonia.*

Smyrna Scammony is in compact ponderous masses of a black colour, harder, and of a stronger smell and taste than the other kind, and full of impurities. The smell of scammony is peculiar and nauseous, its taste is bitter, and acrid; with water it forms a greenish coloured opaque liquid. Alcohol dissolves the greatest part of it. Its specific gravity is 1.235.

Vogel and Bouillon La Grange have analysed the two varieties as follows:—

Aleppo.		Smyrna.	
Resin	60	Resin	29
Gum	3	Gum	8
Extractive	2	Extractive	5
Vegetable *debris*, earth, &c.	35	Vegetable *debris*, &c.	58
	100		100

Mr. Gate, of Princes Street, Soho, who lived at a large wholesale druggist's in the city, has favoured us with the following receipt for a spurious kind of Scammony, with which the market is supplied by unprincipled men:—

Take of Gum Scammony, six pounds.
Gum Arabic, six pounds
Calomel, two ounces.
Aleppo Scammony, one pound.
Ivory Black, *q. s.*

The whole, after being powdered, is formed into a mass by the addition of water.

Dr. Taylor remarks (Poisons, p. 522) "that Scammony, which is much used in medicine, is capable of producing, in large doses, great irritation of the alimentary canal. The medicinal dose is from ten to twenty grains: in larger doses its principal effect is to produce hypercatharsis, and to operate injuriously like gamboge and jalap, although it is considered not to be so energetic as either of these substances.

"Analysis.—Scammony is usually seen under the form of a dark grey *powder.* Nitric acid turns it immediately brown. Sulphuric acid carbonizes it on contact. Iodine-water acquires with it slowly a deep purple colour. Potash dissolves it in part, and acquires a deep greenish-brown colour. A solution of green sulphate of iron produces with it no marked change; a solution of persulphate is slowly darkened. When heated on platina, it takes fire and burns with a smoky flame, leaving a grey alkaline ash.

"*Ipecacuanha* is not very likely to be mistaken for scammony; nevertheless it will be proper to state the results of some experiments on this powdered root. Ipecacuanha in powder has a fawn-brown colour: by strong nitric acid it is turned of a rich green colour, passing speedily to brown. Sulphuric acid carbonizes it on contact. Iodine-water gives to it a deep blue colour. Potash has no immediate effect, but the liquid becomes slowly brown. A solution of green sulphate of iron produces slowly in the mixture a deep greenish colour: the persulphate is speedily darkened. When heated on platina it burns without melting, and leaves a white ash. *Contrajerva* powder strikes a blue colour with strong nitric acid, before passing to a brown."

Ferula Assafœtida

FERULA ASSAFŒTIDA.—ASSAFŒTIDA.

Class V. PENTANDRIA.—Order II. DIGYNIA.

Natural Order, UMBELLIFERÆ.—THE UMBELLIFEROUS TRIBE.

Fig. (*a*) and (*b*) the seed; (*c*) the corolla, magnified.

This species of Ferula is a native of the south of Persia, growing on the mountains in the provinces of Chorasaan and Laar, where it is named *Hingisch*. The following description we copy from Kaempfer, who saw the plant growing during his travels in Asia.

"The root is perennial, tapering, ponderous, and attains the size of a man's arm or leg, covered with blackish coloured bark, and near the top beset with many strong rigid fibres; the internal substance is white, fleshy, and abounds with a thick, fœtid, milky juice; the stalk is simple, erect, straight, round, smooth, striated, herbaceous, about six or seven inches in circumference at the base, and rises to the height of two or three yards; the radical leaves are six or seven, nearly two feet long, bipinnate; the pinnæ are alternate, variously sinuated, lobed or lanceolate, smooth, of a deep green colour, and fœtid smell; the umbels are compound, plano-convex, terminal, and consist of many radii; the seeds are oval, flat, foliaceous, of a reddish brown colour, rough, marked with three longitudinal lines, have a porraceous smell, and a sharp bitter taste.

This plant is said to vary according to the situation and soil in which it grows, not only in the shape of the leaves, but in the nauseous quality of the juice with which they are impregnated, sometimes becoming so mild as to be eaten by the goats. The gum resin known in commerce under the name of Assafœtida, is the concrete juice of the root of this plant. When the plants are about four years old, the roots are sufficiently vigorous to yield the Assafœtida. In the provinces of Chorasaan it is procured in the following manner:—at the season when the leaves begin to decay, the oldest and most vigorous plants are selected, the earth from the upper part of the root is cleared away, the stem and leaves twisted off; it is then left in this state for forty days, being previously screened from the sun by covering it over with the decayed leaves: at the expiration of this time the covering is removed, and the top of the root cut off transversely, and left for forty-eight hours for the juice to exude, when it is scraped off by a proper instrument, and exposed to the sun to harden. This operation is repeated three times, after which the root is again covered up, and suffered to remain for eight or ten days, when it is again uncovered and another transverse section is made as before. In this way the Assafœtida is collected eight times, when the root becomes exhausted of its juice, and soon after perishes. The collecting of the Assafœtida is performed by the peasants who live in the neighbourhood of the mountains; the juice from a number of roots is collected at the same time, put together, and exposed to the sun to harden.

Sensible and Chemical Properties. Assafœtida comes to market in large irregular masses of a heterogeneous appearance, composed of various shining little lumps or grains, some of which are white, others of a brown or reddish colour, and some of a violet hue. Those masses are esteemed the best which are clear, of a pale reddish colour, and variegated with a great number of fine white tears. Assafœtida has a strong, fetid, and to most persons, a disagreeable odour, and a bitter, subacid taste; it becomes brittle by exposure to the air, but is not readily reduced to powder. It is composed chiefly of gum, resin, and essential oil, the latter of which is obtained by distillation, either with water or alcohol. Its odour and taste reside in the resin and oil, which are readily dissolved by ether and alcohol; hence the alcoholic and ethereal tinctures combine the virtues of this drug, the former dissolving three parts out of four. By trituration with water Assafœtida forms an opaque milky solution, about 60 per cent. being readily dissolved, which is chiefly extractive matter.

Medical Properties and Uses. Assafœtida is stimulant, expectorant, and antispasmodic, it is considered a more efficacious medicine than any of the other fetid gums; hence it has been much employed in hysteria, hypochondriasis, flatulent colics, tympanites, dyspepsia, and many nervous disorders; also as an anthelmintic, and as an emmenagogue, and for those peculiar convulsive and spasmodic symptoms which so often recur in the latter disease, it frequently proves the most efficacious remedy we possess. When we wish it to act immediately as an antispasmodic, it should be given in a fluid form, as that of the diluted tincture; when inflammatory symptoms are present, it should be used with caution, owing to its stimulant qualities, and it may be conveniently combined with nitre or antimonials according to the state of the patient. As a topical remedy it is applied in the form of plaster to promote suppuration in indolent tumours, and also in the form of enema in convulsions attending dentition, worms, flatulent colic, &c. Assafœtida may be taken in doses of from five to twenty grains, two, three, or more times a day.

Off. The Gum-resin.
Off. Pp. Enema Fœtida, D.
Mistura Assafœtidæ, L. D.
Tinctura Assafœtidæ, L. E. D.
Pilulæ Assafœtidæ Compositæ, E.

It also enters into the combination of many other compound medicines.

It is curious to observe the perspiration of plants, which is of various kinds. When of a watery nature, it can only be considered as a condensation of their insensible evaporation, perhaps resulting from some sudden change in the atmosphere. Groves of poplar, or willow, exhibit this phenomenon even in England, in hot calm weather; when drops of clear water trickle from their leaves, like a slight shower of rain. Sometimes it is of a saccharine nature, as De la Hire observed in orange-trees. It is more glutinous in the lime, more resinous in the poplar, as well as in the *cistus creticus*. In the *fractinus dictamnus albus*, it is a highly inflammable vapour. Ovid has made an elegant use of the resinous exudations of Lombardy poplars, which he supposes to be the tears of Phaeton's sisters, who were transformed into those trees. Such exudations must be considered as peculiar secretions; for, it has been observed that, manna may be scraped from the leaves of the *fraxinus ornus*, as well as procured by incisions from its stem. They are sometimes signs of unhealthiness in the plant; at least such appears to be the nature of one kind of honey-dew, to which the birch is subject, and which, in consequence of an unfavourable wind, covers its leaves in the form of a sweet secretion.

The perspiration of aquatic plants appears to be remarkably copious. Of these a considerable number grow constantly immersed in water; as most species of *potamogeton*, or pond-weed. Their leaves are peculiarly vascular, drying quickly in the air, and withering after a few minutes exposure to it.

The under sides of leaves are furnished with absorbing vessels: hence, in dry weather, they are seen to hang down. The truth of this assertion may be readily discovered by placing two leaves in water on different surfaces; the one that floats upon the lower side will continue fresh and green for many days and weeks; while the other will immediately decay. Of sixteen leaves tried by Bonnet, the aspin and lilac were the only ones that seemed to imbibe moisture equally well on both sides. The leaves of the white mulberry were in this respect very remarkable: those supplied by the upper surface began to wither in the course of a few days, while the others continued in perfection for nearly six months. Leaves of the hazel-nut and rose, not only imbibe sufficient moisture for their own support, but also nourish such as grow upon the same branch. This property is particularly obvious in the leaflet of a French-bean, which has been seen to preserve its neighbour fresh, and unwithered, for a considerable time.

It has been already observed, that the perspiration of aquatic plants is very copious; their absorbing powers are equally so, and they appear to be continually imbibing and emitting a quantity of moisture, much greater than has been observed in land-plants. Many aquatics, as the *nymphœa alba*, or white water-lily, float with only the upper surface of their leaves exposed to the air, which surface is so contrived that water will scarcely remain upon it. These leaves, though extremely juicy in their nature, dry with great rapidity, as does every part of the plant when gathered. It is extremely probable that they draw in water very copiously through their under sides, and perspire by the upper.

Pyrola umbellata.

PYROLA UMBELLATA.—UMBEL-FLOWERED WINTER-GREEN.

Class X. DECANDRIA.—Order I. MONOGYNIA.

Natural Order, PYROLACEÆ.—THE WINTER-GREEN TRIBE.

Fig. (*a*) the anthers separated; (*b*) a seed—from Lamarck.

Five species of this very natural genus are indigenous to Great Britain. The Pyrola *umbellata* has received a place in our national pharmacopœias; probably on account of the high eulogiums which have been bestowed upon it as a powerful tonic and diuretic: but although widely diffused throughout the northern hemisphere, this species is not found wild in Britain. It inhabits every part of the United States, and extends across the continent to the Shores of the Pacific Ocean. It is also found in the forests of Siberia, and in several of the northern parts of Europe and Asia. It delights only in shady woods, particularly of pine and birch, where it is protected from the rays of the sun, and nourished by the soil formed from the decomposition of leaves and other vegetable matter. The common appellations by which it is known in America are *Winter Green, Ground Holly, Rheumatism Weed, and Pippissewa.* It is the most beautiful of all the genus; producing its elegant umbels of cream-coloured flowers in June and July, and continues a long time in bloom.

Like most others of this genus, the Pyrola *umbellata* has a long creeping perennial root, sending up woody, somewhat angular, erect, or slightly procumbent stems, at various distances, a span high. The leaves grow in irregular whorls, of which there are generally two or three on each stem. They are lanceolate, wedge-shaped, strongly serrated, smooth, placed on short petioles, and of a deep shining green colour. The flowers, which are usually five, grow in a small corymb, on simple, nodding pedicles: the calyx is inferior, and consists of five roundish, permanent segments, much shorter than the corolla: the petals are five roundish, concave, spreading, cream-coloured, with a tinge of crimson at the base: the filaments are ten, awl-shaped, curved, supporting large, 2-celled purple anthers; each cell opening by a short, round, tubular orifice at the summit: the germen is roundish, depressed, furrowed, obscurely 5-lobed; the style cylindrical, half as long as the germen, and concealed by the stigma, which is large, peltate, covered with a viscid matter, and obscurely 5-rayed. The capsules are orbicular, depressed, with 5 valves, 5 cells, and 5 partitions from the central column. The seeds are very minute, oval, each contained in a membranous tunic, elongated at both ends.

Qualities and Chemical Properties.—The whole plant, when bruised, has a strong unpleasant odour, and a moderately warm pungent taste, partaking of both sweet and bitter. Alcohol appears to be the best menstruum for extracting the active properties of the plant, although water is capable of separating the greater part of its virtues. The decoction is of a deep brown, and strikes a black colour with the sulphate of iron.

A Dissertation "De Pyrola umbellata," published at Göttingen, by Dr. Wolf, in 1817, contains an elaborate chemical examination of this plant. As the result of his trials, this author concludes, that 100 parts of Pyrola *umbellata* contain about 18 of a bitter extractive principle, 2.04 of resin, 1.38 of tannin, a slight portion of gum, and the rest fibrous matter and earthy salts. The resin is adhesive, brownish, readily soluble in ether and alkalis, burning with flame and a resinous odour, leaving a white cinder.

Medical Properties and Uses.—"As we have no experience ourselves (says Professor Burnett) of the medical properties of this plant, we think that our readers will thank us for furnishing them with the opinions of Dr. Bigelow, Professor of Materia Medica, and Botany, in Harvard University, United States: The Pyrola *umbellata* though scarcely known as a medicine until within the last few years, has at the present day acquired a reputation of considerable extent in the treatment of various diseases. Its popular celebrity seems to have originated in its application to the treatment of fever and rheumatism; but the attention of physicians has been chiefly drawn towards its use in other complaints. The instances in which this plant has received favourable testimonies on medical authority, of its successful use, both in America and Europe, are principally the following. 1. As a palliative in strangury and nephritis. 2. As a diuretic in dropsy. 3. As an external stimulant, susceptible of useful application in various diseases.

"In the first of the cases, the Pyrola is entitled to attention and confidence. Some practioners in this country have employed it with advantage in the same cases in which the Arbutus *Uva ursi* is recommended. Dr. Wolf, the german writer, has reported a number of cases of ischuria and dysuria, arising from various causes in which the Pyrola, given in infusion, produced the most evident relief, and took precedence of a variety of remedies which had been tried. His method of administering it was to give a table spoonful of a strong infusion, with a little syrup, every hour. In all the cases he has detailed, small as the dose was, it gave relief in a very short time. In one case its effect was so distinctly marked, that the disease returned whenever the medicine was omitted, and was removed on resuming its use. A tonic operation attended its other effects, so that the appetite was improved, and digestion promoted during the period of its employment.

"The diuretic properties of the Pyrola *umbellata*, seem to have been fully illustrated by Dr. W. Somerville in a paper on this vegetable, published in the 5th volume of the London Medico-Chirurgical Transactions. The facts presented by this physician afford satisfactory evidence of the power of this medi-

cine to promote the renal excretion, and to afford relief to patients afflicted with dropsy in its various forms The most distinguished case presented by him, is that of Sir James Craig, the British governor in Canada, who was labouring under a general dropsy, which in its progress had assumed the forms of hydrothorax, anasarca and ascites, and which was combined with different organic diseases, especially of the liver. After having tried with little or temporary success, almost every variety of diuretic and cathartic medicines, and submitted twice to the operation of tapping, the patient had recourse to a strong infusion of the Pyrola, in the quantity of a pint every twenty-four hours. Although the case was altogether an unpromising one, yet the plant gave relief, not only in the first, but in the subsequent instances of its use. It produced an augmentation of strength, and an invigorated appetite.

"Several other cases of dropsy are detailed in Dr. Somerville's paper, in which the Pyrola was administered by himself and by other practitioners with decided advantage. Dr. Satterly and Dr. Marcet are among those who have added their observations to the testimonies in its favour. Dr. Somerville found his patients to remark, that an agreeable sensation was perceived in the stomach soon after taking the Pyrola, and that this was followed in some instances by an extraordinary increase of appetite. He considers it as having in this respect a great advantage over other diuretics, none of which are agreeable to the stomach, and most of them very offensive to it. He further states, that no circumstance had occurred within his own experience or information, to forbid its use in any form, or to limit the dose.

"Such are the most important facts which to my knowledge have been published respecting the internal use of the Pyrola *umbellata*. I have administered this plant on various occasions, and attended to its mode of operation. In a number of dropsical cases, when first given, it made a distinct and evident impression on the disease, communicating an increased activity to the absorbents, followed by a great augmentation of the excretion from the kidnies. The benefit, however, with me, has been in most instances temporary, and it was found better to omit the medicine for a time, and to resume it afresh, than to continue it until the system had become insensible to its stimulus. After suspending it for a week or two, the same distinct operation took place on returning to its use, as had been manifested on the first trial. It proved in almost every instance, a very acceptable medicine to the patient, and was preferred both for its sensible qualities and its effects on the stomach, to other diuretics and alteratives which had been prescribed.

"The Pyrola has been considerably employed as an external application in tumours and ulcers of various descriptions. It first acquired notice in consequence of some newspaper attestations of its efficacy in the cure of cancer. Those persons who know how seldom genuine cancers occur in comparison with reputed ones, will be more ready to allow it the character of curing ulcerous, than really cancerous affections. There are undoubtedly many ulcers, and those frequently of a malignant kind, which are benefited by antiseptic stimulants; and to such the Pyrola may be useful. But of its efficacy in real cancer we require more evidence than is at present possessed, before we ascribe to it the power of controlling so formidable a malady.

"Dr. Millar, of Franklin, informs us that he has used a decoction and cataplasm of this plant, with apparent success in various chronic indurated swellings. It acts as a topical stimulant, and when long continued, not unfrequently vesicates. Tumours of long standing have in several instances disappeared under its use."

Sir Walter Farquhar, it appears from Dr. Somerville's papers, had also used the Pyrola *umbellata* in the case of a lady labouring under ascites, in which case the diuretic effects were very striking. The same gentleman likewise states that "the extract was prescribed in three hopeless cases of ascites, accompanied with unequivocal marks of organic derangement: the patients were stimulated powerfully, but in the third the individual complained of sickness at the stomach, and did not persevere in taking the medicine." Dr. Barton, author of "the Vegetable Materia Medica of the United States," also corroborates the accounts of the diuretic effects of this vegetable, by four cases which came under his care at the Marines' Hospital, Philadelphia, in which a strong infusion was given with the most decided advantage. It is said to be a practice in many parts of America to give a bucketful of the decoction to horses that are unable to stale, with the view and uniformly with the effect of relieving them.

As a tonic, the Pyrola *umbellata* has been employed in intermittents, scrofula, and other diseases, where this class of remedies are indicated. Dr. Mitchell, an American physician, relates some cases of its success in these fevers. The Indians use a strong and warm decoction of this plant in rheumatism and fever. They employ the whole vegetable, and the decoction is taken in large quantities. Professor Barton says, he has been assured on good authority, that it was very extensively employed, and with excellent effect, in many cases of typhus fever, which under the appellation of "camp-fever," prevailed among the American troops and carried off great numbers of them during the time of the revolutionary war.

Another species of the genus to which this plant belongs, the Pyrola *rotundifolia*, is said to be used by the Indians as a topical stimulant and vesicant.

The Dublin College directs the following method of preparing the decoction of Pyrola, as recommended by Dr. Somerville:

Pyrolæ umbellatæ ℥j.
Aquæ, mensura ℔ij.

Macerate for six hours, then bruise and return the Pyrola to the liquor, and reduce the mixture by evaporation, when strained and pressed to ℔j. by measure.—*Dose* ℥j. to ℥ij. three times a day.

Dendrobium longicornu.

DENDROBIUM LONGICORNU.—LONG-HORNED DENDROBIUM.

Class XX. GYNANDRIA.—Order I. MONANDRIA.

Natural Order, ORCHIDEÆ.—THE ORCHIS TRIBE.

For a description of this rare plant we are indebted to Dr. Wallich, by whom it was brought from India in 1828. "This fine species," says that gentleman, "is a native of most of the mountains in Nepaul, where it blossoms during the rainy season. It thrives well at the Honourable East India Company's Botanic Garden at Calcutta, into which it has been introduced from these countries."

It grows pretty well in decayed vegetable mould, among moss, in the stove.

An epiphyte, usually hanging down. Root formed of many cylindrical, fleshy, fasciculated fibres; stems numerous, slender, furrowed, flexuose, six inches, a foot, or even two feet long, covered with copious, chaff-like, dark, decumbent, separable hairs, but becoming nearly smooth when old; leaves alternate, spreading bifariously, thrice as long as the intervals, linear-lanceolate, tapering outwards, very obliquely 2-toothed at the apex, the teeth narrow, obtuse, unequal; at the base rather acute, sessile, with very short sheaths, three or four inches long, smooth, obsoletely 3-nerved, striated, nearly flat; flowers large, whitish, two inches long, scentless, smooth, terminal, or sometimes lateral, on leafless stems, placed on a fleshy, cylindrical, hairy peduncle, measuring, with the oblong clavate ovarium, about two inches; bracteæ 2, lanceolate, acute, keeled, rather hairy, half a nail long, at the base of the peduncle; sepals erect, spreading, lanceolate, acute, somewhat keeled; the lateral ones adnate to the column, very much dilated downwards, and, together with the elongated base of the column, produced into a long, funnel-shaped spur; petals shaped like the sepals, somewhat conniving under the upper one; labellum large, funnel-shaped, straight, with a short, ovate, blunt lamina, fringed, with a papillose glandular disk, and a few yellow lines on it.

The Orchidaceæ are more prized for their beauty and the strangeness of their flowers, than for any very important dietetic or medicinal properties they possess. When the doctrine of signatures prevailed, their geminate roots were supposed to be powerful aphrodisiacs, and hence the names Orchis, Satyrium, Serapias, &c. have been given to various genera; but it is probable that no quantity would induce that kind of madness which characterised the Roman demigods, or the devotees of the more profligate Egyptian divinity.

The tubers of these plants contain a great deal of very nutritious farinaceous matter, consisting, according to modern chemical analysis, of a proximate principle called Bassorine. This substance is known commonly as *saloop*, or *salep;* a word derived from the Persian name of the Orchis, which, according to Forskhall, is *Sahleb*. It used to be sold at the corners of the streets in London, and was a favourite drink with porters, coalheavers, and other hardworking people; and it is still highly esteemed both in Turkey and in Persia. It is said to contain more nutritious matter in proportion to its bulk than any other known substance, and that an ounce a-day will be sufficient to sustain a man: hence it is a favourite food, from its portability, with pedestrian travellers in wild deserts and uninhabited countries.

Some of the South American species, such as the *Cataseta* and *Cyrtipodia*, contain a viscid substance, which, when separated by boiling and inspissated, is used by the Brazilians instead of glue. The root of *Bletia verecunda* is said to be stomachic, and *Orchis abortiva* and others slightly astringent.

Vanilla is the produce of the *V. aromatica*, the old Epidendrum Vanilla. This plant is a climbing epiphyte, growing in the West Indies, and its root is used for flavouring chocolate, and also for perfuming snuff.

The *Epidendra, Aerides,* and many others of the epiphytic species (for they are not truly parasites), are familiarly known as air-plants. They absorb much of their food from the atmosphere, and hence require very little either soil or water; so that when taken from the trees on which they grow, just before their flowers are developed, and suspended by strings from the ceiling of a room, they will live for weeks, and even months, supported solely by the moisture floating in the atmosphere, and go on blossoming luxuriantly; hence they are some of the most favorite and elegant ornaments of the houses in China and Japan.

"Field Paths (says Mr. Howitt, Book of the Seasons, p. 198) are at this season particularly attractive. I love our real old English footpaths. I love those rustic and picturesque stiles opening their pleasant escapes from frequented places and dusty highways into the solitudes of Nature. It is delightful to catch a glimpse of one on the old village-green; under the old elder-tree by some ancient cottage, or half hidden by the overhanging boughs of a wood. I love to see the smooth, dry track, winding away in easy curves, along some green slope to the churchyard—to the forest grange—or to the embowered cottage. It is to me an object of certain inspiration. It seems to invite one from noise and publicity into the heart of solitude and of rural delight. It beckons the imagination on through green and whispering corn-fields, through the short but verdant pasture, the flowering mowing-grass, the odorous and sunny hay-field, the festivity of harvest; from lonely farm to farm, from village to village; by clear and mossy wells; by tinkling brooks and deep wood-skirted streams, to crofts where the daffodil is rejoicing in spring, or meadows where the large blue geranium embellishes the summer wayside; to heaths with their warm elastic sward and crimson bells—the chithering of grasshoppers,—the foxglove, and the old gnarled oak; in short, to all the solitary haunts after which the city-pent lover of nature pants 'as the hart panteth after the water-brooks.' What is there so truly English? What is so truly linked with our rural tastes, our sweetest memories, and our sweetest poetry, as stiles and footpaths? Goldsmith, Thomson, and Milton, have adorned them with some of their richest wreaths. They have consecrated them to poetry and love. It is along the footpath in secluded fields, upon the stile in the embowered lane, where the wild rose and the honeysuckle are lavishing their beauty and their fragrance, that we delight to picture to ourselves rural lovers breathing, in the dewy sweetness of summer evening, vows still sweeter. There it is that the poet, seated, sends back his soul into the freshness of his youth, amongst attachments since withered by neglect,—rendered painful by absence, or broken by death; amongst dreams and aspirations which, even now that they pronounce their own fallacy, are lovely. It is there that he gazes upon the gorgeous sunset—the evening star following with its silvery lamp the fading day, or the moon showering her pale lustre through the balmy night air—with a fancy that kindles and soars into the heavens before him; there, that we have all felt the charm of woods and green fields, and solitary boughs waving in the golden sunshine, or darkening in the melancholy beauty of evening shadows. Who has not thought how beautiful was the sight of a village congregation, pouring out from their old grey church on a summer day, and streaming off through the quiet meadows, in all directions, to their homes? Or who that has visited Alpine scenery, has not beheld with a poetic feeling the mountaineers come winding down out of their romantic seclusions on a Sabbath morning, pacing the solitary heath-tracks, bounding with elastic step down the fern-clad dells, or along the course of a riotous stream, as cheerful, as picturesque, and yet as solemn as the scenes around them?

"Those good old turnstiles, too—can I ever forget them? the hours I have spun round upon them when a boy! or those in which I have almost laughed myself to death at the remembrance of my village pedagogue's disaster! Methinks I see him now!—the time a sultry day,—the *domine* a goodly person of some eighteen or twenty stone,—the scene, a footpath sentinelled with turnstiles, one of which held him fast as in amazement at his bulk. Never shall I forget his efforts and agonies to extricate himself, nor his lion-like roars which brought some labourers to his assistance, who, when they had recovered from their convulsions of laughter, knocked off the top of the turnstile and let him go. It is long since I saw a stile of this construction, and I suspect the Falstaffs have cried them down. But without a jest, stiles and footpaths are vanishing everywhere. There is nothing upon which the advance of wealth and population has made so serious an inroad."

Tussilago farfara

TUSSILAGO FARFARA.—COLT'S-FOOT.

Class XIX. SYNGENESIA.—Order II. POLYGAMIA.

Natural Order, COMPOSITÆ RADIATÆ.

Fig. (*a*) represents a floret of the ray with the bifid pistil; (*b*) a floret of the disc, both slightly magnified; (*c*) the fruit, which is an achenopsis, with its pappus or down; (*d*) a floret of the disc, much magnified and spread; showing the situation of the pistil, with the five united anthers, and the insertion of the filaments into the tube of the corolla. The stem on the right exhibits the situation of the fruits, with their hairy crowns, and part of the naked receptacle from whence they have been removed.

Colt's-foot is one of the most common of our native plants, being found in profusion in most parts of the kingdom and throughout Europe; growing in moist, shady situations, especially on a chalky or marly soil, in waste places, on the banks of rivers, and in gardens, where it frequently proves a very troublesome weed. The clayey parts of the pestilential maremmes of Tuscany, where scarcely any other plants will grow, are covered with common colt's-foot. It is a perennial, flowering from the middle of March to the end of April, but the leaves do not appear in full luxuriance till the month of May. The name Tussilago is derived from *tussis* and *ago*, in allusion to its pectoral powers, and Farfara, from the resemblance its leaves bear to those of the white poplar, called by the Greeks, Farfarus.

The root is very long, frequently penetrating to the depth of several feet, and sending out many slender fibres, which creep horizontally. The scape, or flower stem, appears before the leaves; it is erect, slender, round, woolly, slightly furrowed, six or eight inches high, and clothed with numerous lanceolate scales. Several stems generally issue from the same root, each supporting a single flower about an inch in diameter, and of a bright yellow colour. The colour of the stem, as well as the scales, varies from pale green to reddish brown. The leaves are radical, cordate, on channelled footstalks, slightly lobed, and toothed; smooth above with reddish veins, but white and woolly underneath: when young the leaves are revolute, and covered with a cottony down, which easily wipes off. The scales of the involucrum are lanceolate-linear, equal to the length of the disc; erect at first, but afterwards become reflexed. The inflorescence is compound; the florets of the ray are ligulate and very numerous, always fertile, and twice the length of those of the disc, which are few in number and often barren; the central florets are tubular, with five equal segments. The achenopsides are smooth, oblong, compressed, and the seeds often abortive. The pappus is pilose, silvery, sessile, and permanent. The receptacle is naked, flat at first, but afterwards becomes convex.

The beautiful wing-like pappus with which the seeds are so plentifully provided, renders Colt's-foot peculiarly a plant of passage, and no sooner is a fit soil exposed, than it becomes covered with young plants of Colt's-foot, although none may have previously been growing within many miles. This has led sometimes to the ignorant belief, that this plant is generated spontaneously by clayey soils, the facility with which it seeds are transported either not being known, or not being duly considered. It is, however, one of many such admirable provisions of nature, that plants with long penetrating roots, such as thistle, colt's-foot, &c., should be furnished with ready means of migration, and that they should flourish chiefly in clay-bound soils, which they thus, by their burrowing roots, perforate and drain.

Qualities.—The root is mucilaginous and bitterish; the leaves are inodorous, and have a rough subviscid taste like that of artichokes. "The mucus they contain is yielded to water by decoction, and evolves, by boiling, a peculiar odour."

Medical Properties and Uses.—The dried leaves of this plant generally form the basis of British herb tobacco, and amongst the ancients it was famed for its pectoral and vulnerary properties. Dioscorides, Pliny, and Galen, recommend it to be smoked through a funnel or reed, and in a work, "*De Internis Affectionibus,*" Ed. Fæs. p. 532. l. 34, attributed to Hippocrates, the root, βηχιον, taken in honey, is recommended for ulcerations of the lungs. Dr. Cullen, on the authority of Fuller, employed its expressed juice in scrophulous cases, administering several ounces a day; and in some instances he thought that it favoured the healing of scrophulous sores: subsequent experience, however, has not confirmed its power over the lymphatic system. During the last century, both the leaves and the flowers were recommended for their demulcent and expectorant virtues; and old Gerard, in his "Herball, or General historie of Plants," says, "the fume of the dried leaues taken through a funnel, burned upon coles, effectually helpeth those that are troubled with the shortnesse of breath, and fetch their wind thicke and often, and breaketh without peril the impostumes of the breast. Being taken in the manner as they take tobaco, it mightily preuaileth against the diseases aforesaid." But although Colt's-foot still retains a place in the London Pharmacopœia, it is seldom used; and independently of its mucilaginous qualities, it may be considered an unnecessary and useless article of the materia medica.

A nostrum (says Professor Burnett), which is well known under the name of "Essence of Colt's-foot," consists of equal parts of the *Balsam of Tolu,* and the *Compound Tincture of Benzoin,* to which is added double the quantity of *rectified spirits of wine.* This composition, which contains no Colt's-foot, is certainly one of the most baneful medicines that could have been imposed upon the public in pectoral cases. The injurious tendency of warm resinous substances in pulmonary consumption has been pointed out, in a Dissertation by the late Dr. Fothergill. In a slight cold, the foundation of a suppuration of the lungs is laid by their use, from their increasing the inflammatory disposition, and exciting general fever; and hence it is not improbable, as a popular writer justly remarks, that more fatal cases arise in pulmonary complaints from the officious interference of domestic practice, or the nostrum of the patent warehouse, than from the really incurable nature of such maladies. Consumptive patients who take such an exhilarating, but pernicious cordial, may be compared to a flower on the bank of a river—it blossoms luxuriantly for a season, but the moisture that feeds its roots, undermines its foundation.

Those who wish to exhibit Colt's-foot, on account of its demulcent properties, generally boil a handful of the leaves in two pints of water, to one pint; and the decoction, after being strained, is sweetened with honey or coarse sugar. The dose is a teacupful.

A kind of tinder, or touchwood, is, in some countries, made of the roots, impregnated with nitre. The leaves have been used as stuffing for pillows and cushions.

It may not be out of place here to notice that singular property of seeds by which they are preserved in the ground for ages. It appears from certain circumstances, that when they are buried below that particular depth at which they feel the influence of the atmosphere and consequently vegetate, they are in a state of preservation which may and does often continue for centuries—perhaps, for aught we know to the contrary, to the end of the world, if undisturbed; certainly, however, to an amazing extent of time. By this beautiful law of the all-wise Creator, the vegetable tribes are never likely to be lost. However cultivation or carelessness may tend to extirpate certain species, their seeds lie in myriads in the treasury of the earth, and some event such as we sometimes witness, the lowering of a hill, the cutting of a single turf, exposes them to the action of the air, and forth they spring. Thus it is that farmers are frequently surprised on ploughing up a field that has lain in lea beyond the memory of man, to see a plentiful crop of various and unusual plants spring up. So I have observed in Sherwood Forest, that where turf is pared, henbane is almost sure to exhibit itself, though none has been seen in the neighbourhood for years. Many instances of this kind have no doubt attracted the attention of all curious lovers of Nature.

Pachypodium tuberosum

PACHYPODIUM TUBEROSUM.—TUBEROUS PACHYPODIUM.

Class V. PENTANDRIA.—Order II. DIGYNIA.

Natural Order, APOCYNEÆ.

From παχὺς, thick, and πους ποδὸς, a foot; in allusion to its succulent stem and swollen root.

Professor Lindley observes that, "When Mr. Brown remodelled the order of Apocyneæ in 1809, he pointed out the Echites suculenta and bispinosa, two remarkable Cape plants, which he had had no opportunity of examining, as likely to constitute a distinct genus. In this opinion, the plant now figured, shews that he was right. It evidently differs from Echites, in the segments of the corolla being equal sided, and in the want of hypogynous scales; and is more nearly allied to Holarrhena, which differs in having its stamens arising from the bottom of the corolla instead of the middle, regularly opposite leaves, and whole habit.

"This plant offers an exception to the usual position of the leaves in Apocyneæ, they are not opposite, as in the order generally, but scattered irregularly over the surface of the stem; a circumstance which appears to be owing to the unusually succulent and distended state of the stem.

"A native of barren, sandy plains, at the Cape of Good Hope. If it is the Echites suculenta, it was found by Mr. Burchell in the Kloof and its mountains; but upon this point there is some doubt. It agrees with neither the figure nor description of Thunberg in minor details, but it has so much general resemblance, that it is very probable they are the same,—allowances being made for Thunberg's loose mode of description.

"Stem spherical at the base, tuberous, smooth; branches taper, succulent, divided, spiny. Spines proceeding from below the leaves, 2 or 3-lobed, subulate, flat. Leaves scattered, sessile, oblong, obtuse, fleshy, downy beneath. Calyx inferior, 5-leaved; leaflets ovate, acute, hairy, imbricated. Corolla hypocrateriform, hairy on the outside; the tube inflated in the middle, hairy inside below the stamens; limb contorted; segments equal-sided, oblong, obtuse, slightly unguiculate; throat naked. Stamens inserted in the middle of the tube; anthers sessile, sagittate, opening lengthwise. Ovarium double, many-seeded. Styles 2. Hypogynous scales none."

I was lately walking in a solitary corn-field, and could not help reflecting how many heartfelt pleasures are within our reach, if we rest satisfied with those which reason and religion equally approve; instead of sighing after vain and fugitive delights, especially such as it would be our highest wisdom, if offered, to reject.

The morning was a fine one. The first beams of the rising sun shone bright on the glittering windows of distant cottages, and tinged with a warm gleam the tall forest-trees, as they waved gently in the wind. The heavens were bright and clear. The fog was lying in the valley, serene as the unruffled waters of a lake, while the high hills rose like little islands covered with corn-fields and orchards, the trees of which were loaded with fruit. It was delightful to look over the smiling landscape, and to listen to the bleating of the sheep, the cheerful whistle of early labourers, and the shrill cry of wakeful birds, chasing each other through the air, or darting into the valley, where they were lost in a sea of mist. As the sun advanced in the heavens, his beams enlivened the spot on which I stood, and shed a golden tint on the glossy heads of the ripening corn, which gently rustled in the breeze, and glittered like a thousand little mirrors.

Homer, whose descriptions of nature are equally correct and beautiful, frequently characterizes different countries by the various productions peculiar to them. One he has celebrated for the grape, another for the olive, a third for the laurel, a fourth for the palm; but to the earth he has given the general epithet of corn-bearing. No appellation could be more appropriate. Corn is the produce of almost every soil and climate, Even amid the rugged rocks of Finland, as high as the sixty-first degree of north latitude, crops of barley are frequently to be met with, luxuriant as those which clothed the fertile plains of Sicily. Trees are generally adapted for the sites they occupy; the willow delights in marshy places, and will scarcely flourish in any other: the cypress of Louisiana stands with its roots in the water; whilst the fir grows best in elevated stations. Flowers are also suited in their various constructions to different soils and seasons; but the corn-plant may be termed a citizen of the vegetable world. The roots are long and ramified; consequently, they are seldom liable to be uprooted by the wind, while at the same time they draw considerable moisture from the earth in arid situations.

The Romans peopled their fields with imaginary deities, each of whom presided over the corn in every state of growth and preparation. Stercutus directed the manuring, Occator the harrowing, and Sator the sowing; Seia watched the seed while it remained in the earth; and, when the blade sprung up, Runcina directed the weeding; Robigus warded off both blasts and mildew; the joints of the stalks were guarded by Nodosus; and Volusia folded the tender blade around the ear. When the wheat began to blossom, Flora presided over it with guardian care; Patelina watched it on emerging from the pod; Hostilina observed that the ears grew long and even; and, when fully ripe, it was the office of Matura to guard it from every threatened danger.

Many ancient superstitions appear to have originated from the best feelings of the heart. The Roman husbandmen must have often felt that their utmost care was insufficient to bring to maturity the fruits of the earth, unless the operations of nature accorded with their own. Hence arose in them a feeling of gratitude to some unknown cause; and, as they were unacquainted with that Being "who covereth the heavens with clouds, prepareth rain for the earth, and causeth grass to grow upon the mountains," they naturally concluded, that subordinate agents were necessary to perfect the progress of the blade.

Higher feelings should arise spontaneously in the bosom of the Christian, when he thinks

> "How good the God of nature is to him,
> Who sheds abundance o'er his flowing fields."

I have recurred to the elegant observations of St. Pierre, on the tranquil pleasures of a country life. Forgive me if I bring them to your recollection in a more compressed form. They may, perhaps, beguile some evening walk.

The husbandman, in the abundance of the joyous season, discovers a visible token of the benevolence of God. Successive harvests bring to his remembrance the cheerful moments of his past existence, and inspire him with gratitude to the great Being, who has united the transient race of men by a continual chain of blessings. The direction of the shadow is a silent monitor, which reminds him of the hour of the day; at noon it warns him to retire from the sultry heat; in the evening, that his work is done, as Humboldt, whilst crossing one of the vast rivers of North America, was admonished that it was past midnight by the bending of the southern cross. The guiltless harvests which he has reaped, successively remind him of the years which have already passed away. When the sun in his annual course arrives at Virgo, and the cool fresh morning invites him to the labour of the field, he rises refreshed from his tranquil slumber, and hastens to cut down the ripened corn. His heart exults as he binds up the swelling sheaves; whilst his children dance around him, crowned with garlands of corn cockles and wild poppies. Their harmless play recalls to recollection the amusement of his early days, the parents whom he has lost, and all those indefinable associations which brighten as they take their flight. Thus far St. Pierre. Other thoughts might also occupy the bosom of his virtuous husbandman. He is naturally admonished, by his daily occupation, to perform as an hireling his appointed duty; that, when the shouting for the summer fruits and for the harvest, is ended, he may be gathered to his fathers, as a shock of corn fully ripe.

The great Author of our religion continually exemplified the important truths which he delivered, by a reference to natural objects; those especially of pasturage and husbandry, as peculiarly calculated to make an impression on the mind. An harvest-field was by him compared to the world, in which both bad and good are permitted, under the similitude of tares and wheat, to grow together; angels are the reapers; and the solemn day of final retribution, is the gathering of the wheat into the garner. Even the solitary blade which springs by the way-side, or grows upon a rock, or brings forth abundantly in rich and cultivated soil, though unnoticed by the casual observer, speaks in forcible language to the ear of the Christian. It also tells of the resurrection, and the life; "For verily, except a corn of wheat fall into the ground, and die, it abideth alone; but if it die, it bringeth forth much fruit."

I shall now take my leave of you, my friends, with this reflection, that, if you are really unfortunate, religion will be your only consolation; if you merely sigh for pleasures which are not within your reach, rural occupations, books, and flowers, will afford you sources of enjoyment which the world can neither give, nor take away.

> "Nature never did betray
> The heart that lov'd her; 'tis her privilege,
> Through all the years of this our life, to lead
> From joy to joy: for she can so inform
> The mind that is within us, so impress
> With quietness and beauty, and so feed
> With lofty thoughts, that neither evil tongues,
> Rash judgments, nor the sneers of selfish men,
> Nor greetings where no kindness is, nor all
> The dreary intercourse of daily life,
> Shall e'er prevail against us, or disturb
> Our cheerful faith that all which we behold
> Is full of blessings. Therefore let the moon
> Shine on thee in thy solitary walk;
> And let the misty mountain winds be free
> To blow against thee; and in after years,
> When these wild ecstasies shall be matured
> Into a sober pleasure, when thy mind
> Shall be a mansion for all lovely forms,
> Thy memory be as a dwelling-place
> For all sweet sounds and harmonies; oh! then,
> If solitude, or fear, or pain, or grief,
> Should be thy portion, with what healing thoughts
> Of tender joy wilt thou remember me,
> And these my exhortations!"