LIST OF PLATES

IN

VOL. II.

Inula Helenium.

W. Clark. del. et sculp.

London. Published by John Churchill. Leicester Square. Jan.y 1828.

MEDICAL BOTANY:

OR,

ILLUSTRATIONS AND DESCRIPTIONS

OF THE

Medicinal Plants

OF THE LONDON, EDINBURGH, AND DUBLIN PHARMACOPŒIAS;

COMPRISING

A POPULAR AND SCIENTIFIC ACCOUNT OF ALL THOSE POISONOUS VEGETABLES

THAT ARE INDIGENOUS TO GREAT BRITAIN.

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XLIX

INULA HELENIUM.

Elecampane.

Class XIX. SYNGENESIA.—*Order* II. POLYG. SUPERF.

Nat. Ord. COMPOSITÆ, γ, DISCOIDEÆ, *Lin.* CORYMBIFERÆ, *Juss.*

GEN. CHAR. *Receptacle* naked. *Pappus* simple. *Calyx* imbricated. *Anthers* with two bristles at the base.

SPEC. CHAR. *Leaves* ovate, rugged, clasping the stem, tomentose beneath. *Calyx-scales*, ovate, leafy.

Syn.—Helenium, *Raii Syn.* 176; *Ger. Em.* 793. *f.*; *Camer Epit.* 35. *f.*; *Matth. Valgr. v.* 1. 65. *f.*; *Fuchs. Hist.* 242. *f.*

Helenium vulgare, *Bauh. Pin.* 276.

Aster. *n.* 72. *Hall. Hist. v.* 1. 31.

Ελένιον, *Diosc. Ic. t.* 141.

Inula Helenium, *Lin. Sp. Pl.* 1236; *Willd. v.* 3. 2089; *Fl. Brit.* 891; *Eng. Bot. v.* 22. *t.* 1546. *Hook. Scot.* 245; *Woodv. t.* 108.

PROVINCIALLY.—*Great-flowered Elecampane; Scab-wort; Horse-heal.*

FOREIGN.—*Inula Laleniere*, Fr.; *Enula Campana*, It.; *Enula Campana*, Sp.; *Alantwurzel*, Ger.

ELECAMPANE is an indigenous perennial plant; and is occasionally met with in moist meadows, and pastures, in many parts of the south and west of England; flowering in July and August. We observed it several years ago in the meadows near Pirten-Hall, in Bedfordshire; and it was noticed by Sir James E. Smith, in 1795, between Worcester and Ludlow, and between Bishop's Castle and New Town, Montgomeryshire. It grows likewise in several parts of Essex, Norfolk, and Sussex; also about St. Ives,

Cornwall, and Bugden, Huntingdonshire. It was found between Ulverston and Foulness, by Mr. Crowe, and near Ewell, Surrey, by Dr. Thomson.

The root is thick, fusiform, branching, and aromatic. The stem rises three or four feet high, being one of our tallest herbaceous plants; it is thick, round, leafy, furrowed, solid, branched and downy towards the top. The leaves are large, ovate, slightly serrated, veiny, of a deep green colour above, and downy and hoary underneath; the radical ones are a foot long and stalked, but those on the stem are sessile and clasping. The flowers are large, radiated, solitary, terminal, and of a golden yellow colour. The common calyx is hemispherical; the outer scales are broad, imbricated, and downy on both sides; the inner are narrow, linear and chaffy. The florets of the disc are very numerous, perfect, tubular, with five equal segments; those of the radius numerous, spreading, ligulate, linear, each terminating in three unequal teeth. The anthers are united into a cylindrical tube, and furnished with bristles at their base: the germen in all the florets is oblong, having a thread-shaped cloven style, and spreading obtuse stigma. The seeds are quadrangular, smooth, and furnished with a simple down. The receptacle is reticulated and roughish.—Fig. (*a*) represents a floret of the radius, showing the germen and style; (*b*) a floret of the disc; (*c*) the corolla removed, showing the anthers united into a tube; (*d*) the anthers spread, showing the 5 sharp teeth at the summit, and 10 straight bristles at the base.

Elecampane is also a native of Japan, Denmark, Germany, Flanders, Switzerland, Austria, France, Piedmont, and Spain; and is supposed to be the Inula of Pliny, who mentions Helenium as a different plant. Horace likewise refers to it.

> Erucas virides, inulas ego primus amaras
> Monstravi incoquere.—Sat. 8. v. 51.
>
> ———— quum rapula plenus
> Atque acidas mavult inulas.—Sat. 2. v. 44.

Professor Alston says, " the description of Dioscorides, first Helenium, l. i. c. 27. p. 22. agrees tolerably well to our Enula.

Some think it the Panax Chironium Theophrasti Hist. l. 9. c. 10."

Qualities and Chemical Properties.—Elecampane root, has a strong, partly aromatic and partly fœtid odour: its taste is disagreeable, bitter and aromatic; and it leaves, in chewing it, a burning heat, which remains for a considerable time. Both alcohol and water extract its virtues, but the former most completely.

In examining the root of the Inula Helenium, Mr. Rose imagined, that he discovered a new vegetable product, to which Dr. Thompson, Professor of Chemistry, Glasgow, has given the name *Inulin*. It is white and pulverulent, like starch. When thrown on red-hot coals, it melts, diffusing a white smoke, with the smell of burning sugar. It yields, on distillation in a retort, all the products furnished by gum. It dissolves readily in hot water; and precipitates almost entirely on cooling, in the form of a white powder; but before falling down, it gives the liquid a mucilaginous consistence. It precipitates quickly on the addition of alcohol. Inulin is obtained by boiling the root of this plant in four times its weight of water, and leaving the liquid in repose. M. M. Pelletier, and Caventou have found the same starch-like matter in abundance, in the root of colchicum; and M. Gautin in the root of pellitory. It has also been found in the tubercles of the Helianthus *tuberosus*, (Jerusalem Artichoke,) by M. Braconnot. Starch and inulin combine; and when the former is in excess, it is difficult to separate them. The only method is to pour infusion of galls into the decoction, and then to heat the liquid; if inulin be present, a precipitate will fall, which does not disappear till the temperature rises to upwards of 212° F, while if only starch be present, it will redissolve at 122° F.

The action of inulin on the animal economy has not yet been ascertained.

Medical Properties and Uses.—The root of this plant is among the least efficacious of bitters and aromatics; and has the reputed virtues of a diaphoretic, diuretic, expectorant, and tonic. The ancients had a high opinion of its medicinal

properties, and it was warmly recommended in dyspepsia, palsy, cachexy, dropsies, colica pictonum, sciatica, uterine obstructions, and pulmonary complaints; but it is an useless appendage to the materia medica, and is now never used, unless it be by "*cow-doctors*," who are ignorant of its properties, or by dishonest druggists, who add a small quantity of tartar-emetic to it, and sell the mixture for powdered ipecacuanha; which, of course, produces a nauseating and depressing effect, that genuine ipecacuanha would not. This spurious article costs about two shillings a pound, while ipecacuanha is sometimes as high as thirty shillings; and is so like the latter in appearance, that great temptations are held out, to a set of men who too often profit by the ignorance of the medical practitioner; and are alike unmindful of his reputation, or of the recovery of their fellow-creatures.

Dose.—The dose of the powdered root may be from ℈j to ʒj; in infusion ʒj; and from ʒij to ℥ß in decoction.

Ricinus communis

W. Clark. del. et sculp.

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RICINUS COMMUNIS.

Common Palma-Christi, or Castor-Oil Plant.

Class XXI. MONŒCIA.—*Order* VIII. MONADELPHIA.

Nat. Ord. TRICOCCÆ, *Lin.* EUPHORBIÆ, *Juss.*

GEN. CHAR. Male. *Calyx* 5-parted. *Corolla* 0. *Stamens* numerous.

Female. *Calyx* 3-parted. *Corolla* 0. *Styles* three, bifid. *Capsule* 3-celled. *Seed* one.

* *With palmated leaves.*

SPEC. CHAR. *Leaves* peltate; lobes lanceolate, serrated. *Stem* herbaceous, pruinose. *Stigmas* three, cloven at the tip.

Syn.—Ricinus, *Ger. Em.* 496.

Ricinus vulgaris, *Bauh. Pin.* 432; *Hist.* 3. 642.

Ricinus sive Cataputia major vulgatior, *Park*, 182; *Raii Hist.* 166.

Avancæ, *f.* Citavanacu, *Rheede Hort. Malab.* 2. 57. *t.* 32.

Ricinus communis, *Lin. Sp. Pl.* 1430; *Willd. v.* 4. 564; *Woodv.* 171; *t.* 61.

FOREIGN.—*Le noix et l'Huile du Ricin*, Fr.; *Semi e l'olio di Ricino*, It.; *Palmoel, Ricin soel*, Sp.; *Gemeiner waudebaum; Rizinusöhl*, Ger.; *Eranda*, Sans.; *Areud*, Hind.; *Khirwa*, Arab.

THE Castor-oil plant, from the seeds of which the oil is obtained, grows spontaneously in many tropical districts. It is a tall annual plant, and is found native in almost every part of the East and West Indies, South America, and China. In Africa, this plant, which seldom rises more than four or five feet high in England, attains the size of a considerable tree. Clusius observed it in Spain, with a trunk as large as a man's body, and fifteen or twenty feet high. Ray asserts, that in Sicily it is as large as the common

elder-tree, woody, and perennial. Willdenow, however, expressly says, "Planta semper annua, nunquam fructicosa vel arborea, nec in calidissimis terræ plagis lignescit."

The root is thick, whitish, and furnished with many slender fibres. The stem, as we have already observed, varies in height; it is round, thick, jointed, furrowed, smooth, of a purplish red colour towards the top, and glaucous at the lower part. The leaves are on long tapering purplish footstalks, large, subpeltate, and deeply divided into seven acute, serrated, lanceolate lobes, of a blueish green colour. The flowers are in long, green, glaucous spikes of a blueish green colour, springing from the divisions of the branches, and appear in August and September; the males occupy the lower part of the spike, the females the upper. The *male* flower is destitute of a corolla, and consists of a calyx divided into five oval, pointed, purplish segments, inclosing several long stamens united at the base; the *female* flower is composed of a calyx cut into three narrow segments of a reddish colour; the styles are three, slender, and forked at the apex. The capsule is a trilocular nut, covered with rough spines, which bursts elastically to expel the seeds; the seeds are usually three, of an oblong flat figure, and greyish colour, with brownish red streaks. Fig. (*a*) represents an anther; (*b*) a *female* flower, with the prickles removed, showing the calyx, and the insertion of the stamens into the germen; (*c*) a prickle, (*d*) the capsule, (*e*) the back view of a seed, (*d*) the side view of a seed.

The scientific name Ricinus, is said to have been bestowed on the present genus, from the fancied resemblance of its seeds to the small apterous insect called a *tick*, ricinus; and this, according to Ainsworth, is compounded of *re* and *canis*, because the tick or tyke, is particularly troublesome to dogs. It is generally regarded as the Κικι or Κροτων of Dioscorides, who observes, that the seeds are powerfully cathartic. It is likewise mentioned by Ætius, Paulus Ægineta, Pliny, and other ancient authors; hence this species of Ricinus appears to have been known at a very early period; and we are informed by Turner in his Herbal, that it was cultivated in England in 1562.

Dierbach * informs us, that the plant was known to Hippocrates under the name Κροτον; and Dr. Ainslie says, the castor oil plant grows in great abundance in almost every part of India. It is one of but few examples of an expressed oil possessing medicinal activity; and it is only within a very few years that it has been used in this country. The London College order the oil to be obtained by expression, a method, which according to Mr. Long in his History of Jamaica, is employed there, when it is intended for medical use. The expressed oil is, however, more acrimonious, and less pure than that which is imported from the West Indies, which is obtained in the following manner:—"The seeds being freed from the husks, which are gathered upon their turning brown, and when beginning to burst open, are first bruised in a mortar, afterwards tied up in a linen bag, and then thrown into a large pot, with a sufficient quantity of water, and boiled till the oil is risen to the surface, when it is carefully skimmed off, strained, and kept for use."

Qualities and Chemical Properties.—Castor oil is of a pale yellow colour, is transparent, viscid, and has little taste or smell. It leaves, however, a slight burning in the throat, after it has been swallowed. That obtained by boiling, becomes rancid much sooner than that procured by expression. It is often adulterated, says Dr. Thompson, with olive oil, linseed oil, and poppy oil, which may be readily detected by adding an equal quantity of *alcohol*, sp. gr. 820 to any given quantity of the suspected oil; if it be pure, a uniform solution will take place, which will not happen if it be adulterated: and the same will be the case, if a weaker spirit be employed, by the addition of camphor. Excepting that it is soluble in alcohol, it has all the characters of other expressed oils. Boiled in nitric acid, it is converted into a sort of wax, which melts too readily to be used for making candles.

Poisonous Effects.—Three drachms of the seeds of Palma Christi, deprived of their ligneous envelope, were introduced into the stomach of a dog of middle size; and the æsophagus was

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* Materia Medica of Hippocrates Ch. v.

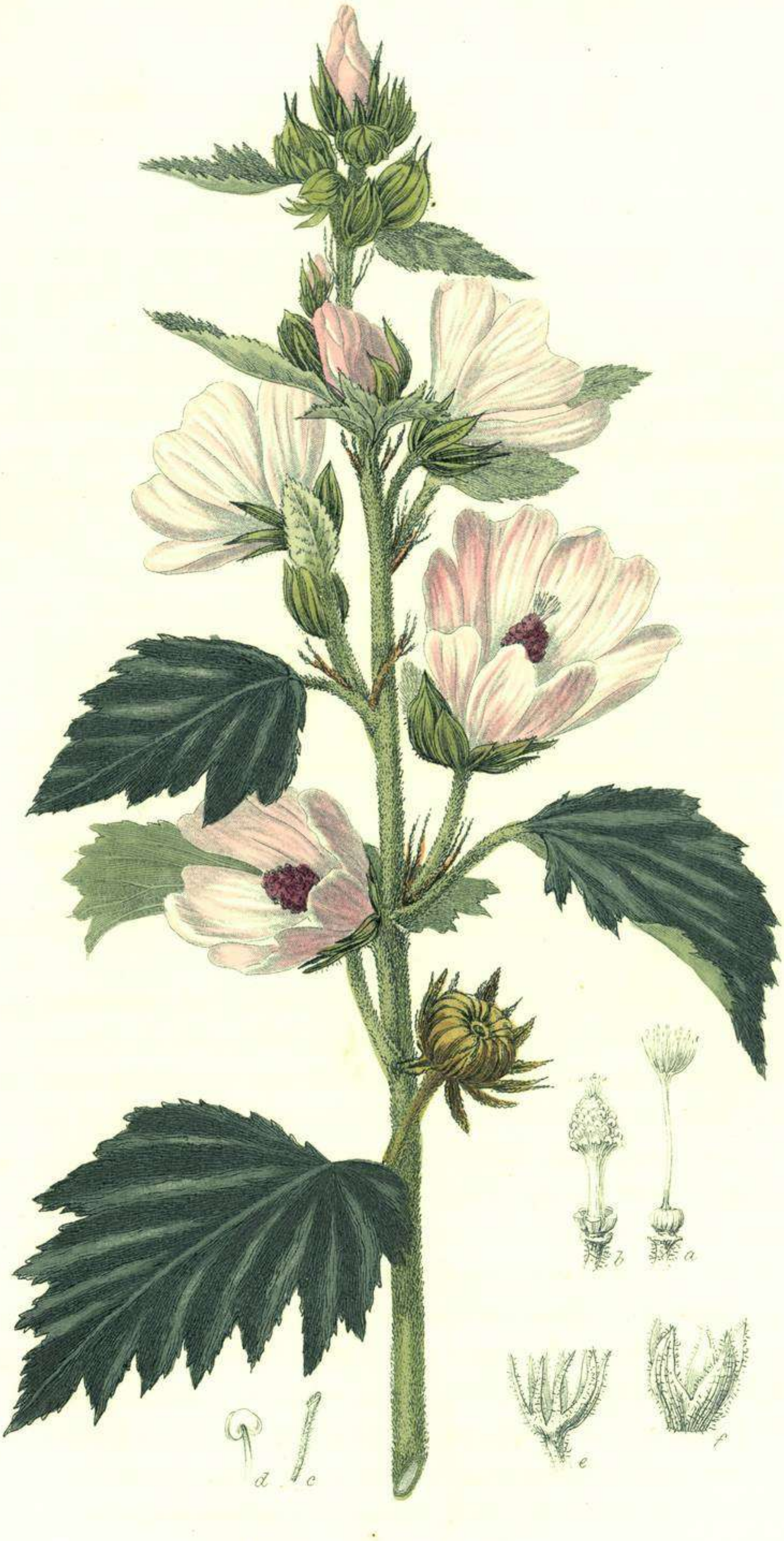
tied. The next day he shewed no remarkable symptoms. The day following, at eight o'clock in the morning, he experienced very severe vertigoes; it was impossible for him to walk without falling; he did not moan. At noon, he laid on his side, in great insensibility, his inspirations were few and deep; the pulsations of the heart natural. He.died at two o'clock.

Dissection. The mucous membrane of the stomach was not red, but exhibited some small ulcers, the centres of which were black; the rectum which was extremely red, was inflamed in its interior; the lungs though crepitating, contained a small quantity of venous blood."—*Orfila*.

Bergius relates that a robust man chewed a seed, which produced a stinging sensation in the fauces. He passed the night quietly; but the next morning had copious vomitings, and during the whole day he made alternate efforts to vomit, and to go to stool without passing much. From these facts, and other experiments, Orfila infers that the seeds produce a local irritation, and act upon the nervous system after being absorbed.

Medical Properties and Uses.—As a laxative, castor-oil acts so mildly and speedily, that it is often resorted to in cholic, obstinate constipations, hæmorrhoids, and diseases where irritation by other purgatives would be injurious. Pregnant women advantageously have recourse to it; and in this country, as well as in India, where it is prescribed by native physicians, it is a useful evacuant for children. Unlike all other purgative medicines, its doses may be often lessened, when an individual is in the habit of taking it. The bark of the root is a powerful purgative; and in conjunction with chillies and tobacco leaves, is an excellent remedy for gripes in horses; in the West Indies, it is said frequently to act as a diuretic, and the leaves are there used as applications to blisters. Many of the planters burn the oil in their house-lamps, and it is a valuable ingredient in injections.

Dose. From half an ounce to an ounce and a half, which may be taken floating on peppermint water, to which can be added, a little tincture of senna, if necessary. Sometimes it is formed into an emulsion, by means of mucilage or the yolk of an egg. To prevent nausea or griping from it, a little rum is often employed in the West Indies.



Althæa officinalis.

W. Clark. del. et sculp.

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LI

ALTHÆA OFFICINALIS.

Common Marsh-mallow.

Class XVI. MONADELPHIA.—*Order* VIII. POLYANDRIA.

Nat. Ord. COLUMNIFERÆ, *Lin.* MALVACEÆ, *Juss.*

GEN. CHAR. *Outer Calyx* 6 or 9-cleft. *Capsules* numerous, 1-seeded.

SPEC. CHAR. *Leaves* simple, soft and downy, obsoletely 5-lobed.

Syn.—Althæa vulgaris, *Raii Syn*, 252; *Park*, 303.
Althæa Ibiscus, *Ger. Em.* 933. *f.*
Althæa, *n.* 1074; *Hall. Hist. v.* 2. 23.
Althæa *Fuch's. Hist.* 15. *f.*; *Camer. Epit.* 667. *f.*; *Matth. Valgr. v.* 2. 276. *f.*
Althæa officinalis, *Lin. Sp. Pl.* 966; *Willd. v.* 3. 770; *Fl. Brit.* 739; *Eng. Bot. v.* 3. *t.* 147; *Hook. Scot.* 208; *Woodv. v.* 1. *t.* 53; *Stokes, v.* 3. 530.
FOREIGN.—*Guimauve*, Fr.; *Altea*, Ital.; *Malvarisco*, Sp.; *Eibisch*, Ger.

THE Marsh-mallow is a perennial plant, a native of Britain, growing in marshes near the sea; it occurs among other places, in great abundance on Romney Marsh, Kent; flowering from July, to September.

The roots of this plant are spindle-shaped, and somewhat woody. The stems are annual, round, leafy, simple, erect, branching towards the top, downy, and two or three feet in height. The leaves, which are about two inches and a half in length, of a hoary green colour, and downy on both sides, feel smooth and velvetty when rubbed between the fingers; they are alternate, ovate, or heart-shaped, plaited, unequally serrated, more or less deeply divided into five acute lobes, and stand upon longish footstalks. Towards the lower part of the stem they are broader, and more heart-shaped at the base. The flowers are of an uniform pale blueish colour, and grow in very short, dense, axillary panicles. The outer calyx has 8, 9, 10, or 12 narrow deep divisions, the inner is less deeply cleft into five broader segments. The petals are five, inversely heart-shaped, and attached by their claws to the base of the tube of the stamens.

The stamens are numerous, capillary separate at the summit, and support kidney-shaped anthers. The germen is orbicular, surmounted by a cylindrical style, divided into many bristle-shaped stigmas, which rise above the anthers. The capsules, generally about 20 in number, are compressed, and ranged in a circle round the columnar receptacle; each of two valves, and containing a solitary, kidney-shapened, flatened, smooth, brown seed. Fig. (*a*) represents the pistil, with its bristle-shaped stigmas and germen; (*b*) the anthers and filaments, united into a tube; (*c*) a single stigma; (*d*) a single anther; (*e*) the outer calyx; (*f*) the inner calyx.

Qualities and Chemical Properties.—"All parts of this plant yield a mucilage by infusion or decoction in water; the root does so most abundantly, and freed from the outer bark, is kept in the shops. It is white, inodorous, and insipid."

M. M. A. Payen, and A. Chevalier, state, that an alcoholic infusion of the flowers, (previously dried by a steam heat, out of contact of light,) gives a sensible tinge of green, on being mixed with pure water, containing $\frac{1}{200000}$ of potash, $\frac{1}{1000}$ part carbonate of soda, and $\frac{1}{25}$ of lime-water.

It is generally believed that the mucus contained in what are termed demulcent drinks, relieves diseases of the bladder and urinary passages, by passing off with the urine. We enter our protest against such an unphysiological notion; for it is evident that warm water would be quite as efficacious, could the stomach retain as much in its simple state, as when combined with mucilaginous particles; which no doubt, passes into *chyle*, at the same time that the aqueous part of the potion becomes absorbed, and being filtrated through the kidnies, dilutes the the urine, and renders it less stimulating. On these grounds, simply, we recommend the decoction of marshmallow in urinary diseases; while we are willing to admit that irritation of the fauces and intestinal canal may derive benefit from the lubricating properties of mucus; and as this is more pure in marshmallow root than in linseed, it ought to be preferred.

The roots well boiled, and beaten into a pulpaceous mass, are sometimes applied as poultices; and a decoction, either of them or of the leaves, is a useful application to irritable eruptions, and ulcers. It forms also a useful vehicle for injections.

Off. Prep.—Decoctum Althææ Comp. *E.*

Syrupus Althææ. *L. E.*

Strychnos. Nux-vomica.

W. Clark, fculp.

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STRYCHNOS NUX VOMICA.

Poison Nut.

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

Nat. Ord. LURIDÆ, *Lin.* APOCINEÆ, *Juss.*

GEN. CHAR. *Corolla* 5-cleft. *Berry* 1-celled, with from 1 to 5 seeds, with a hard rind. *Stigma* capitate.

SPEC. CHAR. *Leaves* ovate. *Stem* unarmed.

Syn.—Nux Vomica officinarum, *Bauh. Pin.* 511; *Raii Hist.* 1814; *Ger. Em.* 1546; *Burm. Zeyl.* 171.

Solanum arboreum indicum maximum, *Breyn. Prodr.* 97.

Caniram, *Rheede Hort. Malab.* 1. 67. *t.* 37.

Strychnos Nux vomica, *Lin. Sp. Pl.* 271; *Willd. v.* 1. 1052; *Fl. Zeyl. n.* 91; *Roxb. Coromand.* 1. 8. *t.* 4; *Gærtn. Fruct.* 2. 427; *Stokes* 1. 412.

FOREIGN.—*Noix vomique*, Fr.; *Noce vomica*, It.; *Mataperros*, Sp.; *Noz vomica*, Port; *Kraehenaugen; Brechnuss*, Ger.; *Braaknooten*, Dut.; *Broœknoed*, Dan.; *Rafkaka*, Swed.; *Leuz alke; Kanekulkelb*, Arab.; *Yettie cottay*, Tam.; *Moostighenza; Musadi*, Tel.; *Culaka; Kutaka; Veshamoostibeejum*, Sans.; *Koochla*, Duk. and Hind.; *Ma-tseen*, Chin.

THE Strychnos Nux Vomica, is a native of the East Indies, and is very common on the coast of Coromandel, where it flowers during the cold season. It is the tree called, by Plunknet, *Cucurbitifera Malabarensis aenopliæ foliis rotundis, fructu orbiculari rubro, cujus grana sunt nuces vomicæ officinarum;* described and figured in the Hortus Malabaricus, under the name of *Caniram.*

This species of Strychnos is a middle, sized tree, with a short, crooked, thickish trunk, irregularly branched, and covered with a smooth ash-coloured bark. The leaves are opposite, short, petioled, ovate, shining, smooth on both sides, entire, three to five nerved, differing in size from one inch and a half to four

inches long, and from three to four inches broad. The flowers are small, greenish-white, and collected into small terminal umbels; they are said to exhale a strong disagreeable odour. The calyx is five-cleft, and deciduous: the corolla is monopetallous, of a pale green colour, and divided at the border into five segments: the filaments are five, very short, with roundish anthers; the germen is superior, roundish, and crowned with a single style, the length of the tube of the corolla. The fruit is a berry about the size of a pretty large apple, globular, covered with a smooth, somewhat hard shell, of a rich orange colour when ripe, and filled with a soft jelly-like pulp. The seeds are generally five in number, and immersed in the pulp of the fruit. They are round and flat, about an inch in diameter, and a quarter of an inch thick, with a prominence in the middle, of a grey colour externally, and covered with a woolly matter, but internally hard and tough, like horn. Fig. (*a*) represents the germen, pistil and calyx; (*b*) the corolla spread, showing the anthers magnified; (*c*) a section of the fruit of the natural size.*

The systematic name, Strychnos, which occurs in Pliny and Dioscorides, is derived from *στρωννυμί*, to *overthrow*, in allusion to the powerful effects of the plant to which it was assigned; Στρυχνος of the Greeks being a kind of *nightshade*. It was Linnæus who adopted this name for the present genus, on account of the analogy of its poisonous qualities with the plant of the ancients.

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* There is a tree, but exceeding rare on this coast, which the Telingas call Naga Musadie (Naga, or Tansoo Paum in the Telinga language means the Cobra de Capella, or *Coluber Naja* of Linnæus: tansoo means dancing, and paum snake, this sort being famous for erecting its head, and moving it from side to side at the sound of music,) *i. e.* Cobra de Capella Musadie. I have only once met with it, and then it was pointed out by a Telinga physician. The tree had been cut down, and carried away some time before; most of the roots were also dug up and carried away; from the only remaining one that I could find, some shoots had sprung up. The leaves upon these were opposite, short petioled, obtuse, lanced, three-curved, about two, or two and a half inches long, by three quarters broad; the petioles were very short, and connected at their insertions by a membrane, as in the natural order of Rubiaceæ. I took up the root with the greatest care, cut off the upper part, from whence the shoots grew, and planted it in my garden; but it soon perished. From the above circumstance, I am inclined to think there is a species different from the Nux Vomica tree, which yields the real Lignum Colubrinum. The wood of the root of this sort is esteemed by the Telinga physicians an infallible remedy for the bite of the naja, as well as for that of every other venomous snake: it is applied externally, and at the same time given internally: it is also given in substance for the cure of intermitting fevers.—*Roxburgh's Plants of Coromandel*, p. 8.

Qualities and Chemical Properties.—The taste of the vomic nut which is the seed of the fruit or berry, is intensely bitter; it has little or no smell, and is so hard that it cannot be reduced into powder by beating, but requires to be filed down. According to an analysis by M. Chevereul, it consists of acidulous malate of lime, gum, vegeto-animal matter, bitter matter, fixed oil, colouring matter, (which was yellow, and propably starch, which could not be directly extracted on account of its dessiccation;) earthy and alkaline salts, woody hairs, and wax, which appears to preserve the perisperm from humidity. Messrs. Pelletier and Caventou have since discovered two peculiar vegetable alkalies, *strychnine* and *brucine*, which are fully adverted to under the head of medical properties, and for the account of which we are indebted to an excellent translation of Majendie, by Joseph Houlton, Esq. F.L.S.

Poisonous Effects.—It is very generally believed amongst the lower class of people in this country, that nux vomica (by them called *rat's-bane*,) is capable of poisoning animals only; and on a coroner's inquest held during the last year, a juryman observed, that the vulgar imagine it will not produce death to those persons who are born blind. So strongly, he said, was he impressed with this idea, that he should have had no hesitation in taking a quantity of it, before he had heard, on the present occasion, of its baneful effects on the human constitution. Nux vomica is one of the narcotico-acrid class of poisons, and seems to have a direct power over the spinal cord. It produces laborious respiration, which is followed by torpor, trembling, coma, convulsions and death. It is fatal to dogs, hares, wolves, foxes, cats, rabbits, rats, ducks, crows, and other birds; and Loureiro poisoned a horse by an infusion made of the seeds in a half-roasted state.

"Hoffman reports that a young girl, ten years of age, labouring under an obstinate quartan fever, took, at two doses, fifteen grains of nux vomica: she died in a short time, after having experienced extreme anxieties, and having made some efforts to vomit."

"A person swallowed in the morning, a scruple of nux vomica in powder, and drank afterwards a few glasses of cold water, in order to diminish the bitterness occasioned by this substance. Half an hour after, he appeared to be drunk; his limbs, especially his knees, were stiff, and tense; his walk was staggering, and he was afraid of falling. He took some food, and the symptoms disappeared without his having had either stools, or vomiting."—(*Orfila.*)

"The administration of nux vomica, and of the root of gentian, to a woman affected with ague, was followed by convulsions, cold and stupor, and almost every part of the body was torpid."—(*Scutter's Dissert.*)

Dissections of those who have died, show no organic lesions; proving that it acts directly on the nervous system: and those who are anxious to see the result of numerous experiments on dogs, and other animals, must consult Orfila's Toxicology; Wepfer's Historia Cicutæ Aquaticæ, p. 248, and Dr. Chapman's American Medical Journal.

TREATMENT.—In the treatment of poisoning by nux vomica, keeping up artificial respiration is of the utmost importance; and for further information the reader may consult our article "Nicotiana Tabacum." The subjoined information is interesting.

"M. Drapiez has ascertained, by numerous experiments, that the fruit of the Feuillea *cordifolia* is a powerful antidote against vegetable poisons. This opinion has been long entertained by naturalists, but it appears, that M. Drapiez has verified the fact by numerous experiments. He poisoned dogs with the rhus toxicodendron, hemlock, and *nux vomica*. All those that were left to the effect of the poison, died; but those to whom the fruit of this plant was administered, recovered completely, after a short illness. To see whether this antidote would act in the same way, when applied externally to wounds into which vegetable poisons had been introduced, he took two arrows which had been dipped in the juice of manchenille, and slightly wounded with them two young cats. To one of these he applied a poultice, composed of the fruit of the Feuillea *cordifolia*,

while the other was left without any application. The former suffered no other inconvenience except from the wound, which speedily healed; while the other, in a short time, fell into convulsions, and died. It would appear from these experiments that the opinion entertained of the virtues of this fruit, in the countries where it is produced, is well founded. It loses its virtues, if kept longer than two years after it has been gathered." —*Annals of Philosophy*, v. 15, p. 389.

MEDICAL PROPERTIES AND USES.—For a century, nux vomica has been known as a powerful medicine, and employed in a vast variety of diseases, with different degrees of success. Linnæus, who could know but little of pathology, attributed dysentery to irritation of the mucous membrane of the intestines, produced by worms, and recommended these seeds for that disease, in consequence of their intense bitter, and narcotic powers. Hagstrom considered, that a scruple dose, given in the morning, was a specific for dysentery; and Bergius narrates a case, in which the evacuations were stopped for twelve hours, but afterwards returned; he also says, " Inter hos ægros fœmina fuit 32 annorum, quæ scrup. I sumsit mane et vesperi per biduum; ipsi incesserunt, post singulum pulverem, pandiculationes summe convulsivæ, cum vertigine, omnibus evacuationibus suppressis, neque vomiut; nec a morbo curata fuit, sed rediere symptomata dysenterica post relictam nucem, quare aliis remediis curanda erat; hæc dolorem ventriculi et regionis epigastricæ per longum tempus sensit." Roxburg says: " the wood is hard and durable, and is used by the natives for many purposes. It is exceeding bitter, particularly the root, which is used to cure intermittent fevers and the bites of venomous snakes. The seeds are employed in the distillation of spirits to render them intoxicating. The pulp of the fruit seems perfectly innocent, as it is eat greedily by many sorts of birds." Nux vomica is also occasionally employed by brewers in this country to impart an intoxicating effect to beer.

Dr. Good was never able to give more than seven grains of the powdered nut for a dose, without the head becoming stupid and

vertiginous. From his "Study of Medicine" we make the following extract, explanatory of its effects on paralysis:—

"Dr. Fouquier, of the Hospital de la Charité at Paris, has tried it upon a very extensive scale, and apparently with a perfect restoration of health in many cases. He gives it in the form of powder, or alcoholic extract: four grains of the first, and two of the last are a dose, and may be taken from two to six times a day. He also employs it in injections. In half an hour after administration the paralyzed muscles have, in various cases, begun to evince contraction: and what is peculiarly singular, while a spastic contraction is determined to these, the sound parts remain unimplicated in the action. A frequent effect, unquestionably dependent on the bitter principle of the plant, is that of increasing the appetite, and diminishing the number of the alvine evacuations when in excess. Sometimes it produces a temulent effect, and occasions stupor, and a sense of intoxication, and, when rashly administered, general tetanus, with all its train of distressing and frightful symptoms.

"Like all other powerful medicines in their first and indiscriminate use, the nux vomica appears sometimes to have been highly beneficial, sometimes mischievous, and sometimes to have produced violent effects on the nervous system without an important change of any kind. Dr. Cooke has collected a variety of cases in which it has been tried in our own country as well as in France, and this seems to be the general result. The present author has tried it in various instances, but has never been able, from its tendency to termulency, to proceed much more than half as far as some practitoners have gone, who have gradully advanced it from four grains of the powder to twenty-four, three or four times a-day. In the case of the late E. Sheffield, Esq., of the Polygon, Somers-Town, Mineralogist to the estates of the Duke of Devonshire, and who is well known to have been one of the best practical geologists of his day, the author commenced with two grains alone of the powder given three times daily, as this was a hemiplegia following upon a second fit of atonic apoplexy, with a general debility both of the mental and corporeal powers, the patient being, at the time, rather upwards of sixty years of age. This dose occasioned no manifest effect, and on the third day, August 21, 1819, it was gradually increased to six grains. It now produced a powerful sense of intoxication, but with clonic agitation instead of a tetanic spasm, of the paralyzed leg and arm, and great heat down the whole of the affected side. The powder was continued in this proportion for three or four days, but the stupor and vertigo were so considerable, and afflictive, that the patient could not be persuaded to proceed with it any longer, and it was in consequence suspended. On the ensuing September 1, he was evidently weaker, and recommenced the medicine at his own desire; the dose was gradually raised from four to six grains three times a-day: the same clonic effect was produced with the same sensation of heat through the whole of the affected side, but without a sense of intoxication. The dose was advanced to eight grains, when the head again became affected, but without any permanent re-

turn of muscular power or sensation in the palsied limbs, or any other effect, than a few occasional twitches, and involuntary movements. Mr. Sheffield could not be persuaded to persevere any farther, and the medicine was abandoned. He continued in the same feeble state for about three months, when he fell a sacrifice to a third apopletic attack apparently of a much slighter kind.

"I have stated that this was a case of atonic affection, and hence, there was no opportunity of giving full play to the power of the nux vomica. But so far as I have seen, I think we may come to the following conclusion: First, that when only small doses can be given without seriously affecting the head, as in cases of great general or nervous debility, the effect is a clonic instead of an entastic or tetanic spasm. Secondly, that under this effect it is not calculated to do any permanent good, and often produces mischief. And thirdly, that it is most serviceable in entonic hemiplegia, after the patient has been sufficiently reduced from a state of high energetic health, and especially energetic plethora, to a subdued and temperate state of pulse; in which state it may very frequently be employed in doses sufficient to excite strong, or entonic, instead of weak or clonic spasm."

In 1809, M. Majendie presented to the Institute of France some account of a course of experiments, which led to an unexpected result, viz. that an entire family of plants (the Strychni-Amari) possessed the singular property of strongly exciting the spinal marrow, without affecting, except indirectly, the function of the brain; and it was remarked at the close of this report, that such a result might be turned to advantage in the treatment of diseases. This conjecture has since been amply confirmed at the bedside of the patient. M. Majendie, ignorant of Dr. Fouquier's published cases, succeeded in curing a person of paralysis, and has since given the alcoholic extract of nux vomica, not merely to palsies, both partial and general, but also in various other kinds of local and general debility.

Preparation of the Alcoholic Extract of Nux Vomica.

Treat a given quantity of rasped nux vomica with alcohol at 40° * and at the lowest possible temperature; let it be renewed until nothing further is taken up from the rasping; then evaporate gently to the consistence of an extract. The activity of the matter obtained will be in proportion to the strength of the alcohol. The alcoholic extract may be obtained dry, by filtering a saturated tincture, (made with alcohol at 36°) and evaporating in the common way.

* By the déromèter of Baumé.

Action on the Animal System.

One grain of this substance absorbed in any part of the body, or taken into the stomach with food, will destroy a large dog in a very short time, by producing paroxysms of tetanus which interrupt respiration, until complete asphyxia ensues; and when a large quantity has been administered, the animal has been destroyed by its direct action on the nervous system. A contraction of the spleen has been observed in animals which have been poisoned by this substance. *On touching an animal under the action of the resin, a sensation similar to a strong electric shock is felt.* The division of the spinal marrow, and even complete decollation, do not interfere with the peculiar action of this substance. Its effects on the human subject are exactly the same; and no indication of the nature of its action, or of its exhibition, is traceable in the body after death.

The effects, in cases of paralysis, are similar to those described; but they are exerted in a remarkable manner upon the parts affected. These are the seat of tetanic shocks, of a prickly sensation, and of a perspiration, which is not observed elsewhere. In hemiplegia the sound side of the body remains tranquil, while the affected one is the seat of extreme agitation: the tetanic attacks succeed each other rapidly, and an abundant exudation takes place. Even an anomalous eruption has been observed, while the healthy side has been perfectly free. One side of the tongue is sometimes sensible of a decidedly bitter taste, which is not perceptible on the other. If the dose be augmented, both sides become the seat of tetanic action, though not equally so. Sometimes the effect is so violent as to throw the patient out of bed. In a very small quantity, this extract has no immediate action, at least of a perceptible kind; and it is not until after several days that its good or bad effects display themselves.

Practical Employment of the Alcoholic Extract of Nux Vomica.

It may be given in all diseases of debility, whether local or general—and in palsies of every description. It has been administered with perfect success in amaurosis accompanied with paralysis of the upper eye-lid:* and very good effects have followed its exhibition in weakness of the genital organs, and of the stomach, incontinence of urine, and extreme general debility, accompanied with an irresistible disposition to somnolency. It has been recently tried with advantage in partial atrophy of the extremities, both superior and inferior.† The medicine, however, must not be exhibited immediately after the apopletic attack which has caused the paralytic affection; nor is a cure to be expected from it where there is a lesion of the brain.

It has been given to the extent of twenty grains in a case where paralysis supervened to an attack of apoplexy, without benefit,‡ although the tetanic affection of the parts involved was considerable. Many physicians have borne testimony, however, to the efficacy of the medicine in all the varieties of nervous debility; and since the publication of the former edition of the Formulary, several cases of suc-

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* By Mr. Edwards. † Experience of M. Magendie.
‡ By M. Chauffart. Journ. Gen. de Med. Oct. 1824.

cess, in paralysis more especially, have been recorded. M. Chauffart, in particular, has reported the cure of a case of palsied rectum.*

Method of Employing this Remedy.

The preferable form is that of pills, each containing one grain of the extract; we may commence with one or two daily, increasing the dose until the desired effect be produced. The pills should be given in the evening, as the night time is the most proper for observing the phenomena. In general from 4 to 6 grains per diem will be sufficient to produce tetanic action; but sometimes it has required as much as 24 or 30 grains in the day. If it should be found necessary to suspend the medicine for a time, it must be recommenced with small doses, and gradually increased. When it is intended to produce but slight effects, one grain, or even half a grain per diem will be sufficient. A tincture may also be employed according to the following formula:—

Tincture of Nux Vomica.

Take of Alcohol at 36° . . . . . 1 once.†
Dissolve. Dry extract of Nux Vomica . 3 grains.

Of this a few drops may be given in any simple vehicle. In this form it may also be used by friction upon the parts affected; it is a mode much employed in Italy, and from which M. Magendie has seen great benefit result in his own practice.

Mode of Preparing Strychnine.

Dissolve the alcoholic extract of nux vomica in water, and add to the solution subacetate of lead in a fluid form, until precipitation ceases. The superfluous bodies being separated in this manner, the strychnine remains in solution, with a portion of colouring matter, and sometimes with an excess of acetate of lead. The lead is to be separated by sulphuretted hydrogen: then filter, and boil the liquid with magnesia; which, combining with the acid, yields a precipitate of strychnine and brucine. This is to be washed with cold water, and re-dissolved in alcohol, in order to separate the access of magnesia, and then by evaporating the alcohol we get a mixture of strychnine, brucine, and colouring matter. The whole is macerated in a small quantity of weak alcohol, which readily dissolves the two latter bodies, while the strychnine remains in the form of a powder. It is taken up again by boiling in rectified alcohol; which, being evaporated, deposits the strychnine in a crystalline form. We must take care to leave a little alcoholized water, in order to retain what remains there may be of the brucine. The strychnine may be obtained still purer, by renewing the crystallization. The sign of its purity is its not reddening with nitric acid, a degree almost unattainable in strychnine procured from nux vomica. That obtained from St. Ignatius' bean is purer; but the purest, and most easily obtained, is furnished by the upas.‡

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* Dr. Baxter, (New York Med. Repos. vol. 8.) records a case of hemiplegia in a child, which was cured by this medicine. A very satisfactory one is reported by M. Gendron in the Journ. General for November, 1824. It has been given with success too in a case of chorea sancti viti.

† An *once* is 7 drachms 52½ grains, by Troy weight. See the scale for reducing the French Weights and Measures to the English standard, at the end of Majendie's "Formulary," translated by Mr. Houlton.

‡ For other methods of preparing Strychnine, see Majendie's Formulary, or the Journal of the Royal Institution.

Sensible and Chemical Properties.

Strychnine obtained in this way presents itself under the form of minute crystals, which, by the aid of the microscope, are found to consist of four-sided prisms, terminated by pyramids with four depressed faces. When rapidly crystallized, it is white and granular, intolerably bitter, and leaving an impression on the organs of taste like that of some metalic salts; it has no smell, and undergoes no alteration by exposure to the air; it is neither fusible, nor volatile; suffering decomposition and carbonization at the point of fusion, which is at a degree of heat below that required for the destruction of most vegeto-animal' matters.

Exposed to the naked fire, it swells, blackens, and gives out an empyreumatic oil, a small portion of water and acetic acid, some indications of carbonic acid gas, carbonated hydrogen, and carbonate of ammonia. Distilled with the deutoxide of copper, it yields a large quantity of carbonic acid and azote.

According to Messrs. Dumas and Pelletier, the mean of two analyses of strychnine is, per hundred parts,*

Carbon	78.22
Azote	8.92
Hydrogen.	6.54
Oxygen	6.38
	100.06

Strychnine is of all vegetable principles that which contains the most azote. It is nearly insoluble in water, requiring 6.667 times its weight at a temperature of 10°, but of boiling water half the quantity will dissolve it. This will appear remarkable, if we consider the intense bitterness of its taste, which will be still distinctly perceptible, if a solution of strychnine made in cold water, and consequently not containing above $\frac{1}{6000}$ part of its volume, be diluted in a hundred times the quantity of the same fluid. Its principal chemical characteristic is its readiness to form neutral salts by uniting with acids.

According to recent experiments of Pelletier and Caventou, the above-mentioned process indicates, in nux vomica, the presence of two alkaline principles, the one *strychnine*, the other *brucine*, which had already been found by the same chemists in the Brucea Antidysenterica. To obtain strychnine pure, it is necessary to crystallize it repeatedly in alcohol; the other principle, the brucine namely, being more soluble in this menstruum, and crystallizable with difficulty, remains in the alcoholic mother water. The presence of brucine with the strychnine is, however, of no great importance, as it possesses the same properties, though less energetic.

It is unfortunate that the bean of St. Ignatius is so rare an article in commerce, as the strychnine contained in it is nearly free from brucine, and would be readily obtained from it in a state of purity.

Action of Strychnine on the Animal System.

The action of strychnine on man and the lower animals, is exactly

* See Recherches sur la composition élémentaire des bases salifiable organique, par M. M. Dumas et Pelletier.

like that of the alcoholic extract of nux vomica, though more powerful. One eighth of a grain is sufficient to kill a large dog, and a quarter of a grain has often produced very great effect upon man in health.

Medicinal Employment.

As a remedy, it is applicable in the same cases as the resin of nux vomica; and it might never be necessary to have recourse to strychnine, if the extracts of the nux were always prepared in the same manner, and exempt from those variations in their effects, which result from peculiarities in their mode of preparation. In consequence of its greater uniformity in this respect, it is in general preferable. Both in Germany, and Italy, accounts have been published of its successful employment.*

Mode of employing Strychnine.

Pills of Strychnine.

Take of,	Very pure strychnine . .	2 grains.
	Conserve of roses . . .	½ gros.

Mix accurately and divide into 24 equal pills.

Tincture of Strychnine.

Take of,	Alcohol at 36°	1 once.
	Strychnine	3 grains.

Dose from 6 to 24 drops in draughts, or common drink.

The following mixture has frequently been used.

Mixture of Strychnine.

Take of,	Distilled water	2 onces.
	Very pure strychnine . .	1 grain.
	White sugar	2 gros.
	Acetic acid	2 drops.

Five *grammes* to be taken morning and evening.

Salts of Strychnine.

United with acids, this substance forms salts, which are crystallizable, and for the most part soluble. This latter property must therefore be borne in mind, when giving strychnine in common drink, for lemonade and all acids very much increase its activity. The subcarbonate of strychnine is sparingly soluble.

The SULPHATE is soluble in less than ten parts of cold water; it crystallizes in small transparent cubes if neutral, and in needles if there be a preponderance of acid. Its taste is extremely bitter. It is decomposed by every soluble salifiable basis. It undergoes no alteration by exposure to the air. Heated at a temperature of 100° it loses no part of its weight, but becomes opaque. At a higher temperature it fuses, and resolves itself into a mass, after suffering a loss of 3 per cent. If the heat be further augmented it decomposes. It consists of

Sulphuric acid	9.5
Strychnine	90.5
	100.

* By Cramer of Bonn, and Diffenbach of Germany—and particularly by Cattaneo, who has published his observations in Omodei's *Annali Universali.*

According to M. M. Dumas and Pelletier 100 parts of the base saturate 10.486 of acid.

The HYDROCHLORATE is still more soluble than the sulphate; it crystallizes in needles, which viewed through a lens, appear to be quadrangular prisms; when exposed to a temperature at which the base is decomposable, it gives off muriatic acid.

The PHOSPHATE can be obtained in a perfectly neutral state, only by double decomposition. It crystallizes in four-sided prisms.

The NITRATE is easily obtained, by dissolving strychnine in acid highly diluted. Upon evaporation, it crystallizes in needles, of a pearly aspect.

This salt is much more soluble in hot than in cold water, and its action is more violent than that of the strychnine itself.

It forms very soluble salts also with the acetic, oxalic, and tartaric acids, susceptible of crystallization, especially if the acid be in excess. The neutral acetate is very soluble and does not readily crystallize. The hydrocyanic acid forms with this base a crystallizable salt.

The SUBCARBONATE is obtained in the form of white flakes.

Boiled with iodine it forms an IODATE and HYDRIODATE.

A large proportion of acid combined with a very small quantity of strychnine, would form a medicine possessing the double property of acting on the nutrition of the organs, and of exciting the nervous system.

Action of the Salts of Strychnine.

The salts of strychnine, in consequence of their greater solubility, are more active, and consequently more intensely poisonous than their base.

Mode of Employment.

When the patient is habituated to the action of strychnine, it may sometimes be advantageous, to substitute the salts for the strychnine itself, without increasing the dose. M. Magendie has used none of the salts except the sulphate, which has produced most decided relief in a case of paraplegia given in a dose of a twelfth of a grain.

MODE OF PREPARING BRUCINE.

In order to obtain BRUCINE, the inner bark of the brucea antidysenterica is subjected to a process similar to that directed for the preparation of strychnine, with this difference, that in the present case the magnesian precipitate must not be so elaborately washed, of the greater quantity of colouring matter it contains. By evaporating the alcoholic liquors employed for the treatment of the magnesian precipipate, the brucine is readily obtained in a resinous form, not being yet sufficiently pure to crystallize. In its purification it must be combined with oxalic acid, and this oxalate is to be treated with a mixture of alcohol at 40°, and ether at 60°. In this way the colouring matter will be dissolved, and the oxalate of brucine will remain under the form of a white powder: it may be decomposed by magnesia, and the brucine separated by alcohol. In evaporating the alcoholic solution in the open air, brucine will be obtained in a crystallized form: if heat be employed it will be obtained fused, but not less pure.

Properties of Brucine.

Its taste is intensely bitter; it is sparingly soluble in water, although more so than strychnine. It dissolves in 500 times its weight of boiling water, and in about 850 of cold water. When regularly crystallized it presents itself under the form of oblique prisms, with parallelogrammic bases. This form of brucine is a true hydrate, its affinity for water being considerable; whereas pure strychnine can never pass to this state. Brucine loses a considerable quantity of water by fusion.

Two hundred parts of brucine thus crystallized yield of

Water	37 parts.
Residue	163

One hundred and sixty-one parts crystallized in alcohol, give of

Water	27 parts.
Residue	134

which establishes the constitution of the hydrate, taking the mean to be

Water	21.65 parts.
Brucine	100.

It fuses at a temperature nearly equal to that of boiling water, and in cooling assumes the consistence of wax. It combines with acids, and forms with them neutral salts, of which the greater part are susceptible of regular crystallization. On applying concentrated nitric acid, it acquires an intense crimson colour, which passes into a yellow, by the application of heat. If, while in this state, a solution of the proto-hydrochlorate of tin be added, we have a magnificent violet-coloured precipitate, which phenomenon is peculiarly characteristic of brucine; so that if strychnine obtained from nux vomica exhibits a similar appearance, on the addition of the proto-hydrochlorate, we may be assured that it is owing to the presence of brucine.

The mean result of two analyses of this substance obtained from the brucea antidysenterica and fused in vacuo, gave as its composition,

Carbon	75.04
Azote	7.22
Hydrogen	6.52
Oxygen	11.21
	100

Action on the Animal System.

This is analogous to that of the strychnine, but less intense, being in the proportion to that of pure strychnine as 1 : 12. Or, according to M. Andral, jun. 6 grains of brucine are equal to one of impure, and a quarter of a grain of pure strychnine. Four grains of brucine were required to kill a rabbit: and a strong dog having taken the same quantity experienced severe attacks of tetanus, but recovered. It may, therefore, be a convenient substitute for strychnine, as it will not act with so much energy.

Manner of Administration.

It may be given either in pills or tincture, increasing the dose gradually. In medical use that which is obtained from the bark of the brucea antidysenterica should be preferred; as that furnished by the nux vomica is rather apt to be mixed with a portion of strychnine,

which increases its power, and deranges our calculation as to the effects.

Cases for the Exhibition of Brucine.

As it possesses the properties of strychnine, in a milder degree, it may be given to the extent of one, two, or even three grains, without apprehension as to the consequences, in the same cases as the preparations of nux vomica are found to benefit. It is probable that much larger doses may be given, but we must be attentively upon our guard. M. Andral, jun. has given it in cases of palsy with advantage from half a grain to five grains. M. Magendie has administered it successfully in two cases of atrophy, one of the arm and the other of the leg. The patients took six pills daily of one eighth of a grain.

Mode of prescribing Brucine.

Pills of Brucine.

Take of, Pure brucine . . . 12 grains.
Conserve of roses . . $\frac{1}{2}$ gros.

Mix accurately and divide into 24 equal pills.

Tincture of Brucine.

Take of, Alcohol at 36° . . . . 1 once.
Brucine . . . . . 18 grains.

From 6 to 24 drops may be given in ordinary drink.

Stimulating Mixture.

Take of, Distilled water . . . 4 onces.
Very pure brucine . . 6 grains.
White sugar . . . 2 gros.

Mix.—Five *gros* to be taken night and morning.

Salts of Brucine.

SULPHATE. This salt crystallizes in long needles, resembling four-sided prisms, terminated by extremely delicate pyramids. It is very soluble in water and in alcohol: its taste is exceedingly bitter. It is decomposed by potash, soda, ammonia, baryta, strontian, lime, magnesia, morphine, and strychnine. The supersulphate crystallizes more readily than the neutral salt, and is formed of

Sulphuric acid . . . 8. 84 .. 5.
Brucine . . . . . 91. 16 .. 51. 582.

HYDROCHLORATE. This salt crystallizes in four-sided prisms terminated by an oblique surface. It is not acted upon by the air, and is very soluble in water. It is decomposed by sulphuric acid, while the nitric acts on and even destroys the brucine. It consists of

Acid . . . . . 5.953 .. 4.575
Brucine . . . . . 94.046 .. 72. 5

The PHOSPHATE is also crystallizable, very soluble, and slightly efflorescent: the acetate, tartrate, and oxalate may also be crystallized.

The NITRATE is a mass bearing some resemblance to gum.

The SULPHATE and MURIATE of brucine being more soluble than brucine itself, probably possess certain advantages, and have in all likelihood greater activity: they may therefore be employed instead of the preparations above described.

Fraxinus Ornus.

W. Clerk. sculp.

London. Published by John Churchill. Leicester Square. Febr 1828.

LIII

FRAXINUS ORNUS.

Manna, or Flowering Ash.

Class XXIII. POLYGAMIA.—*Order* II. DIŒCIA.

Nat. Ord. SEPIARIÆ, *Lin.* JASMINEÆ, *Juss.*

GEN. CHAR. Hermaph. *Calyx* 0, or 4-parted. *Corolla* 0, or 4-petalled. *Stamens* 2. *Pistil* 1. *Capsule* 1-seeded, lanceolate.—Female. *Pistil* 1, lanceolate.

SPEC. CHAR. *Leaflets* elliptic-oblong, pointed, bluntly serrated. *Flowers* with a corolla.

Syn.—Fraxinus humilior sive altera Theophrasti, minore et tenuiore folio, *Bauh. Pin.* 416.

Fraxinus florifera, *Scop. Carn. n.* 1250.

Fraxinus Ornus, *Sp. Pl. Willd. v.* 4. 1102.; *Sm. Fl. Græc. Sibth. v.* 1. 4. *t.* 4. *Woodv, v.* 1. 105. *t.* 36.; *Ehrh. Pl. Offic.* 270. *Arb.* 160.

FOREIGN.—*Manne*, Fr.; *Manna*, Ital.; *Mana*, Sp.; *Manna*, Ger.; *Turenjeebeen*, Arab.; *Shirkhisht*, Hind.

THIS tree, which greatly resembles our common ash, is a native of the warmest parts of Europe. It grows abundantly in Calabria, Sicily, and on the highest and most rocky mountains of Greece, and is one of the most elegant trees that adorn our lawns, and pleasure-grounds; flowering in May, and June. Our figure of this plant was taken from Dr. Sibthorp's "*Flora Græca*," the most splendid botanical work ever published in this country.

The Fraxinus *Ornus* is a low tree, very much branched, and covered with a smooth grey bark. The leaves, which are smaller than those of the common ash, stand upon longish, channelled footstalks; are opposite, pinnate, and composed of several pair of leaflets, with a terminal one; the leaflets are opposite, about an inch and a half long, and three-fourths broad, of an oblong shape, pointed at each end, unequally serrated,

smooth, and of a bright green colour. The flowers are produced in loose panicles at the extremities of the branches, are supradecompound, scarcely the length of the leaves, and of a white or pale herbaceous colour. The segments of the calyx are ovate; the corolla consists of four oblong, linear, pointed petals; the filaments are two, spreading, and supporting large yellow incubent anthers; the germen is oval, with a very short style, and a notched stigma. The capsules are pendulous and compressed; and usually contain a single lanceolate cylindrical dark brown seed.

Fig. (A) represents a flower magnified; (*a*) the anthers; (*b*) the germen; (*c*) the capsules.

Manna is yielded by trees of different families, for although we are principally indebted to four species of ash, F. *ornus;* F. *rotundifolia;* F. *excelsior;* and F. *parviflora;* the larch, fir, orange, walnut, willow, mulberry, and the oak also produce it. At Briançon, in France, Manna is said to be collected from all sorts of shrubs; and the inhabitants observe that such summers as produce it in the greatest quantities, are very fatal to the plants. Their walnut-trees produce annually a considerable quantity; but if they happen to yield more than ordinary, they usually perish the following winter. From this it appears evident that manna is the extravasated juice of trees, and that they cannot afford to lose it: and what confirms this idea, is their secreting so much more when the summers are hot. The ancients were accustomed to find it on different species of trees; and therefore inferred that it was something wholly foreign to the tree: an error very easily embraced by those who were not aware that the nutritive juices of trees are nearly, if not wholly the same.

"The Manna tree, (Fraxinus *Ornus*) says Prof. Cirillo,* is common not only in Calabria and Sicily, but also on the famous mountain Garganus, situated near the old town of Sypontum, upon the Adriatic; and is mentioned even by Horace as an inhabitant of that mountain;—

Aut Aquilonibus querceta Gargani laborant,
Aut foliis viduantur Orni.

* Phil. Trans. vol. 60. p. 234.

"In all the woods near Naples the Manna tree is to be found very often; but for want of cultivation it never produces any manna, and is rather a shrub than a tree. The manner in which the manna is obtained from the Ornus, though very simple, has been yet very much misunderstood by all those who have travelled in the kingdom of Naples; and among other things they seem to agree that the best and purest manna is obtained from the leaves of the tree; but this, I believe, is an opinion taken from the ancients, and received as an incontestable observation, without consulting nature. I never saw such a kind, and all those who are employed in the gathering of the manna know of none that comes from the leaves. The manna is generally of two kinds; not on account of the intrinsic quality of them being different, but only because they are got in a different manner. In order to obtain the manna, those who have the management of the woods of the Orni in the months of July and August, when the weather is very dry and warm, make an oblong incision, and take off from the bark of the tree about three inches in length, and two in breadth: they leave the wound open, and by degrees the manna runs out, and is almost suddenly thickened to its proper consistence, and is found adhering to the bark of the trees. This manna, which is collected in baskets, and goes under the name of *manna grassa*, is put in a dry place, because moist and wet places will soon dissolve it again.

"This first kind is often in large irregular pieces of a brownish colour, and frequently is full of dust, and other impurities. But when the people want to have a very fine manna, they apply to the incision of the bark thin straw, or bits of shrubs, so that the manna, in coming out, runs upon those bodies, and is collected in a sort of regular tubes, which give it the name of *manna in cannoli*, that is, manna in tubes; this second kind is more esteemed, and always preferred to the other, because it is free and clear. There is, indeed, a third kind of manna, which is not commonly to be met with, and which I saw after I left Calabria; it is very white like sugar; but as it is rather for curiosity than for use, I shall say no more about it. The two sorts of manna already mentioned undergo no kind of preparation whatever

before they are exported; sometimes they are finer, particularly the *manna grassa*, and sometimes very dirty and full of impurities; but the Neapolitans have no interest in adulterating manna, because they always have a great deal more than they export; and if manna is kept in magazines, it receives often very great hurt by the southern winds, so common in our part of the world. When the summer is rainy, the manna is always scarce and bad."

Manna likewise exudes spontaneously and concretes into granules; it is known in the markets by the name of manna in tear.

The manna referred to by the ancient Greek writers is asserted, by Dr. Fothergill, to be portions of olibanum, broken off in the carriage of larger pieces, which by some is still called "manna of frankincense." The Arabians are supposed to be the first who brought manna into medicinal use, and the substance known by the name of *manna persicum*, is the *terenjabin* of Avicenna and Serapion; for, according to Rauwolf,* large quantities of it were brought from Persia to Aleppo, where it is known by the names of *trunschibil*, or *trunschibin*, doubtless corruptions of *terenjabin*. Rauwolf informs us, that it is gathered from the Alhagi *maurorum*, or Hedysarum *alhagi* of Linnæus, a plant which is minutely described by Tournefort.† But for further particulars respecting this substance we refer the reader to Dr. Fothergill's paper in the Phil. Trans. vol. xliii. f. 86, and to Dr. Ainslie's Materia Medica, vol. i. f. 209.

Qualities and Chemical Properties.—Pure manna is very light, and appears to consist of a congeries of fine capillary crystals. Its taste is sweet, and it leaves a nauseous impression on the tongue. When dissolved in water, it may be obtained again unaltered by a gentle evaporation. Alcohol dissolves it when assisted by heat; and the solution, when set aside, gradually deposits about $\frac{5}{8}$ths of the manna, in a state of a fine white light spongy crystalline mass, bearing some resemblance to camphor. This deposit has an agreeable sweet taste, and instantly melts upon the tongue like snow in warm water. This may be considered as pure manna. It differs from sugar in the nature of its crystals, and in its more rapid solubility. By eva-

* *Rauwolf's* Itinerary, by *Ray*.
† Voyage to the Levant, vol. i. p. 247.

porating the solution, and setting it aside repeatedly, about $\frac{2}{8}$ths more of the manna is deposited, but not so fine in colour, or taste, as the first precipitate. By evaporation to dryness, the remaining $\frac{1}{8}$th is obtained in the state of a thick extract, which cannot be easily reduced to dryness. This may be considered as consisting chiefly of foreign bodies, to which manna owes its nauseous taste. Manna differs from common sugar in several remarkable particulars. It dissolves very readily and abundantly in alcohol, and crystallizes on cooling. When digested in nitric acid it yields both oxalic, and saclactic acids; whereas sugar only yields oxalic acid. It does not ferment like sugar, and of course does not seem capable of furnishing alcohol.*

The common manna of the shops, according to the experiments of Fourcroy and Vanquelin, consists of four different ingredients: 1. Pure manna, which constitutes at least $\frac{3}{4}$ths of the whole. 2. A little common sugar, which makes it fermentable to a small extent. 3. A yellow matter, with a nauseous odour, to which the purgative quality of manna seems owing. 4. A little mucilage convertible into saclactic acid. This last ingredient seems hypothetical.

Several substances seem to be converted into manna. The juice of the common onion yields it, and it has been discovered in the juice of the melon, but not till it has fermented.

Manna appears also to be formed and deposited by insects.

Dr. Ainslie, after adverting to several kinds of manna that are met with in the East, says,

"Whether any of these mannas may be the product of the insect, which has got the appellation *chermes mannifera*, I know not; but the inquiry might be interesting. Major Macdonald Kinneir mentions, in his Geographical Memoir of Persia, p. 339, a sort of manna which the Persians call *guz*, and which may be procured in great quantities in *Louristan*, and in the district of *Khonsar* in *Irak;* he adds, that it is obtained from a shrub in appearance like a funnel, about four feet high, and is supposed to be produced by small red insects; these are seen in vast numbers under the leaves. Now this I should presume is the substance which, within the last few years, has called the attention of several scientific men of the Indian establishments; such as General Hardwick, Cap-

* Thompson's Chemistry, vol. iv. p. 30.

tain Edward Frederick, and particularly the admirable Dr. Wallich; the last-mentioned gentleman had only seen the insect which produces it in its larva state; though we know that the French entomologist Geoffroy had many years ago attributed to a species of *chermes*, the property of producing both in the *larva* and *pupa* state, a sugary substance of a white colour; it appears that the animal is about the size of a domestic bug, and of a flattened oval form. Mr. Hunter informs us, that the *guz* seems to project from the abdomen of the animal in appearance like a tail, or bunch of feathers; but perhaps more resembling snow than any thing else. The animals are found on certain trees in Persia and Armenia; swarming in millions and generating this feathery-like substance, till it gets long and drops on the leaves, caking on them, and resembling beautiful bees-wax; the insects do not destroy the leaves they feed on."

Medical Properties and Uses.—The medical properties of manna are those of a mild cathartic, for which purpose it was formerly much used in practice. As, however, from one to two ounces of this medicine scarcely produces effects on adults, it is now seldom employed alone; but combined with senna, neutral salts, and other purgatives, is frequently used to cover their taste. It is an innocent purgative in the hands of mothers, who frequently give it to their children in doses from one drachm to half an ounce dissolved in water; but, though mild in its operation, it is apt to produce flatulence and griping.

Off. Prep.—Confectio sennæ. *L. E. D.*
Enema catharticum. *D.*
Enema fœtidum. *D.*
Syrupus sennæ. *D.*

Pl. 54.

Valeriana officinalis.

W. Clark del. et sculp.

London Published by John Churchill, Leicester Square. Febr 1828.

VALERIANA OFFICINALIS.

Great Wild Valerian.

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

Nat. Ord. AGGREGATÆ, *Lin.* DIPSACEÆ, *Juss.* VALERIANEÆ DE CAND.

GEN. CHAR. *Corolla* monopetalous 5-cleft, gibbous at the base. *Seed* 1, crowned with a feathery radiating pappus.

SPEC. CHAR. *Stamens* three. *Leaves* all pinnate; leaflets lanceolate, serrate, nearly equal.

Syn.—Valeriana sylvestris major, *Raii Syn.* 200; *Ger. Em.* 1075. *f.*; *Park.* 122.
Phu, *Column. Phytob.* 113. *t.* 114.
Phu parvum, *Matth. Valgr. v.* 1. 37. *f.*
Phu germanicum, *Fuchs. Hist.* 857. *f.*
Valeriana *n.* 210. *Hall. Hist. v.* 1. 91.
Valeriana officinalis, *Lin. Sp. Pl.* 45; *Willd. v.* 1. 177; *Fl. Brit.* 38. *Eng. Bot. v.* 10. *t.* 698; *Curt. Lond. fasc.* 6. *t.* 3; *Hook. Scot.* 15; *Woodv. t.* 96. *Stokes v.* 1. 96. *Fl. Dan. t.* 570.
PROVINCIALLY.—*Great Wild Valerian; Capon's-tail; Setwalle.*
FOREIGN.—*Valeriane; Valeriane Sauvage*, Fr.; *Valeriana Silvestre*, It.; *Valerian Officinal*, Sp.; *Wilde Baldrianwurzel*, Ger.; *Balder an*, Russ.

THE great wild Valerian, Valeriana *officinalis*, of Linnæus, or Valeriana *sylvestris major montana* of Bauhin, is a perennial indigenous plant, growing on the banks of rivers and ditches, and in dry mountainous woods and pastures; flowering from June, to August.

The root of this species of Valerian is composed of several long, slender fibres, of a dusky brown colour, approaching to olive, that issue from one head. The stem is erect, furrowed, hollow, smooth, branched, and rises to the height of three or four feet. The leaves are of a deep glossy green, serrated, a little hairy on the under surface, grow opposite, in pairs on foot-

stalks, and are all pinnated, but differ in different parts of the plant, in the number of leaflets. In the lower leaves there are generally ten pair; in those on the stem nine; and towards the top five or seven only; hence the leaf, except towards the bottom of the plant, is always terminated by an odd leaflet. The radical leaves are larger, stand upon long footstalks; the *pinnæ* are elliptical, and deeply serrated; the bracteas, or floral leaves, are lanceolate and pointed. The flowers, which are small, and of a reddish white colour, are disposed in large dense aggregates, or corymbs, not unlike an umbel, at the extremities of the stem and branches, and containing both stamens and pistils, whereby the present species may at once be distinguished from the V. *dioica*, which it very much resembles. The calyx is a slight border, subsequently expanding into a crown for the seed. The corolla is tubular, with a protuberance at the base, and divided at the limb into five obtuse, somewhat unequal segments. The stamens are three, awl-shaped, and support oblong yellow anthers. The germen is inferior, oblong, having a thread-shaped style the length of the stamens, and terminated by a trifid stigma. The seeds are ovate-oblong, compressed, and crowned with a feathery pappus of ten rays.—Figs. (*a.*) and (*b.*) are two views of the corolla magnified.

The V. *locusta*, corn salad, or lamb's lettuce is sometimes cultivated in gardens for salad, and of the Officinal Valerian there are two varieties; one growing in woods and moist places, the other on dry heaths, and high pastures. Both sorts have been used indiscriminately, but the latter variety is esteemed of far greater efficacy than the marshy sort. It is principally distinguished by the leaves being narrower, and of a duller green; and by its stronger smell, and more humble growth.

This plant having till lately been generally regarded as the celebrated φου, or Valerian of Dioscorides, has been extensively employed as an article of the Materia Medica. Dr. Sibthorp, in his Greek tour, however, has ascertained that the real plant of the ancients is a distinct species, which he has figured and described under the name of Valeriana *Dioscoridis*.* It was

* See Sibthorp's Flora Græca, Edited by Sir J. E. Smith, vol. i. t. 33.

gathered by the learned author near the river Linyrus in Lycia; and has a much more pungent and more durable, and yet less nauseous odour, than the plant here represented.*

Culture.—In Derbyshire, Valerian is planted in rows twelve inches apart, and the plants six inches asunder. Soon after it comes up in the spring, the tops are cut off to prevent its running to seed, which spoils it. At Michaelmas the leaves are pulled off and given to cattle, and the roots dug up, and clean washed, and the remaining top is then cut close off, and the thickest part slit down to facilitate their drying, which is effected on a kiln, after which they must be packed tight and kept very dry, or they will spoil. The usual produce is about 18 cwt. per acre.†

Qualities, and Chemical Properties.—The leaves have a saltish taste, but little or no smell. The roots, particularly the mountain sort, are bitter, subacrid, and of an aromatic and penetrating odour. The smell of the roots is very alluring to cats, and rat-catchers employ it to entice rats, who are also fond of it. Trommsdorff has examined the root of the Valeriana *Officinalis*. It loses three-fourths of its weight by drying. Distilled with water it yields a volatile oil, very liquid, and of a greenish white colour. Its odour is strong and camphoric; its specific gravity, at the temperature of 77°, is 0,9430; its taste is aromatic and camphoric, without being acrid. Nitric acid converts it into a a resinous substance, or, if it be used in a sufficient quantity, into oxalic acid. The expressed juice of the roots, has a strong odour, and is muddy. It lets fall a portion of starch. It contains a peculiar substance approaching the nature of extractive, soluble in water, insoluble in ether or in pure alcohol. It is precipitated from water by the salts of lead, silver, mercury, and antimony. The juice also contains a portion of gum. The roots, deprived of this juice yield a portion of black-coloured resin, but consist chiefly of woody fibre.—*Annales de Chimie*, t. xx. p. 384.

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* The *Greek Valerian*, also called *Jacob's Ladder*, a common ornament in rustic gardens, must not be confounded with the Valerian of Dioscorides. It belongs to a different genus, *(Polemonium,)* deriving its name from the resemblance its leaves bear to the Officinal Valerian, and has not been discovered in Greece.

† Loudon's Encyclopædia of Agriculture, p. 875.

Medical Properties and Uses, &c.—Valerian has long been esteemed an excellent remedy in various affections of the nervous system, especially in hysteria, chorea, and epilepsy; and when those diseases seem to depend rather on increased susceptibility than on organic derangement, it is frequently useful. Fabricius Columna first discovered its antispasmodic powers, having cured himself of epilepsy by the powdered root, when many other powerful medicines had failed.

Dr. Scopoli * relates the case of a young man who had contracted epilepsy from fright, who was shortly cured by the use of the powder. M. Marchant † has also related many cases of its success in the same disease; and what is remarkable and well worthy of our attention is, that his patients voided large quantities of worms; a fact supported by the testimony of others. It has been found extremely beneficial in many cases of hysteria, and hemicrania, especially when combined with bark, or the volatile alkali; and conjoined with guiacum, it is beneficially employed for strumous enlargement of glandular structures. Dr. Cullen strongly recommends the root of that which has grown in a dry calcareous soil for hysterical affections. Dr. Withering speaks of it as a useful remedy for habitual costiveness; and, although its aperient qualities can no more be relied on than its diuretic, or anthelmintic ones, we consider it to be among the most powerful of the vegetable antispasmodics. The powder is the best mode of administration; and Lewis justly remarks, that its taste is best covered by a suitable addition of *mace*.

Dose.—When given in substance the dose may be from ℈j to ʒj twice or thrice in twenty-four hours: of the ammoniated tincture, which is a better preparation than the simple tincture made with proof spirit, the dose is from ʒj to ʒij.

Off. Prep.—Tinctura Valerianæ. *L. D.*
Tinctura Valerianæ Ammoniata. *L. E. D.*
Extractum Valerianæ. *D.*
Infusum Valerianæ. *D.*

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* See Scopoli Flora Carniolica.

† Histoire de l'Acad. Roy. des Sciences, an. 1706.

Delphinium Staphisagria.

W. Clark. Sculp.

London. Published by John Churchill. Leicester Square. Feb.y 1828

LV

DELPHINIUM STAPHISAGRIA.

Palmated Larkspur, or Stavesacre.

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

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

GEN. CHAR. *Calyx* 0. *Petals* 5, the upper one spurred. *Nectary* bifid, horned behind.

* * *Three-capsuled.*

SPEC. CHAR. *Nectaries* 4-leaved, shorter than the petal. *Leaves* palmate, with the lobes obtuse.

Syn.—Staphisagria, *Raii Hist.* 705; *Park*, 223; *Ger. Em.* 495: *Bauh. Pin.* 324; *Dod. Pempt.* 336; *Fuchs.* 784.

Delphinium Platani folio, Staphisagria dictum, *Tourn. Inst.* 428; *Boerh.* 1.301.

Delphinium Staphisagria, *Lin. Sp. Pl. Willd.* 2.1226; *Scop. Carn.* 2. *n.* 652; *Woodv.* 417. *t.* 154. *Sm. Fl. Græc. Sibth.*; *Stokes*, 3. 215.

FOREIGN.—*Staphisagre*, Fr.; *Stafisagria*, It.; *Piogenta*, Sp.; *Stephanskraut laus korner*, Ger.

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

Stavesacre grows to the height of one or two feet; the stem is round, downy, erect, simple, and of a purplish hue. 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 form an elegant open spike at the extremity of the stem. There is no calyx. The corolla is composed of five petals, placed in a circle, the upper one extended behind into a long tubular spur; the nectary is usually divided into four leaves placed in front within the row of petals; the two superior are narrow, small, and at the base drawn out into spurs like that of the petal 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 contain many rough, brown, triangular seeds. The beautiful figure which accompanies this description, we have taken the liberty to make from Sibthorp's celebrated "Flora Græca." Fig. (*a*) represents the nectary; (*b*) the stamens; (*c*) the capsules.

The Delphinum Staphisagria is supposed to be the *σταφις αγρια* of Dioscorides; and from the flower being something like a dolphin's head, the generic term is derived from *δελφινος*, a dolphin. Our climate is too cold for this plant in the open air.

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. M. M. Lassaigne, and Feneulle, have discovered in the stavesacre a vegetable alkali which they named *delphine*, 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 grounds, 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 then 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 melts; 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 morphium 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 of copper gave no other gass than carbonic acid. It exists in the seeds of the stavesacre, in combination with malic 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, 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 to us that the operation of tying the œsophagus, would,

of itself, be able 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-ach; 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 *pediculi* 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.

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* Eius grana quindecim si quis trita in aqua musla dederit, crassa per vomitu purgant. Sed qui biberint, ambulare debent. Quinetiam assiduè attendere, oportet, et aquam mulsam potue dare, quod strangulationis pericula inferant et fauces deurant. Trita eadem, et ex oleo inuncta, pediculationi, prurigini et scabei auxiliatur. Plurima cit pituita comanducata. Decocta in aceto, dentium in dolori, si ea colluantur, subuenit. Gingiuaru rheumatismum sistit. Ulcera oris, aphthas nominant cum melle sanat. Miscetur præterea urentibus malagmatis. *Diosc.*

Daucus Carota.

W. Clark del et sculp.

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LVI

DAUCUS CAROTA.

Wild Carrot.

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

Nat. Ord. UMBELLATÆ, *Lin.* UMBELLIFERÆ, *Juss.*

GEN. CHAR. "*Fruit* elliptic-oblong, compressed transversely. *Seeds* with 4 rows of flat prickles, and rough intermediate ribs. *Calyx* obsolete. *Petals* inversely heart-shaped, unequal. *Flowers* separated."

SPEC. CHAR. *Stem* bristly. *Leaves* tripinnate; *leaflets* pinnatifid, with linear-lanceolate acute segments. *Involucre* nearly as long as the rays of the umbel. *Fruit* bristly.

Syn.—Daucus vulgaris, *Raii Syn.* 218; *Clus. Hist. v.* 2. 198.
Daucus. *n.* 746, *Hall. Hist. v.* 1. 326.
Pastinaca sylvestris tenuifolia, *Ger. Em.* 1028. 1.; *Park.* 902.
Staphylinus, *Rivin. Pentap. Irr. t.* 28.
Caucalis Carota, *Hud. Fl. Ang.* 114.; *Stoke's Bot. Mat. Med. v.* 2. 64.
Pastinaca erratica, *Fuch's Hist.* 684. *f.*
Daucus Carota, *Lin. Sp. Pl.* 348.; *Willd. v.* 1. 1389.; *Fl. Brit.* 300; *Eng. Bot. v.* 17. *t.* 1174; *Woodv. t.* 161.; *Mart. Rust. t.* 82; *Hook. Scot.* 88.
PROVINCIALLY.—*Wild Carrot. Bird's Nest. Bee's Nest.*
FOREIGN.—*Carotte*, Fr.; *Carola*, It.; *Zanahoria*, Sp.; *Karotte*; *Mohrriibe* Ger.; *Gajer*, Hind.

IN its wild state, the Carrot is a common weed in this country, growing by road sides, especially in a gravelly or chalky soil; and is known by the name of *Bird's-nest*, from the appearance of the umbels as they approach maturity. It is a biennial plant, flowering in June, and July, and ripening its seeds in September.

The root of the Wild Carrot is slender, dry, somewhat woody, of a yellowish colour, and aromatic. The root of the Garden Carrot, which is reckoned only a variety, is succulent, commonly of a yellow or an orange colour, and is universally known as an article of domestic economy. The stem of the wild sort is about two feet high, erect, furrowed, branched, and hairy. The leaves are alternate, on broad footstalks, bipinnate, of a dark green colour, and hairy, especially beneath. The umbels, which terminate the long leafless branches, are solitary, large, and as they approach maturity, the external rays become incurved, which renders the inner surface of the umbel concave like a bird's-nest. Both umbels are many-rayed, and consist of flowers that are small, and generally white, except the abortive ones in the centre of the umbel, where they have a purple or reddish hue. The general involucre is composed of many-winged, or pinnatifid leaves, shorter than the umbel; the partial ones undivided, or sometimes 3-cleft. The petals are unequal, radiate, and obcordate. The seeds are in pairs, ovate, and rough, with rigid bristles.—Fig. *(a.)* a floret somewhat magnified, to show the stamens, and a single ray of the umbel, with the involucra; *(b.)* a seed.

The Carrot is supposed to be the *σταφυινος ἀγρίος* of Dioscorides; and Pliny, in speaking of it, book xxv. c. 9, says, that the finest kinds were, in his days, those of Candia and Achaia. Celsus refers also to the seeds of another species of Carrot, as an ingredient in the celebrated Mithridate, that secured the body against the effects of poison.

It is generally allowed that the cultivated Carrot is a variety of the wild; but although Miller endeavoured to improve the latter kind, by growing it in different soils, he was never able to effect his purpose: it is therefore probable that we are indebted for our delicious vegetable to an accidental growth of seed, or to a foreign supply; Carrots having been used in the reign of Elizabeth, at which time the utility of gardens was just beginning to be felt, and their stock supplied from abroad. They are cultivated in the Mahratta, and Mysore countries, where they are very fine, and much eaten by the inhabitants.

CULTURE.—" Several varieties," says Mr. Patrick Neill, " are cultivated, particularly the orange carrot, with a large long root of an orange-yellow colour; the early horn and the late horn carrot, of both which the roots are short and comparatively small; and the red or field carrot, which acquires a large size.

" Carrots are sown at two or three different seasons. The first sowing is made as early perhaps as new year's day, or at any rate before the first of February, on a warm border or in front of a hothouse. Some employ a gentle hotbed for this first crop; while others only hoop over the border, and cover it with mats during frost. The main crop of carrots is put in, in March or April; and in June or July a small bed is sown to afford young carrots in the autumn months. In some places a sowing is made a month later, to remain over winter, and afford young carrots in the following spring. These, however, often prove stringy, but they are useful in flavouring soups. In light early soils, it is better that the principal crop should not be sown sooner than the end of April or beginning of May; for in this way the attacks of many larvæ are avoided. For the early crops the horn carrot is best; for the principal crops, the orange variety is preferred, but the red is also much cultivated.

" The seeds having many forked hairs on their borders, by which they adhere together, are rubbed between the hands with some dry sand, so as to separate them. On account of their lightness, a calm day must be chosen for sowing; and the seeds should be trod in before raking. They are sown either at broad-cast, or in drills a foot apart. When the plants come up, several successive hoeings are given; at first with a three inch, and latterly with a six inch hoe. The plants are thinned out, either by drawing young carrots for use, or by hoeing, till they stand eight or ten inches from each other, if sown by broad-cast, or six or seven inches in line. The hoeing is either performed only in showery weather, or a watering is regularly given after the operation, in order to settle the earth about the roots of the plants left.

" Carrots thrive best in light ground, with a mixture of sand. It should be delved very deep, or even trenched, and at the same

time well broken with the spade. If the soil be naturally shallow, the late horn carrot is to be preferred to the orange or red. When manure is added to carrot ground, it should be buried deep, so that the roots may not reach it, else they are apt to become forked and diseased. In general it is best to make carrots the second crop after manuring. From the Scottish Horticultural Memoirs, however, (vol. i. p. 129,) we learn, that pigeons dung, one of the hottest manures, far from injuring carrots, promotes their health, by preventing the attacks of various larvæ.

"Carrots are taken up at the approach of winter, cleaned and stored among sand. They may be built very firm, by laying them heads and tails alternately, and packing with sand. In this way, if frost be excluded from the storehouse, they keep perfectly well till March or April of the following year. Some persons insist that the tops should be entirely cut off at the time of storing, so as effectually to prevent their growing; while others wish to preserve the capability of vegetation though certainly not to encourage the tendency to grow.

"From old Parkinson we learn, that carrot leaves were in his day thought so ornamental that ladies wore them in place of feathers. It must be confessed that the leaves are beautiful. If during winter a large root be cut over about three or four inches from the top, and be placed in a shallow vessel with water, over the chimney-piece, young and delicate leaves unfold themselves all around, producing a very pretty appearance, enhanced no doubt by the general deadness of that season of the year."

QUALITIES AND CHEMICAL PROPERTIES.—The seeds of the wild carrot are aromatic, both in taste and odour. Water digested on them becomes impregnated with the latter quality, but it extracts but little of their taste. They yield a yellowish essential oil, and give out all their virtues to spirit. M. Braconot has recently discovered a new acid, named *pectic* acid, which is universally diffused in all vegetables. The following is the method of preparing pectic acid from *carrots*:—The roots being well washed, are reduced to a pulp by means of a grater. The juice is pressed out, and the grounds repeatedly washed with filtered rain-water, till the water passes out colourless.

With these grounds, and a certain quantity of water, a semi-liquid pap is made, into which is stirred a solution of potash or soda of commerce, rendered caustic, in quantity sufficient to maintain in the liquor, till the end of the operation, a slight excess of alkali, perceptible to the taste. The mixture is immediately exposed to heat, and made to boil, till, on taking out with a tube a portion of the thick resulting liquor, it coagulates entirely into a jelly with an acid. The boiling liquor is then strained through linen. The mass is washed with rain-water, containing no sulphate of lime, and the liquors, which are thick and mucilaginous, are added together, and will form into a jelly, if allowed to cool. The solution of this pectate is decomposed with a little muriate of lime, diluted with a great deal of water. By this means, we obtain an extremely abundant transparent jelly of insoluble pectate of lime, which it is easy to wash well upon a linen cloth. This combination is boiled for some minutes with water, acidulated by a little muriatic acid, which dissolves the lime with the starch. The whole is afterwards thrown upon a linen cloth, and the pectic acid is obtained, and may be washed with the greatest facility with pure water.

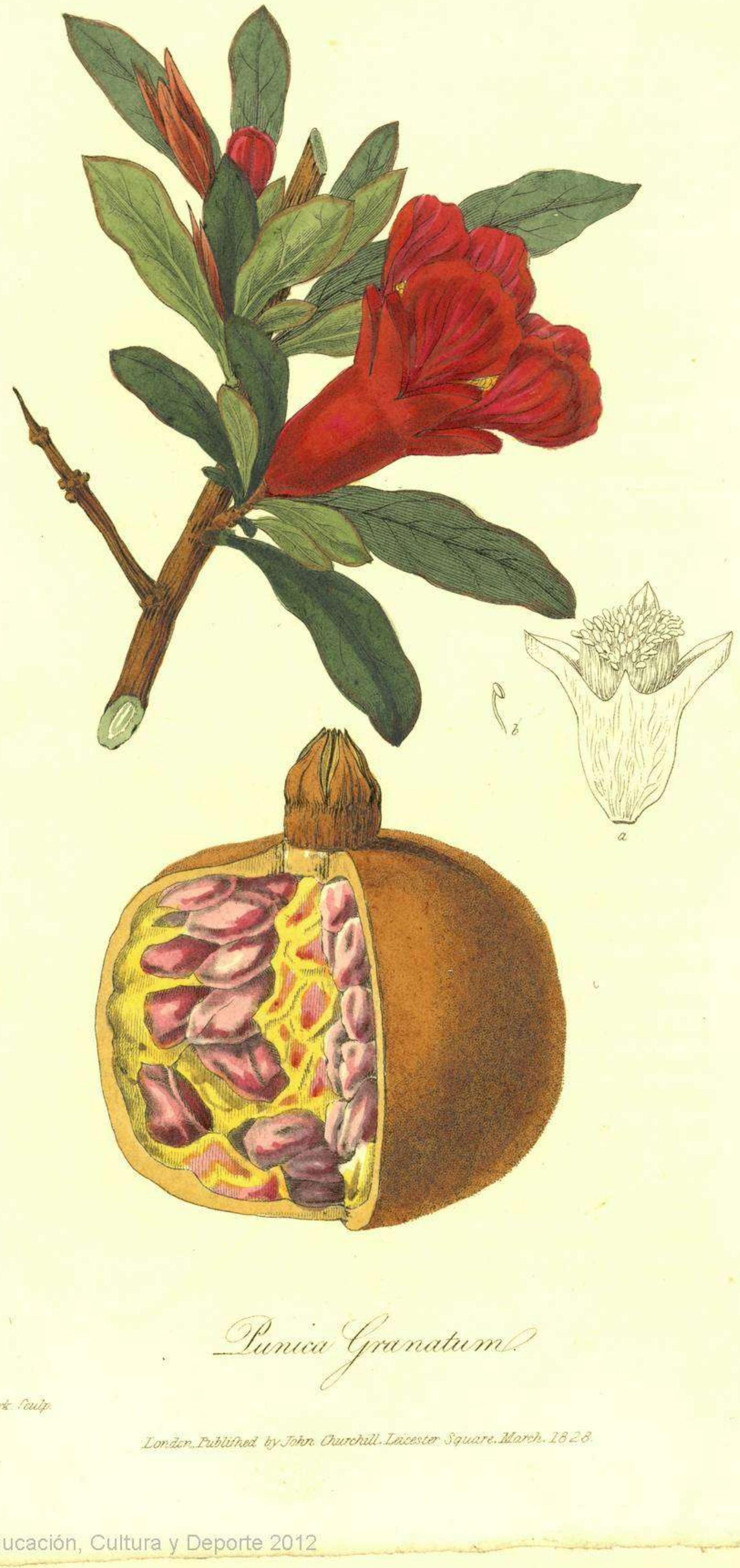
The proportions of the ingredients are 50 parts of carrots, 300 parts of water, and one part of potass. Pectic acid in jelly liquifies with extreme facility on the effusion of a few drops of ammonia. The solution, evaporated to dryness, gives a residue, a sub-pectate of ammonia, which swells up extremely in distilled water, dissolves in it, and thickens a great quantity of that liquid.

It is remarkable how small a quantity of this salt can communicate to great quantities of sugared water, the property of gelatinizing. M. Braconot dissolved, in a quantity of warm water, one part of this salt, produced from the root of the turnip. He dissolved some sugar in the liquor, and then added an infinitely small quantity of the acid ; a moment after, the whole had formed into a mass of trembling jelly, of the weight of three hundred parts. The inventor has prepared, by these means, aromatised jellies, perfectly transparent and colourless, very agreeable to the taste and to the eye. This acid is also obtained

from fruits, and may be used in the preparation of jellies. When it is wished, for example, to make a lemon jelly, one part of the acid in jelly, well drained, is mixed with three parts of distilled water; and to these, a small quantity of a dilute solution of pure potash and soda is added, till the acid is dissolved and saturated. This solution is exposed to heat, and three parts of sugar are dissolved in it, a small portion of sugar being previously rubbed on the rind of a lemon. A small quantity of very diluted muriatic or sulphuric acid is added to the liquor to decompose the pectate; the mixture being agitated, acquires consistency, and forms into a jelly a short time afterward.

One of the most valuable properties that the author has discovered in the soluble pectates is, that they may be considered as the most certain antidotes in cases of poisoning by the metallic salts, with the exception of corrosive sublimate, nitrate of silver, and emetic tartar.

Medical Properties and Uses.—The seeds of Carrot are carminative and somewhat diuretic; and by Schroder, and others, have been recommended for obstructed menses, flatulent cholic, hiccough, dysentery, chronic coughs, gravel, &c. Cullen found them of no efficacy in the latter disease, and they appear to be of little use, excepting as correctors of flatulency. Dr. Ainslie, in his elaborate work, informs us that the Arabians place the root of the Carrot amongst their (Mobehyet Aphrodisiaca,) a proof that they never could have supposed them to be indigestible; which they certainly are not, if they be young, and *well* boiled. Bergius informs us that the expressed and inspissated juice is sweet, approaching to the nature of honey, but not crystallizable: and Marggraf recommends recent roots to be cut, well washed, and beaten into a pulp; the juice of which is to be expressed through a sieve, and inspissated to the consistence of honey, when it may be used at table instead of sugar, and will be found a useful remedy for infantile and consumptive coughs, and for worms. The root, beaten into a pulp, forms an excellent antiseptic poultice for cancerous and ill-conditioned sores, especially when combined with hemlock. The dose of the bruised seed is from ℈i. to ʒi. or more.



Punica Granatum.

W. Clark Sculp.

London. Published by John Churchill. Leicester Square. March. 1828.

LVII

PUNICA GRANATUM.

Common Pomegranate Tree.

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

Nat. Ord. POMACEÆ, *Lin.* MYRTI, *Juss.*

GEN. CHAR. *Calyx* 5-cleft, superior. *Petals* 5. *Pome* many-celled, many-seeded.

SPEC. CHAR. *Leaves* lanceolate. *Stem* arboreus.

Syn.—Malus Granata sive Punica, *Ger. Em.* 1450.
Malus Punica sylvestris et sativa, *Bauh. Pin.* 438; *Raii. Hist.* 1462.
Malus Punica, *Camer. Epit.* 130. 131.
Malus Punica sylvestris, sive Balaustium, *Park. Theatr.* 1511.
Punica spinosa, *n.* 1098. *Hall. Hist; Du Hamel Traite des Arbres, t.* 2. 193.
Punica Granatum, *Sp. Pl. Willd.* 2. 981; *Lamarck Illustr.* 415; *Sm. Fl. Græc. Sibth. v.* 1. 476; *Woodv.* t. 58; *Stokes,* 3. 84.

FOREIGN.—*Le Grenadier,* Fr.; *Pomo Granato,* It.; *Granado,* Sp.; *Roma,* Port; *Granatass felschale,* Ger.; *Granatnik,* Russ.; *Rana,* Arab.; *Anár.* Hind.

THE Punica *Granatum* is a native of the southern parts of Europe, of Arabia, Japan, Persia, and Barbary, and is much cultivated in India and Ceylon. Mr. Crawford says, that in the Indian Archipelago it is found only in a cultivated state, and that the finest fruit is brought into Upper India, from Eastern Persia; while Olivier, in his travels in the Ottoman Empire, informs us that those of Ghemlek are the finest in Turkey. It is also introduced into the West Indies from Europe, and bears fruit of a very superior description. It blossoms luxuriantly in our own country, but as the flowers are generally monsters, fruit is seldom met with, and never of a proper flavour. By the Romans it was called the Punic Apple. The

tree was well known to the ancients, and Venus is fabled to have planted the first in Cyprus. It is said by Theophrastus to inhabit the same spots that the myrtle does, but although it is still found in Macedonia, the latter plant is not to be seen with it. According to Dierbach* it is the *ποα ειδη* of Hippocrates, and Pliny refers to it in the following terms: "Interior Africa ad Garamantas usque, et deserta palmarum magnitudine, et suauitate constat, nobilibus maxime circa delubrum Hammonis. Sed circa Carthaginem Punicum malum cognomine sibi vindicat."—lib. xiii. ch. 19, p. 197.

This tree rises to the height of eighteen or twenty feet; it is covered with a brownish bark, and is divided into many slender branches, which are armed with spines. Tne leaves are opposite, or ternate, about three inches long, sessile, wavy, entire, oblong or lance-shaped, pointed at both ends, and of a bright green colour. The flowers are large, of a rich scarlet colour, solitary, or two or three together; and are produced at the extremities of the young branches, from June to September. The calyx is bell-shaped, thick, fleshy, of a fine red colour, and divided into five acute segments. The corolla is composed of five large roundish wrinkled petals, rather spreading, and of a scarlet colour. The filaments are numerous, capillary, furnished with oblong yellow anthers, and inserted into the tube of the calyx. The germen is inferior, roundish, with a simple style, the length of the stamens, and capitate stigma. The fruit is as big as an orange, globular, and somewhat compressed; containing numerous angular, seeds, each enveloped in a distinct very juicy rose-coloured pulp, and is crowned with the calyx, and covered with a thick tawny coriaceous rind. Fig. (*a*) represents a section of the flower; (*b*) a single stamen, with its anther.

QUALITIES AND CHEMICAL PROPERTIES.—The flowers (*Balaustra* of the ancients†) are of a beautiful red colour,

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* Materia Medica of Hippocrates.

† Flos balaustrum vocatum, et medicinis idoneus, et tingendis vestibus, quarum color inde nomen accepit.—*Pliny, l. c.*

nearly inodorous, but somewhat of a styptic flavour. The juice, which is contained in the membranous cells, exhales a vinous odour, when fresh; it is of an agreeable subacid taste, is refreshing, and contains a great deal of mucilage united to a little tannin. The bark of the fruit has been used in the art of tanning, and, besides mucilage, contains a volatile oil, and tannin.

Medical Properties and Uses.—The pulp of the fruit may be eaten by patients who are suffering from the thirst of ardent fever; and combined with sugar, or honey, is very refreshing. By some it is said to be diuretic. "The Hindoo doctors prescribe it, combined with saffron, when the habit is preternaturally heated." The bark of the fruit is a powerful astringent, and as it readily gives out its properties to water, it has been strongly recommended by Dr. Cullen as a medicine of which we may frequently make use for relaxation of the gums and throat, for chronic diarrhœa, blenorrhagia, prolapsus of the rectum or uterus, &c. It is also prescribed with considerable success in those profuse perspirations, and in the colliquative diarrhœa which accompany the last stages of phthisis pulmonalis. The flowers possess the same virtues, but in a milder degree.

The Mahometan physicians consider the bark of the root to be a specific in cases of tape-worm;* and it is probable that they borrowed their knowledge from Avicenna, who is said to be their favourite author.† They boil two ounces of the fresh bark, in a pint and a half of water, till half only of that quantity remains; of this, when cold, a wine glassful is drunk every half hour, till the whole is taken. It occasionally produces a little nausea, says Dr. Ainslie, but seldom fails to destroy the worm, which is soon passed. Celsus also refers to the same practice in the following words, "Vel etiam pridie, cum mul-

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* Vide Ainslie's Materia Indica, vol. i. p. 323.

† Acetosum est plurimu prouocans vrinam, quàm dulce; et ambo sunt prouocatina, et grana granati cum melle conferunt viceribus ani, et quod acétosum est, nocet (stomacho) et intestinis, et eius succus confert solutioni cholericæ, et confortat stomachu, et cortex radicis granati cum vino extrahit vermes, et ascarides, et assumitur cum sua dispositione, aut sumitur eius decocto. *Avicenna, Tractatus Secundus. Fol.* 329.

tum allium ederit vomat: posteroque die mali Punici tenues radiculas colligat, quantum manu comprehendet; eas contusas in aquæ tribus sextariis decoquat, donec tertia pars supersit; huc adjiciat nitri paulum, et jejunus bibat. Interpositis deinde tribus horis, duas potiones sumat, aut aquæ, vel muriæ duræ sit adjecta: tum desidat, subjecta calida aqua in pelve."* And we should suppose that M. Gomes, a Portuguese physician, who has written a treatise on the subject, is indebted to one of these sources for the suggestion. This gentleman has detailed sixteen cases of its successful employment, and since M. Merat has translated his work, and published it in the sixteenth volume of the *Journal Complémentine*, its efficacy has been confirmed by numerous experiments. Amongst others, M. Bourgeoise, has published many interesting facts upon the subject, in the Bibliotheque Medicale, (Dec. 1824,) and calculates that he has relieved thirty-four cases.

"Vegetable broth and spare diet are prescribed until the decoction be given. The evening before the medicine be taken, it is usual for the patient to take an *ounce* and a half, or two *ounces* of castor oil, with an equal quantity of syrup of lemons.

Decoction of the Bark of Pomegranate Root.

Take of fresh, but dry bark of the root of the pomegranate (bruised) . . 2 ounces.
Common Water . . . 2 pints.

"Macerate without heat twenty-four hours, then boil gently until it be reduced to one pint, and strain.

"This quantity of decoction is to be taken in three doses, one every half-hour, or every three-quarters of an hour.

"Usually in an hour, seldom so long as two hours after the third dose, the tenia is brought away entire, wound up into a ball, and strongly knotted in many places.

"Sometimes the first and the second doses are rejected from the stomach; notwithstanding which the third dose must be taken. It has been stated that the medicine given in the manner described may produce serious consequences.

"M. Bourgeoise, who gave it always in this manner, has never observed any thing which has induced him to give a less quantity: he has even used it in a stronger dose. If the tenia should not come away in an entire state, the vermifuge decoction should be repeated the following day." (*Majendie's Formulary.*)

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* A. Corn. Celsi de Med. l. iv. c. 17.

Artemisia.

Santonica. Absinthium.

W. Clark. del. et sculp.

London. Published by John Churchill. Lacester Square. March 1828.

LVIII

ARTEMISIA ABSINTHIUM.—*Common Wormwood*

Class XIX. SYNGENESIA.—*Order* II. POLYG-SUPERF.

Nat. Ord. COMPOSITÆ, γ, *discoideæ, Lin.* CORYMBIFERÆ, *Juss.*

GEN. CHAR. *Receptacle* either naked or hairy. *Seed-down* none. *Calyx* imbricated, with roundish converging scales. *Florets* of the radius subulate, entire.

* * * *Erect, herbaceous.*

SPEC. CHAR. *Leaves* bi- or tri-pinnatifid, clothed with a close silky down; the segments lanceolate. *Flowers* drooping, hemispherical. *Receptacle* hairy.

Syn.—Absinthium latifolium sive ponticum, *Ger. Em.* 1096.
Absinthium vulgare, *Raii Syn.* 188; *Park.* 98; *Fuch's Hist.* 1. *f.*; *Ic.* 2. *f.*
Absinthium, *Matth. Valgr. v.* 2. 47. *f.*; *Camer. Epit.* 452. *f.*
Apsinthium, *n.* 124; *Hall. Hist. v.* 1. 53.
Artemisia Absinthium, *Lin. Sp. Pl.* 1188; *Willd. v.* 3. 1844; *H. Brit.* 864; *Eng. Bot. v.* 18; *t.* 1230; *Hook. Scot.* 239; *Woodv. t.* 120.

FOREIGN.—*Absinthe commun*, Fr.; *Assenzio*, It.; *Artemisio axengo*, Sp.; *Wormuth*, Ger.

COMMON Wormwood, which, Dr. Thomson justly observes,* is the only species of Artemisia that deserves to be retained in the list of materia medica, is an indigenous perennial plant, growing naturally in waste places, and by road sides; flowering in August. In the neighbourhood of London, it is extensively cultivated for medical use, but wild specimens are more powerful than garden ones. At Mitcham, in Surrey, it is a good deal

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* London Dispensatory, 3d edit. p. 182.

cultivated for the seed, which is sold to the rectifiers of British spirits; and in Scotland, the distillers of great-still whiskey sometimes employ it in place of hops, and for their use, small fields of it are occasionally sown.

The root is woody and branched, with numerous fibres below. The stems rise one or two feet high; are branching, erect, striated, leafy, and panicled at top. Every part of the herb is covered with a close silky down, and has a peculiar strong aromatic odour. The lower leaves are bipinnate, on long footstalks; the upper pinnatifid, or digitated, on shorter footstalks, with broadish, entire, obtuse segments. The racemes are erect, and the flowers stalked, drooping, hemispherical, of a yellow colour, and accompanied by entire, oblong bracteas. The common calyx is imbricated and roundish. The florets of the disc are numerous, perfect, tabular, 5-lobed; those of the radius few, and destitute of stamens. The filaments are five, short, and united by their anthers into a 5-toothed tube. The germen is small, with a large recurved style and cloven stigma. The seeds are small, obovate, and naked. The receptacle is convex, and clothed with fine white silky hairs. Fig. (*a*) represents the calyx magnified to show the scales; (*b*) a section of the receptacle with a perfect flower; (*c*) the pistil and germen; (*d*) the corolla spread to show the insertion of the stamens.

Qualities and Chemical Properties.—Common Wormwood has a strong fragrant odour, and an intensely bitter, nauseous taste. These qualities are most remarkable in the fresh leaves, which lose part of their disagreeable smell by drying. The flowers are nearly as bitter as the leaves, but less nauseous; the roots are warm and aromatic, without the bitterness of the other parts of the plant. The leaves, and flowering tops, are the parts directed for medical purposes; and their peculiar virtues may be extracted either by water, or by alcohol. Besides the resinous matter, in which the bitter quality more immediately resides, the herb contains extractive, some earthy and saline matters, and an essential oil, which is not in the least bitter. By long boiling the essential oil is dissipated, and the bitter is obtained entire. An infusion of the herb gives to

water an olive tinge, which is slowly changed to black by the salts of iron; and superacetate of lead throws down a yellowish green flocculent precipitate.

Medical Properties and Uses.—Wormwood is one of the most popular stomachics, and possesses the properties of the class of bitters in a considerable degree; but it is inferior in medicinal powers to gentian, chamomile, quassia, and many others. It is regarded as anthelmintic, slightly tonic, and, in an inconsiderable degree, diuretic. It is an ingredient in the *Decoctum pro Fomento* of the older editions of the London Pharmacopæia, usually termed *Fotus communis*, which is made by boiling an ounce of dried chamomile, dried wormwood, dried southernwood, and half an ounce of bay-leaves in six pints of water. Its chief use is in dyspepsia, and hypochondriacal affections; and has at different times acquired a high reputation for its efficacy in intermittents, gout, scurvy, jaundice, and dropsy. Like all other bitters it has been of service in calculous complaints, and is an ingredient in the once celebrated Portland powder for the cure of gout. Haller extols its powers as a stomachic, and recommends it as a preventative of the fits of gout, for which purpose it is said to have been advantageously employed by the Emperor Charles V. "Princeps est medicamentum stomachicum, quod tonum fibrarum ventriculi laxatum reparet, in cruditate acida, aut hypochondriaca, magnum auxilium est; longo usu podagram avertis, proprio meo experimento. Quare etiam in iuero extractum et in hydropis initiis vinum apsinthites summo cum fructu adhibui."* The extract is nearly a simple bitter, and may be administered in doses of gr. x. to ℈j, two or three times a day. The essential oil is recommended by Hoffman as an antispasmodic, and anodyne; and by Boerhaave in tertians; but modern practice supplies more effectual remedies. The vegetable alkali of the shops was formerly procured from this herb, and called salt of wormwood; and some have supposed that saline draughts made with it, sit more easy on the stomach.

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* Haller Hist. Stirp. Indig. Helvet. tom. 1. p. 54.

Dose.—In substance, ℈j. to ʒss.; of the infusion, made by macerating, ʒvi. of the herb in ℥xij. of water, ℥j to ℥iss.

Off. Prep.—*Extractum Absinthii. D.*

ARTEMISIA SANTONICA.—*Tartarian Southernwood.*

Pl. 58.

** *Procumbent before flowering.*

Spec. Char. *Stem leaves* pinnate, linear, multifid. *Branches* undivided. *Spikes* 1-ranked, reflexed; *Flowers* with five florets.

Syn.—Sementina, *Ger. Em.* 1100.

Semen Sanctum, *Lob. Ic.* 758.

Absinthium Santonicum Alexandrinum, *Bauh. Pin.* 139; *Raii Hist.* 368; *Park.* 132.

Absinthium Seraphium Ægyptium et semen, Sanctum, *Camer. Epit.* 457.

Artemisia Santonica, *Sp. Pl. Willd.; Woodv.* 335. *t.* 123.

Foreign.—*Sementine*, Fr.; *Santonico*, It.; *Sartarisches Beyfus.*

This species of Artemisia is a native of Tartary, and Persia; and is reported to have been cultivated in England by Miller, in 1768. It flowers from September, till November.

The root is perennial and woody. The stem is two feet high or more, round, panicled, erect, and somewhat hoary. The leaves on the upper part of the stem and branches are small, sessile, linear, entire, and undivided; the lower ones pinnate, much cut, linear, of a pale green colour above, and hoary beneath. The flowers are roundish, pale brown, solitary, and placed in alternate spikes or racemes upon short footstalks, and are all directed the same way. In the fruiting plant the branches are erect, and lose their hoariness. The common calyx is composed of numerous narrow imbricated scales. The florets of the disc are hermaphrodite; those of the radius female; and both, in their situation, and structure, agree with the preceding species. The receptacle is naked.

Qualities.—This species of Artemisia very much resem-

bles common wormwood in its chemical, and sensible qualities. It has a strong disagreeable odour, and when chewed, first warms the tongue, and then leaves a sensation of cold. The seeds, both of this and of the Artemisia *judaica*, are brought from the Levant, and sold under the name of worm-seed.

MEDICAL PROPERTIES.—The seeds of this plant, known by the name of *Semina Santonici*, were formerly much used for the expulsion of worms, but have given place to anthelmintics more deserving of notice. They have likewise been supposed to possess emmenagogue powers. Bergius says, "Puellæ cuidam decenni, vermibus conflictanti, semina santonici exhibui, sed per illud tempus, quo iis utebatur, menses fluxerunt, qua re cognita, usum eorundem dissvasi, unde etiam fluxus sponte cessavit." When employed as an anthelmintic, from twenty grains to one drachm, to an adult, may be given in syrup, or treacle, combined with small doses of the sulphate of iron, two or three times a-day, interposing a cathartic.

ARTEMISIA ABROTANUM.—*Common Southernwood.**

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* *Shrubby erect.*

SPEC. CHAR. *Leaves* setaceous, pinnatifid; *stem* very branching, shrubby.

Syn.—Abrotanum mas, *Ger. Em.* 1105; *Raii. Hist.* 371; *Dodon. Pempt.* 21.
Abrotanum mas vulgare, *Park. Theatr.* 92.
Abrotanum mas angustifolium majus, *Bauh. Pin.* 136; *Tourn. Inst.* 459; *Duham. Arb.* 20. *t.* 4.
Artemisia Abrotanum, *Sp. Pl. Willd. v.* 3. 1815; *Woodv. v.* 3. *t.* 119.

FOREIGN.—*Abrotonum*, Lat.; *L' Aurone des Jardins, Citronelle Auronne*, Fr. *Abrotano*, Ital.; *Limbriguera*, Sp.; *Stabwurz, Eberaute, Gartenwurz*, Ger.

THIS species of Artemisia is a perennial under-shrub, a native of Syria, China, Siberia, Italy, Carniola, and Montpellier. In

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* We have not thought it necessary to give figures of this and the following species; that our work might not be unnecessarily expensive.

England, it was cultivated by Gerarde in 1596, and probably much earlier. Although it sustains no injury from our ordinary winters, it seldom flowers.

The root is woody and fibrous. The stem rises two or three feet in height; is branching, and covered with an ash-grey bark. The leaves are alternate, doubly and irregularly pinnate, and stand upon long footstalks. The leaflets are linear, very narrow, entire, concave on the upper surface, concave below; tomentose, and of a pale green colour. The flowers, which are in close upright spikes at the extremities of the branches, are small, numerous, and of a pale yellow colour. The seeds are naked and solitary.

Southernwood is called in Greek, *Αβροτονον*, which is variously derived from *αβροτον*, *inhumanum*, bitterer than wormwood; from *αβρωτον*, *cibo inutile*, unfit for food; *δια το προς οψιν αβρον και απαλον φαινεςθαι*, from the delicacy and softness of its appearance; or from *αβρος* and *τονος*, *οτι αβρως τεινεται*, because it is extended, or grows in a very soft manner.

Qualities.—The herb, which is the part used in medicine, is exceedingly grateful in odour to most persons, and there are few cottage-gardens in which it is not to be found. The taste is pungent, bitter, and somewhat nauseous; it depends on an essential oil, and a small portion of resinous matter, soluble in proof spirits; the tincture thus formed is of a fine green colour, and contains the active properties of the plant in an eminent degree. The infusion is of a pale brown colour, possesses a slight bitter taste, strikes a black colour with the sulphate of iron, and precipitates the acetate of lead. Six pounds of the fresh tops yield about a drachm of essential oil, of a bright yellow colour, and an odour resembling that of the plant.

Medical Properties and Uses.—Southernwood agrees in its medical properties with the other species of Artemisia, but is more disagreeable; and as it possesses no advantages over either the common, or the sea wormwoods, it is never employed in modern practice. A decoction of the herb was formerly employed externally in fomentations; it has also been used under the form of ointment and lotion for some cutaneous eruptions,

and for preventing the hair from falling off. In the days of Gerarde, Southernwood was highly extolled in a variety of diseases, and the following extract from his Herbal will at least afford amusement:—"The tops, flowers, or seed, boiled or stamped raw with water and dranke, helpeth them that cannot take their breath without holding their necks straight up, and is a remedie for the crampe, and for sinewes shrunke and drawne togither; for the sciatica also, and for them that can hardly make water, and it is goode to bring down the termes. It killeth wormes and driveth them out; if it be drunke with wine, it is a remedie against deadly poisons. Also it helpeth against the stinging of scorpions and fielde spiders, but it hurteth the stomake. Stamped and mixed with oile, it taketh away the shiuering cold that cometh by the ague fits, and it heateth the body if it be anointed therewith before the fits do come. It is goode for inflammations of the eies, with the pulpe of a rosted Quince, or with crums of bread, and applied pultis-wise. The ashes of burnt southernwood with some kind of oyle that is of thinner parts, as of Palma Christi, Radish oyle, oyle of sweet Marierome, or Organie, cureth the pilling of the haire, and maketh the beard to grow quickly; being strowed about the bed, or a fume made of it vpon hot embers, it driveth away serpents; but if a branch be laid vnder the bed's head, they say that it prouoketh venerie. The seeds of Southernwood made into powder, or boiled in wine and drunke, is good against the difficultie and stopping of vrine; it expelleth, wasteth, consumeth, and digesteth all colde humours, tough slime, and flegme, which do usually stop the spleene, kidneies, and bladder. Southernwood drunke in wine, is good against all venome and poison. The leaves of Southernwood boiled in water vntil they be soft, and stamped with barley and barrowes grease vnto the forme of a plaister, dissolueth and wasteth all colde humours and swellings, being applied or laide thereto."

Dose.—In substance, the dose may be from ℈i to ʒj.

ARTEMISIA MARITIMA.—*Sea Wormwood.*

* * *Procumbent before flowering.*

SPEC. CHAR. *Leaves* downy, pinnatifid; uppermost undivided. *Flowers* drooping, oblong, sessile, racemed. *Receptacle* naked.

Syn.—Absinthium marinum album, *Raii Syn. ed.* 3. 188; *Ger. Em.* 1099. *f.*
Absinthium maritimum nostras, *Dill. in Raii. Syn.* 189.
Artemisia maritima, *Lin. Sp. Pl.* 1186; *Willd. v.* 3. 1833; *Woodv. t.* 122.

ENGLISH.—*Drooping Sea Wormwood; French Sea Wormwood; Sea Mugwort; English Sea Wormwood; Roman Wormwood*; Herb-sellers.

THIS is a native plant, growing on the sea-shore, or about the mouths of large rivers, and flowering in August, and September. We observed it growing plentifully by the side of the Thames, near Greenhithe, Kent.

The root is perennial, and rather woody. The stems a foot high, or more; solid, woody, erect or decumbent; alternately branched, leafy, and covered with a fine white cottony down. The whole herb is hoary: the lower leaves are pinnate, with 3-cleft segments; the upper ones linear or irregularly cleft. The flowers are in unilateral leafy racemes, nearly sessile, ovate-oblong, drooping, and of a yellowish brown colour. The outer scales of the calyx are woolly; the inner ones nearly naked, with a broad membranaceous margin. The receptacle is small and naked. The florets are very few; those of the ray sometimes wanting.

QUALITIES.—It has a more agreeable aromatic odour, and less bitter taste than common wormwood; its specific virtue being supposed to depend on a portion of resinous matter, and an essential oil,

MEDICAL PROPERTIES.—The Artemisia *maritima*, as well as the preceding species, has been sometimes prescribed in worm-cases, dyspepsia, and jaundice. Its medical properties are those of a slight tonic, inferior in efficacy to common wormwood, and not often employed except in discutient and antiseptic fomentations, in inflammations, tumors, and foul ulcers; where its topical application has been thought beneficial. In substance, the dose may be from ℈j. to ʒj. The infusion is made by macerating for four hours six drachms of the leaves in ten ounces of boiling water. Dose, a cupful twice or three times a-day.

Carum Carui.

W. Clark. del. et sculp.

London. Published by John Churchill. Leicester Square. March. 1828.

CARUM CARUI.

Common Carraway.

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

Nat. Ord. UMBELLIFERÆ. *Lin.*

GEN. CHAR. *Involucre* 1-leafed. *Petals* inversely heart-shaped, inflex emarginate. *Fruit* elliptic-oblong, with equidistant ribs; insterstices convex and striated. *Calyx* 0, or very minute.

SPEC. CHAR. *Stem* branched. *Partial involucres* none.

Syn.—Carum seu Careum, *Raii Syn.* 213; *Ger. Em.* 1034.
Caros, *Fuchs. Hist.* 396. *f.*; *Bauh. Hist.* 3. *p.* 2. 69. *f.*
Carum, *n.* 789. *Hall. Hist. v.* 1. 351.
Carum, *Dod. Pempt.* 299. *f.*; *Matth. Valgr. v.* 2. 114. *f.*; *Camer. Epit.* 516. *f.*
Carum Carui, *Lin. Sp. Pl.* 378.; *Willd. v.* 1. 1470; *Fl. Brit.* 330; *Eng. Bot. v.* 21. *t.* 1503; *Hoock. Scot.* 95; *Woodv. p.* 125. *t.* 45.

FOREIGN.—*Carvi*, Fr.; *Carvi*, It.; *Alcaronea*, Sp.; *Kümmelsamen*, Ger.

CARRAWAY is an umbelliferous biennial plant, a native of the north of Europe, which has become naturalized, in some parts of Britain, where it has long been cultivated for confectioners, distillers, and bakers, as well as for medicinal purposes. The flowers are produced in June, and the seeds ripen in August or September.

From a spindle-shaped root proceeds an erect, branched, leafy, furrowed, smooth stem, which rises to the height of about two feet. The lower leaves are of a light green colour, eight or ten inches long, stalked, smooth, bipinnate, with numerous finely cut leaflets, the segments of which are narrow, linear, and pointed; those on the stem are smaller, and stand opposite, one

of them on a dilated membranous-edged footstalk, the other sessile. The flowers are numerous, white, or of a pale flesh colour, form an umbel, which is terminal, erect, and composed of many rays. The general umbel is large, usually of ten rays, and furnished with a 1—3-leaved general involucre, which is sometimes deficient; the partial is entirely wanting. The calyx is very minute, or altogether deficient. The petals are five, nearly equal, small, inflexed; the filaments, spreading, about as long as the petals, and bearing small, roundish 2-lobed anthers; the germen is inferior, ovate, supporting styles, which are very short in the flower, but afterwards become elongated, and terminate in bluntish stigmas. The seeds are two, elliptic-ovate, bent, of a greyish-brown colour, and marked with three dorsal, and two marginal ribs, the interstices being marked with three lines. Fig. (*a*) represents a perfect flower; (*b*) a stamen; (*c*) the germen and styles, magnified.

Culture.—The carraway, or caroy, *καρος* of Dioscorides, is much cultivated in Essex, especially at Mersea Island. Mr. Neil says the seed should be sown in Autumn, soon after it is ripe, on a moist rich soil; the seedlings quickly rise, and the plant being biennial, a season, by this plan, is gained. The seed is generally sown in rows; and in the Spring the plants are thinned out, to four or six inches apart. At the end of Summer, when the seeds appear to be nearly ripe, the plants are pulled up, and set upright to dry; the seed being then easily beaten out.

Qualities and Medical Properties.—Carraway seeds are warm and aromatic, and give out their virtues, which depend on an essential oil, partially to water, but entirely to alcohol. In former times, the tapering fusiform roots were eaten like parsnips, to which Parkinson gives them the preference. In the Spring, the leaves are sometimes put into soup. The seeds are used for cakes, and, incrusted with sugar, are known by the name of *comfits*. They are likewise distilled with spirituous liquors. The oil of carraways is stimulant and carminative, and is often used to cover the taste of other medicines, and to prevent them from griping.

The dose of the seeds is ʒj. or ʒij.

Pl. 60

Convolvulus Scammonia?

W. Clark Sculp

London Published by John Churchill Leicester Square March 1828

LX.

CONVOLVULUS SCAMMONIA.

Syrian Bindweed, or Scammony.

For the Class, Order, and Generic Character, see Convolvulus *sepium*.

SPEC. CHAR. *Leaves* sagittate, the posterior margins with a tooth. *Foots-talks* cylindrical, nearly double the length of the leaves, mostly 3-flowered.

Syn.—Scammonium syriacum, *Ger. Em.* 866; *Lob. Ic.* 1. 620; *Raii. Hist.* 722; *Park*, 163; *Bauh. Hist.* 2. 163.

Convolvulus syriacus, sive Scammonia, *Moris. Hist.* 2. 12. *t.* 3. 5; *Bauh. Pin.* 294.

Εκαμμωνια, *Diosc.*

Convolvulus Scammonia. *Sp. Pl. Willd.* 1. 844. *Sm. Fl. Græc. Sibth.*; *Woodv. Med. Bot. 2d. edit.* 243. *t.* 86; *Stokes* 1. 322.

FOREIGN.—*Scammonèe*, Fr.; *Scammonea*, It.; *Escamonea*, Sp.; *Scammonium Von Aleppo*, Ger.; *Sukmunga*, Hind. and Arab.

THIS species of Convolvulus, which much resembles our great Bindweed (C. *sepium*) is a native of Turkey, Syria, Greece, Persia, and Cochinchina. According to Dr. Russel, 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, dividing near the top into two small pedicels, an inch or two in length, each supporting a pale 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 already described. The capsule is three or four-celled, containing several small pyramidal seeds. Fig. *(a)* represents the corolla removed to show the stamens; *(b)* the germen and style.

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 acetious 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,

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* Oper. de Re Med. lib. viii. p. 206.

† Lib. iv. chap. 17.

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 we consider 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 so violently, as to produce numerous evacuations, that are occasionally bloody; painful senesmus, colic, and inflammation: 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 extends 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, where 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 Mountains Amanus, I imagine it might probably be found on most of the hills in Syria that produce any

* Med. Observ. and Inquiries, vol. i. p. 18.

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 drachms. 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 it is yet soft, they have an opportunity of mixing it with such other things as suit their purpose best; as wheat-flower, 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

* This of course applies only to the recent article.

a little time, yet the liquor still retains its milky colour. The colour of Scammony seems to be a mark of little consequence, for I have seen it in 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 in colour from what is dried in the shade." (*Russel.*) 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 druggists in the City, has favoured us with the fol-

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* Pharmacop. Francaise, by Ratier, p, 94.
† Ann. de Chin. Lib. xxii. 69.

lowing receipt for a spurious kind of Scammony, with which the profession are supplied by these 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.

Linum

usitatissimum.

catharticum.

W. M. Maddocks Sculp.

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LXI

LINUM USITATISSIMUM.

Common Flax.

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

Nat. Ord. GRUINALES, *Lin.* *Allied to* CARYOPHYLLEÆ, *Juss.* LINEÆ, *De Cand.*

GEN. CHAR. *Corolla* 5-petalled. *Capsule* globose, 10-valved, 10-celled. *Seed* solitary, ovate, compressed.

* *Leaves alternate.*

SPEC. CHAR. *Calyx-leaves* ovate, acute, 3-nerved. *Petals* crenate. *Leaves* lanceolate, alternate. *Stem* mostly solitary.

Syn.—Linum sylvestre sativum plane referens, *Raii Syn.* 362.
Linum sativum, *Ger. Em.* 556; *Park. Theatr.* 1335.
Linum, n. 836. *Hall. Hist. v.* 1. 373.
β Linum, *Camer. Epit.* 200. *f.*; *Bauh. Hist. v.* 3. 450. *f.*; *Fuchs. Hist.* 471. *f.*; *Raii Syn.* 362.
Linum usitatissimum, *Lin. Sp. Pl.* 397; *Willd. v.* 1. 1533; *Fl. Brit.* 342; *Eng. Bot. v.* 19. *t.* 1357; *Curt. Lond. fasc.* 5. *t.* 22. *Woodv. t.* 111; *Hook. Scot.* 97; *Stokes, v.* 2. 186.

PROVINCIALLY.—*Lint; Lyne; Flax.*

FOREIGN.—*Lin, Grains de Lin,* Fr.; *Lino domestico, Seni de Lino,* It.; *Laxor,* Sp. *Flacks, Lein, Leinsaamen, Flachsaamen,* Ger.; *Vlasch,* Dut.; *Len, Lan, Russ.; Busrue,* Arab.; *Tisi,* Hind.

OF the genus Linum, more than thirty species have been described by botanical writers. Linneus, in the 14th edition of his Systema Vegetabilium, enumerates twenty-two; besides which, four, not mentioned by him, occur in the Hortus Kew-

ensis, and one in the Prodromus Floræ Græcæ. To this list belongs the L. *Radiola*, which is the Radiola *millegrana* of Smith. The genus is divided into two sections, the first having opposite, the second, alternate leaves. To the first section belongs the Linum *Usitatissimum*, the subject of this article. It is an annual plant, growing occasionally in corn-fields, and in sandy pastures; flowering in July, and ripening its seeds in September.

Common flax has a small, fibrous root; a round, slender, smooth, leafy, and branched stem, which rises to the height of two feet. The leaves are scattered, small, lanceolate, entire, sessile, three-nerved, alternate, and, on the upper part of the stem, of a glaucous, or sea-green colour. The flowers are numerous, collected in a corymbose pannicle, erect, and supported on longish footstalks. The calyx is composed of five lanceolate, erect, permanent, 3-ribbed leaflets. The corolla is funnel-shaped, and consists of five notched, sky-blue, shining, veiny, oblong petals, which are narrow below, and gradually grow broader upwards. The filaments are five, awl-shaped, erect, the length of the calyx, and inserted into an annular receptacle, with simple sagitated anthers. The germen is superior, ovate, and surmounted by five blue, capillary, spreading, undivided, bluntish stigmas, the length of the stamens. The fruit is a globular capsule, about the size of a pea, with ten cells and ten valves united in pairs, and crowned with a sharp spine. In each cell is lodged a single elliptical, pointed, smooth, and shining seed.—Fig. (*a*) represents the calyx; (*b*) the stamens; (*c*) the germen and styles.

The generic name, Linum, retained from the ancient Greek authors, is supposed to be derived from λινεω, to hold; the fibres of this plant being so remarkable for their tenacity, that its herbage has always been in the highest estimation in the manufacture of linen cloth.

Flax is mentioned in the ninth chapter of Exodus, verse 31, as growing in Egypt; and it is still found in those parts which are inundated by the Nile. It grows also in many of the counties of England; and as we have no intimation of its first introduction, it has been supposed to be an indigenous plant, by some of our botanists. Although its utility has been known from

time immemorial, it appears probable that the knowledge of its applicability to the purposes of society, was ascertained long after cotton had been employed; as the vestments of mummies are composed of the latter material, which in its natural state, even from its very appearance, would be likely to have struck the Egyptians as a structure that might easily be wrought into garments. In the simplicity of former times, when families provided themselves with most of the conveniences and necessities of life, every garden supplied a sufficient quantity of hemp and flax; but although we make clothing from the stalks of the latter, and draw valuable oil from its seeds, which likewise serve as food for our cattle, little of it is now cultivated in England; wheat yielding crops much more profitable. The maceration or steeping, necessary to separate its fibres, renders water so very offensive, that in the reigns of Henry the Eighth, and James the Sixth of Scotland, acts were passed to prevent this process from being carried on in any river, stream, or pond, where cattle drank, under the penalty of twenty shillings.

QUALITIES AND CHEMICAL PROPERTIES.—The cuticle of the seeds of flax, commonly called *linseed*, yields a mucilage to boiling water, which is inodorous, and has but little taste. By *expression*, a bland, inodorous, sweetish oil is obtained, the specific gravity of which is 939.* It is much more soluble in alcohol than olive-oil; and as it is one of the *drying oils*,† it loses its unctuosity after proper preparation, and is used for varnishes, and printer's ink. It is not congealed excepting by a cold below 0° of Fahrenheit, and boils at 600° of the same scale. Although the pharmacopœia orders this oil to be obtained by expression, heat is generally employed, which renders it disagreeable both in

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* Prof. Thomson's System of Chemistry.

† When fixed oils are exposed to the open air, or to oxygen gas, they undergo different changes according to the oil. All of them, as far as experience has gone, have the property of absorbing oxygen; and by uniting with it, they become more and more viscid, and terminate at last in a solid state, being apparently saturated with oxygen. Some retain their transparency after they have become solid; while others become opaque, and assume the appearance of tallow, or wax. Those that remain transparent are called *drying oils*, while those that become opaque are called *fat oils*.

taste and smell: it is therefore seldom employed as an internal remedy. Linseed contains about one-fifth of mucilage, and one-sixth of oil. The cake remaining after the expression of the latter, is used for fattening cattle, by the name of oil-cake.

Medical Properties and Uses.—Woodville asserts that linseed affords but little nourishment, and that when taken as food it is found to impair the stomach. These circumstances were noticed by Galen.* Ray † also adverts to them; and Professor Fritze, in his Medical Annals, states, that vegetable mucilage, when used as a principal article of diet, relaxes the organs of digestion, and produces a viscid, slimy mucus, and a morbid acid in the primæ viæ—effects which may be obviated, as Dr. Paris has well shown, ‡ by the addition of bitter extractive.

As we have already stated, the oil is little used as a demulcent; but if it can be obtained good, we can recommend it to be given in doses of one table-spoonful as an excellent corrector of habitual costiveness; and if a drachm of tincture of rhubarb be added to it, it will generally agree with the most fastidious stomachs. The decoction of the seeds contains a portion of oil diffused in the mucilage; it is, therefore, an useful ingredient for injections, when we have abrasion or ulceration of the mucous membrane of the intestines: and the infusion is a valuable drink for persons who are suffering from irritation of the fauces; it is also much employed for diseases of the urinary organs, on a false principle we conceive. § We need scarcely state, that one of our most useful and common poultices is made with linseed-meal and boiling water.

Off. Prep.—Infusum Lini. *L.*

Oleum Lini. *L. E. D.*

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* Stomacho autem noxium est, et cocta difficile, exiguumque alimentum corpori exhibet.— *De Aliment. Facul. lib. secundus, cap.* 32.

† Quod paucis abhinc annis Middleburgi in Zelandia (inquit Tragus) animadverti potuit, cum propter frumenti aliarumque frugum inopiam plerique ex civibus pane et cibis ex hoc coctis vescerentur. Distenta enim his valde citò hypochondria fuerunt, et facies aliæque partes tumidæ factæ, quorum non pauci sic affecti etiam mortui sunt.—*Hist. Plant.* p. 1073.

‡ Pharmacologia. Edit. 5. vol. i. p. 144.

§ See our observations on this subject under Althæa Officinalis. *Art.* 51.

LINUM CATHARTICUM.—*Purging Flax, or Mill-Mountain.*

Pl. 61.

** *Leaves opposite.*

SPEC. CHAR. *Leaves* opposite, obovate-lanceolate. *Stem* pannicled above with dichotomous branches. *Petals* acute.

Syn.—Linum sylvestre catharticum, *Raii Syn.* 362; *Ger. Em.* 560. *f.*
Linum pratense, flosculis exiguis, *Bauh. Pin.* 214.
Chamælinum Clusii flore albo, sive Linum sylvestre catharticum, *Park.* 1336.
Linum, *n.* 839. *Hall. Hist. v.* 1. 374.
Linum catharticum, *Lin. Sp. Pl.* 401; *Willd. v.* 1. 1541; *Fl. Brit.* 344; 344; *Eng. Bot. v.* 6. *t.* 382; *Curt. Lond. fasc.* 3. *t.* 19; *Hook. Scot.* 97; *Stokes, v.* 2. 188.

PROVINCIALLY.—*Wild Dwarf Flax; Mountain Flax; Mill-mountain; Meadow Flax; Two-leaved Spurrey; Chamælinum*, or *Ground Flax.*

FOREIGN.—*Lin Sauvage, Lin purgatif*, Fr.; *Lino salvatico*, It.: *Purgierend flachs*, Ger.

THIS small, delicate species of flax, belongs to the second section of the genus Linum, from having opposite leaves. It is an indigenous annual, growing in dry meadows, and pastures; flowering from the end of May, to August. Dr. Milne found it plentifully in waste ground opposite the chalk-pits at Greenhithe; at Gravesend, by the river-side; and in the meadows betwixt Chatham and Gillingham. Dr. Greville, in his "Flora Edinensis," says, it occurs abundantly in the King's Park; and between Burntisland and Pettycur, in Fifeshire.

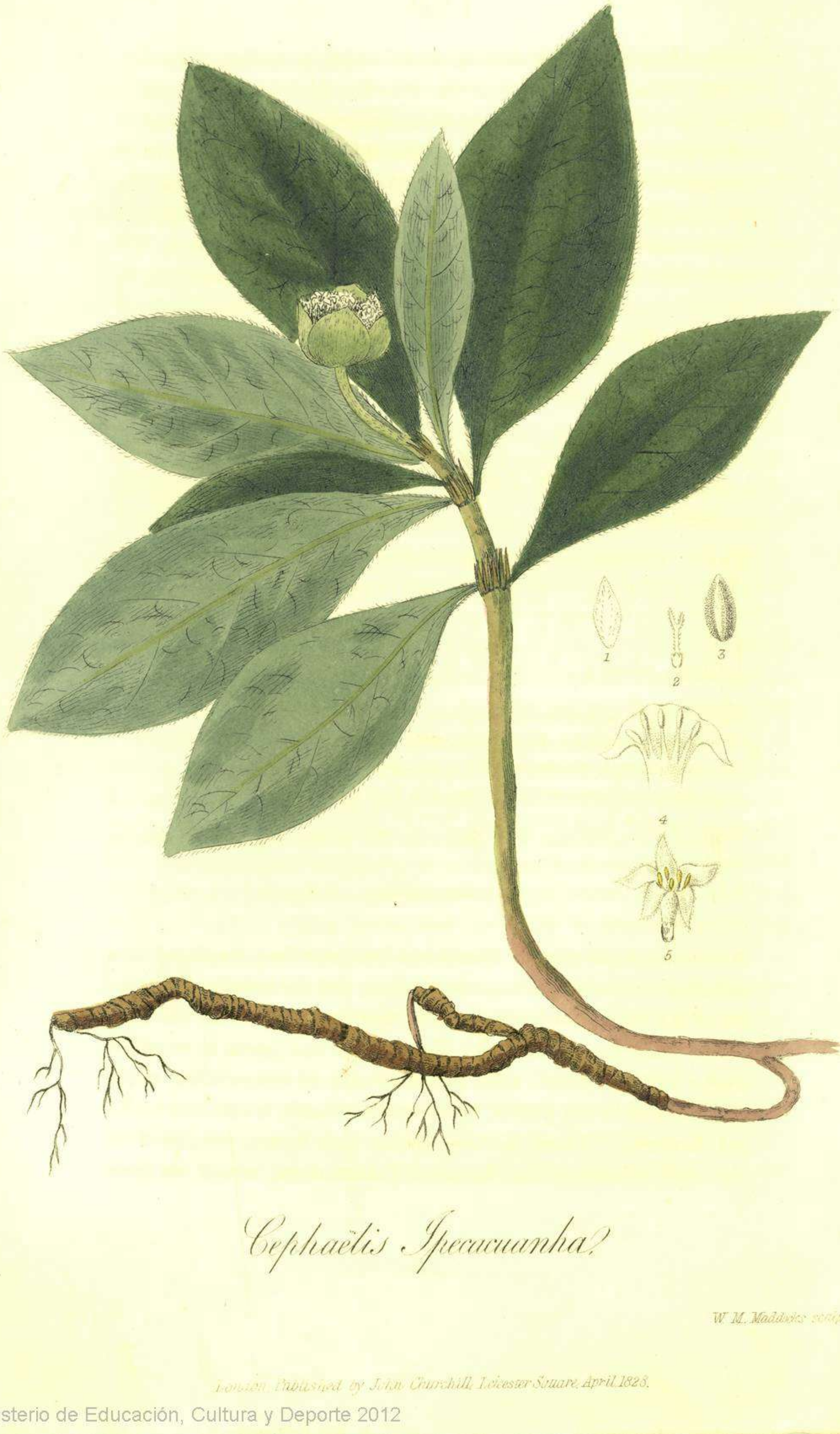
Mountain-flax rises from a very small, tapering, woody root, with several slender, straight, smooth stems, to the height of a span and upwards. The stem at the lower part is simple, but above pannicled, dichotomous, and spreading. The leaves are small, bright green, elliptical, stand opposite in pairs, and have no foot-stalks; those next the root are rounded, and terminate bluntly; whilst on the stem they are lanceolate, smooth, and pointed. The flowers are small, white, drooping before expan-

sion, and sustained on long pedicles at the extremity of the stalks. The leaves of the calyx are pointed, serrated, and one-ribbed; the petals acute, entire, white, and spreading; the filaments are ranged in a circle round the lower part of the germen, which is ovate and furnished with capitate stigmas. The capsules resemble those of the preceding species, having the same number of valves or openings, and ten cells, each inclosing a small yellow, smooth, shining, oblong pointed seed.—Fig. (*a*) represents the calyx; (*b*) the stamens surrounding the germen; (*c*) the germen, and styles; (*d*) the capsule.

Qualities.—Purging-flax, when well dried, is of a bright green colour, and gives out its virtues to water, which becomes of a greenish brown colour, tastes rather warm, and somewhat bitter. The virtues of the plant appear to depend on extractive matter, and a bitter resin.

Medical Properties.—Two ounces of this plant, infused in a pint of water, forms an infusion which we frequently administer to delicate subjects as a valuable indigenous, tonic purgative. A wine-glassful taken twice a-day generally succeeds in keeping the bowels in a soluble condition; but if we want more decided effects, we may give it oftener, or combine it with neutral salts, or rhubarb. It sometimes produces a little griping, which is obviated by a little compound spirit of ammonia. Mr. Houlton has prepared an extract, which operates rather severely in doses of ten grains. As the plant grows so abundantly in our own country, why has it fallen, so undeservedly, into disuse? Both Gerarde and Lewis strongly recommend it; and the latter states, that it occasionally acts as a diuretic.

Pl. 62.



Cephaëlis Ipecacuanha?

W. M. Maddocks scrip.

London Published by John Churchill, Leicester Square, April 1828.

CEPHAËLIS IPECACUANHA.

Ipecacuan.

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

Nat. Ord. AGGREGATÆ, *Lin.* RUBIACEÆ, *Juss.*

GEN. CHAR. *Flowers* in an involucred head. *Corolla* tubular. *Stigma* 2-parted. *Berry* 2-seeded. *Receptacle* chaffy.

SPEC. CHAR. *Stem* ascending, somewhat shrubby, sarmentous. *Leaves* ovate, lanceolate, a little pubescent; leaflets a little heart-shaped; *corolla* 5-cleft, chaffy; *bracteas* large.

Syn.—Herba Paris Brasiliana, Polycoccos, *Raii. Hist.* 669.
Ipecacuanha fusca, *Piso Bras. p.* 101; *It. Margr. Bras. p.* 17.
Psychotria Ipecacuanha, *Stokes, Bot. Mat. Med. v.* 1. 364.
Callicocca Ipecacuanha, *Brotero, Lin. Trans. v.* 6. *t.* 2.
Cephaëlis Ipecacuanha, *Willd. Spec. Pl.* 1. 977.
FOREIGN.—*Ipecacuanne*, Fr.; *Ipecacuana*, It.; *Ipecacuanha*, Sp.; *Brechwerzel*, Ger.

ALTHOUGH the root of Ipecacuan has been long employed as a valuable article of the materia medica, yet the botanical character 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

taken the liberty to copy, we learn that it belongs to the genus Calicocca; or, as Linneus has since arranged the same individuals, to that of 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 Ipecacuanha by the natives of some parts of Brazil; *poaia do matto* 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 somewhat 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 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 stipules, deeply cut into awl-shaped divisions, sessile, shrivelling, equal to the petioles in length, and with them embracing the stem. The flowers are aggregated in a solitary head, a little drooping, on a round downy foot-stalk, terminating the stem, and encompassed by a four-leaved in-

volucre. 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, very entire, sessile, green, varying in form, sometimes longish 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 a little heart-shaped, acute, entire, almost sessile, slightly waved, hairy; the two outer ones largest, and all a little longer than the florets. The calyx is very small, superior, membranous, persistent, white, with five blunt teeth. The corolla is monopetalous, 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 a 1-celled berry, of a reddish-purple colour, becoming wrinkled and black, and containing two smooth, oval seeds. Fig. (*a*)

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

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; the subjoined passage, being a translation from his work, is to be met with in Purchas' Pilgrims, vol. iv. fol. 1311: "*Igpecaya*, or *Pigaya*, is profitable for the bloodie fluxe, the stalke is a quarter long, and the roots of another, or more; it hath onely foure or five leaves; it smelleth much wheresoever it is, but the smell is strong and terrible. This root is beaten, and put in water all night at the deaw, and in the morning, if this water, with the same root beaten and strained, be drunke, (onely the water,) it causeth presently to purge in such sort, that the laske ceaseth altogether." A distinguished writer in

Rees's Cyclopædia infers from this passage, that the method of using the plant induced operations by stool; but if the plant referred to, be the ipecacuanha now in use, (and the description seems to confirm this,) we do not see how far that construction is warranted; for the nature of the medicine is not altered by water: and as we know that an infusion of ipecacuanha produces vomiting in our day, we believe that that effect is referred to by the Brazilian; and this will readily be conceded, if it be remembered that the word purge was frequently used by our old English authors synonymously with vomiting.

Piso afterwards describes it,* and speaks of two sorts, the white and brown, which he says were given for fluxes, and as vomits. 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 Cephaëlis *Ipecacuanha*, while the *white* is the root of the Richardsonia *Brasiliensis*, which is exported largely to Portugal. Besides these, the name of *ipecacuan*, which in the language of South America, means *vomiting root*, is given to various species of Cynanchum, Asclepias, Euphorbia, Dorstenia, and Ruellia, 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 Psycotria *emetica;* by, from sixty to seventy-two of the Viola *calceolaria;* and by, from one drachm to three of N. *Ipecacuanha*.

Linneus, in a paper published in the third volume of "Ame-

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* Historia Naturalis Brasiliæ, p. 101. It has been asserted that Piso was the first to advert to ipecacuanha, but his work was published several years after Tristam's.

nitates Academicæ," gave Ipecacuanha as a trivial name to a species of Euphorbia, a native of Virginia and Carolina; the root of which is there used as an emetic. But this was soon discovered not to be the real ipecacuanha. In his second "Mantissa," he gave the trivial name to a species of *Viola*, a native of Brazil; the root of which he supposed to be the white ipecacuanha of the shops. De Candolle, in a paper published in the "Bulletin des Sciences par la Societé Philomatique," and republished entire in the "Nouveau Dictionnaire d'Histoire Naturelle," says, there are three species of Viola which produce the white ipecacuanha; the *calceolaria* of the "Species Plantarum," a native of Guiana, and the Antilles; the *ipecacuanha* of the Mantissa, and the *parviflora* of the "Supplementum Plantarum," both natives of Brazil. The roots of these, and especially the last, are sometimes mingled in common with the true or brown ipecacuanha; but they are a fraudulent adulteration, and do not possess its active properties. They may be distinguished by their colour, but most certainly by the size of the woody part, which in these is always considerably thicker than the bark; whereas, in the true ipecacuanha it is much less; and, as described by Brotero, is only a fibre *(filum)*.

The *black* or *striated ipecacuanha*, (*Psycotria emetica**) is exported from Carthagena to Cadiz. It is black within and without, fusiform, articulated, striated, and not annulated. The *white*, in contradiction to De Candolle, already quoted, is described by Gomez, to be the root of Richardsonia *Brasiliensis*: "it is of a dirty white, and turns brown by drying; it is simple, or little branched, often five or six lines thick, three inches long and upwards, attenuated at its extremities, variously contorted, with transverse annular rugosities larger than those of the brown ipecacuanha; bark thick, white internally; softer than the other; wood white, hard, fine as a thread;

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* We have had no opportunity of consulting Mutis; who, according to Dr. Todd Thompson, says that the Psycotria *emetica* yields the Peruvian grey ipecacuan; which is at variance not only with Dr. Duncan's account, but with the *Pharmacopée Française*, edited by Ratier, fol. 52.

when fresh, its taste is acrid; when dry, farinaceous; smell, nauseous when recent.

The common brown (Cephaëlis *Ipecacuanha*) is exported from Rio to Portugal. Its colour varies from different degrees of grey to brown; but it is characterized by being contorted, wrinkled, and unequal in thickness; having a thick, brittle bark, deeply fissured transversely, covering a central very small white wood, so as to give the idea of a number of rings strung upon a thread.

The descriptions of these three varieties we have copied from Dr. Duncan's Dispensatory. The whole subject is, however, involved in considerable difficulty from the cause we have already adverted to, viz. the signification of the term *ipecacuan*, being applied so generally to plants that excite vomiting. We are quite sure, however, that the plant we have figured, yields the brown ipecacuanha which is so generally employed; dried specimens being in existence in this country. And by reference to Dr. Woodville's plate, which was copied from a specimen sent home in spirits to Sir Joseph Banks, without its flower, it will be seen that the plants agree.

Qualities and Chemical Properties.—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. It has been subjected to various chemical investigations, and Dr. Irvine ascertained that it contains a gum resin. M. M. Pelletier and Majendie have given the following as the result of their analysis:

Oil	2
Emetine	16
Wax	6
Gum	10
Starch	42
Wood	20
Loss	4
	100

Annales de Chimie. iv 180.

While pursuing their investigations they discovered that the power of the various species of ipecacuanha depended on a peculiar principle, to which the name *emetine* has been given; and they think, that it might upon all occasions be substituted with advantage, being much more active than ipecacuanha itself, without possessing its disagreeable taste, and smell. The latter quality resides in a greasy substance, quite distinct from its emetic virtue; for M. Caventou swallowed it with impunity to the extent of six grains. As we have already announced, Art. Viola *odorata*, emetine has also been discovered in that plant by M. Boulay. The mode of preparing emetine, and its employment, are fully detailed under *medical properties.*

Incompatibles.—All vegetable astringents, as infusion of galls and vegetable acids, weaken or destroy the power of Ipecacuanha; and Dr. Irvine found that half a drachm administered in two ounces of vinegar produced loose stools only.

Medical Properties and Uses.—The utility of ipecacuanha is so generally known and properly appreciated, that we shall but briefly advert to it. 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 emetic, 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 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, 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 very 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 effect on the stomach; and is, therefore, frequently prescribed in cases of dyspepsia, attended by a foul tongue. Small nauseating doses are advantageously given to subdue uterine and pulmonary hæmorrhages; and combined with opium, the effects of both appear to be modified, so that under the name of Dover's powder, doses of from five, to ten grains, 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 60º 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 medical purposes. (See the next article). 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.

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 our author, 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. In cases of disease, the action of this substance is perfectly analogous. It both vomits, and purges; but acts beneficially in catarrhal affections, particularly those of a chronic kind*.

Medicinal Employment.

The cases in which emetine may be given, are the same as those in which ipecacuanha is indicated.

To procure vomiting, dissolve four grains, and give it in divided doses. If the whole quantity were administered together, the vomiting thereby excited would expel it at once from the stomach, without producing any other effect. The following formula may be used.

Emetine Mixture.

Take of Emetine ..... 4 grains.
Weak orange-flower infusion.... 2 onces.
Syrup of orange-flower..... ½ once.
Mix.

Five *gros* to be taken every half hour.

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* See Recherches Chimiques et Physiologiques sur l'Ipecac. Par M. M. Magendie et Pelletier. Paris, 1807.

In chronic pulmonary catarrhs, hooping cough, obstinate diarrhæas, &c. the following lozenges may be advantageously substituted for the common ipecacuanha preparations of that sort.

Pectoral Lozenges of Emetine.

Take of Sugar ..... 4 onces.
Coloured Emetine ..... 32 grains.
Mix.

To be made into lozenges of nine grains each. It is customary to give these lozenges a rose colour, by means of a little carmine, in order to distinguish them from similar preparations of ipecacuanha. One may be given every hour; but more frequent exhibition will excite nausea. To excite vomiting by means of similar lozenges, half the quantity of sugar only should be used, and the proportion of emetine being the same, the lozenges should consist of 18 grains. One of these, taken fasting, is commonly an emetic for a child, and three or four will readily excite vomiting in adults.

The following syrup may be substituted for the syrup of ipecacuanha used in France.

Take of Simple Syrup ..... 1 pound
Coloured Emetine ..... 16 grains.
Make a syrup.

PURE EMETINE.

The emetine of which we have hitherto spoken, is by no means pure. M. Pelletier, during a course of chemical research, upon which he is still employed, has obtained the active matter of the ipecacuanhas in a completely isolated state; and it appears to be a new vegetable alkali—of which we proceed to describe the principal characters.

Mode of Preparation.

To obtain pure emetine, calcined magnesia must be employed, adding a quantity of this base sufficient to take up the free acid which exists in the liquor, and also to attract that which is combined with the emetine. This substance, being thus separated and rendered less soluble, is precipitated and mixed with the excess of magnesia; and the precipitate, washed with a little cold water, (which takes up the colouring matter not combined with the magnesia) must be carefully dried, and treated with alcohol, which dissolves the emetine. This being again obtained, (after evaporating the alcohol,) must be re-dissolved in diluted acid, and treated with purified animal charcoal. After this process, for the purpose of removing the colour, we are to precipitate by means of a salifiable base. The waters in which the magnesian precipitate has been washed, still retain a portion of emetine, which may be obtained by another series of operations.

M. Calloud obtains emetine by the following process:—125 *grammes* of the cortical part of ipecacuanha pulverised, is mixed with 800 grammes of water, sharpened by 16 grains of sulphuric acid, it is brought to the boiling point and kept a little below that temperature for half an hour, stirring it constantly with a wooden spatula; then it is all poured upon a shallow earthen dish so as to extend the surface as much as possible.

This acidulated decoction is left to cool, and to it is added 125 *grammes* of pulverised lime; it is then reduced to the consistence of jelly by the addition of a sufficient quantity of water, and afterwards dried upon a stove at a temperature not above 50° Reaumur.

This mass is then pulverised; it is composed of sulphate of lime, gallate of lime, fatty and colouring matter combined with an excess of lime, free emetine, fecula and woody matter. On submitting this to the action of boiling alcohol at 36°, or 38°, the emetine is dissolved, combined with very little common matter; and is obtained by evaporating the alcohol.

To procure this substance in a pure and white state, dissolve it in water slightly acidulated, treat it by very pure animal charcoal, filter the solution, that it may be more conveniently concentrated; saturate the acid with weak ammonia, filter, wash with a little distilled water, and leave what remains upon the filter to dry at the ordinary temperature, and in the dark: this will be pure emetine.

Emetine may be procured from the mother waters and washings, according to the methods already described.

Physical and Chemical Properties.

Pure emetine is white and pulverulent, not acted on by the air; whereas coloured emetine is deliquescent. This substance is slightly soluble in cold water, rather more so in warm water, but readily so in ether and alcohol. Its taste is slightly bitter. It is very fusible, melting at 50° of the centigrade. It restores the blue colour to turnsol reddened by an acid; and dissolves in all the acids, impairing, without entirely removing, their acidity; and forming with them crystallizable salts, in which the acid predominates. It is precipitated from its combinations by gall nuts, in the manner of the alkalies of cinchona, so that in a case of poisoning by emetine, gall nuts would be the best antidote. M. Caventou swallowed a dose which produced inconvenient consequences, but neutralised its action by a decoction of galls. According to M. M. Dumas and Pelletier, the composition of this substance is:—

Carbon	64,57
Azote	4.00
Hydrogen	7.77
Oxygen	22.95
Emetine	99.29

This emetine was obtained from the Cephaëlis emetica.

Action of the Pure Emetine on the Animal System.

It is the same as that of the coloured, but much more powerful. Two grains are sufficient to kill a large dog. M. Magendie saw vomiting produced by one sixteenth of a grain in a man aged 85, in whom however, vomiting was easily excited.

Medicinal Employment.

For some time M. Magendie has used lozenges, composed of

Sugar	4 onces.
Pure Emetine	8 grains.

made into lozenges of 9 grains each.

But in order to produce vomiting, one grain of pure emetine, previously dissolved either in a little acetic or sulphuric acid, may be mixed in some drink; or the following formula may be adopted;

Emetic Mixture of Pure Emetine.

Take of Infusion of lime flowers ..... 3 onces.
Pure Emetine dissolved in a sufficient quantity of acetic acid.. } 1 grain.
Syrup of Marshmallow ..... 1 ounce.
Mix.

Dose. Five *gros* every quarter of an hour till vomiting is produced.

Or, a syrup may be prepared in the following manner.

Take of Simple syrup..... 1 pound
Pure Emetine ..... 4 grains.

Make a syrup which may be given in doses of 5 grammes*

OFF. PREP.—Pulvis Ipecacuanhæ Compositus. L. D.
Vinum Ipecacuanhæ. L. E. D.

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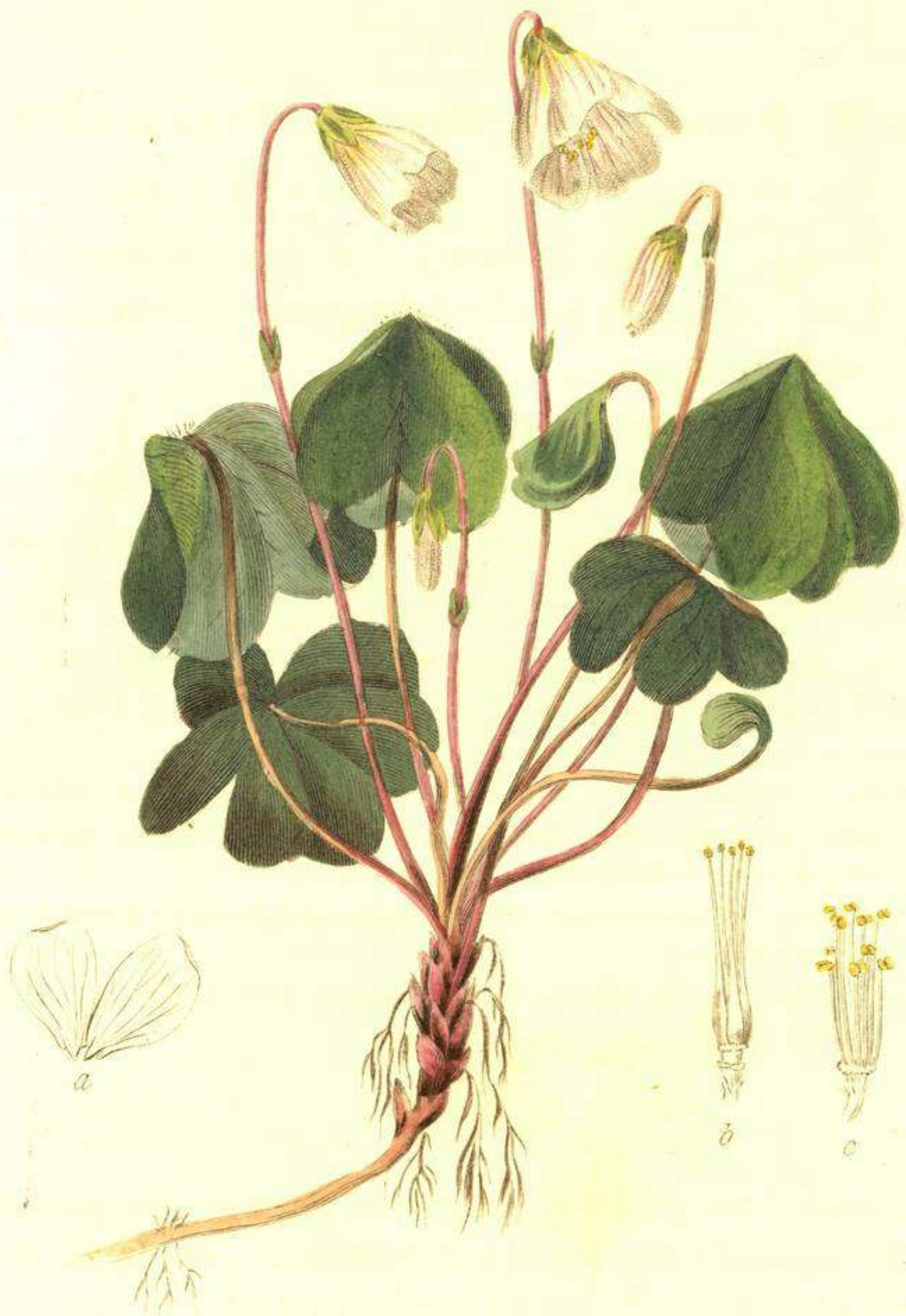
* For a table of French weights reduced to Troy weight in round numbers, we again refer to Mr. Houlton's Translation of Magendie's Formulary.



Oxalis Acetosella.

W.M. Maltacks Sculp.

London. Published by John Churchill, Leicester Square, April 1828.

XLIII

OXALIS ACETOSELLA.

Common Wood-sorrel.

Class X. DECANDRIA. *Order* V. PENTAGYNIA.

Nat. Ord. GRUINALES, *Lin.* GERANIA, *Juss.*

GEN. CHAR. *Calyx* 5-leaved. *Petals* connected at the base. *Capsule* 5-celled, angular. *Seeds* 2, with an elastic arillus.

* * * *Leaves ternate, scape* 1-*flowered.*

SPEC. CHAR. *Leaves* all radical, ternate, inversely heart-shaped, hairy. *Scape* single-flowered. *Root* squamose.

Syn.—Oxalis alba, *Raii. Syn*, 281; *Ger. Em.* 1201. *f.*; *Merr. Pin.* 90.
Trifolium acetosum, *Camer. Epit.* 584, *f.* 2; *Matth. Valgr. v.* 1. 191. *f.*
Oxys. *n.* 928; *Hall. Hist. v.* 1. 402.
Oxalis Acetosella, *Lin. Sp. Pl.* 620; *Willd. v.* 2. 780; *Fl. Brit.* 491; *Eng. Bot. v.* 11. *t.* 762; *Curt. Lond. fasc.* 2. *t.* 31; *Woodv. t.* 20; *Hook. Scot.* 141; *Fl. Dan. t.* 980; *Stokes, v.* 2. 555.

PROVINCIALLY.—*Woodsour; Sour trefoil; Stubwort; Alleluja; Sorrel du bois; Cuckoo's beard.*

FOREIGN.—*Petite Oseille, Surelle,* or *Pain a Coucu,* Fr.; *Acetosa salvatca,* It.; *Oxalide arederilla,* Sp.; *Sauerhlec,* Ger.

THIS delicate little creeping indigenous plant is very generally found throughout Europe. It is a perennial, growing in moist shady woods, and producing its flowers in April and May.

The root is horizontal, and consists of several fleshy reddish scales, connected by a thread. The leaves are ternate, on long, hairy, radical, purplish footstalks; with the leaflets obcordate and entire, drooping in the evening, of a yellowish-green colour, and purplish underneath. The scape, or flower-stalk, is about four inches high, slender, furnished with a pair of opposite bracteas, placed considerably below the flower, which is bell-shaped, drooping, of a delicate white or pale flesh-colour, and

streaked with purplish veins. The calyx is cut into five, acute, ovate segments; petals five, obovate, spreading; filaments capillary, with oblong, furrowed, incumbent anthers; germen ovate, with five thread-shaped styles, and obtuse, downy stigmas. The capsule is 5-celled, membranous, and containing two seeds in each cell, and inclosed within an elastic arillus, by the bursting of which they are thrown out. Fig. (*a*) shows the petals spread; (*b*) the styles (*c*) the stamens.

This plant is called by old Gerarde, wood sour, sour trefoil, stub-wort, and sorrel du bois; by herbalists, alleluya, and cuckoo's meat, "by reason when it springeth forth and flowereth, the cuckoo singeth most; at which time also alleluya was wont to be sung in churches." The names Alleluya and Lujula, appear, however, to be corrupted from the Calabrian name, *Juliola*.

Qualities and Chemical Properties.—Wood-sorrel is inodorous, but possesses a very agreeable and refreshing acid taste. Twenty pounds of the fresh plant yielded to Neuman six pounds of juice, from which he got two ounces, two drachms, and one scruple of the bin-oxalate of potash: and two ounces, six drachms of an impure saline mass.

The bin-oxalate of potass, is one of three subspecies of oxalate of potash, and exists ready formed in Oxalis *Acetosella*, Oxalis *corniculata*, and different species of Rumex, from which it is extracted in some parts of Europe in large quantities. Hence it is known by the name of salt of wood-sorrel, and in this country is sold as essential salt of lemons, mixed with an equal quantity of cream of tartar. It is mentioned by Duclos in the Memoirs of the French Academy for 1668. Margraaf proved that it contained potass; and Scheele discovered its acid to be the oxalic. It may be formed, as Scheele has shown, by dropping potash very gradually into a saturated solution of oxalic acid in water: as soon as the proper quantity of alkali is added, the bin-oxalate is precipitated. But care must be taken not to add too much alkali, otherwise no precipitation will take place at all.

Medical Properties and Uses.—The leaves of this plant are among the most grateful of the vegetable acids. The juice of sorrel is sometimes used as an agreeable refreshing drink in fevers, and the leaves boiled in milk form a pleasant whey; but the other vegetable acids are quite as useful and more available: Beaten up with fine sugar, the leaves make a refreshing and wholesome conserve; "its flavour resembling green tea." The leaves in a recent state form a good salad for the scorbutic, and have been employed with advantage as an external application to scrofulous ulcers.

Bryonia dioica.

W. Clark del. et sculp.

London. Published by John Churchill. Leicester Square. April. 1828.

BRYONIA DIOICA.

Red-berried Bryony.

Class XXI. MONŒCIA.—*Order* V. PENTANDRIA.

Nat. Ord. CUCURBITACEÆ, *Lin. Juss.*

GEN. CHAR. Male. *Calyx* 5-toothed. *Corolla* 5-cleft. *Stamens* 3. Anthers 5. Female. *Calyx* 5-toothed. *Corolla* 5-cleft. Style 3-cleft. *Berry* inferior, many-seeded.

SPEC. CHAR. *Leaves* palmated, 5-lobed, toothed, rough on both sides. *Flowers* racemose, dioicous.

Syn.—Bryonia alba, *Raii Syn.* 261; *Ger. Em.* 869; *Woodv. v.* 3. *t.* 189.

Bryonia aspera, sive alba, baccis rubris, *Bauh. Pin.* 297; *Mill. Ic.* 47. *t.* 71.

Vitis alba, sive Byronia, *Matth. Valgr. v.* 2. 620. *f.*; *Camer. Epit.* 987. *f.*; *Fuchs. Hist.* 24. *f.*

Bryonia dioica. *Willd. Sp. Pl. v.* 4. *t.* 621; *Fl. Brit.* 1019; *Engl. Bot. v.* 7. *t.* 439; *Hook. Scot.* 272.

PROVINCIALLY.—*Bryony; Tetter Berry; White Wild Vine.*

FOREIGN.—*Bryone, Couleuvre,* Fr.; *Brionia, vite bianca,* It.; *Neuza alba,* Sp.; *Zaunrube, Stickwurz,* Ger.; *Wilde Wyngaard, Witte Bryone,* Dut.; *Hundrosva,* Swed.

THIS is an indigenous plant, with annual stems, and a perennial root; very common in dry hedges, and flowering from May to September.

From a large, fleshy root, which is often as thick as a man's thigh, of a white colour, and subdivided below, this species of briony rises with several slender, herbaceous, annual, rough, leafy stems, somewhat branched, and climbing by means of tendrils to the height of several feet. The leaves are large, with five acute lobes, hairy on both sides, rough all over with minute callous tubercles, and disposed alternately on strong hairy footstalks.

The flowers are dioicous, or male and female on different plants; of yellowish white colour, elegantly streaked with green veins, and form a sort of panicle proceeding from the axillæ of the leaves. Miller observed that, after the first two or three years, old roots sometimes produced both fertile and barren blossoms on the same plant, " as is proper to all the other known species of this genus." The calyx of the male flower is monopetalous, bell-shaped, and deeply divided into five narrow, pointed, segments; the corolla is also bell-shaped, and divided into five deep segments, which are ovate and spreading. The filaments are three; short, thick, and furnished with five anthers, of which two are together, united on one of the filaments, and the fifth solitary on the third filament. The calyx and corolla of the female flowers are superior, and resemble those of the male, but are smaller. The germen is inferior, surmounted by a short, strong, erect, 3-cleft style, with large, cloven, triangular, spreading stigmas. The fruit is a smooth, globular, red berry, about the size of a common garden-pea, containing five or six roundish seeds, in pairs, attached to the rind. " The true Bryonia *alba* of Linneus, found on the continent, has black fruit, being called *alba* from its white root, in contradistinction to *Tamus*, the black-rooted Bryony." *—Fig. *(a)* represents the corolla spread open to show the anthers; (*b*) the germen, with its styles and stigmas; (*c*) the ripe fruit.

Qualities and Chemical Properties.—The fresh root, which is spongy, has an extremely disagreeable odour, and a particularly nauseous taste, which appear to depend principally upon an acrid principle that can be so dissipated by repeated washings with water, as to leave a fecula similar to what is yielded by the potatoe; and which, in the scarcity which followed the French revolution, was resorted to as food, and found to be very nutritious. Vauquelin has lately analysed the root. By maceration in water, and subsequent pressure in a linen cloth, the starch was separated, and obtained in a state of purity. The bitter substance was soluble both in alcohol and water, and appeared to possess the proper-

* Smith's English Flora, v. 4. p. 130.

ties of pure bitter principle. It was found also to contain a considerable portion of gum; a substance which is precipitated by infusion of galls, and which Vauquelin denominates vegeto-animal matter, some woody fibre, a small portion of sugar, and a quantity of super-malate of lime, and phosphate of lime.

Poisonous Effects.—Given in over-doses, the root of bryony exerts a powerful influence on the lining membrane of the stomach, and bowels; producing all the effects of an acrid cathartic, such as vomiting, purging, intense pain, and inflammation and all its consequences. Orfila infers from numerous experiments—

1st. That the bryony root acts upon men in the same manner as upon dogs.

2nd. That its effects may depend on the inflammation it produces, and the sympathetic irritation of the nervous system, rather than on its absorption.

3rd. That its deleterious properties reside especially in the portion which is soluble in water.

Treatment.—First evacuate the stomach by ipecacuanha powder, suspended in warm water. After the stomach has been evacuated, give repeated doses of the sulphate of magnesia, dissolved in almond emulsion, which will not only operate on the bowels, but serves to defend the mucous membrane of the intestinal canal from the acrid effects of the poison. Should inflammatory symptoms supervene, the usual antiphlogistic treatment is to be practised.

Medical Properties and Uses.—This root was formerly much extolled as a cathartic and diuretic. Its medical properties, evidently depend upon its acrid juice, which is most powerful in the autumn and spring; the root must therefore be procured at one of these periods, and to insure its uniform operation, we always choose the latter period. The root should be cut in thin slices and dried in the sun, or in a warm room; by which means some of the acrid qualities are dissipated: we then have a remedy of no little value for dropsical cases, as we can testify from pretty extensive

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* Ann. de Mus. d'Hist. Nat. No. 43, p. 82.

experience. Of the dried root we infuse half an ounce in a pint of boiling water; to which may be added one ounce of spirit of Juniper. Of this mixture we generally prescribe a wine-glass-ful every four hours; whereby we obtain numerous watery evacuations, and a copious secretion of urine. Like all other irritating purgatives, it occasionally acts too powerfully; when its use must be suspended, and cordials or opiates resorted to. It has been much commended for its effects in mania, and amongst others by Sydenham. Dioscorides and Pliny, were in the habit of giving an ounce of the juice for epilepsy: some of the moderns have done the same; and to procure it, it is customary to cut off the top, and scoop a hole in the root; which in the course of a few hours will be filled. Matthiolus recommends it for hysteria. Many accounts partaking of the marvellous, are extant of its virtues in expelling the parasites of the abdomen; * and it was once much celebrated as an emmenagogue. † Withering, says that a decoction made with a pound of the fresh root, is the best purge for horned cattle; and it is a common practice in Norfolk, to give small quantities to horses in their corn, to render their coats glossy and fine. The recent root is capable of blistering the skin, and has been found useful, if externally applied, to rheumatic affections of the muscles and joints, ‡ also for removing extravasated blood. "In hospitals," says Dr. R. Pearson, "it would very well supply the place of jalap, and thus lead to considerable savings."

The *dose* of the powder is from half, to one drachm.

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* Vide Takius, qui magna bryoniæ tribuit: quin etiam conducit singulariter, ad lumbricos, et variarum formarum vermes, lacertas, bufones, aliáque animalcula subinde in hominum intestinis reperibilia enecanda et expellenda. Hoc non tantummodò duobus egregiis experimentis confirmat Freitagus, sed etiam D. Michaëlis ex ancilla Altenburgica bufones et ranas deturbavit bryonia et irride nostrate.

Ettmuller *Opera Omnia*, Vol I. p. 608.

† Menses ac fœtum pellit, abortumque sæpe procurat. *Ibid.*

‡ Vel radix recens contusa, cum oleo lini subacta, et tepidè applicata, dolores ischiadicos aliosque; arthriticos tollit.... et in omni sanguine grumoso dissolvendo, et contusionibus; sicut et folia contusa in livore applicata sanguinem grumosum discutiunt. *Ibid.*

Daphne Mezereum.

W. Clark del.

London Published by John Churchill, Leicester Square May. 1828.

LXV

DAPHNE MEZEREUM.

Common Mezereon, or Spurge-olive.

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

Nat. Ord. VEPRECULÆ, *Lin.* THYMALEÆ, *Juss.*

GEN. CHAR. *Calyx* coloured, inferior, 4-cleft. *Berry*, 1-seeded.

SPEC. CHAR. *Flowers* sessile, in threes, on the stem. *Leaves* lanceolate, deciduous.

Syn.—Chamelæa Germanica, sive Mezereon, *Ger. Em.* 1402.
Daphnoides, *Matth. Valgr. v.* 2. 557. *f.*; *Camer. Epit.* 937. *f.*; *Fuchs. Hist.* 227. *f.*
Thymelæa, *n.* 1024. *Hall. Hist.* 227. *v.* 1. 438.
Daphne Mezereum, *Lin. Sp. Pl.* 509; *Willd. v.* 2. 415; *Fl. Brit.* 420; *Eng. Bot. v.* 20. *t.* 1381; *Woodv. t.* 23; *Stokes, v.* 2. 372; *Fl. Dan. t.* 268; *Bull. Fr. t.* 1.

FOREIGN.—*Laureole Gentile*, Fr.; *Mezereo, Daphnoide, Biondella*, It.; *Laureola-hembra*, Sp.; *Mezereo major*, Port.; *Kellerkals*, Ger.; *Woltschje luko*, Russ.

MEZEREON is a low shrub, which occurs wild in some parts of England, and produces its flowers in March. It is first mentioned as a native of our island, by Miller, who found it plentifully near Andover, in Hampshire. Since that it has been found in several other places, as at Laxfield, in Suffolk; in Needwood forest, Staffordshire; in the beech-woods in Buckinghamshire; at Eastham, and Stanford, Worcestershire; near Appleton, Berks; and in Wich-wood Forest, Oxfordshire. On the 10th of February, 1828, we observed it in full flower in the gardens near London, above three weeks before its average time of blowing,—a striking proof of the very remarkable mildness of the season.

It has a strong root, which gives off a number of small slender fibres covered with a smooth olive-coloured bark. The stem is bushy, with nearly upright alternate branches, covered with a smooth grey bark, and seldom growing above four, or five feet high. The leaves are deciduous, lanceolate, scattered, smooth,

stalked, about two inches long, and half an inch broad, appearing after the flowers, and accompanied by flower-buds for the next season. The flowers are disposed in clusters, about three together, on the naked branches, with several smooth, ovate bracteas underneath; they are of a pale rose-colour, fragrant, sessile, monopetallous, tubular, with the lip divided into four deep ovate, spreading segments. The calyx, which constitutes what is usually denominated the flower, resembles a *corolla* in texture, and contains the stamens. The filaments are eight, alternately shorter, inserted into the tube, and supporting roundish oblong anthers. The germen is ovate, superior, bearing a flattish, entire stigma, on a very short style. The fruit is a pulpy scarlet berry, containing a single seed, and is the favourite food of some species of Finch. Of this species of Mezereon there is a variety with white flowers, and yellow or orange-coloured berries. —Fig. (*a*) represents the calyx spread open, to show the insertion of the stamens; (*b*) a seed.

QUALITIES.—The bark of the root, which is the part used in medicine, is united to the ligneous fibre by a woolly substance. The recent bark is very acrid, and when chewed, powerfully excites the salivary glands, and creates burning sensations in the mouth, which last for a considerable time. M. Vauquelin has discovered a new vegetable principle in the DAPHNE *alpina* and D. *gnidium*: but we have not learnt that it has been found to exist in the D. *Mezereum*.

POISONOUS EFFECTS.—Several species of Daphne are poisonous, and the berries of this plant prove so to man, dogs, wolves, and foxes.* Linneus reports, that a young lady, labouring under intermittent fever, died from hæmoptysis, in consequence of having taken twelve berries of the Daphne *Mezereum*, which had been given with the intention of purging her;† and Vicat states, that an hydropic patient having taken the wood of Mezereon, was suddenly attacked with diarrhœa, which was continual, and accompanied with insupportable

* Semina ejus in cadaveribus abscondita exhibentur a rusticis Sueciæ lupis et vulpibus, quibus adsumtis pereunt sine mora æque ac a seminibus Strychni. *Linneus Flora Lapponica*, p. 105

† *Flora* Suecia, No. 338.

pains. He had beside, for six weeks, vomitings, which returned every day with extreme violence; although, during the whole time, proper remedies were employed in order to quiet them.*

M. Blatin also narrates the case of a person who took a decoction of the root of Mezereon, instead of marsh-mallow. It occasioned violent pain in the stomach and intestines, accompanied by strong burning sensations in the skin, restlessness, loss of appetite, intense fever, and irregular actions of the tendons. These symptoms were relieved by drinking copiously of a sweetened decoction of marsh-mallow.†

MEDICAL PROPERTIES AND USES.—It is very generally allowed that Mezereon is a stimulating diaphoretic, useful in chronic rheumatism; but Dr. Donald Monro, Dr. Russel, Dr. Fothergill, and several other eminent men, have described it as capable of curing venereal nodes, scirrhus tumours, obstinate ulcers, and severe affections of the skin. The extensive experience, however, of that able and scientific surgeon, the late John Pearson, by no means supports the character it had obtained; and as his book is in the hand of but few persons, and cannot be obtained, we are happy to be able to record his opinions:

"Dr. Russel's account of the virtues of Mezereon," says, Mr. Pearson, "is delivered with so much candour and fairness, that if it be not calculated to excite high expectations, it certainly contains nothing that can mislead. The seventeen cases which Dr. Russel has recorded, do by no means warrant a stronger form of expression than that which he has adopted; and, although Dr. Home has asserted, that 'this root is a powerful deobstruent in all venereal tumours of the scirrhous kind, when mercury has failed;' the evidence he has adduced of this fact, is so scanty and insufficient, that it can scarcely be regarded as forming an addition to Dr. Russel's prior report. From all that I have been able to collect, I feel myself authorized to assert, unequivocally, that the Mezereon has not the power of curing the venereal disease in any one stage, or under any form. If a decoction of this root can reduce a venereal node, when no mer-

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* *Histoire des Plantes Vénéneuses de la Suisse*, p.140.

† Roque's *Phytographie Medicale*.

cury has been previously given, yet the patient will by no means be exempted from the necessity of employing mercury, for as long a space of time, and in as large a quantity, as if no Mezereon had been taken." Speaking of its power of removing venereal nodes, Mr. P. remarks, "I have given the Mezereon in the form of a simple decoction; and also as an ingredient in compound decoctions of the woods, in many cases where no mercury had been previously employed; but never with advantage to a single patient. I have also tried it in numerous instances, after the completion of a course of mercury: yet with the exception of two cases, when the thickened state of the periosteum was removed during the exhibition of it, I never saw the least benefit derived from taking this medicine. In a few cases of anomalous pains, which I supposed were derived from irregularities during a mercurial course, the Mezereon was of service, after I had tried the common decoction of the woods without success; but, even in this description of cases, I have always found it a very uncertain remedy." In scrofulous cases, when the periosteum was diseased, Mr. P. saw no benefit derived from it; neither did he ever see it do good in cutaneous affections, excepting in two instances of lepra, in which the decoction conferred a temporary benefit. Mr. P. concludes by saying, "Indeed the Mezereon is of so acrimonious a nature, often producing heat, and other disagreeable sensations in the fauces; and, on many occasions disordering the primæ viæ; that I do not often subject my patients to the certain inconveniences which are connected with the primary effects of this medicine, as they are rarely compensated by any other important, and useful qualities."*

It has been asserted by some of our English authors, that the bark of the Daphne *Mezereum* is used in France to produce vesication, and to keep up the formation of pus from issues; but, on referring to Bergius, and to the Pharmacopée Française, we find it to be the produce of the D. *gnidium*.

Off. Prep.—Decoctum Sarsaparillæ Comp. *L.*

Decoctum Daphnes Mezerei. *E.*

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* *Observations on the Effects of various Articles of the Materia Medica,* &c. p. 44.

Canella alba.

W. Clark. del.

London. Published by John Churchill, Leicester Square. May. 1828.

LXVI

CANELLA ALBA.

White, or Laurel-leaved Canella.

Class XI. DODECANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. OLERACEÆ, *Lin.* MELIACEÆ, *Juss.*

GEN. CHAR. *Calyx* 3-lobed. *Petals* five. *Anthers* 21, adhering to a pitcher-shaped nectary. *Berry* 1-celled, with two or four-seeds.

Syn.—Canella peruana, and C. tubis minoribus alba, *Bauh. Pin. p.* 409; *Park.* 1581.
Canella cubane, *Johns. Dendr.* 165.
Canella cinamomea, *Pluk. Phyt.* 160. *f.* 7.
Canella Winterana, *Gœrt. Fruct. v.* 1. *t.* 77. *f.* 2.
Canella alba, *Sp. Pl. Willd. v.* 2. 851; *Swartz, Trans. Lin. Soc. v.* 1. 96. *t.* 8; *Woodv.* 2. 318. *t.* 117; *Stokes v.* 3. *p.* 12.
FOREIGN.—*Canelle blanche*, Fr.; *Canella bianca*, It.; *Weisser Zimmet*, Ger.

THIS tree is pretty common in most of the West India islands, growing in the inland woods, where it attains a considerable size.

The stem rises from ten to fifty feet in height, very straight and upright, and branched only at the top. The branches are erect, and not spreading; furnished with petiolated leaves, irregularly alternate, oblong, pointed, entire, without any distinct nerves or veins, of a dark green colour, thick like those of the laurel, and shining. The bark is whitish, by which it is commonly known at first sight in the woods. The flowers, which grow at the extremities of the branches in clusters, upon divided foot-stalks, are small, of a violet colour, and seldom open. The calyx is 1-leaved, persistent, and deeply divided into three lobes; the lobes are roundish, concave, incumbent, smooth, and mem-

branous. The petals are five times as long as the calyx, oblong, sessile, concave, erect, two a little narrower than the others; the nectary is pitcher-shaped, the length of the petals, bearing the anthers, and deciduous. There are no filaments; but the anthers, which are twenty-one in number, linear, parallel, adhere longitudinally to the outside of the nectary, and discharge a yellow pollen. The germen is superior, within the nectary, ovate, 3-celled; style cylindrical, with two rough, convex, blunt stigmas. The fruit is an oblong, fleshy, 1-celled, smooth, black berry. The annexed plate represents a branch of the tree in flower, and the berries of their natural size.—Fig. (*a*) a flower, with its petals forcibly expanded; (*b*) the fruit; (*c*) the pistil standing on the 3-lobed calyx magnified, with the two stigmas; (*d*) a transverse section of the berry of its natural size, with one seed remaining fixed to the side; (*e*) a seed of the natural size.

About the year 1579, as Captain Winter, who commanded the Elizabeth, which formed part of the squadron under the command of Sir Francis Drake, was sailing through the streights of Magellan, he discovered the Wintera *aromatica*, which yields a bark, first mentioned, described, and named by Clusius, as *Cortex Winteranus*, in compliment to the discoverer.* About the beginning of the seventeenth century, Clusius was the first, also, to record the introduction of Canella *alba;* which Parkinson† says, was in his time often mistaken for Winter's bark: it was John Bauhin,‡ however, who first confounded the names, by styling Cortex Winteranus, Canella alba; and although Sir Hans Sloane gave separate descriptions of each in the Transactions of the Royal Society, the botanical distinctions were paid so little attention to by Lemery,§ Pomet, and other writers on the materia medica, that Linneus‖ himself was led into error, and combined two different genera under the name of Laurus *Winterana.* He afterwards separated the Canella *alba* from *Laurus,* and established it as a distinct genus, by the name

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* *Exot.* lib. 4. ch. 4. † *Theatr.* p. 1581. ‡ *Hist.* t. i. l. 4. p. 460.
§ *Dict. des Drogues.* p. 170. ‖ *Sp. Plant.* ed. i. p. 371. n. 11.

Winterania; under which title it has been universally, but very improperly known; for while the tree we have figured comes, as we have already stated, from the West Indies, the Wintera *aromatica,* whose existence remained in oblivion nearly a century, during which time the bark of the former was substituted for it, is found in the neighbourhood of the Antarctic regions, and belongs to a different class. An excellent plate of it is given in Vol. V. of Medical Observations and Inquiries, and to that work we are indebted for the subjoined botanical account by Dr. Solander; which it will be well to compare with the one already given of Canella *alba.*

" *The Winter's Bark-tree, Winterana Aromatica,* is one of the largest forest trees upon Terra del Fuego; it often rises to the height of fifty feet. Its outward bark is, on the trunk, grey, and very little wrinkled, on the branches quite smooth and green.

" The *branches* do not spread horizontally, but bend upwards, and form an elegant head of an oval shape.

" The leaves come out, without order, of an oval elliptic shape, quite entire, obtuse, flat, smooth, shining, of a thick, leathery substance, evergreen, on the upper side of a lively deep green colour, and of a pale bluish colour underneath, without any nerves, and their veins scarcely visible; they are somewhat narrower near the footstalks, and there their margins are bent downwards.

" In general, the leaves are from three to four inches long, and between one and two broad; they have very short *footstalks,* seldom half an inch long, which are smooth, concave on the upper side, and convex underneath. From the scars of the old footstalks the branches are often tuberculated.

" The peduncles, or footstalks for the flowers, come out of the *axillæ foliorum,* near the extremity of the branches; they are flat, of a pale colour, twice or three times shorter than the leaves; now and then they support only one flower, but are oftener near the top divided into three short branches, each with one flower.

" The *bracteæ* are oblong, pointed, concave, entire, thick, whitish, and situated one at the basis of each peduncle.

"*Calyx*, or *flower-cup*, it has none; but in its place the flower is surrounded with a *spathaceous* gem, of a thick, leathery substance, green, but reddish on the side which has faced the sun: before this gem bursts, it is of a round form, and its size is that of a small pea. It bursts commonly so that one side is higher than the other, and the segments are pointed.

"The *corolla* consists always of seven petals, which are oval, obtuse, concave, erect, white, have small veins, and are of an unequal size, the largest scarcely four lines long; they very soon fade, and drop off almost as soon as the gem bursts.

"The filaments are from fifteen to thirty, and are placed on the flattened side of the receptacle; they are much shorter than the petals, and gradually decrease in length towards the sides.

"The *antheræ* are large, oval, longitudinally divided into two, or as if each were made up of two oblong *antheras*.

"The *germina* are from three to six, placed above the receptacle, turbinated, or of the shape of an inverted fig, flat on the inside, and somewhat higher than the stamina; they have no styles, but terminate in a stigma, which is divided into two or three small lobes.

"The fruit I have never seen in its perfect ripe state, but can conclude from the unripe ones, which I saw in abundance, that each germen becomes a separate seed-vessel, of a thick, fleshy substance, and unilocular: in each I could plainly discern the rudiments of three, four, or five seeds."

"The bark," (says Dr. Fothergill) "of the Winterania, or Winter's cinnamon, brought over by the Dolphin, in respect to figure, exactly resembles that which was delineated by Clusius. The pieces are about three or four inches square, of different degrees of thickness, from a quarter to three-quarters of an inch. It is of a dark brown cinnamon colour, an aromatic smell if rubbed, and of a pungent, hot, spicy taste, which is lasting on the palate, though imparted slowly. It has the name of Winter's cinnamon, from a faint resemblance in colour and flavour to that grateful aromatic, though differing from it greatly in every other respect. This bark is only brought to us from the Streights of Magellan, and is the produce of the tree above de-

scribed. Much celebrated as an antiscorbutic by the first discoverers, but unknown in the practice of physic, no quantity, except as a curiosity, having been brought to Europe till the return of the ships sent out on the expeditions to the South Seas."

In the last edition of Dr. Hooper's Dictionary, we find that the glaring errors, which we have exposed, are still propagated.

QUALITIES AND CHEMICAL PROPERTIES.—Every part of the tree exhales a powerful aromatic odour, and when in blossom, perfumes the whole neighbourhood. The flowers dried, and softened again in warm water, are said to diffuse an odour nearly approaching to that of musk. The leaves have a strong smell of laurel. The berries, after having been some time green, turn blue, and become at last of a glossy black colour, and have a faint aromatic taste and smell. They are, when ripe, as well as the fruits of several kinds of laurel, very agreeable to the white-bellied and bald-pate pigeons, (*Columba jamaicensis* and *leucocephala*,) which feeding upon them, acquire that peculiar flavour, so much admired in the places where they are found.

Canella alba is brought to England in casks, and cases: the principal part is in quills, which are of a whitish yellow; while the flat pieces, which are somewhat thicker, are rather of a darker colour. The odour is strongly aromatic; the taste aromatic also, more like the clove than cinnamon, warm, pungent, and somewhat bitter. It gives out all its virtues to alcohol, but the infusion, although bitter, possesses little of its aromatic properties. "The infusion is not altered by infusion of galls; sulphate of iron, or zinc; muriate of mercury, or tartarized antimony; but nitrate of silver, and acetate of lead, render it milky, and throw down precipitates."* The essential oil is often scented with the oil of cloves, and sold for it.

MEDICAL PROPERTIES AND USES.—On account of its aromatic flavour, Canella alba is employed to cover the taste of several articles of the materia medica. Combined with aloes, it forms a popular remedy, well known by the name of *hiera*

* Thomson's Dispensatory.

picra, and added to the tincture and infusion of senna, it covers its nauseous taste, renders it much more grateful to the palate, prevents it from griping, and might be advantageously substituted for the cardamom seeds, which enter into the composition of the former. It appears to be more useful as a condiment than as a medicine, for "the bark, together with the fruit of the capsicum, were formerly common ingredients in the food and drink of the Caraibs, the ancient natives of the Antilles; and even at present it makes a necessary addition to the meagre pot of the negroes."†

DOSE.—From ten grains to thirty, or more.

OFF. PREP.—Tintura Gentianæ composita. *E.*

Vinum Aloes. *L. E.*

Pulvis Aloes cum canella. *D.*

† Trans. Linnean Society, vol. i. p. 99.

Spartium scoparium.

W. Clark, del.

London Published by John Churchill, Leicester Square, May 1828.

SPARTIUM SCOPARIUM.

Common Broom.

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

Nat. Ord. PAPILIONACEÆ, *Lin.* LEGUMINOSÆ, *Juss.*

GEN. CHAR. *Filaments* all united into a tube at the base. *Stigma* linear, hairy. *Legume* flat.

SPEC. CHAR. *Leaves* oblong, ternate, or solitary. *Branches* angular, unarmed. *Flowers* axillary, peduncles short. *Legume* many-seeded; fringed.

Syn.—Genista, *Ger. Em.* 1311. *f.*; *Camer. Epit.* 950. *f.*; *Dod. Pempt.* 761; *Fuchs. Hist.* 218. *f.*; *Trag. Hist.* 961. *f.*
Genista angulosa trifolia, *Raii Hist.* 474.
Genista scoparia, *Lob. Ic. v.* 2. 89. *f.*; *Hook. Scot.* 211.
Spartium n. 354. *Hall. Hist. v.* 1. 154.
Spartium scoparium, *Lin. Sp. Pl.* 996; *Willd. v.* 3. 933; *Fl. Brit.* 753; *Engl. Bot. v.* 19. *t.* 1339; *Curt. Lond. fasc.* 5. *t.* 52; *Woodv. t.* 89; *Fl. Dan. t.* 313.

FOREIGN.—*Genet à balais*, Fr.; *Ginestra*, It.; *Esparto*, Sp.; *Giesta*, Port.; *Pfriemenkraut*, Ger.

THIS is a large, indigenous shrub, growing plentifully on dry sandy heaths and waste places; flowering in May and June.

It is a bushy plant, from three to eight feet in height, with innumerable ascending, long, straight, angular, smooth, dark evergreen twigs. The leaves are deciduous, sessile, scattered, petioled, and ternate; but the upper ones are generally simple; the leaflets are small, obovate, entire, and smooth, but silky when young. The flowers are papilionaceous, large, and showy, very numerous, axillary, solitary, or in pairs, on simple stalks, longer than the leaves, of a deep golden yellow, sometimes tinged with

orange, and occasionally of a pale lemon-colour. The calyx is cup-shaped, bilabiate, reddish-purple, having the upper with two, the lower with three small teeth. The corolla consists of five petals; the standard inversely spear-shaped, the whole reflexed, very large; the wings ovate-oblong, connected with the filaments; the keel of two petals, lanceolate, oblong, attached to the filaments, and connected at the lower margin by soft hairs. The filaments are ten, all united into a single tube, and support oblong orange-coloured anthers. The germen is oblong, hairy; the style awl-shaped, curved, and the legume compressed, brown, oblong, ciliated, and containing about fifteen or sixteen small, compressed, shining seeds.—Fig. (*a*) represents the calyx; (*b*) the germen and style; (*c*) the stamens forming a tube at the base; (*d*) the legume or pod.

Qualities.—The leaves and tops have a disagreeable odour, and a nauseous bitter taste, imparted by infusion both to water and spirit. The tops and seeds are directed for medical use.

Medical Properties and Uses.—Broom tops have long been celebrated for their cathartic, and diuretic powers, and have been successfully employed in dropsical cases. His Royal Highness the late Duke of York is reported to have taken the decoction with considerable effect.

An ounce of the green tops may be boiled in a pint and a half of water down to a pint, and a teacupful of this decoction given every hour till it operates freely on the bowels; and may be repeated every day, or every second day. The seeds and flowers are said to be emetic, but according to Woodville, "the evidence upon which this assertion rests is not wholly to be relied on, as the former, when roasted, have been recommended as a substitute for coffee, and the latter employed as a pickle." Sydenham recommends the ashes, and their utility has been confirmed by Monro, and others; but their whole power, no doubt, depends upon the subcarbonate of potash which they contain.

Off. Prep.—Extractum Cacuminum Genistæ. *D.*

Æsculus Hippocastanum.

London Published by John Churchill Leicester Square May 1828.

LXVIII

ÆSCULUS HIPPOCASTANUM.

Common Horse Chesnut.

Class VII. HEPTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. TRIHILATÆ, *Lin.* ACERA, *Juss.*

GEN. CHAR. *Calyx* 1-leaved, 5-toothed, swelled out. *Corolla* four or five irregularly coloured petals inserted into the calyx. *Capsule* 3-celled.

SPEC. CHAR. *Leaves* digitate, with seven leaflets. *Corolla* 5-petalled. *Capsules* prickly.

Syn.—Castanea Equina, *Ger. Em.* 1442; *Park*, 1401; *Raii. Hist.* 1683.
Castanea folio multifido, *Bauh. Pin.* 419.
Hippocastanum, *n.* 1029; *Hall. Hist. v.* 1. 442.; *Clus. Hist. p.* 7.
Æsculus Hippocastanum, *Lin. Sp. Pl.* 488; *Willd. v.* 2. 285; *Woodv.* 349.; *Hort. Kew. v.* 2. 335.

FOREIGN.—*Marronier d'Inde*, Fr.; *Castagno d'India*, It.; *Castanheiro da India*, Port.; *Rosskastanienbaum*, Ger.; *Paardenkarstengeboom*, Dut.; *Hestekastagnetræ*, Dan.; *Hætkastagnier*, Swed.; *Konskoi kastan*, Russ.

THIS magnificent, and beautiful tree, is a native of the north of Asia, but has been cultivated in almost every part of Europe since its introduction by Clusius, about the middle of the sixteenth century. It is of rapid growth, and when, in May, it is covered with its digitate foliage, and large handsome spikes of white flowers, constitutes one of the most striking ornaments of our parks, and avenues.*

The common horse-chesnut frequently rises to a great height;

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* There are four species of this genus, viz. the subject of the present article; the Æsculus *flava*, or yellow-flowered horse-chesnut, a native of North Carolina, having leaves digitate, with five leaflets, the lamina of the corolla cordate, and the claws twice the length of the calyx; the Æs. *pavia*, or scarlet horse-chesnut, a native of Carolina, Florida, and Brazil, which has flowers with eight stamens, digitate leaves, with five or six serrate leaflets, smooth capsules, lamina of the corolla obovate, and claws the length of the calyx; and the Æs. *parviflora*, or *macrostachys* of Michaux, a native of North America, with a long thick spike, and a shrubby stalk.

and from the lower part of the trunk sends off numerous spreading branches, covered with a rough brown bark; the wood is white and soft, but soon decays, and is of little value. The leaves, sustained on long foot-stalks; they are large and digitated, with seven leaflets, proceeding from a common centre, the middle one being the largest, and the lateral ones on each side gradually decreasing in size; the leaflets are of a spatulate form, pointed, serrated, ribbed, and of a bright green colour. The flowers stand on short foot-stalks, and are disposed in large, conical, erect spikes, at the extremity of the branches. The calyx is of a pale green colour, monopetallous, bell-shaped, and divided at the margin into five blunt teeth: the corolla is composed of five petals, which are ovate, slightly waved at the edges, spreading and inserted into the calyx by narrow claws, of a white colour, and marked immediately above the claw, with a yellow, or reddish spot. The filaments are awl-shaped, about the length of the corolla, curved, and supporting reddish, oblong, double anthers; the germen is cylindrical, furnished with a short style, and pointed stigma. The fruit is a coriaceous, roundish, 3-celled, 3-valved capsule, armed externally with short spines, and usually containing two subglobular seeds or nuts.—Fig. (*a*) represents the calyx; (*b*) a back, and front view, of the stamens; (*c*) the germen, and style.

Though the Spanish-chesnut was well known to the ancients, and is several times referred to by Virgil, under the name of Castanea, it appears that the *horse-chesnut* was introduced into Europe about the year 1550; and Matthiolus, who gives a figure of the tree, seems to be the first who described it.* In the time of Clusius it was so scarce that but one tree existed in Vienna, which being too young to bear fruit, nuts were obtained from Constantinople in 1388,† after which, it was very generally propagated. In 1633 it was cultivated in England by Mr. John Tradescant, and is now so common as to be known to every one, as a favourite ornamental tree, which grows rapidly, blossoms early, and forms an excellent shade.

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* Constantinopli primum ad me allatæ sunt.—*Matthiolus, Compendium de plantis omnibus. Ed. Venet.* p. 101.

† *Woodville.*

Qualities and Chemical Properties.—The fruit consits almost entirely of fecula. The bark, which is inodorous, is bitter, astringent, and slightly aromatic. It yields its virtues both to water, and proof spirit. The sulphates of iron, and zinc, throw down from the infusion, dark-coloured precipitates; while oxymuriate of mercury and superacetate of lead precipitate it white. Tartar emetic effects no change in it. Gelatin precipitates a small portion of tannin. A new vegetable principle, named *esculine*, which is said to possess alkaline properties, has lately been discovered in Æsculus *Hippocastanum*, by M. Carzoneri, and on it, the febrifuge virtues of the bark are supposed to depend.

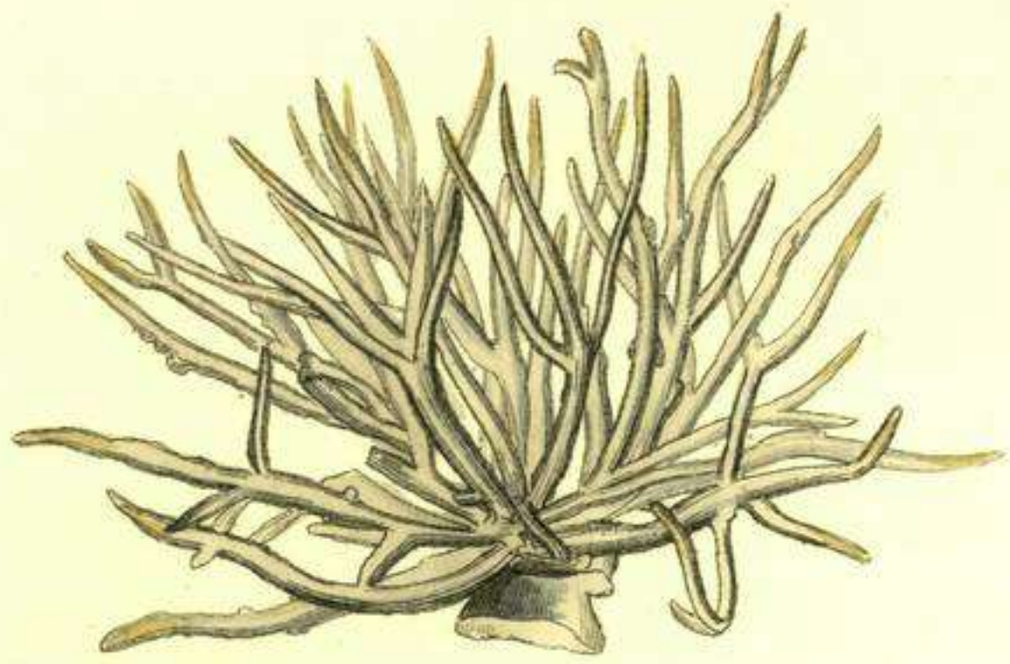
Economical Uses.—The wood, as we have already mentioned, is soft, and soon decays; excepting when made into pipes for conducting the water underground, when it is said to last many years. Horses are said to eat the fruit greedily—hence the name; and it is asserted, that coughs and pulmonary affections in these animals have been much relieved by it. Sheep, goats, and deer, also fatten on it; but, prior to giving the nuts to the former, it has been considered necessary to macerate them in caustic alkali, to destroy their bitterness; afterwards to wash them in water, and boil them into a paste. Lime water is said to answer as well. M. Raiment of Anjou, was in the habit of mixing them with the provender for his cows, and states, that the quantity of their milk was thereby increased. They have been employed in France, and Switzerland, for bleaching yarn, and are recommended as of extensive use in whitening flax, hemp, silk, and wool. They contain a saponaceous juice, that is obtained by grinding or rasping them, after which they are mixed with hot, or running water, in the proportion of twenty nuts, to ten, or twelve quarts of water. Wove caps and stockings have been milled in it, and took the dye remarkably well; and successful trials have been made for fulling stuffs and cloths. Linen washed in this water takes a pleasing blue colour, and the filaments of hemp, steeped in it some days, were easily separated. The sediment, after infusion, loses its bitter taste, and becomes excellent food for fowls when mixed with bran. Deprived

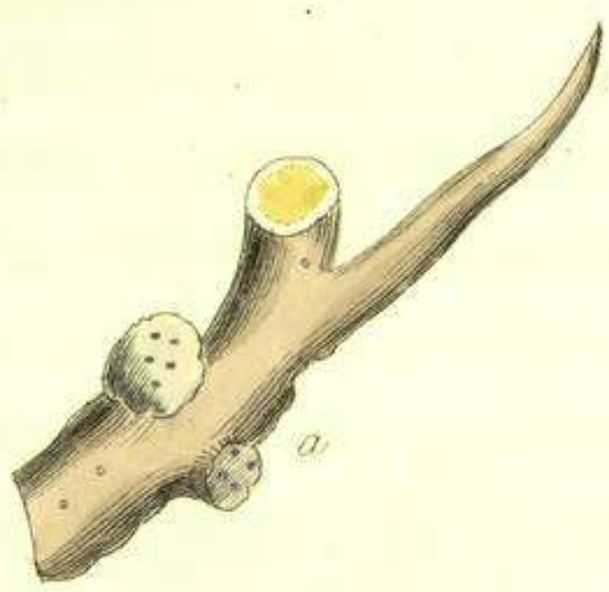
of their acrimony and bitter taste, the fruit might be converted into proper food for men in times of scarcity. In 1796, Lord Murray obtained a patent for extracting starch from it. The bark yields a yellow dye.

MEDICAL PROPERTIES AND USES.—The bark, which, for use, should be about three years old, was first recommended as a febrifuge by Zannuchelli; and several other continental physicians have subsequently written accounts of its efficacy in intermittent, and other fevers. The hyperbole, however, in which they dealt, some averring it to be superior to cinchona, produced an effect, which we suspect is not entirely deserved. We therefore strenuously recommend some of our Cambridgeshire, or Lincolnshire friends, to put it again to the test of repeated experiments, and to favour us with the result, which we shall be happy to publish in our next edition.

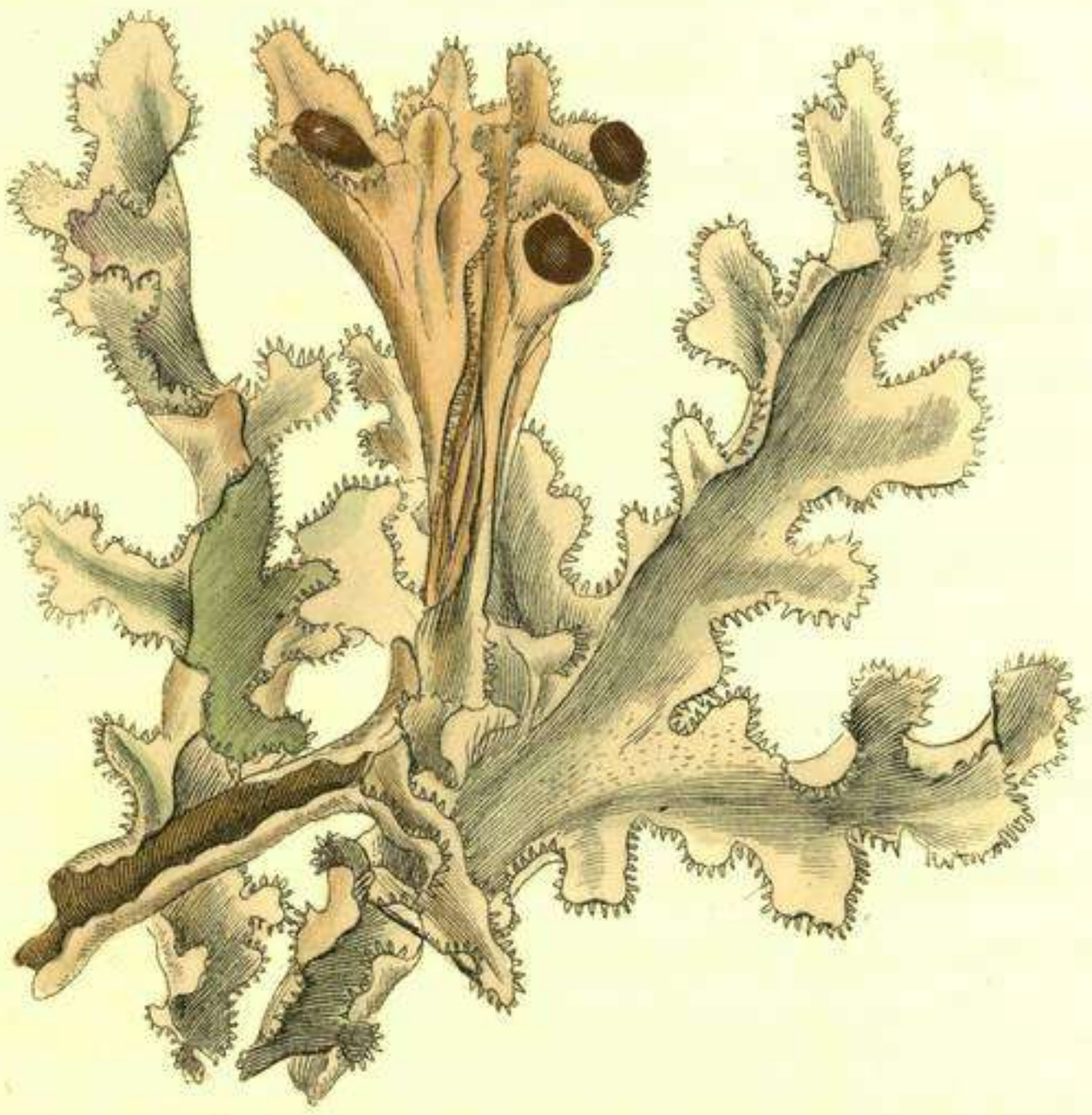
A strong decoction has been commended as a lotion in gangrene; and four grains applied to the nostrils at night, are said to act mildly in the morning, as an errhine.

DOSE.—From half, to one drachm of the powder, every four hours. Of the *decoction*, made with an ounce and a half of the bark to a pint of water, about two ounces may be given.





Roccella tinctoria



Weddell Fecit.

Cetraria Islandica

London Published by Jon. Churchill Princes Street Soho 1828

LXIX

ROCCELLA TINCTORIA.

Dyer's Lichen, Dyeing Rock-moss, or Orchal.

Class XXIV. CRYPTOGAMIA.—*Order* IV. ALGÆ.

Nat. Ord. ALGÆ, *Lin.* LICHENES, *Hoffm.*

GEN. CHAR. *Apothecia* circular, loosely and wholly attached to the frond; gemmiparous plates forming plano-convex discs to the Apothecia, encircled with sessile borders formed by the frond; covering globular, but compressed masses, consisting of two layers, the upper transparent and rather gelatinous, the under blackish and compact, including nests of naked gongyli. *Frond* cartilaginous, and somewhat leathery; round or thread-shaped, also flat and shrub-like.

SPEC. CHAR. *Frond* cylindrical, solid, but little branched. *Tubercles* alternate, powdery.

Syn.—Corraloides corniculatum fasciculare tinctoreum, Fuci teretis facie, ***Dillen.*** *Musc.* 120. *t.* 17. *f.* 39.

Pamelia Roccella, *Achar. Meth. Lich.* 274.

Roccella tinctoria, *Achar. Lichenogr. Univ.* 439.

Lichen Roccella, *Lin. Sp. Pl.* 1622; Eng. *Bot. v.* 3. *t.* 211; *Dicks. Crypt. fasc.* 3. 19.

FOREIGN.—*Orchel, Orseille,* Fr.; *Oricello,* It.; *Orciglia.* Sp.

THE Lichens constitute an extensive natural Order of plants, belonging to the class Cryptogamia, of the Linnean system; and are commonly known in this country by the popular names of *rock-moss* and *tree-moss.* By the illustrious Linneus they were included in one great, and heterogeneous genus, Lichen; but Dr. Erick Acharius, a learned botanist of Stockholm, has since divided the whole tribe into three distinct classes, and forty-two genera. In the plants of this Order, there are no regular roots, many of the species being attached by

small fibres issuing from the under surface of the frond, or fixed to their place of growth as if by a sort of cement. They are equally destitute of stems, and also of leaves properly so called; the part most analogous to a leaf, and which constitutes the body of the plant, being generally a crustaceous expansion, usually denominated the *frond*, and by Acharius the *thallus*. The species are very numerous; and not a few of them have at different times been employed in domestic economy, in medicine, and the arts. In Lapland, the branched corraline Lichen, Cenomyce *rangiferina*, is highly important in rural economy, as affording the food of the rein-deer. Two or three species only have been used as food by men, but several sorts are eaten by goats, and other animals. Of these perhaps the most important in a dietetic point of view is the Cetraria *islandica*, to be noticed hereafter; and a species mentioned by Professor Pallas, as growing on the calcareous mountains of the great desert of Tartary, and described by Acharius under the name of Urceolaria *esculenta*. In Siberia, the lungwort lichen, Sticta *pulmonacea* is used in the making of ale, as a substitute for hops, and Parmelia *physodes*, Usnea *plicata*, and Ramalina *farinacea*, when eaten with salt, are used in some northern countries as food. Dr. Withering tells us, that the country people in some parts of England, make an infusion of Peltidea *apthosa*, in milk, and give it to children affected with thrush, and that in large doses it excites purging and vomiting. Nor is this tribe of plants when administered internally, entirely harmless, for according to Pontoppidan, the yellow filamentous lichen, Evernia *vulpina*, is so poisonous, that it is employed for killing wolves, a carcase of some animal stuffed and smeared with the powder of it, mixed with pounded glass, being set as a bait. Several species are used for dyeing, and not a few were at one time considered as of great efficacy in the practice of medicine. Thus the common *cup-moss lichen*, Lichen *pyxidatus*, or Cenomyce *pyxidata*, Ach. was long regarded as an infallible nostrum for the hooping-cough; the *common ground-liverwort*, L. *caninus*, or Peltidea *canina*, Ach., received its specific name from the fame it had acquired as a specific in the cure of hydrophobia, and the *tree lungwort* or *oak-*

lungs, was equally renowned in former times for the cure of pulmonary complaints. At the present day, two species only, the Roccella *tinctoria* and Cetraria *islandica*, the subjects of the following article, are retained in the list of the British Pharmacopœias.

The Orchal or Archil, Roccella *tinctoria*, is an indigenous Lichen, found sparingly on the maritime rocks of the south of England, particularly in Portland Island, and grows very abundantly on the sea rocks of the Cape Verd, and also of the Canary islands; and from both clusters it is exported in considerable quantities. In France, it is called *Orseille*, and is used to a considerable extent in the southern provinces for dyeing silks, being collected on the rocky shores of the Mediterranean. By the Dutch, it is manufactured into a paste called by them *Lacmus*, or *Litmus*. This is sold in square masses about an inch in length, and half an inch in breadth, and thickness; hard and brittle, having the appearance of a violet coloured earth with white spots. The plant seldom exceeds two inches in height; it is firmly fixed to the rocks, and sends up a thick tuft of slender worm-like stems, round, pointed, often curved, more or less branched, smooth, of a white, grey, or brownish hue, studded about their upper part with numerous scarlet tubercles, or wart-like excrescences, replete with a white powder, which have been regarded by Hedwig, as pollen or seeds, and by Gertner and others as a peculiar sort of germs or buds. The latter opinion has been established by Acharius, and lichens are now considered as gemmiparous plants, propagated only by bud-knots, or gongyli.

Although many other species afford colours, this is the most valuable lichen as a dye-stuff. If we may credit Tournefort, it was known to the ancients, being the Λειχην of Dioscorides, and the *Phycos thalassion* of Pliny. It was collected in the islands of the Archipelago, and from one of these acquired the name of *Purple of Amorgus*. In modern times, according to Berthollet, it was prepared as an article of commerce at Florence, the fine violet colour which resulted from mixing it with urine, having been accidentally observed by a Florentine merchant, about the year 1300, while visiting the Levant. The persons by whom

the *archil* or *litmus* was formerly prepared, desirous to keep it a secret, gave it the name of *tincture of turnsole*, pretending that it was extracted from the turnsole, Heliotropium *europeum*. It is now well known in this country, and large manufactures of it are carried on in London and Liverpool. The Lichen is imported to us as it is gathered, and is prepared in the following manner.—The plant is first dried, cleansed, and pulverized in a mill like the oil-mill. The powder is then thrown into a trough, with one half its weight of pearlash; is moistened with a little human urine, and then allowed to ferment. This fermentation is kept up for some time by successive additions of urine, till the colour of the materials first changes to a purplish red, then to blue. In this state, it is mixed with a third of its weight of very good potash, and spread upon deep wooden trays till dry. A quantity of chalk is added at last, apparently for the mere purpose of increasing its weight. It may here be remarked, "that another species of Roccella, R. *fusiformis*, is reported to vie in richness of colouring matter with the common orchal, while the plant attains to a much larger size. This species, like the former, occurs sparingly on the sea rocks of the south of Europe; but it is said to abound in the East Indies, especially on the shores of Sumatra, and might deserve the notice of some of our enterprizing countrymen."

Prepared archil, which has a violet odour, derived from orris root, very readily gives out its colour to water, to volatile spirits and alcohol, and is the substance principally made use of for colouring the spirits of thermometers. As exposure to the air destroys its colour upon cloth, the exclusion of the air produces a like effect in hermetically sealed tubes, the spirits of large thermometers becoming in a few years colourless, and the colour being again restored by the admission of air. Archil stains marble in a beautiful manner; and by the addition of a little solution of tin, this drug gives a durable dye of a scarlet colour.

MEDICAL PROPERTIES AND USES.—We know of no medicinal virtues possessed by this lichen, though it was employed at one time for relieving pulmonary complaints.

Litmus is used in chemistry as the most delicate test, either

by staining paper with it, or by infusing it in water; which will presently turn red by acids, and have the blue colour restored by an alkali.

CETRARIA ISLANDICA.

Iceland Lichen or Eryngo-leaved Liverwort.

Pl. 69.

GEN. CHAR. *Apothecia* roundish, plano-concave, attached obliquely to the margin of the thallus, and therefore loose beneath, elevated and bent inward at the circumference; gemmiparous plate surrounded by a projecting border formed by the thallus; within of simple texture, or slightly celluliferous. *Frond* membranaceous, foliaceous, irregularly laciniated, smooth below.

SPEC. CHAR. *Frond*, olive-brown, bright reddish or pale at the base; lobes suberect, irregularly linear, multifid, channelled, fringed or toothed, the fertile ones dilated. *Apothecia* sessile, flat, of the same colour as the frond, with a raised entire border.

Syn.—Lichenoides rigidum, eryngii folia referens, *Raii Syn.* 77; *Dill. Musc.* 209, *t.* 28. *f.* 111.

Lichenoides islandicum. *Hoffm. Plant. Lich. t.* 9.*f.* 1.

Physicia islandica, *Michaux Fl. Bor. Amer.* 2 *p.* 326.

Ceteraria islandica, *Achar. Meth. Lich.* 293.

Lichen islandicus, *Pharm. Lõnd.Ed.Dub.*; *Lin. Sp. Pl.* 1611; *Achar. Prodr.* 170; *Eng. Bot. v. t.* 1330; *Jacq. Coll.* 4 *t.* 8.*f.* 1; *Fl. Dan. t.* 153; *Grev. Fl. Edin.* 340.

FOREIGN.—*Lichen d'Islande, Fr.*; *Lichene Islandico.* It.; *Lichen de Islanda Sp.*; *Musco da Islanda, Port*; *Isländisches Moos,* Ger. *Yslandsch Mos,* Dut.; *Islands Moos,* Dan.; *Islandsmossa,* Swed.

THIS species of Lichen is a native of the mountainous heaths and woods in the alpine parts of Britain. The late Sir J. E. Smith gathered it on the Pentland Hills, near Edinburgh, on Ben Lomond, and various parts of Scotland. It occurs in all

the heaths and mountains of the north of Europe, and Dr. Holland informs us that it grows abundantly on the lava on the western coast of Iceland, where the whole plant is more luxuriant than with us. Although this plant is more or less common in all arctic countries, no mention is made of it by Wahlenberg, in his interesting account of the physical distribution of vegetables in Lapland.*

The Iceland Moss seldom exceeds three inches in height, and is erect and bushy. The fronds form loose elegant tufts; they are membranous, somewhat cartilaginous, channelled below, variously sinuated, and lobed; the lobes being irregularly divided, notched, and fringed at the margin with hairs. The surface of the whole vegetable is smooth, shining, of a rich chesnut brown colour, with a green tinge when wet, paler underneath. In such plants as grow in the shade the colour is a pale brownish green. The fructification or shields, are dark chesnut, large, polished, flat, without any border, growing close to the upper surface of the frond.

Qualities and Chemical Properties. — Cetraria *islandica* is inodorous; is mucilaginous, tough, and bitter. When dry it differs little in appearance from the recent plant. It yields all its medical virtues to boiling water and infused in rectified spirit, affords by evaporation, a very small quantity of resin.

Subjoined is a curious analysis by Berzelius.

Syrup	3	6
Bi-tartrate of Potass, with some tartrate and phosphate of lime	1	9
Bitter principle	3	0
Green wax	1	6
Gum	3	7
Extractive colouring matter	7	0
Starch	44	6
Starchy insoluble matter	36	6
	101	6

Œconomical Uses.—The esculent properties of the Iceland moss are well known in many districts on the continent of Europe. Of late years it has been proposed to use it, either alone,

* Linneus' Lapland Tour, by Smith.

or mixed with flour, in the composition of bread in those districts where flour is scarce. The Saxon Government lately published a Report on this subject, which is full of information interesting to those mountainous districts, where this plant abounds. In this report, we are informed, that 6 pounds and 22 *loths* of lichen meal, boiled with fourteen times its quantity of water, and baked in this state with $39\frac{1}{2}$ pounds of flour, produced $111\frac{1}{2}$ pounds of good household-bread. Without this addition, the flour would not have produced more than $78\frac{3}{4}$ pounds of bread, consequently, this addition of 6 pounds and 22 *loths* of lichen meal occasioned an increase of $32\frac{5}{6}$ of good bread. It is known that three pounds of flour yield four pounds of household bread. One pound of lichen meal, added in the form of paste, gives an addition of nearly 6 pounds, and therefore is equivalent in this view to about $3\frac{3}{4}$ pounds of flour, because it affords $3\frac{1}{2}$ times more bread than this. But at present, nearly all the Iceland Moss collected in Germany, is sent through Hamburgh to this country, where it is used in brewing, and in the composition of ship-biscuit, whereby they are not attacked with worms, and suffer little from the action of sea-water.

Dr. Ebeling, in his thesis, recommends it first to be infused in boiling water, with a view to its being thoroughly cleansed; while by the same means, it will be deprived of a considerable part of its original bitterness. The lichen, thus prepared, is to be boiled, and the mucilage so obtained from it, to be used either as an article of diet, or of medicine; and we have it in our power to render it exceedingly palatable by the addition of a little white wine, when that can be given with propriety; or when wine is not admissible, by the addition either of milk, honey, or the syrup of lemons.

MEDICAL PROPERTIES.—Iceland Moss was first recommended by Linneus as a popular remedy in Sweden, for coughs. Scopoli afterwards published his observations on it, but it excited little attention in this country, till Dr. Regnault's treatise on consumption appeared, in which its virtues are very highly extolled. According to Bergius, the lichen in its recent state is "eccoprotica," and when dried, "nutriens, pectoralis." In the Dispensatorium Fuldense, it is said to be "astringens, roborans, humectans, invis-

cans, nutriens, antiseptica." It is not, however, used on the Continent, indiscriminately, in every species of phthisis, nor in every stage of that disorder. It is chiefly recommended in those instances where the cough is attended with purulent expectoration; in cases preceded, or accompanied by hæmoptysis, in incipient phthisis, when from relaxation there is an increased discharge of mucus from the bronchiæ; in the sequelæ of measles, attended by a quick small pulse, pain of the breast, emaciation, violent cough, and purulent expectoration. The use of it is forbidden when vomicæ are already formed, and proceeding towards ulceration; in dyspnœa, and when there is an increased action of the vessels, with diminished expectoration. Neither has the Cetraria *islandica* been confined to phthisical cases; it has been recommended in malignant fevers, dysentery, and hæmatemesis; as an enema in hæmorrhoids; and as an injection in gonorrhæa. In the recent state, it is boiled in milk, and frequently used by the peasants as a cathartic, and to expel worms. The most usual form of exhibiting this remedy on the continent is by boiling it in milk, or when it disagrees with the stomach, in water. Scarcely any of the authors, however, who have published on it, appear to have trusted to it solely, but have generally united it with squills, opium, cinchona and other active remedies. Iceland Moss has owed much of its celebrity to the prevalence of the humoral pathology; for, as it consists of mucilage united with a bitter, it was supposed that the first principle would render it powerful in inviscating acrimony; and the second in gently constringing and corroborating the muscular fibres of the stomach. The decoction as ordered by our pharmacopœias, is so bitter as to prevent many from taking it; and when deprived of its disagreeable taste, it can only be viewed as a demulcent, equal in effects to linseed, quince seed, and marsh-mallows. Iceland Moss certainly does not cure phthisis pulmonalis, but in the last stage of that disease, when solid food is oppressive, and the diarrhæa appears to be kept up by the acrid contents of the stomach and bowels, it has appeared to us, to check the latter, and to impart both vigour, and nourishment, to the digestive organs.

OFF PREP.—Decoctum Lichenis Island. L. E. D.

Pl. 70.

Weddell Fecit.

Colchicum autumnale

London Published by John Churchill Leicester Square June 1828.

LXX

COLCHICUM AUTUMNALE.

Common Meadow-saffron.

Class VI. HEXANDRIA.—*Order* III. TRIGYNIA.

Nat. Ord. SPATHACEÆ, *Lin.* JUNCI, *Juss.* COLCHIACEÆ, *De Cand.* MELANTACEÆ, Brown, *Prodr.*, p. 272.

GEN. CHAR. *Calyx* 0. *Corolla* 6-parted, tubular. *Capsules* 3-inflated. *Seeds* numerous.

SPEC. CHAR. *Leaves* flat, lanceolate, erect. Segments of the *corolla* oblong.

Syn.—Colchicum anglicum purpureum et album, *Ger. Em.* 157. *f.*
Colchicum commune, *Raii Syn.* 373; *Bauh. Pin.* 67.
Colchicum vere prodiens, *Camer. Epit.* 846. *f.*
Colchicum, *n.* 1255, *Hall. Hist. v.* 2. 124.
Colchicum autumnale, *Lin. Sp. Pl.* 485; *Willd. v.* 2. 273; *Fl. Brit.* 399; *Eng. Bot. v.* 2. *t.* 133; *Woodv. v. t.* 177; *Hook. Scot.* 114; *Stokes, v.* 2. 329.

FOREIGN.—*Κολχικον*, Diosc.; *Εφημερον*, Theophr.; *Colchique, Tu-chien*, Fr.; *Colchico autumnale, Giglio Matto, Strozzo-cane*, It.; *Zeitlose, Lichtblumo*, Ger.; *Tydeloosen, Naakte-vrouwen*, Dut.; *Nakna Jungfrur*, Swed.

MEADOW-SAFFRON, like the colts-foot, produces its leaves one season, and flowers at another; but differs in this respect, that the leaves, and fruit, appear early in the spring, and the flowers in the autumn. It is an indigenous perennial plant, found in several counties, chiefly in the west, and north of England, where it grows in tolerable abundance, in moist rich meadows. It occurs, among other places, at Filkins and Bradwell, Oxford-

shire; in Weston Park, Staffordshire; at Little Stonham and Bury, Suffolk; near Devizes, Wiltshire; about Derby and Northampton; and at the foot of the Malvern hills, in Worcestershire. Miller observed it, many years ago, in great plenty, in the meadows near Castle-Bromwich, in Warwickshire, in the beginning of September, and says, that the common people called the flowers *Naked Ladies*, because they come without the leaves. In Scotland it appears to be very rare; but Lightfoot, in his "Flora Scotica," mentions it as growing at Alloa, the seat of a Mr. Erskine.

The root is perennial—consisting of two fleshy succulent bulbs, abounding in a milky juice, and covered with a brown membranous coat. The bulb, which is nearly as large as a tulip, and furnished at the base with numerous small fibrous roots, perishes after the ripening of the seeds, having first thrown out a lateral bulbous offset, that produces the flowers of the ensuing season. From this last, arises in autumn, along a furrow in the side of the old bulb, a long naked tube, which at the upper part expands into the flower. The leaves spring directly from the bulb in spring, along with the capsules. They are dark green, smooth, obtuse, spear-shaped, above a foot long, and pointed; growing erect. On the decay of the leaves, the flower makes its appearance, towards the latter end of September. It is large, of a pale purple or lilac colour, divided into six deep, elliptic-oblong, concave, upright segments, and rising immediately from the bulb, by a tube five or six inches long, two-thirds of which are sunk in the ground. There is no calyx. The filaments are awl-shaped, inserted into the tube of the corolla, and support erect, oblong, yellow anthers. The germen is roundish, and imbedded in the root. The styles are thread-shaped, the length of the stamens, and terminated by linear, recurved, and downy stigmas. The fruit is a capsule, with three lobes, closely connected, and containing numerous whitish, smooth, globular seeds, which are perfected in the month of June, when the capsule rises above ground on a short peduncle, and accompanied by the leaves.

A considerable variety obtains in this species, both with respect to the form and colour of the flower. In one variety the flowers accompany the leaves in spring. Fig. (*a*) represents a petal with a stamen attached; (*b*) the pistil; (*c*) the stigma; (*d*) the germen; (*e*) the capsule and flower.

In the introduction of Colchicum into modern practice, we are principally, if not wholly, indebted to Mr. Want. The first hint he obtained on this subject, was derived from the writings of Alexander of Tralles,* a Greek physician of the sixth century, whose book on gout is one of the most valuable clinical records of antiquity; and who, in his chapter on anodynes, remarks, that some persons take a medicine called *Hermadactylon*, which produces an evacuation of watery matter from the bowels, attended with such relief that patients are immediately able to walk. But, says he, it has this bad property, that it disposes them who take it to be more frequently attacked with disease. He speaks, also, of its producing nausea and loathing of food; and proceeds to describe the manner of counteracting its bad properties. The effects here spoken of, are so similar to those resulting from the exhibition of the Eau Medicinale, that Mr. Want was led to hope that it might be the same medicine, or, at least, that it possessed powers of the same kind; and on procuring a specimen of this plant from Constantinople, it was found to be the Colchicum. The Hermodactyl was strongly recommended by Paulus Ægineta as a specific for the gout, also by Pepagoneus, who wrote a treatise on that disease at the request of the Emperor Michael Palæologus, in the 13th century; and such was its reputation that it obtained the name of *Anima Articulorum*, "the soul of joints." Two of the most celebrated gout-specifics, viz. Turner's Gout-powder, and the Vienna Decoction, the latter of which is so strongly recommended by Behrens in the *Ephemerides Naturæ Curiosum*, are formed principally of Col-

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* Alexander Trallian, cap. xi.

chicum; and it is notorious to every practitioner acquainted with the history of his profession, that this root has, at different times, obtained a celebrity in the treatment of gout, though its general use has, after a time, been suspended. But that the occasional want of confidence in its power, has arisen less from its inefficiency, than from its misapplication, the extensive experience of the present day enables us to affirm. The difference of opinion which has been expressed by many, after repeated trials of this bulb, only proves, that its efficacy is deteriorated by soil, or that it has been taken up at an improper period. Turner recommends fifteen grains at a dose, with equal parts of other purgatives; while Störck* affirms, that less than a grain, wrapped up in crumbs, and taken internally, produce alarming symptoms. Trallian advises the addition of scammony, if a fuller evacuation of the bowels be necessary. Prosper Alpinus says, the Colchicum is perfectly inert, and that the Egyptian women fatten themselves with the wasted roots, often eating twenty in the course of the day, without having any effects produced, either on the stomach or bowels.† More modern experimentalists have differed nearly as much on the powers of Colchicum; but, owing to the investigations of Messrs. Batley and Thompson, the time at which the bulb should be taken up has been satisfactorily proved, by its uniform effects. In the spring, *(April,)* the root does not materially vary in size and general appearance from that which is ordinarily met with. It is then of full size, but irregularly indented or hollow. At this time it is found with a small attached bulb, about the size of a bean. The growth of this small bulb *proceeds* from the latter end of April or beginning of May (according to the season), until the latter end of June or beginning of July, at which time it attains its

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* We are afraid that little reliance can be placed in Störck's veracity; for De Haen, who was his contemporary, finding that his experience of the effects of hemlock did not support the assertions of the former, investigated the alleged fact of his curing 36 cases of cancer by it, and found that 30 of them had died victims to the disease, and that the rest remained uncured.—Vide his *Epistola de Cicuta.*

† De Medicina Ægyptiorum, lib. iii. cap. 16, p. 109.

full growth. The parent root appears to yield as the new production advances, and when the latter attains its full size is no where to be found. The *new* root is then plump, firm, and without any indentation or hollow, and does not undergo any change of appearance from this period until the latter end of August, when in its turn it becomes *old*—for at this time it throws out a new bulb: from that new bulb the flower proceeds, and in the course of a very few days is fully displayed. Between this latter period and the spring very little apparent change takes place: the root and offset are then found as first described. These changes are, of course, subject to some variation from soil, climate, and season. The state and condition of the root, if subjected to experiment, illustrate the process of nature in a striking and forcible manner. A transverse section of the bulb, exposed to the temperature of 170, if procured in *autumn* contracts, and when dried is shrivelled; if procured in *spring*, the cuticle collapses, no other part of the then remaining substance being capable of enduring heat; if procured in the months of *July* and *August*, before the new bulb is projected, it remains quite solid and firm, and has a creamy appearance.

It may be inferred from these facts, that this root is deprived of its power progressively, from the time of throwing out the new bulb, until its final disappearance; and that, although very little change of appearance occurs during the winter months, it really undergoes a decided change during that period.

Qualities and Chemical Properties. — The root, when taken from the ground at the time recommended, and cut transversely, exhibits a milky appearance on both surfaces. The exudation is not particularly pungent: it rather impresses the tongue with a cold but peculiar sensation, which remains unabated for some time. This sensation is accompanied by a peculiar excitement, which is conveyed to the fauces, and continues still longer than the first-mentioned sensation of cold. The properties of Colchicum reside in this milky juice, and depend

upon an alkaline principle termed *veratrine*,* which has also been discovered in the seeds of the Veratrum *sabadilla*, and the Veratrum *album*. When treating of the latter plant, we shall fully advert to its properties. It contains, also, gum, starch, inulin, and extractive matter, which, when in solution, undergoes a chemical change, supposed by Dr. Paris to be analogous to that which takes place in the infusion of senna. Sir E. Home ascertained, that this deposit in the vinous infusion excites nausea and griping, but that it may be removed without destroying the efficacy of the medicine. It is now generally understood, that Husson's *Eau Medicinale* owes its virtues to Colchicum; for not only does it correspond to our Vinum Colchici in its effects, but it is notorious that Wedelius, a continental physician, sold an empirical preparation of this plant, which was extolled as a panacea; while the catalogue of its virtues bears strong resemblance to Husson's original advertisement, and the account of this nostrum is contained in Geoffroy's system of Materia Medica, well known in France, where Husson lived. Wilson's and Reynold's specifics are also entirely indebted to Colchicum for any virtues that they may possess.

Good Colchicum, that is, Colchicum taken up in July, contains gluten; and as Dr. Todd Thompson found, that those specimens in which this principle can be demonstrated are the most powerful in their effects, he infers, (what is now generally acknowledged) that these only should be regarded as fit for medicinal use, and, therefore, that the agent by which gluten is detected in the dried bulb must be regarded as a proper test of its goodness. Dr. Thomson, therefore, rubs ten grains of Colchicum in a mortar, with sixteen minims of distilled vinegar, which is the best solvent of gluten, and immediately adds the same quantity of an alcoholic solution of guaiacum; a most beautiful cerulean blue is directly evolved:—" Distilled vinegar,

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* It is very remarkable, that M. Jussieu, in his *Genera Plantarum*, fol. 53, should say laconically, when speaking of Colchicum, "Habitus Croci aut Gethyllidis, sed major cum Veratro affinitas."

when added alone to the alcoholic solution of guaiacum, merely precipitates the guaiacum unaltered; consequently, the change of colour is evolved, if the powder of Colchicum be well rubbed with the solution alone, although it is by no means so quickly produced."

Dr. Thompson further recommends, that the bulb, when taken up in July, should be cut as soon as possible into transverse slices, equal in thickness to half-a-crown, and then, being spread out upon clean white paper, should be dried without artificial heat, in an airy situation, screened from the sunshine.

Poisonous Effects.—About twelve months ago, two or three deaths occurred, through the prevalence of the mistaken idea that Colchicum produced a *specific* action on the uterus, whereby abortion might be produced; when it is very evident, that such effects arise solely from the violent purging and inflammation which it is capable of exciting, in common with black hellebore, elaterium, and some other plants. The subjoined case has been kindly communicated to us by Mr. Dillon:—

"Susan Laing was about thirty years of age, and of good health and constitution; she was about two months gone in pregnancy of a bastard child, and, having read in a newspaper, that a woman was taken up for causing abortion by taking Meadow-saffron, she determined on getting rid of her burthen by a similar measure. She accordingly bought twopennyworth, and made an infusion of it, which she took on an empty stomach, early in the morning of the 10th of March, 1827. I was called to her about four o'clock in the afternoon of the 11th, and on enquiry, learned that she had miscarried the preceding evening. I found her in a very hopeless state; her extremities were quite cold, and the whole of her body, particularly the hands, feet, and face, livid; the glossy stare of impending death was in her eyes; the respiration was hurried, and the pulse could not be felt at the carotids, and but faintly at the heart. Notwithstanding, the sensorium was undisturbed, and she gave me a clear account of what she had done, her motives for so doing, and the effects the poison had on her. She said, that in about half an hour after she had taken it, her stomach became sick, gripes came on, and a violent purging, which continued with great severity. She had had no medical assistance, and had past a most wretched time from the morning before, and was so tormented with pain and purging, that she had not a wink of sleep

in the course of the night. I administered to her large draughts of brandy and spices, but to no effect, as she died in two hours after I was called in. The body was opened the next day, and all the viscera were found perfectly sound, with the exception, that the mucous membrane of the stomach and bowels was dreadfully inflamed, throughout its course.

Garibel, in his "*Histoire des Plantes des environs d'Aix*," records, that a servant was killed by taking the flowers for an intermittent fever; in which disease they were said to be useful. Cattle who feed in meadows, where Colchicum grows, are said to be affected in the spring by the seeds, which adhere to the coat of the stomach, producing at the several points of their adhesion, inflammation, which occasions death; and several pigs having eaten plentifully of the bulbs, which had been grubbed up, and placed in a yard, died in excruciating agonies; and on dissection, the stomach of each was found *burst*.

TREATMENT.—*See* Helleborus *niger*. Art. XI.

MEDICAL PROPERTIES AND USES.—Colchicum is one of the most powerful remedies we are possessed of, in consequence of the direct action it is capable of exerting over the heart, and arteries. On the continent it has been chiefly used in the treatment of hydrothorax, and asthma, but although we have had considerable experience in its administration, we could never satisfy ourselves that its effects in those diseases were equal to squills; and as a diuretic it can never be relied on. If given in overdoses it produces distressing nausea, deadly vomiting, and profuse purging; but combined with some saline purgative which acts on the bowels *of itself*, the Colchicum even in large doses exerts its own specific powers, and in a few hours, generally succeeds in destroying the paroxysm of gout. In acute and chronic rheumatism it is constantly given with the most happy results; and we have ascertained, that when digitalis fails to produce its effects, even in considerable doses, and after having been administered for some little time, that by combining it with Colchicum, our wishes will be speedily accomplished. The late Mr. Haden published an admirable little work on the power of Colchicum over inflammatory diseases; and a case of peritoneal inflammation which occurred in our own practise, and could only be mitigated by repeated bleedings, gave way immediately to the powdered Colchicum, conjoined with the sulphate of

potash. The marked success of this case, has led us to employ the same remedy in most inflammatory diseases, and having observed that the pulse was frequently rendered intermitting, we were led to its adoption in a case of hæmoptoe, where we had given drachm doses of digitalis without any decisive effects. We then gave half that quantity, combined with an equal part of the Vinum colchici, and we were surprised to find that three doses, brought down the pulse from 120 to 70 beats in the minute, attended by distinct intermissions. Since this case occurred, we have often prescribed these valuable agents conjointly, and have every reason to be satisfied with the results. Dr. Williams of Ipswich has adduced very satisfactory proofs of the mild and beneficial effects of a vinous tincture of the seed; and the flowers are also sometimes employed. In conclusion, we most earnestly recommend an attentive perusal of Mr. Haden's work, in which are recorded the beneficial effects of Colchicum in rheumatic and inflammatory fevers, inflammations of the lungs and membranes, catarrh, influenza, puerperal fever, and other affections, whereby bleeding was rendered unnecessary.

It is exceedingly desirable that such a powerful remedy should be prepared on an uniform plan, and as we fully agree with Dr. T. Thompson, that sherry wine is a much better solvent of the *veratria* than the dilute spirit, we avail ourselves of his form for making the wine of colchicum.

"Take of the bulbs of colchicum, (dug up in July,) sliced transversely, and dried without heat, or at a temperature not exceeding 110°, *one ounce and a half;* pulverise them, and pour upon the powder put into a glass-bottle, twelve ounces of good sherry wine. Agitate the mixture twice a day for seven days, and then filter for use."

For the same quantity of sherry, two ounces of the *seed*, or *flowers* will be required, and of either of these tinctures, from thirty to eighty drops may be given, combined with carminatives, alkalies, or saline purgatives.

In some cases, particularly where acidity and flatulence prevail, the Spiritus seminum colchici ammoniatus (prepared by macerating for ten days, two ounces of the seeds in a fluid pint

of the spiritus ammoniæ aromaticus) is said to be a medicine of greater value than the wine of colchicum.

Dose.—The dose of the powder is from three to eight grains.

Off. prep.—Vinum Colchici. *L.*
Acetum Colchici. *L.*
Oxymel Colchici. *D.*
Syrupus Colchici Autumnalis. *E.*

Ruta graveolens.

Weddell. sc.

London. Published by John Churchill, Leicester Square June 1828.

LXXI

RUTA GRAVEOLENS.

Common Rue.

Class X. DECANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RUTACEÆ, *Juss.*

GEN. CHAR. *Calyx* 5-parted. *Petals* five, concave. *Receptacle* surrounded by ten melliferous points. *Capsule* lobed.

SPEC. CHAR. *Leaves* repeatedly compound; leaflets oblong; the terminal one obovate. *Petals* entire.

Syn.—Ruta hortensis et montana, *Ger. Em.* 1255.
Ruta hortensis major, *Park. Theatr.* 132.
Ruta hortensis latifolia, *Bauh. Pin.* 336.
Ruta *Matth. Valgr. v.* 2. 95.
Ruta foliis duplicato-pinnatis, lobulis ovatis, *n.* 1003, *Hall Hist. v.* 2.
Ruta graveolens, *Sp. Pl. Willd.* 2. 542; *Bull. Herb. t.* 85; *Woodv. v.* 2. 483.

FOREIGN.—*Rue, Rue des Jardins.* Fr.; *Ruta,* It.; *Ruda, Arruda,* Sp.; *Raute, Gartenraute,* Ger.; *Ruite,* Dut.; *Ruta, Vinruta,* Swed.; *Ruta,* Russ.

RUE is a hardy evergreen under-shrub, a native of the south of Europe, and has been cultivated in our gardens from time immemorial, where it flowers from June to September. In the days of popish superstition and ignorance, it was called *Herb of Grace,* from the circumstance of small bunches of it having been used by the priests for sprinkling of holy water among the people. The stem is bushy, round, and branched, rising to the height of two or three feet, woody at the lower part, and covered with a rough, striated, grey bark; but the upper branches are smooth, and of a yellowish green colour. The leaves are alternate, stalked, doubly pinnate, slightly tomentose, smooth, dotted, and of a deep bluish glaucous hue; the leaflets obovate, sessile,

decurrent, very obscurely crenate, or entire, and tapering at the base. The flowers are of a pale greenish-yellow colour, copious, and produced in terminal corymbose panicles, the terminal ones only having the full number of each of the parts of fructification, while the rest are octandrous, and have the calyx 4-parted, and a 4-petalled corolla. The petals are nearly ovate, concave, spreading, fringed at the extremity, and attached by narrow claws. The stamens are ten, awl-shaped, the length of the corolla, bearing small yellow anthers. The germen is oval, punctured, with crucial furrows, and surmounted by a short awl-shaped style and simple stigma. The capsule is gibbous, 5-lobed, bursting elastically at the summit of each lobe, and containing numerous rough, angular, blackish seeds.—Fig. (*a*) represents a petal; (*b*) a stamen; (*c*) the pistil; (*d*) the germen; (*e*) the capsule; (*f*) a seed.

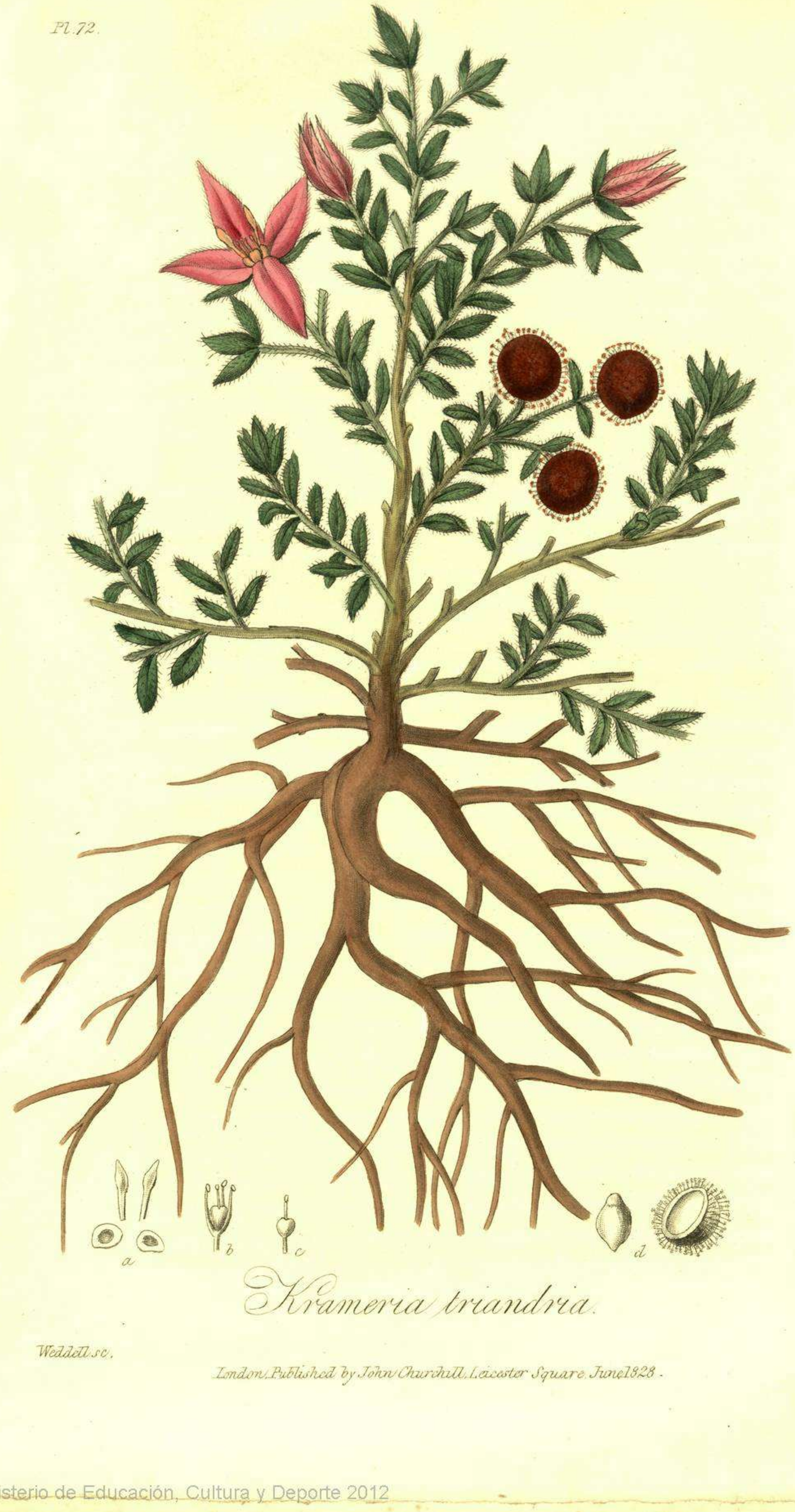
Rue is easily propagated by slips or cuttings in the spring; and like rosemary, lavender, hyssop, and other similar aromatics, it thrives best in poor dry soils.

Qualities.—Every part of the plant has a strong peculiar odour, and a pungent, bitterish, nauseous taste. The bruised leaves are extremely acrid, and excoriate the mouth and nostrils, if incautiously applied, as they often are, to counteract bad smells. Their specific virtues reside chiefly in an essential oil, which they yield on distillation with water.

Medical Uses.—Rue is a moderately active stimulant, and antispasmodic, and was much extolled by the ancients. Hippocrates commends it as a resolvent and diuretic, and attributes to it the power of resisting contagion, and poisons. An infusion of the leaves was formerly in much repute, as an anthelmintic, and if taken in sufficient quantity it certainly proves noxious to intestinal worms. Boerhäave, speaking of rue, observes, that the greatest commendations he can bestow upon it fall short of its merits. "What medicine," says he, "can be more efficacious for promoting perspiration, for the cure of hysteric passion, and of epilepsies, and for expelling poison?" Externally it has been employed in fomentations to gangrenous ulcers; but it possesses no superiority over chamomile, or wormwood for these purposes, and it is but seldom employed.

Dose.—The dose of the powdered leaves is from ℈i to ℈ij.

Pl. 72.



Krameria triandria.

Weddell sc.

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KRAMERIA TRIANDRA.

Triandrous, or Peruvian Krameria.

Class IV. TETANDRIA.—*Order* I. MONOGYNIA.

GEN. CHAR. *Calyx* 0. *Petals* 4. *Nectaries* 2; the superior 3-parted, the inferior 2-leaved. *Berry* dry, echinated, and containing one seed.

SPEC. CHAR. *Leaves* oblong-ovate, pointed. *Stamens* 3.

Syn.—Krameria triandra, *Ruiz. Fl. Peruv. tom. i. Icon.* 93. *Mem. Reg. Acad. Matrit. v. i. p.* 364.

FOREIGN.—*Ratanhie,* Fr.; *Ruiz para los dientes,* Sp.; *Ratanhia,* Huanuco; *Mapato,* Tarma.

THIS species of Krameria, called by us Rhatany, and by the Spanish inhabitants Ratánhia, is the spontaneous growth of many provinces in Peru, delighting in a dry argillaceous or sandy soil, and growing on the declivities of the mountains, exposed to the intense heat of a vertical sun. It was first discovered by Don Hypolito Ruiz in 1780, in the province of Tarma, and Xanca; and subsequently by the same naturalist in the province of Huánuco, Huamalies, and Canta; and is found in abundance in the vicinity of Lima, on the high-lands of Puelles, and other hilly districts. It flowers nearly throughout the year; but blossoms most luxuriantly in October and November. It is gathered in large quantities, from which a beautiful extract is prepared, which, as well as the root, is imported to Portugal for improving the colour, astringency, and richness of red wine. From this use in the manufacturing of wine the Portuguese and Spanish merchants have kept its properties so concealed, that in this country the root was unknown, till the captain of a Spanish ship mentioned these facts to Dr. Reece; which induced him to apply to some Spanish merchants for further information, who corroborated the account, with respect to a certain root being used as

a colouring liquor; but was unacquainted with its name. One of them afterwards furnished Dr. Reece with a preparation that in Portugal was known by the name of wine *colouring;* it proved to be a saturated infusion of the root in brandy; and the deep colour and richness it communicates to port wine renders it an article of great and deserved value to the manufacturer of wine. Some of this root, and extract, forming part of a Spanish cargo, taken by our cruizers, was afterwards sold in London, and Dr. Reece was thereby enabled to enter upon the investigation of its nature and medicinal qualities: and in consequence of the facts which he established, it has become a favourite remedy, and is admitted into the list of our materia medica.

The Krameria triandra is an under-shrub, with very long, much branched, spreading roots, of a blackish red colour externally, red internally, and having an intensely styptic, bitter taste. The stem is procumbent, round, and divided into numerous spreading branches, which when young are white and silky, but afterwards become naked below, and acquire a black colour. The leaves are scattered, sessile, oblong-ovate, pointed; entire, white and silky on both surfaces. The flowers are terminal, solitary, and placed on short foot-stalks. The corolla consists of four lake-coloured petals, the inferior larger than the others, sericeous externally, but internally smooth and shining; the nectary is composed of four leaves, the two upper leaflets being spathulate, the two lower, roundish, concave, and scale-like. The stamens are three, fleshy, inserted between the germen and the superior leaflets of the nectary; the anthers urceolate, small, terminated with a pencil of very short hairs, and perforated with two holes at the apex. The germen is ovate, supporting a red awl-shaped style, and simple stigma. Tha berry or drupe is dry, globose, echinated on all sides with stiff reddish hairs. Fig. (*a*) represents the two upper and two lower leaves of the nectary; (*b*) the pistil and stamens; (*c*) the pistil; (*d*) the drupe divided transversely, and a seed.

Qualities and Chemical Properties.—The root which is somewhat larger than a goose-quill, is of a feruginous colour; and the cortical part, in which its sensible qualities predominate, is very thick, and breaks short. The ligneous

part is tough, and fibrous, and somewhat mucilaginous. On being slightly masticated, the root discovers a very grateful astringency, leaving a lasting impression on the palate; and is slightly aromatic and bitter. These qualities are imparted, as well as its colouring matter, both to cold and boiling water, and to proof spirit. The tincture made with brandy approaches very nearly to the flavour of port wine. Dr. Duncan jun. says in his Dispensatory, that "the rhatany root does not contain a resinous matter, and that it is without bitterness;" but as these assertions are contrary to fact, we must suppose that Dr. Duncan never saw it. The foreign extract, which is a gum-resin, is a very beautiful transparent article; and Dr. Reece informs us, that on mixing it with the foreign extract of bark, or any astringent extract, it loses its adhesive quality, and becomes "powdery," and at the same time loses its astringency. The extract made from a decoction or infusion of the root is "powdery," and not so astringent as the powdered root, although evaporated in vacuo, or in a water-bath. Dr. Duncan also asserts that the foreign extract is so similar to Kino that the difference cannot be discovered; now the former varies from the latter both in appearance and taste, being slightly bitter, and readily dissolving in the saliva in the mouth. Vogel says that Kino is charred on exposure to heat without changing its form; whilst the foreign extract of rhatany previously melts and swells, and this it does when as dry as Kino.

From a careful analysis it appears that the most efficacious part of rhatany is that which dissolves in considerable quantity in water and alcohol, and imparts to these menstrua a brown colour; 2ndly, that in prescribing a decoction, or the extract, the mineral acids should not be added; 3rdly, that the astringent principle possesses, in great part, the properties of tannin, and seems to be a modification of this immediate matter of vegetables; 4thly, that the dried root contains an astringent principle, which is a modification of tannin, gallic acid, gum, fecula, and a ligneous matter; 5thly, that the ashes of rhatany contain pure lime, carbonate of lime, carbonate of magnesia, sulphate of lime, and silex; lastly, that in one hundred parts of the powder are found,

Modified tannin	. . .	40	
Gum	. . .	1	30
Fecula	. .	0	50
Woody matter	. .	48	
Gallic acid, a trace; water and loss		10	
		100	

MEDICAL PROPERTIES AND USES.—Rhatany is a very valuable tonic medicine, for indigestion, arising from direct debility; and for flaccid leucophlegmatic habits. The late Dr. Perceval, of Manchester, speaks highly of a solution of the foreign extract, dissolved in camphorated mixture, as a remedy in the advanced stages of typhus fever; and says, that it possesses all the good qualities of port wine, and is exempt from its pernicious ingredient, alcohol. Sir Henry Halford informs us, that he is in the constant habit of prescribing it for fluor albus, with the most marked success; and for passive uterine hæmorrhage. It is also an excellent tonic to accompany the use of diuretics, cathartics, and absorbent stimulants in cases of dropsy arising from debility: and when the different preparations of bark disagree with the stomach, it may be substituted for it with the most beneficial results.

PREPARATION.—The *extract* which is made by inspissating the expressed juice of the root in the heat of the sun, (by the natives of South America,) possesses, in great perfection, the medicinal properties of the root, and may be taken, in the form of pills, to the extent of five or ten grains, twice a day.

Of the *powder* may be taken from ten to thirty grains.

COMPOUND TINCTURE OF RHATANY.

R.—Rad. Krameriæ Triandræ contus.	. .	℥ iij.
Cort. Aurantii	. . .	℥ ij.
Rad. Serpentariæ Virg.	. . .	℥ ss.
Croci Anglic.	. . .	ʒ i.
Sp. Vini Rectificat.	. . .	℔ ii.

Macera per dies duodecim, et cola.

This *compound tincture* is much recommended by the physicians of the Continent, as a pleasant and efficacious stomachic; and our own experience teaches us, that two tea-spoonsful in a little water, taken three or four times a day, will prove an admirable remedy for indigestion, and its consequences—as flatulency, heart-burn, cramp in the stomach, nervous irritability, &c.

The *simple tincture* is made with three ounces of the root to a quart of *proof* spirit; and is much used by dentists, combined with equal parts of rose water, as a lotion to astringe the gums, and correct unpleasant fœtor of the mouth. Equal parts of powdered Rhatany-root, orris-powder, areca-nut charcoal, form the best tooth-powder with which we are acquainted.

Pl. 73

Pinus sylvestris.

London. Published by J. Churchill, Leicester Square. July 1828.

LXXIII

PINUS SYLVESTRIS.

The Wild Pine, or Scotch Fir.

Class XXI. MONŒCIA.—*Order* VIII. MONADELPHIA.

Nat. Ord. CONIFERÆ, *Lin. Juss.*

GEN. CHAR. *Male fl.* in a *catkin*, naked. *Calyx* 0. *Corolla* 0. *Stamens* numerous, on a common stalk. *Female fl.* in a *catkin*, of close, rigid, 2-lipped, 2-flowered, *scales*. *Seeds*, 2 to each scale, winged.

SPEC. CHAR. *Leaves* rigid, in pairs. Young *cones* stalked, recurved. *Anthers* with a very small crest.

Syn.—Pinus sylvestris, foliis brevibus glaucis, conis parvis albentibus, *Raii Syn.* 442; *Duham. Arb.* v. 2. 125. t. 30.
Pinus sylvestris vulgaris, *Bauh. Hist. v.* 1. 253. *f.*
Pinus sylvestris montana, *Camer. Epit.* 40. *f. Matth. Valgr. v.* 1. 89. *f.*
Pinus *n*, 1661. *Hall Hist. v.* 2. 317.
Pinus sylvestris, *Lin. Sp. Pl.* 1418; *Willd. v.* 4. 494; *Fl. Brit.* 1031; Eng. Bot. *v.* 35. *t.* 2460.; *Hook. Scot.* 275; *Ait. Kew. ed.* 2. *v.* 5. *p.* 314.; *Woodv.* 570. *t.* 207.; *Ger. Em.* 1356. *f.*; *Lambert Pin.* 1. *t.* 1.

FOREIGN.—*Pin, Pin Sauvage*, Fr.; *Pino*, It.; *Pino, Pino silvestre, Pino Balsam*, Sp.: *Pinheiro, Pinheiro Bravo*, Port.; *Kiefer, Kiene, Kienbaum*, Ger.; *Tall, Furu*, Swed.; *Furr, Fyrretræ*, Dan.; *Sosna*, Russ.; *Sonobar*, Arab.

THE Scotch Fir, which is the only native species of the genus Pinus, grows spontaneously on the dry stony mountains of Scotland, Norway, and other countries in the north of Europe; flowering in May, and ripening its seeds two years afterwards. It flourishes best in a cold climate, on a poor sandy soil, and lives to the age of four hundred years or more. The wood is known by the name of *red* deal,* and its value, as well as that of the

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* The *white* deal is from the Pinus *Abies*, which, according to Mr. Coxe, is most demanded because no country produces it in such quantities as Christiana and its vicinity.

tar, pitch, and turpentine, afforded by this species, are well known. The tree is planted on waste grounds and barren hills in several parts of our island as a shelter, or as a profitable object of culture, " though not one of the most agreeable ornaments to a country where any thing else will grow."

This tree, though lofty, seldom grows straight; the branches are numerous, oblique, and like the stem, covered with a rough brown bark, which scales off in large thin flakes. The leaves, which surround the ends of the branches, stand in pairs, and are united at the base with a tubular, membranous sheath; they are equal, about two inches long, linear, narrow, sowewhat pointed, minutely serrated, evergreen; their upper surfaces are dark green, rather concave, originally clapped together, but soon separating: the under convex more glaucous and striated. The flowers are terminal, erect; the *males* aggregated, spiked, sulphur-coloured, soon surmounted by a protruding leafy branch; each flower having several chaffy, concave, leafy *bracteas* at its base, which some have denominated a 4-leafed calyx; there is no corolla, except the spreading scales of the flower-bud be regarded as such; the filaments are very numerous, collected below into a cylindrical column, and furnished with oblong, wedge-shaped anthers, of two cells, crowned with a jagged, membranous crest. The *female* flower is an ovate, roundish catkin, variegated with green and purple, of numerous, imbricated, 2-flowered scales. There is neither calyx nor corolla. The germens are two at the base of each scale, with a single style to each germen, and a simple obtuse stigma. The year after impregnation the young fruit becomes lateral, stalked, and reflexed green, of a more ovate figure; and the second year ripens into one ovate, pointed, hard, tesselated, but unarmed woody cone, whose dry scales finally gape, and allow the dispersion of the winged seeds.—Fig. (*a*) represents the Male catkin with its bracteæ; (*b*) the anthers; (*c*) the crest of the anthers; (*d*) the Female catkin with its bracteæ; (*e*) a separate scale; (*f*) a ripe cone; (*g*) the same expanded by drought; (*h*) the seed with its wing.

Pl 74.

Pinus Balsamea?

Weddell Fecit

London Published by J. Churchill, Leicester Sq. July 1828

LXXIV

PINUS BALSAMEA.

Balm of Gilead Fir.

SPEC. CHAR. *Leaves* solitary, flat, imperfectly 2-ranked. *Cones* cylindrical, erect, with short-pointed scales. Crest of the *anthers* pointless.

Syn.—Abies balsamifera, *Mich. Boreal-Amer, v.* 2. 207.; *Mich. Arb. For. v.* 1. 145. *t.* 14.
Abies taxi folio, odore Balsami Gileadensis, *Du Hamel. Arb. v.* 1. 3. *n.* 3.
Pinus Balsamea, *Lin. Sp. Pl.* 1421.; *Willd. n.* 27.; *Ait. Kew. v.* 5. *p.* 319. *n.* 23; *Lambert* 48. *t.* 31.

FOREIGN.—*Le Baumier de Gilead*, Fr.; *Die Balsamtanne*, Ger.

THE Balm of Gilead Fir has its natural abode in the northern provinces of America, but chiefly in Nova Scotia, Canada, New England, and the Allegany mountains, in high cold situations; flowering in May, and ripening its seeds in September. It has long been cultivated for curiosity in England, but in general, though it attains to a considerable height, does not thrive well, and scarcely survives above twenty years. Some of the largest trees of this species are said to be at Woburn, the seat of the Duke of Bedford, and at Warwick Castle, the seat of the Earl of Warwick; but Mr. Lambert's specimens were procured at Longleat, Wiltshire, the seat of the Marquis of Bath, the only spot where he has seen this tree in perfection. Its fragrant exudation is the well-known Canada balsam, improperly so called, which is often sold in the shops under the name of Balm of Gilead; though the latter, in its genuine state, is the produce exclusively of the Amyris *gileadensis*.

This beautiful tree, which has very much the habit of the Silver Fir, (Pinus *Picea,*) rises with a tall erect stem. The bark is of a whitish grey colour, and in texture pretty smooth. The leaves are disposed on either side along the branches like the teeth of a comb, but in a double row, the upper one shorter than the other; they are linear, solitary, flat, broader than the former species and less pointed; of a dark green colour, marked with a double glaucous line underneath, and numerous white dots. The *male* catkins are ovate: the crest of the anthers kidney-shaped, pointless, or furnished with short spines, but never bifid; the *females* with numerous ovate, notched, pointed bracteas. The cones stand erect on the branches, and when full grown are of a beautiful violet hue; great quantities of a transparent resin exudes from them, as represented in the plate; the trunk also when wounded yields a similar substance.—Fig. (*a*) Male catkin; (*b*) anthers; (*c*) Female catkin; (*d*) scales of the catkin; (*e*) its bracteolæ; (*f*) scale of the cone; (*g*) seed; (*h*) leaves.

Pl. 75

Pinus Abies.

Weddell Fecit.

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PINUS ABIES.

Norway Spruce Fir.

SPEC. CHAR. *Leaves* solitary, quadrangular. *Cones* cylindrical; their scales rhomboid, flattened, waved, and notched.

Syn.—Abies picea, *Matth. Valgr. v.* 1. 88.; *Camer. Epit.* 47.; *Mill. Dict. n.* 2.
Abies foliis solitariis apice acuminatis, *Lin. Hort. Cliff.* 449.; *Fl. Suec. ed.* 1. 789.; *Fl. Lapp. ed.* 1. *n.* 347.; *Dalib. Paris*, 295.
Pinus foliis solitariis, tetragonis, mucronatis, *n.* 1656. *Hall. Helv.*
Pinus Abies, *Lin. Sp. Pl.* 1421.; *Willd. v.* 4. *n.* 32.; *Ait. Hort. Kew. ed.* 2. *v.* 5. *n.* 18.; *Huds. Fl. Ang.* 424.; *Scop. Carn. n.* 1194.; *Fl. Dau. t.* 193.; *Villars Dauph. v.* 3. 810.; *Woodv.* 573. *t.* 208.; *Lambert* 37. *t.* 35.

FOREIGN.—*La Pesse, Pece, Picea, Epicia, Le Faux Sapin, Le Sapin Rouge*, Fr.; *Picea, Zampino*, It.; *Picea, Pinabeto, Pinabete*, Sp.; *Peuce, Abeto Negro*, Port.; *Gran*, Dan. and Swed.; *Harstboom*, Dut.; *Jel*, Russ.; *Xan mo*, Chin.

THE Norway Spruce Fir is one of the loftiest of the European trees, growing sometimes to the height of one hundred and fifty feet. It is a native of the mountains in various parts of Europe, as well as northern Asia, in places watered by alpine rills, where it attains a large size, and with its spreading branches and elegant pyramidal form, makes a magnificent appearance. In this country it has been long cultivated, not only as an ornamental tree, but also on account of the wood, which is one of the most valuable sorts of deal. The wood is chiefly imported from Norway; but Mr. Lambert informs us, that that which is grown in England is supposed to be most

durable, and particularly esteemed for making ladders. The long sweeping fan-like branches, often broken down by loads of snow, or by the effect of boisterous winds, are said to have a grand effect in alpine landscapes, and have been well employed in the sublime compositions of Salvator Rosa, and the German engravers. Burgundy pitch, *Resina Abietis* of our modern pharmacopœias, is yielded by this species. It flowers in April.

The tree is usually straight, pyramidal, and covered with a reddish, scaly bark. The leaves are copiously scattered all around the branches, ascending, somewhat imbricated, each scarcely an inch long, on a short stalk, smooth, linear, curved, bluntish, with four rather unequal angles, shining on the upper surface, and of a dusky green colour. In summer, after a long continuance of dry weather, most of them decay and fall off. There are no stipulas. The flowers are terminal; the *male* catkins most plentiful; they are on short foot-stalks, erect, ovate, cylindrical, and of a tawny red; their bracteas numerous, spreading, longer than the common filament or basis of the stamens; the anthers yellow, their crest crimson, roundish, kidney-shaped, deeply and acutely jagged. The *female* catkins are sessile, oblong, erect, of a rich crimson. The strobiles or cones are pendulous, solitary at the end of each branch, a span long, nearly cylindrical, of a purple colour, and sometimes green before they are ripe, smooth, of numerous imbricated, flattish, rigid, rhomboid scales, waved at the edges, and notched at the point. The seeds are small, rather flattened, and oval, with two thin elliptical-oblong wings.—Fig. (*a*) the anthers; (*b*) female catkin; (*c*) scale of the same; (*d*) seeds; (*e*) leaf.

PINUS LARIX.

Common, or White Larch-tree.

SPEC. CHAR. *Leaves* tufted, deciduous. *Cones* ovate-oblong; the margins of their scales reflexed, jagged. Scales of the *female* catkin fiddle-shaped, prominent in the full-grown cone.

Syn.—Larix; *Bauh. Pin.* 493; *Matth. Valgr. v.* 1. 95. *Ger. Em.* 1365; *Camer. Epit.* 45, 46.

Larix folio deciduo conifera, *n.* 1658. *Hall. Hist.*; *Du Hamel Arb.* 1. 131. *f.*

Pinus Larix *Lin. Sp. Pl.* 1420; *Willd. v.* 4. *n.* 24; *Woodv.* 576. *t.* 210; *Lambert,* 53. *t.* 35.

FOREIGN.—*Le méleze, melese,* Fr.; *Larice,* It.; *Larice, Alerce,* Sp.; *Larico,* Port.; *Lerketræ,* Dan.; *Listweniza,* Russ.

THE White Larch is a native of the Alps of Switzerland, Italy, Germany, and according to Miller, of Siberia. It has been long cultivated very extensively, and with great advantage, in this country; flowering in March and April, before the leaves fully expand.

The Larch is a tree of quick growth, rising to the height of fifty feet or more, with wide spreading branches, whose extremities droop in the most graceful manner. They are adorned with numerous narrow, spreading, linear, bluntish, entire, soft, bright-green leaves, which spring in pencil-like tufts, from alternate, perennial cup-like, scaly buds. The leaves are deciduous,

about an inch long, and have no other stipulas than the scales of the bud. From similar buds spring separately, on the same branch, the male and female flowers; the latter only accompanied by a few leaves. The bracteas to each flower are numerous, recurved, obtuse, with fine fringe-like teeth, chaffy, reddish-brown, and deciduous. The *male* flowers are in small lateral, cylindrical catkins, yellow, drooping, about an inch long, with the common filament much shorter than the bracteas; the anthers crowded, deflexed, inflated, and two-lobed in front, with a short, recurved point. The *female* catkins are erect, ovate; twice as large as the male, beautifully variegated with green and pink; one lip of each scale is orbicular; the other much larger, fiddle-shaped, reflexed, with a prominent, awl-shaped green point. This lip becomes erect, enlarged, projecting always beyond the orbicular one, which dilates, hardens, and becomes the seed-bearing scale of the cone. The strobiles or cones are erect, rather above an inch long, ovate, obtuse at the apex and purple, when young; and becoming of a reddish brown, when ripe. They have imbricated scales, which are spreading, orbicular, slightly reflexed, and jagged on the edges. In each scale are two-winged seeds.

PINUS SYLVESTRIS.

MOST species of Pinus, says Dr. Maton,* may be made to yield, (and many of them produce spontaneously,) a resinous juice, usually called *turpentine*. This appellation more properly belongs to the product of a different genus, called by Linneus, Pistachia† of the ancients, which contains the true *Terebinthus*.

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* Appended to Mr. Lambert's splendid work on the GENUS *Pinus*, is an elaborate account of the various substances yielded by these trees; which was written by Dr. Maton: and as he has monopolized all the raw materials, and worked them up most admirably, we gladly avail ourselves of his labours.

† The Τερμινθος of Theophrastus, (lib. iii. c. 3,) and Dioscorides, (lib. i. cap. 76, from which the word Terebinthus seems to have been derived. *Pistachia Tere-*

The juice of Pines, however, like that of the Turpentine trees, has an austere, astringent taste, singular viscoscity and transparency, ready inflammability, and a disposition to become more or less concrete. In distillation with water it yields a highly penetrating, essential oil, and the liquor is found to be impregnated with an acid; a bitter, resinous substance remaining behind. The resinous *residua* of the several processes to which the matter extracted from Pines may be subjected, constitute the varieties of *rosin*, *colophony*, &c. There are, also, other products, both native and artificial, much employed in medicine and the arts. The terms commonly attached to these substances are, in general, extremely vague, ambiguous, and inexpressive. Those employed in ancient authors are not to be excepted from the application of this remark; they have occasioned great difference of opinion among commentators, and, in some instances, they remain to this day undefined; but, on the whole, they were used with more precision, perhaps, than is observable in the popular discourse, or in the regular *pharmacopœias* of modern times.

Common Turpentine (*Resina liquida pinea*) is the produce of the Scotch fir; is more coarse and dense than any other sort; and has an opaque, light brown colour. Its consistence is that of honey. The taste very acrid, hot, and disagreeable; and the smell much less pleasant than either the Venice, or the Strasburg turpentine.

The artificial extraction of the resinous juice of the Pine, was practised by the ancients, in a manner very similar to that which obtains at present. Theophrastus (lib. ix. cap. 2) gives a particular account of the several trees employed for this purpose in his time, of the proper season of the year for commencing the process, and of the several variations in the qualities of the juice; and though commentators have not been able to refer all

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binthus yields the resinous juice called in the shops *Cyprus* and *Chio* turpentine, the superiority of which to all the products of the Pine tribe, was well known to, and described by, most of the ancient writers on the Materia Medica. Genuine turpentine is almost colourless, and emits a peculiar odour, much more agreeable than that of the common turpentines of the shops.

the trees, described by this author, to their proper places in the Linnean *Species Plantarum*, it is evident, that three or four kinds of turpentine were in use amongst the ancient physicians, which correspond in their properties, with those found in the shops of the moderns.

It has been remarked, that trees with the thickest bark, and which are most exposed to the sun, generally yield the most turpentine. After the outer bark has been taken away, the inner bark, and a thin slip of wood, are cut off, with a very sharp tool, so that there may be a wound in the tree not more than three inches square by an inch deep. The first incision is made near the foot of the tree ; and as the resin flows most abundantly in hot weather, the operations are begun near the end of May, and continued to September. The resinous juice is received by holes dug in the ground at the foot of the tree, and is afterwards taken out with ladles made either of wood or iron ; then poured into pails, in order to be removed to the hollow trunk of a pine sufficiently large to hold three or four barrels.

In France, distinct appellations have been given to the several states of the resinous juice of Pines; that which condenses on the wounds towards the decline of the sap, being called *Galipot* in Provence, and *Barras* in Guienne ; the fluid resin obtains the name of *Perinne vierge ;* and a thinner kind of the latter, subjected to a sort of filtration, is called Bijon, or *Terebinthine fine.* The galipot is used by the chandlers to make flambeaux, though the greatest quantity usually undergoes conversion, by being boiled, in *brai-sec* and *yellow-resin.*

The liquid resin of the Pine, though of inferior quality to that of the Turpentine-tree, the Larch, and the Silver Fir, especially for internal use, is too often substituted for the others by druggists. In most terebinthinate preparations, this species is the subject, and there is no reason, perhaps, why the essential oil, and other parts of it, separately taken, should not be equally good.

Essential Oil (*Oleum Terebinthinæ. Spiritus Terebinthinæ. Esprit de Rase. Essential Oil of Turpentine*) is obtained, as directed by the London Pharmacopœia, by distilling five

pounds of the resinous juice with four pails of water, in a copper alembic. If one pound of the oil be re-distilled with four pints of water, the result is called rectified oil of turpentine. (*Oleum Terebinthinæ rectificatum* of the London and Dublin colleges.) The process is not unattended with danger, for unless the luting be very close, some of the vapour is apt to escape; and if the latter should take fire, the vessels will burst. In some dispensatories, this rectified oil is denominated *ætherial*. It does not differ very considerably in specific gravity, smell, taste, or medical qualities, from the common essential oil.

Common Resin (*Resina Flava*) is the residuum of the process for obtaining the essential oil. This process, pushed as far as the nature of the subject will admit of, changes the colour to a deep brown, or black, when the resin acquires the name of *black resin*, or *colophony*, which latter was originally the appellation of a raw, liquid resin, brought from Colophon, in Ionia, which is described by Dioscorides, (Lib. I. c. 77.)* The medicinal properties of these two resins are, of course, extremely alike. They are rarely used internally; but for external purposes they can scarcely be dispensed with, being remarkably adhesive when mixed with other materials. Colophony is of considerable use in the arts. It enters into the composition of several varnishes, and is sometimes substituted for sandarach. Musicians rub the bows and strings of violins with it, to take off greasy particles, and to counteract humidity.

Tar. (*Pix liquida Pinea.* Πιττα, Πισσα υγρα, Κωνος, of the Greeks. *Pix liquida* of the Romans, and of most modern pharmacopœias. *Goudron*, of the French.) This well-known substance is obtained from the roots and other parts of old pines, by a sort of *distillatio per descensum.* "Pix nihil aliud est (says Pliny†) quam combustæ resinæ fluxus." It differs from the native resinous juice in having acquired an empyreumatic

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* See also Galen (*de Comp. Med.* lib. 7,) and Pliny, (lib. 14, c. 20.) Celsus allows the choice, either of the *Resina Colophonia*, or the *Resina Pinea*, in the composition of his discutient plaster: and Scribonius mentions Colophony as a purgative.

† Lib. 23. cap. i.

quality from the action of fire; and in containing the saline and mucilaginous parts of the tree, mixed with the extractive, and the oily. The greater part of the tar imported into this country is brought from the Baltic, as the produce of the Scotch fir; but in America is chiefly obtained from the Pinus *australis*. The process employed in most countries differs little from that which was followed by the ancient Macedonians, and which is circumstantially described by Theophrastus, in the third chapter of his ninth book, when he tells us, that the billets were placed erect beside one another, and that they were afterwards covered with turf to prevent the flame from bursting forth, in which case the tar was lost. The stacks were sometimes, he says, one hundred and eighty cubits in circumference, and sixty, or even one hundred in height. These huge heaps of wood being set on fire, the tar was made to flow from them in channels cut for that purpose. As all the trees of this genus yield the same substance, by the same treatment, it is probable that the ancients did not confine themselves to one species for obtaining it, any more than the moderns, and that some variety was occasioned in the product according to the different management of the fire, and in the cooling. Hence arise the confusion, and the difference of opinion respecting the terms *Cedra*, *Cedrælon*, *Pissæleon*, &c. which, after the most industrious collation of passages from Theophrastus, Dioscorides, Galen, and Pliny, it is scarcely possible at this day to refer to the precise substances which they were intended to designate. For the modern method of procuring tar, as practiced in the Valais, we must refer to Duhamel's *Traite des Arbres*, tom. ii. p. 160.

The substances mentioned above are officinal; but as the produce of the P. *sylvestris*, we have also:

1st. PITCH. (*Pix Pinea inspissata.* Βοσκας, of the Greeks. *Spissa Pix*, Pliny. *Brai-gras*, of the French.) Pitch is made by melting coarse, hard resin, (or *brai-see*, as it is called in France,) with an equal quantity of tar, in large copper vessels similar to those used for boiling the raw juice. If the tar be too thin, the proportion of the resin is increased; and, on the other hand, if it be thick, a third part of tar is sufficient.

Should the process of inspissation be carried to its utmost limit, the pitch becomes hard and dry, and is called in the shops *Pix arida*, (the Πισσα ξηρα, and Παλιμπισσα of the Greek writers,) which is less pungent and less bitter than the common tar, and is used only in some external applications, as an adhesive substance, agreeing in its medicinal virtues with common digestives. Pitch is used extensively in ship-building; and blended with oil and suet, is much employed by the sons of Crispin for waxing their thread. With whale oil it forms the grease for carriage wheels, and in several kinds of luting is familiar to mechanics, and handicraftsmen.

2ndly. Lamp Black. (*Fuligo Pinea; Noir de fumee,* of the French.) To obtain lamp-black, a sort of box is made nicely closed in every part, with the exception of some holes in the top, which are covered with a sort of linen cone. At a little distance from the box a furnace is constructed, with a very small mouth, and the inferior part communicating with the inside of the box by an horizontal chimney. Into this furnace are put the dregs and coarser parts left in the preparation of tar; and in proportion to the consumption of these a supply is kept up, so as to furnish a constant draught of smoke into the box. The smoke goes chiefly into the cone, when it deposits its soot, or lamp-black, which is employed almost exclusively in printing and dyeing.

3rdly. Bark Bread. We are informed by Linneus, that the Laplanders eat, during a great part of the winter, and sometimes even during the whole year, a preparation of the inner bark of the pine, which they call *Bark-broed*. This substance is made in the following manner, viz. after a selection of the tallest and least ramose trees, (for the dwarf branching ones contain too much resinous juice,) the dry, scaly, external bark is carefully taken off, and the soft, white, fibrous, and succulent matter collected and dried. The time of the year chosen for this process is when the *alburnum* is soft, and spontaneously separates from the wood by very gentle pulling, otherwise too much labour would be required. When the natives are about to convert it to use, it is slowly baked on the coals, and being thus

rendered porous and hard, is ground into powder, which is kneaded with water into cakes and baked in an oven. The Siberian ermine-hunters, when their ferment or yeast, which they carry with them to make their *Quass*, is spoiled by the cold, digest the inner bark of the pine with water over the fire during an hour, mix it with their rye-meal, bury the dough in the snow, and after twelve hours, find the ferment ready prepared on the subsiding fæces.*

Pinus Balsemea.

Canada Balsam is the produce of this tree. (*Resina liquida balsamea. Balsamum Canadense,* Pharm. L. et E. *Baumier du Canada;* vel, *Sapin Baumier,* Pharm. F.)

It is a transparent, whitish juice, brought to this country from Canada; and differs little in its qualities from the celebrated Balm of Gilead, the product of *Amyris Gileadensis,* so high in esteem among the eastern nations, and so strongly recommended in a variety of complaints. Hitherto, however, it has not been much employed in England, yet it is thought capable of answering all the purposes for which the Copaiba balsam is employed; and would, therefore, deserve a more general trial. It has an agreeable odour, and a strong pungent taste.

Pinus Abies.

This tree yields the Thus† of the old London Pharmacopœia. (*Resina concreta abiegna. Poix,* of the French.) It exudes spontaneously from the pores of the tree, and soon concretes into distinct drops, or tears, which differ from Strasburg turpen-

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* Pallas. Fl. Ross. p. 2, 3.

† The *Thus* of the ancients does not appear to have been the product of any species of *Pinus,* but, as we are informed by Dioscorides, (lib. i. cap. 70,) pine resin was often substituted for it; and the substance now bearing that name in the shops, is seldom any other than the concrete resin described above. Dioscorides describes a mode of distinguishing the two kinds. "Resin, (of the pine,) says he, when thrown into the fire, dissipates itself in smoke, whereas frankincense burns with a brisk flame, and the odour of the latter serves to detect imposition. "Some writers," observes Dr. Maton, "are of opinion, that the genuine Λιβανος, *Thus,* or Frankincense, is obtained from Juniperus *lycia,* and constitutes the *Olibanum* of our shops, but I cannot find any passages in ancient authors, sufficiently precise to corroborate this conjecture."

tine, the produce of the silver fir, Pinus *picea*, in being compact, opaque, and of a deeper yellow colour. The common frankincense of the shops, is probably no other than this resin, or, at least, the latter is, in general, mixed with the former, and becomes an ingredient in the *Emplastrum Thuris compositum*, and *Empl. Ladani compositum*, of the London Pharmacopœia.

BURGUNDY PITCH, (*Resina abiegna cocta. Pix Burgundica. Poix-grasse* vel *Poix de Bourgogne.)* This substance is of a close consistence, but rather soft, of a reddish brown colour, and not unpleasant smell. The shops are supplied with it chiefly from Saxony, where, however, many adulterations take place; and in this country, a preparation of the common turpentine substituted for it. Genuine Burgundy pitch, is prepared from the resinous juice of the Norway spruce, which is yielded by that tree from the month of April to September, from incisions made in the bark. In the operation of cutting, the wood is left untouched, for the juice exudes chiefly from *between* the bark and the wood, and in small quantities from the former alone; but not from the latter. It fixes almost immediately after it is freed from its lodgment, and therefore does not flow to the ground, but remains attached to the tree in large tears, or flakes. This concrete matter is collected once a fortnight, by detaching it with an instrument formed on one side like an axe, and on the other like a gorget. With this instrument, also, the incision is renewed every time that the resin is collected. A vigorous tree, planted in a good soil, will yield in one year thirty or forty pounds of juice; which becomes dry enough to be put into sacks, and is thus conveyed by the peasants to places where the following process is carried on, viz.—The resinous substance is put with a proper quantity of water into large boilers; a moderate fire melts it; it is then strained, under a press, through strong, close cloths, into barrels, to be transported to distant countries. This is the method, according to Duhamel, that is practised in the neighbourhood of Neufchatel; but it differs in other places, as may be seen by consulting Axtius' *Tract. de Arb. Conif.*, p. 79; or Geoffroy's *Mat. Med.*, T. 3, p. 437.

Pinus Larix.

Venic eTurpentine (*Resina liquida Larigna. Largatum,* of the Italians. *Terebintha Veneta,* Pharm. Ed.) A produce of this species of pine, is generally esteemed the best of the juices called Turpentines, after that of *Pistachia Terebinthus.* It is usually thinner than any other sort, of a pale yellowish colour, and of a hot, pungent, bitterish taste. It is said to remain always, or at least a very long time, in a state of liquidity; if it should at length become at all concrete, it is only on the edges, or sides of the vessel in which it may be contained. This property is adverted to by Pliny, *Lib.* 16. c. 10.

Though it bears the name of Venice Turpentine, very little is exported from the Venetian territory; but it is probable that the merchants of that country were the first who substituted it for the genuine turpentine of Cyprus. That which is most commonly met with in the shops, comes from New England; from what tree, we are ignorant. The true liquid resin of the Larch, is obtained chiefly from France and Germany. It is procured by boring holes in the trees in May, which are about an inch in diameter, and have a gentle inclination downwards: to these holes a kind of gutter is adapted, from fifteen to twenty inches in length, which terminates like a peg perforated in the centre. The juice passing along these tubes, falls into troughs, placed at their most depending part. This process is continued to the end of September; and as it is impossible to secure the troughs from leaves, and other extraneous matter, the resin is usually strained through a hair sieve into other vessels, in which it is transported to the places of sale.

Besides Venice Turpentine, the Larch also yields the *Gummi Orenburgense,* of the Russian shops, and, although it is used by no other country, it is described as a good substitute for Gum Arabic. It is very glutinous; rather dry; of a reddish colour, and a sub-resinous taste; but wholly soluble in water. The mode in which this substance is obtained is very remarkable. It sometimes happens that whole forests of Larch, in some parts of the Russian empire, are accidentally consumed by fire. During the

combustion of the medullary part of the trunks, a gum issues forth, which is diligently collected by the natives, for the purpose, not only of rendering their bows glutinous, but also of being eaten as a delicacy. It is also supposed to act as an anti-scorbutic, and an useful astringent for the gums.

MANNA OF THE LARCH (*Manna Larigna. Manne de Briançon.*) About the month of June, when the sap of the Larch is most luxuriant, it produces small white drops, of a sweet, glutinous matter, like Calabrian manna. This manna is collected by the peasants, who go very early in the morning to the forests, before the sun dissipates it, and lop off, with hatchets, the branches that bear it; carrying them afterwards to the shade, where they can collect the grains at their leisure. The Venetians have many different names for the varieties of it; and in Dauphiny it has been very generally employed as a laxative; but it is said to possess not more than half the strength of that which is yielded by the Calabrian ash.

QUALITIES AND CHEMICAL PROPERTIES.—It is, at present, the opinion of chemists, that *resins* stand in the same relation to the *volatile* oils that wax does to the *fixed*. Wax is considered as a fixed oil saturated with oxygen; resins, as volatile oils, saturated with the same principle. The reader can be at no loss to form a notion of what is meant by *resin*, when he is informed that common *rosin* furnishes a very perfect example of a resin, and that it is from this substance that the whole genus derived their name: for *rosin* is frequently denominated resin: which is the substance that remains in the retort after the volatile oil (spirits of turpentine) has passed over. During the operation of distillation, succinic acid also rises. Turpentine may, therefore, be said to consist of *essential oil, succinic acid,* and resin, in the simple acceptation of the term.

Terebinthinous exudations, prior to the separation of the essential oil, are termed *resins;* they are solid substances, naturally brittle; have a certain degree of transparency, and a colour most commonly inclining to yellow. Their taste is more or less acrid, and not unlike that of volatile oils; but they have

no smell unless they happen to contain some foreign body. They are all heavier than water. All are *non-conductors* of electricity; and when excited by friction, their electricity is negative. Their specific gravity varies considerably. When exposed to heat they melt; and if the heat be increased, they take fire, and burn with a strong, yellow flame, emitting, at the same time, a vast quantity of smoke. They are insoluble in water, whether cold or hot; but under some circumstances are capable of uniting with a small portion of that fluid. All, with a few exceptions, are soluble in alcohol. Several are so in fluid oils, especially in the drying oils. The greater number are soluble in the volatile oils. Mr. Hatchett has ascertained, contrary to the received opinions, that alkaline leys dissolve them with facility. These alkaline solutions of resins have the properties of soap, and may be employed as detergents. Most of the acids dissolve resins with facility, producing different phenomena, according to circumstances; and the sulphuric and nitre convert them into artificial tannin.

When *volatile oils* are exposed for some time to the action of the atmosphere, they acquire consistency, and assume the properties of resins. During this change, they absorb oxygen from the air. When volatile oil is exposed to the air, it is partly converted into a resin, and partly into a crystallized acid; usually the benzoic, or the camphoric. For a more complete account, we refer to Thompson's System of Chemistry; to which we are much indebted for this detail.

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 into moist and dry. Pliny adopts the same arrangement; and both enumerate, very fully, the different species from which each variety is obtained. "Summæ species duæ, sicca et liquida. Sicca é pinu et picea fit: liquida è terebintho, larice, lentisco, cupresso."* This enumeration accords very nearly with that

* Plinii Historia. cap. xxiv. sect. vi.

given by Dioscorides; as do his remarks on the method of employing them, both internally, and externally. Aretæus gave turpentine internally, in the form of a linctus, composed of nitre, rue, and honey; for lethargy, apoplexy, melancholia, and pleurisy. He prescribed it also in enemas, in conjunction with cummin and rue, for cephalea, and volvulus; externally in phrenitis, and tetanus: and, in the latter disease, it formed the principal ingredient in the cataplasms which were ordered to the injured part, upon the supervention of the tetanic symptoms. Prosper Alpinus enumerates the turpentines amongst the individual remedies of the *Theriaca* of the Egyptians; and that they greatly employed it in the middle ages, may be inferred from the later, but extravagant praises of Fernelius. "Terebinthina calefacit, mollit, discutit, terget, expurgat: viscerum omnium, maximeque renum, obstructiones tollit, et angustos meatus aperit, urinam ciet, putredrinem cohibet." As the chemical remedies and the chemical doctrines of disease became disseminated through Europe, the province of the terebinthinous class of medicines became invaded, their boundaries more confined, and, with many other celebrated galencials, deprived of their due consideration. The diseases of the urinary organs were left, however, in their almost undisturbed possession; so that up to the present time, they have always attached to themselves a portion of attention in the alleviation and cure of disease.

Common turpentine. This variety is directed by the London and Edinburgh colleges to be chiefly used in external applications, for which, as we have stated before, it was much used by the ancients. The *Emplastum Lythargyri compositum*, and *Unguentum Elemi compositum*, both contain it as a principal ingredient, on account of its supposed powers in digesting, cleansing, and incarnating wounds.

Resin (Resina alba vel flava) is only employed in the composition of ointments and plasters, for its adhesive, or its stimulating properties.

Tar was formerly considered almost as a universal *panacea*, and there is no end to the praises that have been bestowed upon it. Dr. Berkeley, Bishop of Cloyne, wrote a dissertation on

Tar Water, under the title of "*Siris, or a Chain of Philosophical Reflexions and Enquiries concerning the virtues of Tar Water.*" Mr. Thomas Prior also published a great number of cases and remarks on its virtues: and from their account, and Cullen's, it appears to strengthen the tone of the stomach, to excite appetite, promote digestion, and remove dyspeptic symptoms.

Tar Vapour has been recommended by Dr. Crichton for phthisis pulmonalis, and there is little doubt but that some persons were benefited by its use. Mr. Ward, of Maidenhead has also narrated cases of its success in asthma. The London and Edinburgh colleges direct tar to be made into an ointment; (*Unguentum Picis;*) the former by means of the admixture of an equal portion of mutton suet; and the latter, of two-fifths of yellow wax. This ointment has been much employed for the cure of cutaneous affections, particularly those of domestic animals: and although the barbarous practice of the *pitch cap* is now justly exploded, we have seen the application of this salve, of eminent service in porrigo of the scalp.

Burgundy Pitch is employed only externally. It enters into the composition of the *Emplastrum Cumini*, and the *Empl: Picis Burgundicæ compositum.* It forms a warm stimulant application, and sometimes occasions vesications; though, in general, a redness of the part, with a gentle exudation are the only effects observable. The cases in which the last-mentioned plaster seems to produce most good, are those which may be called *nervous dyspnæa;* but it is also serviceable in coughs, pains of the muscular parts of the chest, and some affections of the trachea, occasioning loss of voice.

Venice Turpentine is substituted, in medicine, for the true, or Chian turpentine, under those circumstances to which the latter is supposed to be particularly suited. As a diuretic, the Venice turpentine is generally preferred to all the other sorts, and it loosens the belly most, on which account Riverius thinks it more safe than most other irritating diuretics. Cullen observes, that when it is employed as an *enema*, its effects are more certain and durable than those of saline medicines, for remedying obstinate constipations of the bowels. Other prac-

titioners have employed it with advantage in some nephritic cases, exhibiting it in a similar form, by the *rectum*. It forms a part of several plasters and ointments; as, for instance, the *Emplastrum de Belladonna* of the Brunswick pharmacopœia, the *Unguentum Infusi Cantharidum* (Ed;) and the *Unguentum divestigum* of the Russian shops.

Essential oil, or Spirits of Turpentine. Of all the terebinthinous remedies, the essential oil is the most esteemed; and since that erudite physician, Dr. Copland, published his valuable paper on them, (from which we have derived much of the information that we are able to communicate,) many prejudices against its employment have been dissipated, and its utility from day to day more fully confirmed. It is evident from the violet odour that it communicates to the urine, and from other circumstances, that it is a powerful stimulant, capable of being particularly directed to the urinary organs; and from this specific action it is often given for gleet, in doses of from ten to thirteen drops. Cheyne and Pitcairn particularly recommended it for chronic rheumatism, and were followed by Cullen, and Home. The latter gave it in the form of linctus, consisting of two drachms of the oil, and one ounce of honey; and of this a teaspoonful was taken twice, or thrice, in twenty-four hours. This was the same formula as recommended by Cheyne; and, from the cases related by Home, it appears to have generally cured the disease. When this remedy is employed for chronic rheumatism, it may be taken either in the small or medium doses, combined with any of the preparatives of cinchona, or senega, &c. triturated with mucilage into the form of a draught; to which *tinct. capsici*, or *tinct. cardam.*, or *spirit armorac. comp.* with a drop of some essential oil ought to be added. Dr. Copland prefers the capsicum annuum to any other, both as an adjuvant, and corrigent to other remedies; having ascertained, that if given in considerable quantities, in the form of pills, it will remove this disease as soon as any other remedy.

For *sciatica* and *lumbago* the following linctus is efficaciously administered; but the operation of the turpentines must be closely watched lest they affect the urinary organs.

R. Mellis optimi ʒii.
Olei terebinthinæ.
Tinct. Guiaci Ammon. ā ā ʒij.
Olei Caryophil.
—— Limonis ā ā gtt. iii.—Misce ut fiat linctus: cochleare unum minimum bis terve de die sumendum.

For *passive* hæmorrhages, and petechiæ, we have seen it most advantageously given; and in *atonic epistaxis* of children, and in *hæmoptysis*, accompanied with debility, it has been resorted to with advantage. For *hæmorrhoids*, seated high up in the rectum, more especially after repeated attacks have debilitated the patient, the spirits of turpentine is of great service as well as in *chronic dysentery*, and *chronic diarrhœa*. For *epilepsy* it has often been given with decided advantage; and we could narrate several instances of its remarkable success in this disease, of very long standing; which appeared to us to be kept up, more through habit, than from the existence of organic lesion. Several other spasmodic diseases, as *chorea* and *tetanus*, are recorded to have been cured by its internal use, and, in the hands of Dr. Copland, we have *seen* its beneficial effects produced in a variety of maladies; which he has fully adverted to in the 46th Vol. of the Medical and Physical Journal.

Large doses, from one, to two ounces, are sometimes given in the last stages of puerperal fever; and numerous cases are recorded of its producing copious evacuations, whereby tension of the belly is removed, and the disease arrested. After purging and leeching, employed in the same disease, we have known drachm doses to be most advantageously and repeatedly employed, and, by applying it hot to the abdomen in the earliest stages of that fatal malady, it is generally arrested in its progress, as numerous cases that have occurred lately in the Queen's Lying-in Hospital, under the superintendence of Dr. Copland, testify.

It has also been introduced as an anthelmintic of great power, and was first recommended by Dr. Fenwick, in Vol. ii. of the Medico-chirurgical Transactions. 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 larger quantity, seems to prevent its absorption, and therefore obviates its action on the urinary organs; and it has been stated in conformity to this, that this action, giving rise to stranguary, 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 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.

Pl 76.

Acacia Catechu.

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LXXVI

ACACIA CATECHU.

Catechu, or Medicinal Acacia.

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

Nat. Ord. LOMENTACEÆ, *Lin.* LEGUMINOSÆ, *Juss.*

GEN. CHAR. Hermaph. *Calyx* 5-toothed. *Corolla* 5-cleft, or formed of five petals. *Stamens* 4—100. *Pistil* 1. *Legume* bivalve.

Male. *Calyx* 5-toothed. *Corolla* 5-cleft, or formed of five petals. *Stamens* 4—100.

SPEC. CHAR. *Spines* stipulary, hooked, in pairs. *Leaves* hairy, bi-pinnate; first division of ten or twelve pair; second of many pair; with a gland at each extremity of the common foot-stalk. *Spikes* cylindrical, axillary, two or three together.

Syn.—Mimosa Catechu, *Lin. Suppl.* 409; *Woodv. Med. Bot.* 183. *t.* 66; *Roxb. Coromand. v.* 2. *p.* 40. *t.* 175.

Terra Japonica; *Kerr in Med. Obs. & Inq. v.* 5. *p.* 151. *t.* 4.

Acacia Catechu, *Willd. v.* 4. *n.* 73; *Ait. Kew. v.* 5. *n.* 44.

FOREIGN.—*Cachou, Acacia du Cachou,* Fr.; *Cacciù; Catechù; Catto d'India,* It.; *Cachu,* Sp.; *Kateckubaum,* Ger.; *Katechu-boom,* Dut.

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 defines thirty-two, having a 5-toothed corolla, and only eight stamens; and to many of them, being sensitive, the name Mimosa is properly appropriated. Willdenow enumerates a hundred and two species, dividing them

into seven sections; to which Mr. R. Brown has made several additions from New Holland, partly described in Aiton's Hortus Kewensis. 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 Hindoostan. 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 stipulas. 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 pale 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 hence 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 tree, in Vol. V. of "Medical Observations and Enquiries," which contains also a very correct plate. 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 Hin-

doostan, 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 the 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*, *castjoe*, *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 *betle-nut;* nor is it indeed credible that it should, notwithstanding that this is the general and received opinion, for the *betle-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 very powerful. When too profusely used, it is said to be a destroyer of venereal pleasures. It is given at the rate of two ounces per day to tame vicious horses.

"*The Furnace used in making the Extract.*—Dig a hole in the earth five or six feet long, two feet deep, and two feet wide; cover this with an arch of clay, leaving one end open to receive fuel, and take out the ashes; in the arch, three or four circular openings are made, adapted to the bottoms of the pots: the same structure may be raised above ground, made of clay. This furnace is very valuable for its simplicity, easy construction, and small expense of fuel.

"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 to a venereal ulcer. 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 an 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 streaks of chocolate, and of red-brown. 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

* A sort of Catechu or *gutta gambir*, made in Sumatra, Prince of Wales' Island, &c. has been shown by Mr. Hunter, secretary to the Asiatic Society, to be the produce of a species of *Nauclea*; hence, probably, the two sorts of Catechu known to druggists may be thus accounted for.—*Trans. Lin. Soc. vol.* ix. p. 209.

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, and form alkalies, in a manner analogous to the infusion of galls. Sulphuric and muriatic acid 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 deprive 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; 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; hœmorrhoidal and uterine hœmorrhages, leucorrhœa, gleet, &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 this 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. Thomson 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.

PL 77.

Acacia vera f.

Weddell Fecit

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LXXVII

ACACIA VERA.

Egyptian Gum-Arabic Acacia, or Egyptian Thorn.

SPEC. CHAR. *Spines* stipulary, in pairs, linear-awl-shaped. *Leaves* doubly pinnate; first division of five or six pair; second of many pair; common stalk glandular. *Heads* axillary, about three together. *Legume* necklace-like, nearly flat, smooth.

Syn.—Mimosa nilotica, *Lin. Sp. Pl.* 1506; *Hasselq. Travels, Engl. ed.* 250; *Wodv.* 187. *t.* 67.

Acacia vera, *Willd.* 4. 1085. *n.* 87. *Ait. Hort. Kew. v.* 5. *n.* 48; *Bauh. Hist. v.* 1. *p.* 2. 429; *Vesling Ægypt.* 6 *t.* 6.

Ακακια, *Diosc.* l. 1. cap. 133.

FOREIGN.—*Acacia; Acacia vrai*, Fr.; *Acacie d'Egypte*, Lamarck; *Gommier Rouge*, Adanson.; *Acacia; Acazia; Acacia vera; Acacia egiziana*, It.; *Acacia*, Sp.; *Mimosa do Nilo; Acacia verdaiteiro*, Port.; *Die whre oder ägygptische Acacia*, Ger.; *Egyptische Acacia*, Dut.

THIS plant, which affords the finest Gum Arabic of commerce, was originally referred by Linneus to the extensive genus Mimosa, under the title of Mimosa *nilotica;* but has latterly been removed by Willdenow to the new genus Acacia. It is a native of the sandy deserts of Arabia, Egypt, and the western parts of Asia; and, according to Mr. Jackson, grows abundantly in Barbary, and other parts of Africa. The original gum-arabic tree was known to the earlier botanists, and appears to have been cultivated by Gerarde in 1596; but few persons are acquainted with living, or even dried specimens, especially of the legume. Our figure was made from a dried specimen, (perhaps the only one in this country,) in the herbarium of A. B. Lambert, Esq. F.R.S.,

which was brought from upper Egypt, by Dr. Clarke, as the true Acacia *vera*.

This, like the preceding species, rises several feet in height; the stem is crooked, and covered with a smooth grey bark, which on the branches has a yellowish green, or purplish tinge. The leaves are alternate, bipinnate, composed of several pairs of opposite pinnæ, with numerous pairs of small, deep green, smooth leaflets. At the base of the leaves are two opposite awl-shaped spines, nearly erect, and having a slight, glandular swelling below. The flowers are of a bright yellow colour, and collected into globular heads, four or five together, upon slender foot-stalks, that arise from the axillæ of the leaves. Immediately below each head of flowers, is placed a pair of small, ovate bracteas. The calyx is bell-shaped and 5-parted; the stamens are numerous, thread-like, and furnished with roundish, yellow anthers; the germen is conical, with a slender style and simple stigma. The legumes are four or five inches long, moniliform, nearly flat, smooth, of a pale brown colour, and contracted into numerous orbicular portions, in each of which is lodged a flattish seed. This character, as a distinguished botanist justly observes, clearly distinguishes the present species from Acacia *arabica;* being more strictly contracted into orbicular portions, with an obliquity well expressed in the wooden cut of Veslingius.

The gum, says Mr. Jackson, called Morocco or Barbary gum, is produced from a high, thorny tree, called *Attaleh*, having leaves similar to the *Arar*, or Gum Sandrac tree, and the juniper. The best kind of Barbary gum is procured from the trees of Morocco, Ras-el-wed, in the province of Suse, and Bled-hummer, in the province of Abda: the secondary qualities are the produce of the Kedma, Duguella, and other provinces. The tree grows abundantly in the Atlas mountains, and is found also in Bled-el-jerrêde. The gum, when new, emits a faint smell, and when stowed in the warehouse, it is heard to crack spontaneously for several weeks; and this cracking is the surest criterion of new gum, as it never does so when old: there is, however, scarcely any difference in the quality. The wood (of the tree) is hard, and takes a good polish; its seeds, which are enclosed in a peri-

carpium, resemble those of the lupin, yield a reddish dye, and are used by the tanners in the preparation of leather. These seeds attract the goats, who are very fond of eating them. The more sickly the tree appears, the more gum it yields; and the hotter the weather, the more prolific it is. A wet winter, and a cool, or mild summer, are unfavourable to gum.—(Jackson's Hist. of Morocco, fol. 84.)

The purest and finest gum-arabic is brought in caravans to Cairo, by the Arabs of the country round Mount Tor and Sinai; who bring it from this distance on the backs of camels, sewn up in bags, and often adulterated with sand and other matters. The gum exudes spontaneously from the bark of the trunk and branches of the tree, in a soft, nearly fluid state, and hardens by exposure to the air, or heat of the sun. It begins to flow in December, immediately after the rainy season, near the flowering time of the tree. Afterwards, as the weather becomes hotter, incisions are made through the bark to assist the transudation of the juice. All the gum that was employed in medicine, or the arts, was formerly brought from Arabia, or from Egypt, whence its name was derived; and it was not till about two hundred years ago, that the gum of Senegal was introduced into commerce. That adventurous and persevering naturalist, Adanson, who explored the district of the river Senegal with so much assiduity, contributed to extend our knowledge of the trees from which the gum might be procured in the western parts of Africa; and at present nearly the whole of what is imported into Europe comes from that country.

Several kinds of gum, yielded by different trees, are occasionally to be met with, but that which is commonly substituted for it, as we have already observed, is brought from the island of Senegal, on the coast of Africa, and is called *Gum Senegal.* It is generally in larger masses, and is of a darker colour; is more tenacious, and breaks with a vitreous, even fracture. It is not so soluble in water as the true Gum Arabic, and leaves at the bottom a stringy substance.* It is the sort chiefly employed

* The name of *Cerasin* has been applied to those gummy substances which readily dissolve in boiling water, but separate again from it in a gelatinous mass.

by the calico-printers, but does not go so far in thickening water. In India, what is termed the *Babul* tree, (Acacia *arabica*,) furnishes a very fine gum, which is extensively employed in the place of Gum Arabic; and Dr. Ainslie thinks that it is the same tree that is referred to by Dr. Wittman, in his Travels, (p. 231,) as yielding Gum Arabic in Turkey. It is in small, clear masses, of a semi-transparent or very pale yellow colour; but it is essential to have this gum well garbled in India; and care should be taken that is not intermixed with a gum resembling it, but generally in larger pieces, which is quite worthless. The Feronia *elephantum* of Roxburgh also yields a valuable gum, similar to Gum Arabic, which is commonly used by all the practitioners of lower India; and, according to Dr. F. Hamilton, gum, simply so called, may be procured in the Mysore, from the Melia *azederach;* Chironia *glabra;* Mangifera *indica;* Cassia *auriculata;* Ægle *marmelos;* Shorea *robusta*, and several other trees.

Qualities and Chemical Properties.—Gum Arabic is usually in small pieces, like tears; moderately hard; somewhat brittle, and may be reduced to a fine white powder. When pure, it is colourless, but has commonly a yellow tinge, and is not destitute of lustre. It has no smell. Its taste is insipid. Its specific gravity varies from 1.3161 to 1.4317. Water may be said to dissolve it entirely. The solution is known by the name of *mucilage;* which is thick, and adhesive: it is often used as a paste, and to give stiffness and lustre to linen. When spread out thin, it soon dries, but readily attracts moisture, and becomes glutinous. When mucilage is evaporated, the gum is obtained unaltered. It may be kept for years, without undergoing putrefaction. When gum is exposed to heat, it softens and swells, but does not melt; it emits air bubbles, blackens, and at last, when nearly reduced to charcoal, emits a low blue flame. After the gum is consumed, there remains a small quantity of white ashes, composed chiefly of the carbonate of lime and potash. Vegetable acids dissolve gum without alteration: the strong acids decompose it. Chlorine converts gum into nitric acid, according to the experiments of Vauquelin. If nitric acid be slightly heated

upon gum till it has dissolved it, and till a little nitrous gas is exhaled, the solution, on cooling, deposits saclactic acid. Malic acid is formed at the same time; and if the heat be continued, the gum is at last changed into oxalic acid. Thus, no less than three acids are developed by the action of nitric acid on gum.

Gum is insoluble in alcohol and ether, and both precipitate mucilage.*

From the experiments of Vauquelin, it appears that gum contains traces of iron; and he conjectures, that the lime which it contains is usually combined with acetic or malic acid. Berzelius analysed it, by burning it along with chlorate of potash, and found it composed of,

Oxygen	51.306
Carbon	41.906
Hydrogen	6.788
	100.000

Medical Properties and Uses.—Gum Arabic is extensively employed for a number of purposes, both in the arts and in medicine. It is frequently used either to suspend in water various substances, which could not otherwise be kept equally diffused in that liquid, or as a useful, colourless cement. Gum Senegal resembles Gum Arabic so nearly, that it is employed instead of it for all purposes in Hindoostan; and in this country is used in very large quantities by the calico-printers to mix the colours and the mordants in block printing. Gum Arabic forms the basis of crayons, and the cakes of water-colours; and of several liquid colours, of which common writing ink is a familiar example.

All the vegetable mucilages are considerably nutritious; hence in the countries where the Gum Arabic and Senegal grow native, they form an important article of diet, either alone or mixed with milk, rice, and other substances. In Guzerat, especially in the wastes, where the Balbul tree (Acacia *arabica*) is very common; the poor inhabitants use the gum for food. Hesselquist informs

* Thomson's System of Chemistry, vol. iv. p. 36.

us, that a caravan whose provisions were exhausted, preserved themselves from famine, by the Gum Arabic, which they were bringing as merchandise.

In medicine, this gum is used either by itself, or as a vehicle for other substances. Taken internally, its principal use is as a demulcent; to envelop acrid matter, and to cover the surfaces that are too sensible to external impressions. Hence it is sometimes allowed to dissolve gradually in the mouth, to allay irritation of the fauces; and its mucilage, sweetened with syrup, forms a useful remedy for tickling coughs, hoarseness, and diarrhœas; as well as in cardialgia, arising from oily substances received into the stomach. In these cases, it is sometimes advantageously joined with opiates and aromatics. Though its action has been supposed not to extend beyond the fauces and alimentary canal, it has been frequently recommended in tenesmus, strangury, gonorrhœa, gravel, and in almost all diseases of the urinary organs. It is given, either in powder, or dissolved in almond milk, &c. one ounce being sufficient to render a pint of liquid considerably glutinous.

In pharmacy, gum-arabic is employed to render oils, balsams, and resins, miscible with aqueous liquids; and to give tenacity to substances made into troches and pills. Even Mercury may be suspended in water, by being rubbed for a considerable time with gum-arabic; which preparation is called, from its inventor, *Plenk's solution*.

The pharmaceutical preparations into which gum-arabic enters as a principal ingredient, are the *Mucilago Acaciæ*, a simple solution of one part of the gum in two of boiling water; the *Emulsio Acaciæ Arabicæ, Ph. Ed.* which is gum-arabic dissolved in almond milk; the *Trochisci gummosi, Ed.*, with equal parts of gum, starch, and sugar; and the *Pulvis Tragacanthæ compositus, Ph. Lond.*, a powder made of tragacanth, gum-arabic, starch, and sugar. It is also an ingredient in the *Confectio amygdalarum*, L. *Mistura cornu usti*, L. *Mistura cretæ*, L. *Mistura Moschi*, L. *Mistura Guaiaci, L.* and the *Pulvis cretæ compositus*, L.

Pl. 78

Mercurialis perennis.

Weddell Fecit.

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MERCURIALIS PERENNIS.

Perennial, or Dog's Mercury..

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

Nat. Ord. TRICOCCÆ, *Lin.* EUPHORBIÆ, *Juss.*

GEN. CHAR. Barren fl. *Calyx* 3-parted. *Corolla* 0. *Stamens* 9—12. *Anthers* globose, 2-celled.
Fertile fl. *Calyx* 3-parted. *Corolla* 0. *Styles* 2. *Capsules* 2-celled, 2-lobed. *Seeds* solitary.

SPEC. CHAR. *Stem* perfectly simple. *Leaves* rough. *Root* creeping, perennial.

Syn.—Mercurialis perennis repens, cynocrambe dicta, *Raii. Syn.* 138.
Cynocrambe, *Ger. Em.* 333. *f.*; *Fuchs. Hist.* 444. *Ic.* 250. *f.*; *Matth. Valgr. v.* 2. 635. *f.*
Cynocrambe mas et fæmina, *Camer. Epit.* 998.; *Bauh. Hist. v.* 2. 979. *f.*
Mercurialis, *n.* 1601. *Hall. Hist. v.* 2. 277.
Mercurialis perennis, *Lin. Sp. Pl.*; *Willd. v.* 4. 809; *Fl. Brit.* 1083; *Eng. Bot. v.* 26. *t.* 1872; *Hook. Scot.* 289; *Curt. Lond. fasc.* 2. *t.* 65; *Fl. Dan. t.* 400; *Bull. Fr. t.* 303.

FOREIGN.—*Mercuriale sauvage, ou de montagne*; *Choude Chien*, Fr.; *Mercorella montana*, It.; *Kerza perunna*, Sp.; *Das perennirende oder beständidge Bingelkraut, Wildes Bingelkraut*, Ger.; *Vild: bingelurt*, Dan.; *Bingelgras*, Swed.; *Proleska*, Russ.

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 foot-stalks; they are ovate, acute, serrated, two or three inches long, with two small, pointed stipulas, at the base of the foot-stalks. 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 a two-lobed, globular capsule, two-celled, and containing a single, roundish seed in each cell, of a brownish, purple colour. Fig. (*a*) represents the calyx; (*b*) a single fertile flower; (*c*) the capsule and seeds; (*d*) the stamens, with their anthers, and the calyx.

The male and female flowers are seldom found intermixed, each sex usually growing in large patches; whence it has been inferred, that this plant increases principally by the root, rarely producing perfect seeds.

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 3d 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, fryed 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 and purged, 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 too than they had ever done before. The man waked 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

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

twenty-four hours, and, upon their wakening, fell a vomiting and purging 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 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 herbarist, but this I observed of the herb; it is branched and seeded something like spinage, or mercury, but leaved like lakeweed."—(*Philos. Trans., No.* 203, for *September*, 1693.) Sir H. Sloane was afterwards furnished with some specimens of the plant, and found them to be Dog's Mercury.

TREATMENT.—The remedies to be applied in case of poisoning by this plant, will be the same as those recommended under the article Nicotiana *Tabacum.*

MERCURIALIS ANNUA.

Annual, or as it is sometimes called, French Mercury, with branched stems, and smooth, glossy leaves, grows wild in waste or cultivated ground, chiefly in the more temperate parts of Europe. It occurs frequently near London, in Battersea fields; and is figured in "*English Botany,*" *v.* 8. *t.* 559. 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 spinach, 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.

Sambucus nigra

Weddell Fecit

Published by J. Churchill Leicester Sq. Aug.st 1828.

LXXIX

SAMBUCUS NIGRA.

Common Elder.

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

Nat. Ord. DUMOSÆ, *Lin.* CAPRIFOLIA, *Juss.*

GEN. CHAR. *Calyx* 5-cleft. *Corolla* rotate, 5-lobed. *Berry* 1-celled, 3-seeded.

SPEC. CHAR. *Cymes* with five main branches. *Leaves* pinnate; *leaflets* ovate, serrated. *Stipulas* obsolete. *Stem* arborescent.

Syn.—Sambucus, *Rhaii. Syn.* 461; *Ger. Em.* 1422. *f.*; *Matth. Valgr. v.* 2. 606. *f. Camer. Epit.* 975. *f.*; *Fuchs. Hist.* 64. *f.*
Sambucus acinis albis, *Raii Syn.* 461.
Sambucus laciniatis foliis, *Bauh. Pin.* 456. *Raii Syn.* 461.
Sambucus, *n.* 670. *Hall. Hist. v.* 1. 298.
Sambucus nigra, *Lin. Sp. Pl.* 385; *Willd. v.* 1. 1495; *Fl. Brit.* 336; *Eng. Bot. v.* 7. *t.* 476; *Hook. Scot.* 96; *Woodv. v.* 1. *t.* 78.

FOREIGN.—*Le sureau, suzeau; Sambus*, Fr.; *Sambuco; Saugo; Sambugaro*, It.; *Sauco; Sauco negro*, Sp.; *Sabugueiro*, Port.; *Der Schwarze Hohlunder; Gemeiner Hohlunder*, Ger.; *Hyld; Hydetræe*, Dan.; *Fläder*, Swed.; *Vlierboom*, Dut.; *Busina, Bos derewo*, Russ.

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 Boretree or Bourtree.

Common 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 corolla is monopetalous, nearly wheel-shaped, with five deep, obtuse, somewhat reflexed segments: the filaments are five, awl-shaped, about the length of the corolla, 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. Fig. (*a*) represents a flower somewhat magnified; (*b*) the calyx, with the germen and stigmas; (*c*) the fruit.

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. Bauhin. 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 an

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. 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, both by the Edinburgh and Dublin colleges.* The flowers, which, according to Linneus,† are poisonous to peacocks, were formerly administered in the form of infusion for erysipelas, rheumatism, small-pox, &c.;‡ but whether the diaphoretic effects which followed their use, are to be attributed to them, or to the dilution, we cannot determine. Externally, they are still much recommended for their soothing effects; but we are still 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.

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 cottager 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.

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* The berries are said to be poisonous to poultry. *Barthol. Hist. anat. rarior. Cent.* iv. *p.* 248.

† *Flor. Suec. p.* 79.

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

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 stipulas, 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.

Pl. 80

Rhododendron chrysanthum.

LXXX

RHODODENDRON CHRYSANTHUM.

Golden-flowered Rhododendron.

Class X. DECANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. BICORNES, *Lin.* RHODODENDRA, *Juss.*

GEN. CHAR. *Calyx* 5-parted. *Corolla* nearly funnel-shaped. *Stamens* declined. *Capsule* 5-celled.

SPEC. CHAR. *Stem* decumbent. *Leaves* ovate, reticulated, rugged above; paler or ferruginous, and smooth beneath. *Umbels* terminal. *Corolla* irregular, nearly wheel-shaped.

SYN.—Andromeda foliis ovatis, *Gmel. Flor. Sib. v.* 4. *p.* 121. *t.* 54.
Rhododendron officinale, *Salsb. Prodr. t.* 80.
Rhododendron chrysanthum, *Willd. v.* 2. 603; *Woodv. v.* 3. 403. *t.* 149; *Stokes, v.* 2. 504; *Pallas. Fl. Ross. tom.* i. *pars.* 1. *p.* 44. *t.* 30.

FOREIGN.—*Rosage.* Fr.; *Rhododendro aureo,* It.; *Gichtrose; Gelber Alpbalsam,* Ger.; *Sabina,* Russ.

THIS beautiful shrub is a native of the mountains of Siberia, Kamtschatka, and Beering's Island; flowering in June and July, and ripening its pods in September. It was introduced by Mr. Joseph Bush, in 1796, into our gardens, where it flowers, though rarely, in the middle of summer. In its native climes, it grows not only on the mountain tops, but on the banks of rivers.

The stem in alpine situations seldom exceeds a foot in height; in lower ground it grows to a foot and a half, sending off numerous decumbent spreading branches, having their ends emerging from the moss, and which are covered with a brown bark. The leaves are terminal, few, ovate, oblong, of a coriaceous texture, and attenuated to the footstalk; the upper ones reticulated, rugged, and of a deep green colour; the under pale or sub-

ferruginous, very smooth, having the margin entire and bent inward. The flowers are large, yellow, and placed alternately at the ends of the branches on very long peduncles, forming an umbel. They are usually six or fewer, but sometimes about ten, erect and hairy. The calyx is inferior, persistent, and divided into five deep teeth; the corolla is monopetalous nearly wheel-shaped, and divided into five rounded, nearly equal, spreading segments; the three upper ones being only a little larger than the other two, striated towards the tube with livid dots; the lower ones unspotted. The stamens are ten, equal, thread-shaped, declining, with incumbent oblong anthers. The germen is pentagonal, bearing a long slender style, and terminated by a 5-lobed stigma. The capsule is ovate, somewhat angular, slightly curved, subtomentose, and divided into five or ten cells, which contain many small, gray, irregular seeds, like saw-dust. Figs. (*a* and *b*) represent the capsule and its valves; (*c*) a section of the same to show the cells.

Professor Pallas was the discoverer of this plant during his tour through Siberia; and from his splendid work (Flora Rossica) we have taken our characteristic figure. The inhabitants of Siberia call the shrub Schéi, or tea; drinking a weak infusion of it as a refreshing beverage, in the same way as we do that of the Chinese plant.

It appears from Pallas' account, that the Cossacks gather its leaves in September, when the capsules are ripe; but it is then less bitter than when in flower, and the whole plant is more flourishing; at which time, he recommends it to be obtained for medicinal use.

Qualities.—The leaves possess a smell, when fresh, of a rhubarb cast; when dried they are inodorous, but have an austere, bitterish taste, somewhat resembling our common oak-leaf. The decoction has a disagreeable smell, and a rough, bitter, acrid taste.

Medical Properties and Uses.—This plant was first used as a narcotic application for hæmorrhoidal fluxes; but it was not till Gmelin and Steller had lauded its virtues, that it excited the notice of the medical world. It appears that the

Siberians, on the banks of the river Lena, when overcome by fatigue and cold, apply a decoction of its leaves to their limbs, to relieve pain and induce sleep. They also exhibit it for rheumatic and other painful affections of the muscles and joints, in the following manner: they take about two drachms of the dried shrub, stalks, and leaves, which, with nine or ten ounces of boiling water, they put into an earthen pot; lute on the head, and place it in an oven during the night. This infusion, *for it is not allowed to boil,* is drank the next morning for a dose. It occasions heat, together with a degree of intoxication, resembling the effects of spirituous liquors, and a singular kind of uneasy sensation in the parts affected, accompanied by creeping sensations, which are likewise confined to the diseased parts. The patient is not permitted to quench the thirst which the medicine occasions; as fluids, particularly cold water, produce vomiting, whereby the power of the specific is lessened. In a few hours, all disagreeable effects disappear, commonly with two or three alvine evacuations. The patient then finds himself greatly relieved of his disorder, and has seldom occasion to repeat the medicine above two or three times to complete a cure.

From experiments which have been instituted in this country, the yellow Rhododendron appears to exert a stimulant, and diaphoretic effect; and, as far as our experience goes, it supports the correctness of Dr. Home's remarks, who states that it has a power on the heart, whereby arterial action is often much diminished. Pallas relates in his travels, that it is a common and successful remedy, among some of the Tartar tribes in gout, and other painful disorders. They drink till it brings on some degree of vertigo, and symptoms of intoxication, which effects are generally accompanied by a tingling sensation in the parts affected, and an abatement of pain. These effects were also noticed by Kœlpin, a friend of Professor Pallas, who not only speaks of its efficacy on himself, but in a tract, written in German and published at Berlin, extols it not only for its virtues in relieving gout and rheumatism, but for its valuable powers over that painful affection of the bones, known as venereal rheumatism.

Sometimes it excites head-ach, nausea, vomiting, delirium, and other unpleasant symptoms. Capriolus, a companion of Steller, having eaten ten leaves, soon after began to stagger, toss his head about, and to reel. After a short time, he fell on his knees, in vain attempting to rise; and, although milk was copiously administered to him, he became overcome with sleep for an hour and a quarter, during which time he started continually, and appeared terrified. When he awoke he appeared as cheerful as before, and it failed afterwards to produce the same effects. After this, the servants of Steller were constantly taking small quantities of it, on account of its pleasant intoxicating effects.*

When we administer it, we put half an ounce of its leaves in twelve ounces of water, and allow them to *simmer only*, for four hours. Of the strained liquor, a quarter may be given to an adult every four hours; who, during its administration must remain in bed, and its effects should be closely watched. The leaves of a different species, probably the R. *caucasicum*, have been, for several years, sold by druggists for this plant; but Mr. Butler, of Covent Garden, has obtained a considerable quantity from Siberia; and in those constitutions with which colchicum disagrees, we venture to recommend it as a very efficacious remedy.

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* Pallas, Flora Rossica. fol. 45.

Pl. 81.

Swietenia febrifuga.

Weddell fecit.

Published by J. Churchill Leicester Square Sept. 1828.

LXXXI

SWIETENIA FEBRIFUGA.

Frebrifuge Mahogany-tree.

Class X. DECANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. TRIHILATÆ, *Lin.* MELIÆ, *Juss.*

GEN. CHAR. *Calyx* 5-cleft. *Petals* five. *Nectary* cylindrical, bearing the anthers at the mouth. Capsules 5-celled, woody, opening at the base. *Seeds* imbricate, winged.

SPEC. CHAR. *Leaves* pinnate, of about four pair in elliptical, roundish leaflets; unequal at the base. *Panicle* terminal, divaricated.

SYN.—Swietenia Soymida, *Duncan Tent. Inaug. de Swietenia, Ed.* 1794.
Soymida of the Telingas.
Swietenia febrifuga, *Sp. Pl. Willd.* 2. 557; *Roxburgh. Coromand. Plants,* 1. *p.* 16. *t.* 17.

THIS 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. On the Coromandel Coast, it is commonly known under the name of *red wood* tree, which its Tamool name implies: flowering about the end of the cold, or beginning of the hot season, and ripening 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, white, and inodorous; and disposed in very large, terminal, diffuse panicles, furnished with minute bracteas. The calyx is inferior, of one leaf, 5-cleft, oval, deciduous; the nectary scarcely half the length of the petals, and bellied. The petals are five, ob-ovate, obtuse, concave, and expanding. The filaments are ten, very short, inserted just within the mouth of the nectary. 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, 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 long brown speck, on the upper part of the excavations of the receptacle,—Fig. (*a*) represents the germen in outline magnified; (*b*) the capsule.

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 Telingas call this tree *Soymida*. The wood is of a dull red colour, remarkably hard and heavy: it is reckoned by the natives the most durable wood 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 Mahagoni,)* 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*.

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 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 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 gangrene 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 that general conviction of its efficacy, which every succeeding experiment will assuredly tend to 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 the 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. Both the tincture, and infusion, may be prepared in the manner recommended for cinchona, and may be given in the same way.

Pl 82.

R. acris *Ranunculus Flammula*

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LXXXII

RANUNCULUS ACRIS.

Upright Meadow Crowfoot.

Class XIII. POLYANDRIA.—*Order* VII. POLYGYNIA.
Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

GEN. CHAR. *Calyx* 5-leaved. *Petals* 5 or more, with *nectaries* in their claws. *Seeds* numerous, naked.

SPEC. CHAR. *Calyx* spreading. *Flower-stalks* round. *Leaves* in three deep-lobed and cut segments; the upper ones linear and entire. *Stem* erect.

Syn.—Ranunculus pratensis erectus acris, *Bauh. Pin.* 178; *Raii Syn.* 248.
Ranunculus surrectis cauliculis, *Ger. Em.* 951.
Ranunculus pratensis, surrectis cauliculis, *Lob. Ic.* 665. *f.*
Ranunculus hortensis secunda, *Dod. Pempt.* 426. *f.*
Ranunculus, *n.* 1169. *Hall. Hist. v.* 2. 72.
Pes corvinus, *Brunf. Herb. v.* 1. 143. *t.* 38. *f.* 3.
Chrysanthemum, *Fuchs. Hist.* 879. *f.*
Ranunculus acris, *Lin. Sp. Pl.* 779; *Willd. v.* 2. 1326; *Fl. Brit.* 593; *Eng. Bot. v.* 10. *t.* 652; *Curt. Lond. fasc.* 1. *t.* 39; *Mart. Rust. t.* 30; *Hook. Scot.* 174; *Stokes, Bot. Mat. Med. v.* 3. 266; *Bull. Fr. t.* 109.

AMONG the numerous species of vegetables, natives of Britain, few are more familiarly known than those of the Ranunculi. They are herbaceous plants, all, or at least most of them possessing acrid qualities, and generally affecting cold or temperate climates. Sixty-one species are enumerated by Willdenow in the 14th edition of Systema Vegetabilium, but the number has of late been considerably augmented. Fifteen are natives of our island; and of these the two species figured, and the *bulbosus* are the commonest, occupying a considerable space in rich pastures, and propagating themselves with great facility. Early in the spring, and during the greatest part of the summer the flowers occur everywhere; hence the farmer and the horticulturist are continually employed in their destruction, for they contribute little or nothing to the support of man and the larger quadrupeds.

The root of the Ranunculus *acris*, is perennial and somewhat bulbous, with several long simple fibres. The stem is two feet high, erect, round, hollow, leafy, beset with minute hairs, branched towards the top, and many-flowered. The radical leaves are oblong, upright, hairy, footstalks, in three or five deep lobes, which are variously subdivided and toothed. The leaves on the stem are of the same structure; divided into fewer and narrower segments; the uppermost are much smaller, and cut into three linear entire lobes, or sometimes entirely simple and linear. The stalk and branches are terminated by bright yellow flowers, one or two together, on round even stalks, covered with close hairs, and *not* furrowed. The calyx is pale greenish—yellow, or coloured like the corolla, and formed of five ovate, concave, spreading deciduous leaves, which are clothed with a downy pubescence and tipped at the apex with a dark brown spot. Within the calyx are five obtuse petals, polished on their inner surface, and furnished at the base with the nectary, which is a small pore, covered by a scale. The filaments are numerous, (from forty-eight to ninety-three,) not half the length of the petals, with oblong heart-shaped stigmas. In the centre of the corolla are many germens, collected into a head, and each furnished with a small reflected stigma, without any style. The seeds are lenticular, smooth, with a small, slightly-curved point.—Fig. (*a*) represents a single petal detached to show the nectary; (*b*) a stamen with its anther.

Linneus gave this species the name of Acris, on account of its being supposed to be acrid and poisonous in an eminent degree. Mr. Curtis says, "that even pulling up the plant, and carrying it some little distance, has produced a considerable inflammation in the palm of the hand; that cattle in general will not eat it, but that sometimes, when they are turned in a hungry state into a new field of grass, or have but a small spot to range in, they will feed on it, whereby their mouths become sore and blistered. According to Linneus sheep and goats eat it; but kine, horses, and swine refuse it. When made into hay it loses its acrid quality; but then it seems to be too stalky and hard to afford much nourishment; if it be of use, it must be to correct, by its warmth, the insipidity of the grasses."

RANUNCULUS FLAMMULA.

Lesser Spear-wort Crowfoot.

(*Pl.* LXXXII.)

SPEC. CHAR. *Leaves* ovate-lanceolate, bluntish, stalked. *Stem* reclining. *Root* fibrous. *Seeds* smooth.

Syn.—Ranunculus flammeus minor, *Raii Syn.* 250; *Ger. Em.* 961. *f.*
Ranunculus longifolius, aliis Flammula, *Bauh. Hist. v.* 3. 848. *f.*
Ranunculus, n. 1182. *Hall. Hist. v.* 2. 78.
Ranunculus Flammula, *Lin. Sp. Pl.* 772; *Willd. v.* 2. 1307; *Fl. Brit.* 587; *Eng. Bot. v.* 6. *t.* 387; *Curt. Lond. fasc.* 6. *t.* 37; *Hook. Scot.* 174; *Stokes, Bot. Mat. Med. v.* 3. 258; *Bull. Fr. t.* 15.

THIS species of Ranunculus, which is commonly called in English the small or lesser Spear-wort, grows plentifully throughout Europe, in marshy places, and especially in the wet and more boggy parts of heaths and commons, where it flowers most part of the summer.

The root is perennial, consisting of several long simple fibres, issuing part from the lower joints of the stem. The stem is a foot high or more, reclining, partly or entirely decumbent at the base, branched, leafy, round, hollow, smooth, and frequently tinged with purple. The whole plant is generally smooth, except a variety whose leaves are said to be hairy at the edges, and the upper part of the stem is sometimes a little downy. The radical leaves are ovate-lanceolate, pointed at each end, standing on long foot-stalks, which are hollow on one side and flattened; those on the stalk lanceolate, alternate, standing on shorter foot-stalks, which are dilated and sheathing at the base; the uppermost, and those next the flowers, linear; all of them smooth, sometimes perfectly entire, or more or less toothed. The flowers are terminal as well as opposite to the leaves, and stand on round erect stalks, without bracteas. The corolla is of a bright yellow colour, composed of five roundish, somewhat concave, heart-shaped petals, with short claws and a very minute

nectary. The calyx consists of five ovate, obtuse, slightly villous, concave, yellowish, deciduous leaves. The stamens are numerous, and the other parts of the flower resemble those of the preceding species. Mr. Lightfoot remarks that the plant, in some states, differs very little from great Spear-wort Crowfoot, Ranunculus *Lingua;* that it varies greatly in magnitude, and in gravelly soils degenerates to a trailing dwarfish size, with small linear leaves.

GENERAL QUALITIES OF THE RANUNCULI.

The roots of the R. *bulbosus* appear to consist of albumen, mixed with ligneous fibres. If the root be macerated in cold water, it gives a solution of this substance, which coagulates in flocks on the application of heat; and undergoes the same process slowly on the admixture of alcohol. The juice of some, yield nitric acid; but the most interesting constituent in most of the species of ranunculus is the acrid principle, which pervades every part of the plant in its green state. Like the acrimony of the arum, it is volatile, and disappears in drying, or upon the application of heat. It differs, however, in not being destroyed by a moderate heat, and in being fully preserved by distillation. Professor Bigelow subjected various species of this family to this experiment, and always found the distilled water to possess a strong acrimony; while the decoction, and portions of the plant remaining in the retort, were wholly destitute of this property. This distilled water, when first taken into the mouth, excited no particular effect; but after a few seconds, a sharp, stinging sensation was produced. When swallowed, a great sense of heat took place in the stomach. Some distilled water of the *R. repens,* was kept in a close stopped phial for several months, and retained its acrimony undiminished. In winter time it froze, and on thawing lost this property. According to the experiments of Tilebein,* the water of *R. sceleratus,* is acrimonious in an intense degree; and when cold, deposits crystals, which are scarcely soluble in any menstruum, and are of an inflammable nature. Precipitates are pro-

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* Chemical Annals, vol. ii. p. 313.

duced in this water by muriate of tin, and acetate of lead. The strength of the distilled water is impaired by continuing the operation too long. The acrimony of the plants is also expended in a very short time at the boiling heat, and a further continuance of the distillation brings over only water.

PROPERTIES, AND MEDICAL USES, &c.—Both ancient and modern writers on botany, and materia medica agree, in attributing to many species of the genus *Ranunculus* a corrosive, and poisonous quality. In several, it abounds in such a degree as, when applied externally, in a recent state, to excite vesications, and ulceration of the parts, which often assume a malignant or gangrenous disposition: and taken internally they prove poisonous, by inducing vomiting, inflammation of the stomach, and the usual consequences of acrid poisons. These qualities, according to Dr. Pulteney,* are particularly manifest in the recent plant, while in its highest vigour before flowering; and more intensely in the germen of the flower itself, and in the petals of some.

The poisonous species that are indigenous and common in England, are the R. *Flammula;* R. *bulbosus;* R. *acris;* R. *sceleratus;* and the R. *arvensis*. Of these the *Flammula*, *bulbosus* and *sceleratus*, are judged to be the most acrimonious.

Before the introduction of *Cantharides*, the acrid Ranunculi were all, in their turn, used as vesicatories, and Haller† tells us, that the *R. flammula* is still in use as such in some parts of France: and as the two species we have figured have obtained places in the materia medica of the Dublin college, we suppose that they are intended to be employed for this purpose amongst the paupers of Ireland. Gilibert‡ assures us, that the *R. bulbosus* vesicates with less pain than the *flies*, and has this advantage, that it does not affect the urinary passages. He therefore gives it a decided preference as an epispastic. Other authors allow these properties in the Ranunculi; and state that they exert their effects sooner than the Cantharides; but as their action is uncertain,

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* Trans. of Lin. Soc. vol. v. p. 14.
† See his Enumeratio Stirpium, and Hist. Stirp. Helvetiæ.
‡ Plantæ rariores Lithuaniæ. No. 331.

and as many instances are recorded by Murray* and others, of their producing ill-conditioned ulcers, they are not employed in this country. The latter author states, that a slice of the fresh root of *R. bulbosus* placed in contact with the inside of the finger, brought on a sense of pain in two minutes. When taken off, the skin was found without redness, and the sense of heat and itching ceased. In two hours, however, it returned again, and in ten hours a full serous blister was raised. This was followed by an ulcer of bad character, and difficult to heal. He remarks, that if the application is continued after the first itching, the pain, and subsequent erosion are, much greater. And it is a well-known fact, that soldiers, and mendicants, often resort to these plants to produce ulcers on their legs; the former to procure their discharge, and the latter to excite commisseration.

With a view to their external stimulus they have been used advantageously in rheumatism, the hip disease, hemicrania, and fixed pains of various descriptions. Amongst the old practitioners who have recorded instances of their effects, are Baglivi, Störck, and Sennertius. A curious practice formerly prevailed in several countries of Europe, of applying the ranunculus to the wrists, or fingers, for the cure of intermittent fevers. This is mentioned by Van Swieten, Tissot, and some others. In *hemicrania* it was applied to the head, and in this case did not produce a discharge, nor break the skin; but occasioned tumefaction of the hairy scalp. Chesnau, quoted by Murray, advises that the ranunculus be applied to a small surface only, and through a perforation of adhesive plaster, to keep it from spreading. From want of this caution, he had known extensive inflammation to arise, and spread over a great part of the face, neck, and breast.

The burning sensation which the Ranunculi excite in the mouth when chewed, extends, as we have already observed to the stomach, if they be swallowed. Krapf† states that a small portion of a leaf, or flower of R. *sceleratus*, or two drops of the juice, excited acute pain in the stomach, and a sense of inflammation in the throat. He gave a quantity of the juice

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* Appar. Med. iii. 87.

† Experimenta de nonullorum Ranunculorum, &c. p. 107.

to a dog, which produced vomiting and great distress: and the animal being killed, was found to have the stomach inflamed, and contracted, and the pylorus hardly pervious. The same author informs us, that dilution greatly diminishes the power of this fluid, so that half a drachm of the juice, in six ounces of water, may be taken with entire safety. Grazing cattle generally avoid the plants of this genus, as far as it is possible for them to do so. Accordingly we observe the flowers of ranunculi left untouched, while the grass is closely cropped around them. It is nevertheless unavoidable, that portions of them should often be eaten by these animals; and although their mouths and nostrils are frequently excoriated, it is probable that small quantities of the less acrid sorts do them little injury. In the *Pan Suecus*, some experiments upon these plants, on domestic animals are detailed; in which it is stated, that horned cattle eat all the species when offered to them, excepting R. *auricomus*. This species was rejected by horses, while they would eat R. *Flammula*. Sheep, and goats eat the R. *acris*, one of the most pungent of the species. Dr. Pulteney states it as a well-known fact, that hogs devour the root of R. *bulbosus*. How it is that these animals resist the deleterious effects of such virulent plants it is not easy to say. It is not however a more remarkable fact, than that which is mentioned by Professor Pallas, that the hedgehog can devour cantharides by hundreds without inconvenience, whereas one of these insects might cause very serious symptoms to man. In their dry state, various species of ranunculi must necessarily enter very largely into the composition of hay; but having lost their acrimony by drying, they become harmless, and probably nutritive. Dr. Pulteney, in his paper already cited, states that "in the neighbourhood of Ringwood, on the borders of the Avon, which affords the *Ranunculus aquatilis fluvialis* in great abundance all the year, some of the cottagers sustain their cows, and even horses, almost wholly by it. It is usual to employ a man to collect a quantity for the day every morning, and bring it in a boat to the edge of the water, from which the cows eat it with great avidity. I was indeed informed they relish it so highly, that it is unsafe to allow them more than a certain quantity, I think between twenty-five and thirty pounds each

daily; but with variation according to circumstances. The cows I saw were apparently not in a mean condition, and gave a sufficient quantity of good milk. I was told by the person, whose cattle were feeding on it, that he kept five cows and one horse so entirely by this plant, and what the heath afforded, that they had not consumed more than half a ton of hay throughout the whole year. I examined the whole parcel, on which four cows were feeding in the beginning of March; and found the whole consisted, exclusively of the *Ranunculus fluvialis*, without any mixture of other aquatic plants. In summer, however, it can scarcely be avoided, but that there must be a mixture of some of these; but other plants are not chosen. Hogs also thrive so well on this plant, that they are not allowed any other food, till it is proper to fatten them."

The Ranunculus *Flammula* is very acrid. Applied externally it inflames and blisters the skin. Its acrimony rises in distillation. Some years ago a man travelled in several parts of England administering vomits, which operated the instant they were swallowed. The distilled water of this plant was his medicine; "and from the experience I have had of it," says Dr. Withering, "I feel myself authorized to assert, that in the case of poison being swallowed, or other circumstances occurring, in which it is desirable to make the patient vomit instantaneously, it is preferable to any other medicine yet known, and does not excite those painful contractions of the upper part of the stomach, which the white vitriol sometimes does, thereby defeating the intention for which it was given." The Highlanders raise blisters with it; for this purpose, the leaves are well bruised in a mortar, and applied in one or more limpet shells to the part where the blisters are to be raised.

TREATMENT.—The Ranunculi are too acrid to render it probable that they should ever be taken accidentally in sufficient quantity to produce deleterious effects; while, on the other hand, boiling them, if used by mistake for pot-herbs, dissipates their injurious properties. If, however, any accident should ever arise from them, we refer to Arum *maculatum*, Art. 22, for an account of the treatment which ought to be adopted.

Pl. 83.

Angelica Archangelica.

Published by J. Churchill Leicester Square Sept. 1828.

LXXXIII

ANGELICA ARCHANGELICA.

Garden Angelica.

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

Nat. Ord. UMBELLIFERÆ, *Lin.* &c.

GEN. CHAR. *General involucre* often wanting. *Fruit* sub-compressed, 3-ribbed; ribs acute, winged. *Petals* uniform, incurved entire.

SPEC. CHAR. Leaves bi-pinnated, with the terminal leaflet 3-lobed.

Syn.—Angelica, *Camer. Epit.* 899.*f.*; *Lob. Icon.* 698.*f.*; *Trag. Hist.* 421.*f.*
Angelica sativa, *Bauh. Pin.* 155; *Bauh. Hist. v.* 3. *p.* 2. 148. *f.*; *Matth. Valgr. v.* 2. 513.*f.*; *Fuchs. Hist.* 124.*f.*
Angelica, *n.* 807; *Hall. Hist. v.* 1. 358.
Angelica major, *Dod. Pempt.* 318, *f.*
Angelica Archangelica, *Lin. Sp. Pl.* 360; *Willd. v.* 1. 1428; *Fl. Brit.* 311; *Eng. Bot. v.* 36. *t.* 2561; *Woodv. t.* 50; *Stokes, v.* 2. *p.* 97.
FOREIGN.—*Angelique*, Fr.; *Angelica domestica*, It.; *Angelikawurzel*, Ger.

ANGELICA is either a native of this country or completely naturalized, being found growing naturally at Broadmoore, about seven miles north-west from Birmingham, and in the marshes, among reeds by the side of the Thames, between Woolwich and Plumstead; and in some other places; flowering from June to September.

The root is large, fleshy, branched, resinous, brown externally and white within. The stem is erect, four or five feet high, jointed, round, hollow, striated, smooth, of a purplish hue or somewhat glaceous at the lower part, and sends off numerous branches,

which terminate in large globular many-rayed umbels. The foliage, stalks, and even the flowers, are all of a bright green. The leaves are numerous, very large, petiolated, smooth and pinnated, with the leaflets ovate-lanceolate, pointed, cleft, acutely serrated smooth, and having the terminal ones 3-lobed; the foot-stalks, membranous at the base, tumid, with many ribs, and very much dilated. The general bracteas or involucres are few, linear, deciduous, often wanting; the partial ones, consisting of about eight linear-lanceolate leaves, occasionally enlarged, leafy and notched. The flowers are numerous, of a greenish-white colour, and grow in large terminal umbels, composed of several partial ones, both of which are nearly globose and many-rayed. There is no calyx; the corolla is small, and divided into five equal, lanceolate, petals, with the points notched and turned inward; the stamens thread-shaped, spreading, longer than the corolla, with roundish anthers; the germen is inferior, ovate, furrowed, supporting two very short, erect, and subsequently recurved styles, with obtuse stigmas. The fruit is a sort of capsule, large, flat on one side, convex on the other, with three acute ribs, emarginate at both ends, divisible into two parts, and containing a single brown, ovate, pointed seed. Fig. (*a*) represents a flower somewhat magnified; (*b*) the capsule; (*c*) a seed.

Bohemia, and Spain, are said to produce the best Angelica. The college formerly directed the Spanish only to be kept in the shops. Linneus, however, avers that the plant is most vigorous on its native northern mountains, and gives a decided preference to the root dug here, either early in the spring, or late in autumn. This plant, and the Acorus *Calamus*, are almost the only aromatics of European growth; the former is decidedly more pleasant, and is very undeservedly neglected in modern practice.

QUALITIES.—The roots are the part used, and possess a fragrant agreeable smell, and a bitterish pungent taste; on being chewed they are first sweetish, afterwards acrid, and leave a glowing heat in the mouth, and fauces, which continues for some time. The stalks, leaves, and seeds, possess the same qualities in a lesser degree. Dr. Lewis says, that on wounding the fresh root early in the spring, it yields from the inner part

of the bark an unctuous, yellowish, odorous juice, which, gently exiccated, retains its fragrance, and proves an elegant, aromatic, gummy resin. Rectified spirit extracts the whole of the virtues of the root; water, but very little; and by distillation in the latter, a small portion of very pungent oil is obtained. Cows, goats, and swine eat it, but horses refuse it.

Propagation and Culture.—It delights in moist situations on the banks of running water, but will grow freely in any soil and exposure. The plants are raised from seed; and, for a bed four feet and a half by six feet, sown in drills a foot apart, to be transplanted, half an ounce of seed will be requisite. "Sow in August, or as soon as the seed is ripe, as the plants will come up earlier and stronger than from a sowing in the spring. When the plants are advanced from four to six inches high, transplant them into rows two feet apart. They will soon strike root, and advance quickly in strong growth. In the second year, their strong erect branchy stalks will be several feet high, producing large umbels of seed, ripening in autumn, which, as well as the leaves of the plant, are used in medicine. But, for candying, the young shoots of the stems, and stalks of the leaves are the useful parts; being cut, while green and tender, in May and June, they are made by confectioners into the sweetmeat called Angelica. In the second year, if seed is not wanted, cut the plants down in May, and the stool will send out side-shoots; by repeating this practice every year, the same plant may be long continued. Cuttings will also grow."—*Abercrombie.*

Medical Properties and Uses.—The Laplanders extol it not only as food, but as a medicine. For coughs, hoarsness, and other pectoral disorders, they eat the stalks roasted in hot ashes; they also boil the tender flowers in milk, till it attains the consistence of extract, which they use to promote perspiration in catarrhal fevers, and to strengthen the stomach in diarrhæa. The leaves, seeds, and root are certainly good aromatic tonics, and may be given three or four times a day, in doses of two scruples, to a drachm. An agreeable sweetmeat is made of the root by the confectioners of London, which is only surpassed by that of ginger.

The following passage from old Gerarde, if not instructive, is at least exceedingly entertaining:

"The rootes of Garden Angelica is a singular remedie against poison, and against the plague, and all infections taken by euill and corrup aire, if you do but take a peece of the roote and holde it in your mouth, or chew the same betweene your teeth,

it doth most certainly driue away the pestilentiall aire, yea, although that corrup aire have possessed the hart, yet it driueth it out againe by vrine and sweate, as Rice and Treacle doth, and such like *Antipharmaca*. Angelica is an enimie to poisons: it cureth pestilent diseases, if it be vsed in season: a dram waight of the powder hereof is given with thin wine, or if a feauer be vehement, with the distilled water of *Carduus benedictus*, or of *Tormentill*, and with a little vineger, and by it selfe also, with Treacle of Vipers added. It openeth the liuer and spleene: draweth downe the tearmes, driueth out or expelleth the secondine. The decoction of the roote made in wine, is good against the cold shiuering of agues. It is reported that the roote is auaileable against witchcraft, and inchantments, if a man carrie the same about him, as Fuchsius saith. It extennuateth and maketh thinne grosse and tough flegme; the roote being vsed greene, and while it is full of iuice, helpeth them that is asthmatake, dissoluing and expectorating the stuffings therein, by cutting off and clensing the parts affected, reducing the bodie to health againe; but when it is dry it worketh not so effectually. It is a most singular medicine against surfeiting and lothsomnes to meate: it helpeth concoction in the stomacke, and is right beneficial to the hart: it cureth the bitings of mad dogs, and all other venemous beasts. The wild kinds are not of such force in working, albeit they haue the same vertues attributed vnto them."*

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* The Herball or Generall Historie of Plantes gathered by John Gerarde of London, Master in Chirurgerie. p. 849, fol. Lond. 1597.

Melaleuca Cajuputi?

Waddell text

Published by J Churchill Leicester Square Sep^r 1828 .

LXXXIV

MELALEUCA CAJUPUTI.

Lesser Cajeput Tree.

Class XVIII. POLYADELPHIA.—*Order* IV. POLYANDRIA.

Nat. Ord. HESPERIDEÆ, *Lin.* MYRTI, *Juss.*

GEN. CHAR. *Calyx* 5-parted, semi-superior. *Corolla* 5-petalled. *Stamens* (about 45) very long, conjoined in five bodies. *Style* single. *Capsule* 3-celled. *Seeds* numerous.

SPEC. CHAR. *Branchlets* pendulous. *Leaves* alternate, short-petioled, narrow-lanceolate, three and five-ribbed. *Spikes* terminal and axillary, comose, villous. *Bracteas* lanceolate, 3-flowered.

Syn.—Arbor alba minor, *Rumph. Amb. v.* 2. 76. *t.* 17.

Melaleuca Cajuputi, *Pharm. Lond.* 1809; *Trans. Med. Bot. Soc. n.* 1. 27. *t.* 1.

Cajuputi, Daun-Kitzjil, and *Kaju-Kilau* of the Malays.

THIS elegant and useful tree, which affords from its leaves, by distillation, the fragrant essential, known in the shops under the name of Cajeput oil, is a native of the Molucca Islands. This oil was long supposed to be the produce of the Melaleuca *Leucadendron;* but it appears, from specimens of the plant sent home by Mr. Christopher Smith, that the species is different, and that it agrees with the *Arbor alba minor* of Rumphius's Herbarium Amboinense, (vol. ii. t. 17. fig. 1.), Drs. Maton, and Smith, have fixed it as a new species under the name of M. *Cajuputi*.

The following description of the Melaleuca *Cajuputi* was furnished by Thomas Henry Colebrooke, Esq. F. R. S. a practical and accomplished botanist, from the MS. of Dr. Roxburgh, and the same gentleman has communicated to the Medico-Botanical Society of London, the drawing of that plant, made under the direction of Dr. Roxburgh, from which our engraving is taken.

As, says Mr. Colebrooke, it is from the leaves of this plant that the valuable medicine called Cajeputi Oil is obtained, " it became an object of importance to try if it would grow in Bengal, where the medicine is frequently used with the best success. During my absence at the Cape of Good Hope, on account of bad health, in 1798, Dr. John Fleming, had charge of the Botanic Garden. At the same time, Mr. Smith, the nursery-man, was employed on the Molucca islands, collecting plants for the garden, consequently an excellent time for obtaining growing plants of the tree. Dr. Fleming therefore gave Mr. Smith strict orders to be very careful to get the proper sort, (two or three being mentioned by Rumphius,) from which the best oil was obtained. This commission Mr. Smith executed to our satisfaction; many thriving plants having been sent to the garden by the close of the year, where they continued to grow freely; and in six or seven years they began to blossom at various times of the year, which they have hitherto continued to do. From them numerous plants have been reared, and not only distributed over many parts of the continent of India, but sent to various other quarters of the world. It is from the original young trees, now (1811) thirteen years old, that the following description and the accompanying figure is taken."

The trunk is tolerably erect, and covered with a very light or whitish ash-coloured, soft, thick, smooth, spongy bark, the external lamina of which peels off from time to time like the birch tree. The branches are scattered with slender twigs, often drooping as completely as in the weeping willow; they are round and smooth, the *young shoots* being sericeous. The leaves are alternate, on short petioles, not unlike those of the willow, from three to five inches long, and from half to three quarters

of an inch broad, lanceolate, and while young sericeous ; when full grown, smooth, deep green, three to five nerved, and sometimes slightly falcate. On being bruised, they smell strong of the substance they yield, yet the cells which contain this aromatic fluid are scarce visible in the fresh leaves. The spikes are terminal, and from the extreme axils, downy; while in young flowers there is only a scaly cone at the apex; which soon advances into a leafy branchlet. The flowers are small, white, sessile, inodorous, and accompanied by solitary, lanceolate, sericeous bracteas. The calyx is urceolate, sericeous, and divided at the margin into five semilunar deciduous segments. The petals are five, orbicular, short clawed, and much longer than the segments of the calyx. The filaments are from thirty to forty, united into five portions at the base, three or four times longer than the petals, and with them inserted into the large villous 5-lobed rim of the calyx, alternated with its segments: anthers ovate-cordate, with a yellow gland on the apex. The germen is ovate, crowned with a slender style longer than the stamens, and an obscurely 3-lobed stigma. The capsule is completely enveloped in the thick, fleshy, gibbous, permanent tube of the calyx, 3-lobed, 3-celled, and containing many small regularly wedge-shaped seeds.—Fig. (*a*) represents a single petal with the filaments and anthers; (*b*) a section of a flower magnified; (*c* and *d*) the capsule and seed.

Mr. Crawford, in his "History of the Indian Archipelago," states that there are three varieties of this tree, native to Amboyna, Java, and Borneo. The bark of the largest, which is a mountain tree, grows in continuous forests; and the bark of it yields them aterial with which the natives of the Moluccas caulk their ships. The smaller, which yields the *kyápootie*, or *Cajaputi oil*, thrives near the sea-coast, and has got its name from its colour, *káyu-puti*, which signifies *white wood;* and hence Rumphius gave it the name of "*arbor alba minor.*" "Besides its current name, it is known in Malay countries," says Dr. Ainslie, by other terms, as *galam, daun, kibsjil,* &c.; in Ternate, by *bajule;* in Amboyna, by *kilam, ilam,* and *elam;* and in Ceram, by that of *sakelan.*

QUALITIES.—This oil, (formerly called oleum Wittnebianum,

from Wittnebin, who first gave an account of the process for obtaining it,) is distilled from the leaves of the plant, and is generally brought to this country in copper vessels, that hold about three pints; and, as it is generally of a green colour, it has been supposed to acquire this tinge from the copper; but after careful investigation, we have not been able to trace the smallest portion of that metal in it. Sometimes the oil is nearly white, clear, and very limpid. It has a strong volatile smell, resembling camphor and cardamoms mixed; and a strong pungent taste, like that of the latter. It is often adulterated; and when it is of a dark colour, and not perfectly soluble in alcohol, it should be rejected. A solution of camphor in oil of turpentine, tinged with verdegris, is often sold by fraudulent druggists for the genuine article.

Medical Properties and Uses.—This oil appears to be a powerful medicine, and is much esteemed on the continent, as well as in the East Indies, as a general remedy in chronic and painful diseases. It is used for the same purposes for which we employ the officinal æthers, to which it appears to bear considerable affinity. It is, however, more active and pungent; for if five or six drops be taken, it heats and stimulates the whole system, and is a very certain diaphoretic; by which, probably, the good effects it is said to have in dropsies and intermittent fevers are to be explained. For its efficacy in various spasmodic and convulsive affections it has been much used; and numerous instances of its successful employment are cited by Murray from their respective authors. It is said, that if a drop be rubbed on the temple, it will occasion a pungent pain in the eyes, and a discharge of tears; hence it has been used in chronic affections of the eyes, and is a powerful remedy for the relief of toothach. It is, no doubt, a highly diffusible stimulant, antispasmodic, and diaphoretic; and may be efficaciously given in chronic rheumatism, palsy, hysteria, and flatulent colic; in doses of from two, to six, and eight drops on a lump of sugar; and when mixed with olive oil it forms a valuable stimulating embrocation.

Its smell is supposed to keep off insects from collections of natural history; and as it dissolves *caoutchouc*, a good varnish may be obtained.

Pl 85.

Menyanthes trifoliata?

Weddell Fecit

Published by J. Thurnhill Leicester Square Sept 1828.

LXXXV

MENYANTHES TRIFOLIATA.

Common Buckbean or Bog-bean. Marsh Trefoil.

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

Nat. Ord. Allied to Gentianæ, *Juss.*

GEN. CHAR. *Calyx* 5-cleft. *Corolla* funnel-shaped, 5-lobed, equal, hairy within. *Stigma* 2-cleft. *Capsule* 1-celled, 2-valved.

SPEC. CHAR. *Leaves* ternate.

Syn.—Trifolium paludosum, *Ger. Em.* 1194. *f.*

Menyanthes palustre triphyllum, latifolium et augustifolium, *Raii Syn.* 285.

Menyanthes, *n.* 633; *Hall. Hist. v.* 1. 280.

Menyanthes trifoliata, *Lin. Sp. Pl.* 208; *Willd. v.* 1. 811; *Fl. Brit.* 225; *Eng. Bot. v.* 7. *t.* 495; *Curt. Lond. fasc.* 4. *t.* 17; *Hook. Scot.* 71; *Fl. Dan. t.* 541; *Bull. Fr. t.* 131; *Bigelow Med. Bot. Amer. t.* 46; *Stokes. v.* 1. 298.

FOREIGN.—*Menianthe, ou treffle d'eau,* Fr.; *Trifolio fibrino,* It.; *Menyanthes de tres en rama,* Sp.; *Bitterklee,* Ger.

BUCKBEAN, or Bog-bean, so termed from its leaves resembling those of the common garden-bean, is one of the most beautiful of our indigenous plants; "nor does it suffer," as Mr. Curtis justly observes, "when compared with the Kalmias, the Rhododendrons, and the Ericas of foreign climes, which are purchased at an extravagant price, and kept up with much pains and expense, while this delicate native, which might be procured without any expense, and cultivated without any trouble, blossoms unseen, and wastes its beauty in the desert air."

It is a native of many parts of Europe, growing abundantly in marshy meadows, ponds, and sometimes in ditches. The most spongy, boggy soils, which are inundated at certain seasons, and never wholly destitute of water, are the favourite stations of this plant. It often constitutes large beds, at the margins of ponds, and brooks. We obtained it on the great bog on the western slope of Hampstead heath, where it grows in great plenty; but flowers very sparingly, about the end of June and beginning of July. On the same spot we also found Ranunculus *Flammula*, and *arvensis*, Cardamine *pratensis*, Lychnis *Flos Cuculi*, Myosotis *palustris*, Potamogeton *fluitans*, Montia *fontana*, Pedicularis *palustris*, Drosera *rotundifolia*, Orchis *maculata*, Eriophorum *polystachion*, with several species of the genus Carex, and Juncus. It is common in many parts of North America, particularly in New England, and grows, according to Pursh, as far south as Virginia.

Professor Bigelow states, that the Buck-bean is one of those plants which are native in Europe, and North America, with so little difference of structure in the two continents, that their specific identity can hardly be described; and after examining specimens from both, he could perceive no definable difference, excepting in size. The English plant, however, flowers a month later than it does in the neighbourhood of Boston; a circumstance not usual with other species of vegetables.

Buckbean has a long, creeping, jointed root, with perpendicular radicles, from which proceeds a smooth, erect, cylindrical stem, that is naked and destitute of leaves, and rises to the height of a foot. The leaves are bright green, obovate, wavy, with a thick midrib, smooth on both sides, ternate or grow by threes, like those of trefoil, (whence the names Marsh-trefoil, *trifolium* paludosum, *le Treffle d'eau*, and Menyanthes *trifoliata*,) at the extremity of a common foot-stalk, which issues immediately from the root, and is round, striated, forms a sheath at the bottom, and is shorter than the flowering stem. The flowers grow in a loose spike at the extremity of an erect, round, smooth stalk, longer than the leaves, which springs from within the sheath of a leaf. They are ten or twelve in number, each sup-

ported on its proper pedicel, and accompanied by small, ovate bracteas. The calyx is divided into five deep, slightly spreading segments; the corolla is a funnel-shaped petal, divided beyond the middle into five deep, spreading or recurved, pointed segments, which are white tipped with rose-colour, smooth externally, and clothed with dense, white, shaggy fibres on their upper side. The filaments are awl-shaped, bearing erect saggitate anthers of a reddish colour; germen conical; the stigma lobed or notched, with a slender style twice the length of the stamens. The capsule is ovate, succulent, 1-celled, which, when it has attained maturity, separates into two valves, inclosing several small roundish seeds of a brown or yellowish colour. Fig. *(a)* represents the flower expanded and somewhat magnified, to show the stamens, germen, and style.

Of the etymology of the *generic* name MENYANTHES, retained from the Greek and Latin botanists, we can give no satisfactory account. Some render it Moon-flower, in which case it should have been written *Meneanthos*, as being compounded of *μηνη*, the moon, and *ανθος*, a flower. Others deriving it from *μενω*, to remain, conceive the name to be expressive of the permanency of the flower; but this conjecture is even more fanciful than the former. The name Buck-bean, is either a corruption of Bog-bean, or what is more probable, is derived from the French, *le Bouc*, a he-goat; the plant having formerly been distinguished by the appellation, *Phaselus Hircinus*, that is, Goat's-bean.

QUALITIES AND CHEMICAL PROPERTIES.—The whole plant, and particularly the root, has an intensely bitter taste, which resides chiefly in an extractive matter, soluble in water and spirit. The root is, however, resinous, and impregnates alcohol more strongly than water; and may be precipitated from its tincture, in part, by the latter fluid.

MEDICAL PROPERTIES.—The root of this given in small doses of about ten grains, imparts vigour to the stomach, and strengthens digestion. Its virtues were formerly properly estimated, and strange it is that so excellent, and cheap a tonic should be so little employed. It gives out its virtues to boiling

water, and a tincture may be made from it quite equal in its effects to that of gentian. Large doses, either in substance or decoction, produce vomiting and purging, and frequently powerful diaphoresis; in which respect it resembles many other vegetable bitters. Formerly it was employed with benefit in intermittent, and remittent fevers. Boerhaave was relieved from gout by drinking the juice of the plant mixed with whey; while Alston, and others, assert that it has the power of keeping off the paroxysms of that painful complaint. Dr. Cullen speaks still higher of its virtues, for he had several instances of its good effects in some cutaneous diseases of the herpetic, or seemingly cancerous kind, when taken by infusion, in the manner of tea. Others have commended it for rheumatism, dropsy, scurvy, and worms; and its reputation in the north of Europe, particularly in Germany, was at one time so high that it was consumed in large quantities, and deemed a sort of panacea. Its true character, however, is simply that of a powerful bitter tonic, like gentian, and centuary, to which, as Professor Bigelow observes, it is closely related in its botanical habit, as well as sensible properties. Linneus informs us in his Flora Lapponica, that in times of scarcity sheep will subsist upon this plant, notwithstanding its bitterness; and Dr. Tancred Robinson asserts, that sheep which have acquired a tabid condition are quickly recovered by feeding on the marshy meadows, which abound with it. The Laplanders employ it as a substitute for hops; and they even introduce it in some instances into their bread, upon which Linneus bestows the epithet, "amarus et destabilis." We conclude in the words of Bigelow when speaking of the American species: "we may regard this plant as one of the numerous bitters abounding in our country, which are fully equal in strength to imported articles of their class, and which may hereafter lessen our dependance on foreign drugs."

Pl 60

Chelidonium majus.

W Clarke Del

W. Liddell Sc

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LXXXVI

CHELIDONIUM MAJUS.

Common Celandine.

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

Nat. Ord. RHŒADEÆ, *Lin.* PAPAVERACEÆ, *Juss.*

GEN. CHAR. *Calyx* of 2 leaves, caducous. *Petals* 4. *Pod* superior, 1-celled, of 2 valves. *Seeds* numerous, crested.

SPEC. CHAR. *Flowers* umbelled. *Leaves* pinnatifid, bluntly lobed and notched.

Syn.—Papaver corniculatum luteum, Chelidonia dictum, *Raii Syn.* 309. *β. Fl. Brit.* 563.

Chelidonium majus, folio magis dissecto, *Ger. Em.* 1069. *f.*

Chelidonium majus, foliis quernis, *Bauh. Pin.* 144; *Mill. Ic.* 61. *t.* 92. *f.* 2; *Fl. Dan. t.* 676.

Chelidonium, *n.* 1059. *Hall. Hist. v.* 2. 13.

Chelidonium umbelliferum, *Stokes Bot. Mat. Med. v.* 3. *p.* 180.

Chelidonium majus, *Lin. Sp. Pl.* 723; *Willd. v.* 2. 1141. *Fl. Br.* 563; *Eng. Bot. v.* 22. *t.* 1581; *Hook. Scot.* 167; *Woodv. Sup. t.* 263; *De Cand. Syst. v.* 2. 98; *Bull. Fr. t.* 61; *Fuchs. Hist.* 865. *f. Matth. Valgr. v.* 1. 576. *f.*; *Camer. Epit.* 402. *f.*

PROVINCIALLY.—*Greater Celandine; Swallow-wort; Tetter-wort.*

COMMON Celandine, or Greater Celandine, so named in contradistinction 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 a chalky soil, 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 in the garden hedge at the Spaniard, on Hampstead heath; and also by the road side near Richmond, in Surrey, plentifully. It is one of those plants which, on account of the very acrid, and poisonous qualities of its juice, we have allotted a place in the present volume.

This plant 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, 2-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. 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.

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; 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 κελιδών, 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 with 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 root, 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; 2dly. 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 it appears 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 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 case it was accompanied with a specific. It must, however, be observed, that some writers have considered it a danger-

ous remedy internally, if too large a quantity be administered; it will consequently require great caution in the 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. Geoffroy prescribes the following in cases of obstruction of the liver, and suppression of the menses. Take of leaves of Celandine, a handful, cream of tartar, a drachm. Macerate them in six ounces of whey; to the strained liquor add an ounce of syrup of succory, and make it into a draught to be taken on an empty stomach. For the above syrup may be substituted advantangeously that of orange-peel; but it is very evident, in our opinion, that the dose is much too powerful. Ettmuller particularly recommends the external application of the bruised plant for those œdematous swellings of the feet, which succeed to violent fevers and other severe diseases, especially long-continued tertian, or quartan agues. The use of the orange-coloured juice in the jaundice, was probably suggested by the absurd Rosicrucian doctrine of signatures.

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 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 any part of 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 ʒss to ʒj is a dose; of the fresh root infused in wine or in water the dose may be about ʒss.

Pl 87.

Helleborus Orientalis.

Weddell fecit.

Published by J. Churchill, Leicester Square, Sept. 1828.

HELLEBORUS ORIENTALIS.

Oriental, or True Officinal Hellebore.

SPEC. CHAR. *Leaves* pedate, hairy underneath. *Flower-stalks* radical, with many flowers. *Bracteas* deeply-lobed, serrated.

Syn.—Helleborus niger orientalis, amplissimo folio, caule prælto, flore purpurascente, *Tour. Cor.* 20; *Geoffr.* ii. 71. 76; *Bellon.* 196.
Helleborus officinalis, *Salsb. in Trans. Lin. Soc. v.* 8. *p.* 305.
Helleborus Orientalis, *Willd. Sp. Pl. v.* 3. 1337; *Lamarck Dict. v.* 3. 96; *De Cand. Syst. v.* 1. 317; *Sm. Prodr. Fl. Græc. v.* 1. *fas* 6. *p.* 19.
Ellebore noir des Anciens, *Tourn. Voyage, tom.* ii. *Let.* xxi. *p.* 474.

WE have great pleasure in being able to present our readers with a correct figure of this rare plant, made from a most admirable drawing by Mr. Ferdinand Bauer for the Flora Græca, and published in vol. i. fasc. v. of that celebrated work. The plant, as we have already observed, 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. It is unquestionably the true ελλεβορος μελας of Dioscorides, and is named σκάρφη, by the modern Greeks, and by the Turks *Zopleme*. 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, serrated, 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, 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.—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.

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 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 Londonensis, that great quantities of the roots of *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 plant 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 detailed, under ART. *Helleborus niger*, which, till lately, was supposed to be the drug used by the ancients.

Pl. 98.

Tamarindus indica?

Martha Darby's Hms del.

Published by J. Churchill Leicester Square Oct. 1828.

TAMARINDUS INDICA.

The Tamarind Tree.

Class XVI. MONADELPHIA.—*Order* I. TRIANDRIA.

Nat. Ord. LOMENTACEÆ, *Lin.* LEGUMINOSÆ, *Juss.*

GEN. CHAR. *Calyx* in four deep segments. *Petals* three. *Barren filaments* seven. *Style* one. *Legume* pulpy within.

Syn.—Tamarindus, *Ger. Em.* 1607; *Park. Theatr.* 207; *Raii Hist.* 1748; *Rumph. Amb. v.* 2. 90. *t.* 23.
Tamarindus occidentalis, *Gærtn. Fruct. v.* 2. 310.
Siliqua Arabica, quæ Tamarindus, *Bauh. Pin.* 403.
Balam-pulli, *Rheed Malab.* 1. 39. *t.* 23.
Tamarindus indica, *Lin. Sp. Pl.* 48; *Willd. v.* 3. 577; *Jacq. Amer.* 10. *t.* 10. 179. *f.* 98; *Woodv. v.* 3. *t.* 166.

FOREIGN.—*Le tamarinier*; *Tamarin*, Fr.; *Tamarindo*, It. Sp.; *Tamarinho, Tamarinheiro, Tamarino*, Port.; *Der Tamarindenbaum*, Ger.; *Tamarindenboom; Tamaryn*, Dut.; *Tamarintræ*, Dan.; *Tamarintrad*, Swed.; *Tammer bendi*, Arab.; *Balam-pulli; Maderam-pulli*, Malab.; *Assam*, Java; *Cay me*, Cochin-ch.

THE Tamarind-tree, the *tetul* of Upper Hindostan, is a native of Egypt, Arabia, and the East Indies. In the West India islands, where it has become naturalised, it is cultivated for the sake both of its shade; and its acid, cooling, highly grateful fruit; the pulp of which, mixed and boiled with sugar, forms an important article of commerce. It is very abundant in Jamaica, growing to a vast bulk, and thrives well in the Savannahs, but most luxuriantly in a deep rich brick mould. There is only one known

species, the subject of the present article; and for the beautiful drawing, we are indebted to the lady whose name is attached to the plate.

The stem is lofty, and of considerable thickness, terminated by spreading branches, bearing tufts of alternate, abruptly-pinnate, smooth, bright green leaves, each composed of many pair of elliptic-oblong, sessile, entire leaflets, about half an inch in length, and one sixth of an inch broad, rather glaucous beneath. It is observed, that these leaflets close at the approach of evening; or in cold moist weather, like those of the sensitive plant. The flowers are in simple clusters, terminating the short lateral branches: the calyx is inferior, of one leaf, divided into four deep, ovate, acute, deciduous, straw-coloured segments; the petals three, yellowish, beautifully variegated with red veins; ovate, acute, concave, wavy, reflexed. the length of the calyx, and inserted into the tube. The filaments are also three, awl-shaped, purplish, as long as the corolla, connected at the base, curved upwards, inserted into the mouth of the calyx, in the vacancy opposite to the uppermost petal, and bearing large, ovate, incumbent anthers. Besides these, there are seven rudiments of stamens, five of them setaceous threads. The germen is oblong, compressed, incurved, furnished with an awl-shaped style, rather longer than the stamens, and an obtuse stigma. The pods are oblong, compressed, with a joint, 1-celled, and of a dull brown colour when ripe. Those from the West Indies, from two to five inches long, with two, three, or four seeds; but those from the East Indies are almost twice as long, and contain five, six, and even seven seeds. The seeds in both are roundish, somewhat angular, flattened, hard, polished, with a central circumscribed disc at each side, and lodged in a quantity of a soft pulp. Fig. (*a*) represents the pod, and a single seed.

This tree, which is common in almost every part of India, as well as in the West Indies, grows most luxuriantly in all the eastern islands. The soil of Java is said to bring the fruit to very high perfection; and those of the depending island of Madura are reputed to be the best; they are of a dark colour, with a large proportion of pulp to the seed. The natives of India

consider it to be dangerous to sleep under thc tamarind-tree, especially during the night; " and grass,"' says Dr. Ainslie, " or herbs of any kind, are seldom seen growing in such situations, and never with luxuriance;" which facts have been lately confirmed to us by a gentleman, who spent many years in India.

According to Long, in his valuable history of Jamaica, " the fruit or pods are gathered in June, July, and August, according to their maturity. The pods must be fully ripe, which is known by their fragility, or easily breaking on a small pressure between the finger and thumb. The fruit taken out of the pod, and cleared from fragments of shells, is placed in casks, in layers, and the boiling syrup from the *tache* or first copper in the boiling house, is poured in, just before it begins to granulate, till the cask is filled; the syrup pervades every part quite to the bottom, and when cool, the cask is headed for sale. The more elegant method is with sugar well clarified with eggs, till a clear transparent syrup is formed, which gives to the fruit a much pleasanter flavour. The East Indian tamarind differs not from that of the West Indies; but the pulp of the fruit is preserved without sugar, and exported to Europe in this form." Mr. Crawford says, that those exported from one part of the Archipelago to another, are merely dried in the sun, but those sent to Europe, are cured with salt.

Qualities and Chemical Properties.—The pulp of the tamarind, which is inodorous, is brought to us from the West Indies, for medicinal purposes, mixed with the seeds, and small fibres, over which, as already stated, boiling syrup is poured. It possesses an agreeable, sweetish, acidulated taste, and is considered as no little luxury by travellers passing through the deserts of Arabia, who generally take care to supply themselves with it at Cairo. By treating this pulp first with cold water, and afterwards with hot, Vauquelin separated the following substances:

Supertartrate of potass	300
Gum	432
Sugar	1152

Jelly	576
Citric acid	864
Tartaric acid	144
Malic acid	40
Feculent matter	2880
Water	3364
	9752

Ann. de Chim. lxxiv, 303.

According to Ratier, a spurious article is frequently sold for the tretamarind.*

Medical Properties and Uses.—This fruit is cooling and laxative: but while it gratefully allays the thirst of ardent fever, it must be taken in large quantities to insure the latter effect, and is then apt to produce flatulence. It is generally added to cathartics that are given in infusion, with a view to promote their activity, or to cover their taste, and is a useful application to sore throats. The natives of India prepare a kind of sherbet from it; and the Vytians, like us, use it in their laxative electuaries. A decoction of the acid leaves of the tree they often employ externally, in cases requiring repellent fomentations, and in their collyria; and, internally, they are supposed by the Tamool doctors to be useful in jaundice. The stones of the tamarind, which to the taste are very astringent, are prescribed by the Vytians in dysenteric complaints, and for menorrhagia; and in times of scarcity, after being divested of the skin which covers them, by the processes of soaking and roasting, they are boiled, or fried, and resembling in taste a field-bean, are eaten by the poor of India. A decoction of the leaves is used in the West Indies to destroy worms in children.

Off. Prep.—Confectio sennæ. *Lond.*
Electuarium sennæ comp. *E.*
Infusum sennæ comp. *E.*
Inf. sennæ cum Tamarindis. *D.*

* Il est rare aujourd'hui de trouver dans le commerce du véritable tamarin; on le falsifie avee la pulpe de pruneaux et l'acide tartrique: cette fraude est très-difficile a reconnaître.—*Pharm. Française,* p. 138.

Pl 89.

Cicuta virosa?

Weddell Fecit

Published by J Churchill Leicester Square Dec^r 1828.

LXXXIX

CICUTA VIROSA.

Long-leaved Water Hemlock, or Cowbane.

Class V. PENTANDRIA. *Order* II. DIGYNIA.

Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. No general *involucrum*. *Fruit* nearly orbicular, furrowed, with 6 double ribs. *Calyx* acute. *Petals* ovate, or slightly heart-shaped. *Floral receptacle* depressed. *Flowers* uniform, nearly regular, united.—*Smith*.

SPEC. CHAR. *Leaves* twice ternate; leaflets linear-lanceolate, decurrent.

Syn.—Sium alterum olusatri facie, *Ger. Em.* 256. *f.*; *Raii Syn.* 212; *Lob. Ic.* 208. *f.*

Sium aquaticum, foliis multifidis longis serratis, *Moris. v.* 3. 283. *sect.* 9. *t.* 5. *f.* 4.

Sium erucæ folio, *Bauh. Pin.* 154; *Dalech. Hist.* 1094. *f.*

Cicuta aquatica Gesneri, *Bauh. Hist. v.* 3. *p.* 2. 175. *f.*

Coriandrum Cicuta, *Roth. Germ. v.* 1. 130. *v.* 2. *p.* 1. 347.

Sium, *n.* 781. *Hall. Hist. v.* 1. 346.

Cicuta virosa, *Lin. Sp. Pl.* 366; *Willd. v.* 1. 1445; *Fl. Brit.* 322; *Eng. Bot. v.* 7. *t.* 497; *Hook. Scot.* 92; *Woodv. Suppl. t.* 268; *Stokes, v.* 2. 117; *Fl. Dan. t.* 208.

PROVINCIALLY.—*Long-leaved Watercresses; Long-leaved Water Hemlock; Poisonous Cow-bane.*

FOREIGN.—*La cicutaire aquatique; La cique aquatique,* Fr.; *Cicuta aquatica,* It.; *Cicuta acuatica,* Sp.; *Cegude aquatica,* Port.; *Der Wütherich, der giftige Wüterich: der Wasserschierling, Berstekraut,* Ger.; *Omeg, Omernik,* Rus.

THIS plant has often been confounded with the Phellandrium *aquaticum*, in consequence of the same English name being applied to both. In Weller's work on poisonous vegetables, the last mentioned plant is given as a synonym to the Cicuta *virosa*, and as a natural consequence of confounding the two, the account of its properties, and effects, is made up from the history of both. By referring to figure 10, vol. i. of our work, and 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 pinquescere 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 many parts of England, in ditches, and by the sides of rivers and lakes, flowering in July and August. Professor Hooker, in his "*Flora Scotica*," enumerates the following as the principal stations for this plant in Scotland : the side of Loch-end, near Edinburgh ; Pow Mill, Kinrosshire ; in marshes near Forfar Loch ; Otterton Loch, Fifeshire ; about Mugdoch, Bardowie, and Donglaston 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,

* Cicuta quoque venenum est, publica Atheniensium pæna invisa.
Pliny, 26. 13.

about the length of the corolla, supporting roundish anthers: the germen hemispherical, ribbed; the styles two, filiform, at first short 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 three prominent double ribs, and flat on the other, "which afford an excellent generic character." Fig. (*a*) represents the calyx; (*b*) the calyx with the germen and styles; (*c*) a perfect flower.

POISONOUS EFFECTS AND MORBID APPEARANCES.—This violent poison produces the following symptoms:—Dazzling, obscurity of vision, vertigoes, cephalalgia, vacillating walk, agitation, anxiety of the precordia, cardialgia, 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 observed, 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 eat a large quantity, were soon after seized with pains of the precordia, 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 paroxyms 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 for her life; she lay nine hours with her

hands, and feet, outstretched and cold. All this time she had a cadaverous countenance, and 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.

" Jacobus Mæder, puer sex annorum, capillis albis præditus, tener, vegetus tamen, domum rediit hilaris ac subridens, quasi re bene gesta; paulo post conquerebatur de præcordiorum dolore, & vix verbum effatus, humi prostratus urinam magno impetu ad Viri altitudinem eminxit; mox terribili aspectu, cum omnium sensuum abolitione convulsus fuit, os arctissime clausit, ut nulla arte aperiri valuerit, dentibus stridebat, oculos mire distorquebat, sanguis ex auribus promanabat: circa præcordia tumidum quoddam Corpus pugni virilis magnitudine Patris afflicti manum & miserandi Pueri præcordia, maxime circa Cartilaginem ensiformem, validissime feriebat: singultiebat crebro; Vomiturus quandoque videbatur, nihil tamen ore arctissime clauso ejicere valuit: artus mire jactabat & torquebat, sæpius caput retrorsum abripiebatur, totumque dorsum incurvabatur in arcum, ut puellus subtus per spatium inter dorsum & stratum inoffense repere potuisset. Cessantibus convulsionibus per momeutum matris opem imploravit: mox pari ferocia illis redeuntibus nulla vellicatione, nulla acclamatione, nullove alio ingenio excitari poterat, donec viribus deficientibus expalluit & manu pectori admota exspiravit. Durarunt hæc Symptomata vix ultra horam dimidiam. Post obitum imprimis abdomen & facies intumuerunt absque livore, nisi pauco circa oculos conspicuo. Ex ore cadaveris usque ad horam sepulturæ spuma viridis largissime emanavit & quamvis sæpiùs à Patre mœstissimo deteria fuisset, mox tamen nova succedebat."

Schwencke, a German writer, also gives an account 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 perirent en moins d'une demi-heure on trouva les membranes de l'estomac perforées chez l'un des bois, corrodées chez les deux autres. L'estomac etait rempli d'une écume blanchâtre. Les intestines, les poumons, et le cœur etaient flasques, et fletris, les vaisseaux veineux pleins d'un sang très-fluide."—*L'Histoire de l'Academie des Sciences de Paris, année* 1715.

Linneus, in his Flora Lapponica, gives a long account 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*.

TREATMENT.—See ART. No I. Vol. i.

Pl. 90.

Guaiacum officinale

Woddell Lecit

Published by J. Churchill Leicester Square Oct.r 1828.

GUAIACUM OFFICINALE.

Officinal Guaiacum, or Lignum Vitæ.

Class X. DECANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. GRUINALES, *Lin.* RUTACEÆ, *Juss.*

GEN. CHAR. *Calyx* 5-cleft, unequal. *Petals* 5, equal. *Capsule* angular, 2 to 5-celled.

SPEC. CHAR. *Leaves* of two pair of elliptical obtuse leaflets.

Syn.—Arbor ligni sancti, vel guaiacum, *Seb. Thes.* 1. *p.* 86. *t.* 53. *f.* 2.
Guaiacum jamaicense, *Pluk. Phyt. t.* 53. *f.* 3, 4.
Lignum Vitæ, Sloane, Jam. *v.* 2. 134. *t.* 222. *f.*
Guaiaeum officinale, *Lin. Sp. Pl.* 546; *Willd.* 2. *p.* 538; *Ait. Hort. Kew. v.* 3. ed. 2. *p.* 83; *Woodv. v.* 1. 43. *t.* 16; *Stokes Bot. Mat. Med. v.* 2- 486.;
FOREIGN.—*Le gayac officinal*, Fr.; *Guaiaco*, It.; *Guayacan, guayaco*, Sp.; *Guaiaco*, Port.; *Das Franzosenholz*; *Pockenholz*; *Guajakholz*, Ger.; *Pokhout Franzostræe*, Dan.; *Fransosenholts*, Swed.; *Bakaut*, Rus.

THIS tree, the wood of which is well known in England under the name of Brazil wood, or *Lignum vitæ*, is a native of Jamaica, Hispaniola, and the warmer parts of America. It has been long known, and appears from the MSS. of Sir Hans Sloane, in the British Museum, to have been first cultivated in this country by the Duchess of Beaufort in 1699. It is said to flower from July to September.

The tree rises to the height of thirty or forty feet, and is near a foot in the diameter of its trunk, with numerous, divaricated, knotty branches, leafy at the ends. The bark is very smooth, variegated with green and white; that of the branches being uniformly ash-coloured, striated, and marked with fissures. The

wood is hard and ponderous, dark, olive-brown within, whitish towards the bark, and has a peculiar acid aromatic scent. The leaves are opposite, abruptly pinnate, consisting of two or three pair of obovate or roundish, obtuse, entire, smooth, dark-green, rigid, leaflets, various in size, with several radiating veins, and nearly sessile. The flowers are pale blue, on simple, axillary, clustered stalks, shorter than the leaves. The calyx consists of five ovate-oblong, obtuse, concave, spreading deciduous leaves; the two outer ones rather the smallest. The petals are five, roundish, obovate, concave, spreading, with short linear claws, inserted into the receptacle. The stamens are ten, awl-shaped, erect and villous, with oblong incumbent, cloven anthers, the germen is obcordate, with a short awl-shaped style. The capsule is somewhat turbinate, on a short stalk, smooth, succulent, pale, ferruginous or yellow, with from two to five rounded, slightly bordered angles, and as many cells bursting at the angles, but two or three of the cells are frequently abortive. The seeds are solitary, pendulous, ovate, convex on one side, angular at the other.—Fig. (*a*) represents a flower somewhat magnified; (*b*) the calyx: (*c*) a stamen, with its anther; (*d*) the germen; (*e*) the capsule; (*f*) a vertical section of the same; (*g*) a transverse section. Guaiacum is a barbarous name, derived from the Spanish one *Guaiac* or *Guayacau*, which itself originated for *Hoaxacan*, the Mexican appellation of the same plant.

Qualities and Chemical Properties.—The wood of this tree, and the peculiar matter which it yields, are the parts medicinally employed. The wood is hard, and heavy, and is much used for ship-blocks, and for toys. It is nearly inodorous, but has a warm, somewhat bitter taste; and its virtues depend upon the resin-like substance which it contains. It is rasped for medical use, but we are inclined to think that it yields little of its powers to decoction.

The Guaiac exudes spontaneously from the trunk, and branches of the tree; and concreting, forms tears of a semi-pellucid and pure nature. By making incisions in the month of May, greater quantities flow, and after becoming hard, by exposure to the sun and air, it is collected and packed in casks for exportation. Ano-

ther method for obtaining it, is by sawing the trunk, and large limbs into billets, about three feet long: an auger hole is then bored lengthways in each, and the other end of the billet being placed in a fire, the melted matter flows into calabashes, placed purposely to receive it. By boiling chips, or raspings of the wood in water, and common salt, the Guaiac swims at the top, and may be skimmed off. Sometimes it is adulterated with common resin and the Manchineel gum. The former is detected by its smell, if heat be applied, and the latter "by adding to the alcoholic solution a few drops of sweet spirits of nitre, and diluting with water; the guaiac is precipitated, but the adulteration floats in white striæ."

Guaiacum was considered by chemists as a resin, till Mr. Hatchett observed, that when treated with nitric acid it yielded products very different from those of resinous bodies. This induced Mr. William Brande to examine its chemical properties in detail. To his valuable paper we are indebted for almost all the accurate information which we possess respecting its chemical nature.

"*Guaiacum* is a solid substance, resembling a resin in appearance. Its colour differs considerably, being partly brownish, partly reddish, and partly greenish; and it always becomes green when left exposed to the light in the open air. It has a certain degree of transparency, and breaks with a vitreous fracture. When pounded it emits a pleasant balsamic smell; but has scarcely any taste, although when swallowed it excites a burning sensation in the throat. When heated it melts, and diffuses at the same time a pretty strong fragrant odour. Its specific gravity is 1·2289.

"When *guaiacum* is digested in *water* a portion of it is dissolved, the water acquiring a greenish-brown colour and a sweetish taste. The liquid, when evaporated, leaves a brown substance, which possesses the properties of *extractive;* being soluble in hot water and alcohol, but scarcely in sulphuric ether, and forming precipitates with muriates of alumina, tin, and silver. This extractive amounts to about nine parts in the hundred of guaiacum.

"*Alcohol* dissolves guaiacum with facility, and forms a deep brown-coloured solution. Water renders this solution milky by separating the resin. Muriatic acid throws down the guaiacum of an ash-grey, and sulphuric acid of a pale-green colour. Acetic acid, and the alkalies occasion no precipitate. Liquid chlorine throws it down of a fine pale-blue, which does not change when dried. Diluted nitric acid occasions no change at first; but after some hours the liquid becomes green, then blue, and at last brown, and at that period a brown coloured precipitate falls down. If water be mixed with the liquid when it has assumed a green or a blue-colour, green, and blue precipitates may be respectively obtained.

" *Sulphuric ether* does not act so powerfully on guaiacum as alcohol. The solution obtained by means of it exhibits the same properties when treated with re-agents as that in alcohol.

" 5. The *alkaline solution*s, both pure and in the state of carbonates, dissolve guaiacum with facility. Two ounces of a saturated solution of potash dissolved about 65 grains of guaiacum; the same quantity of ammonia only 25 grains; or guaiacum dissolves in about 15 parts of potash, and 68 parts of ammonia. Nitric acid threw down from these solutions a brown precipitate, similar to what is obtained when the alcoholic solution is mixed with the same acid. Muriatic acid, and diluted sulphuric acid, throw down a flesh-coloured curdy precipitate, which in its properties approaches the nature of extractive.

" Most of the *acids* act upon guaiacum with considerable energy. *Sulphuric acid* dissolves it, and forms a deep-red liquid, which deposits while fresh a lilac-coloured precipitate when mixed with water. When heat is applied the guaiacum is charred.

" *Nitric acid* dissolves guaiacum completely without the assistance of heat, and with a strong effervescence. When the solution is evaporated, it yields a very large quantity of oxalic acid. No artificial tannin appears to be formed, but rather a substance possessing the properties of extractive.

Diluted nitric acid converts guaiacum into a brown substance, similar to the precipitate obtained by nitric acid from the alcoholic solution of guaiacum. This brown matter possesses the properties of a resin.

" *Muriatic acid* acts but slightly, as the guaiacum soon melts into a blackish mass, which is not acted upon.

" When guaiacum is distilled, 100 parts of it yielded to Mr. Brande the following products:

Acidulous water	5.5
Thick brown oil	24·5
Thin empyreumatic oil	30·0
Charcoal	30·5
Gases, consisting of carbonic acid, and carburetted hydrogen	9·0
Loss	0·5
	100·0

The coal, when incinerated, left three grains of lime, but no alkaline substance.

" Such are the properties of guaiacum, as far as they have been hitherto ascertained. From the preceding detail, it is obvious that guaiacum in many respects coincides with the resins: but it differs from them in three particulars so remarkable, that we cannot avoid considering it as a distinct substance. The *first* of these is the great quantity of charcoal which it leaves when distilled in close vessels. This Mr. Brande found to amount to above 30 per cent.; while the re-

sins, in like circumstances, hardly ever leave more than 15 per cent. of charcoal, and often not nearly so much. It is possible, however, and indeed not improbable, that this difference is to be ascribed to the different degrees of heat employed. The *second* peculiarity is the action of nitric acid on guaiacum. This acid does not dissolve the resins without the assistance of heat, but converts them into a brown brittle mass; whereas it dissolves guaiacum completely. The action of this acid on the resins terminates in the formation of artificial tannin, whereas its action on guaiacum terminates in the formation of oxalic acid. This striking difference is alone sufficient to warrant a separation of guaiacum from the resins. The *third* peculiarity is the remarkable suit of changes of colour which guaiacum undergoes when its solutions are treated with nitric acid, and chlorine. Dr. Wollaston first observed that guaiacum becomes green when exposed to light, provided air have access to it; and that the colour is again removed by the application of heat. Hence it is probable that oxygen occasions the change. This opinion is much strengthened by the experiments of Mr. Brande. When guaiacum was put in contact with oxygen gas, it became green sooner than in the open air. When put into chlorine gas it became first green, then blue, and lastly brown; and ammonia, when left in contact with it, restored again its green colour. In like manner, by treating the alcoholic solution of guaiacum with nitric acid, green, blue, and brown precipitates are obtained, according to the length of time that the acid is allowed to act upon it. These facts give considerable plausibility to the opinion of Mr. Brande, that the changes of colour are owing to the combinations of oxygen with the guaiacum; that the green contains the least, and the brown the most oxygen, while the blue is intermediate. Thus guaiacum, in its changes of colour, bears some resemblance to indigo. Mr. Brande has remarked a coincidence also between guaiacum and the green resin of the leaves of plants.

Medical Properties and Uses.—The Guaiacum wood was first employed by the natives of St. Domingo as an antidote against lues venerea. The Spaniards soon acquired a knowledge of its virtues, and introduced it into Spain, as early as the year 1501. The fame of this new remedy was diffused with such celerity through the other parts of Europe, that according to the testimony of Nicholas Poll, more than three thousand diseased persons had derived permanent benefit from the use of it, before the year 1517.*

A decoction of this wood, made with water, and sometimes with wine,† was administered under every form, and during

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* Aphrodisacus Aloys. Luisini. Ed. Lugd. 1738.
† Lud. Septalii. Animad. Lib. vii.

every period of the disease; the physicians directing at the same time purgative medicines, at proper intervals; confinement to the house; vapour baths; and an appropriate course of diet which, was commonly dictated with a tedious exactness, bearing the sig-nature of superstition, rather than of medical science. This pro-cess continued during six weeks, and often for a longer time, with such occasional variations as new circumstances might sug-gest, was long regarded as the most safe, and efficacious mode of treating patients afflicted with syphilis.

The advantages which were connected with this method of cure, were so commonly believed, and acknowledged, that during a considerable period of time, the exhibiting of mercury was not only discontinued, but the practice was publicly censured, as in-efficacious and prejudicial. Many of the most eminent writers of the sixteenth century contended that Guaiac was a true speci-fic, having the power of correcting the qualities of the venereal poison, and of expelling it out of the system; and this opinion was revived, and ably supported in the eighteenth century, by a man whose capacity, learning, and medical science, added lustre to the country and period in which he flourished.*

Those favourable reports of the virtues of Guiacum, which maintained their credit through more than two centuries, were not founded merely on the frail basis of partiality, or preposses-sion; they were supported by well-attested narratives of its good effects in great numbers of instances, where no mercury had been employed, or when that medicine had done no permanent good; or when the patients had suffered from it, instead of find-ing advantage. Yet, notwithstanding the numerous and respect-able testimonies which were adduced in proof of the efficacy of this vegetable, its most strenuous advocates were obliged to con-fess, that Guaiacum was frequently administered in vain. The disappointments which medical practitioners often experienced when they had relied on Guaiacum alone, as a specific remedy, introduced again the more frequent use of mercury; and, as this active medium was soon employed with more caution and judg-ment than formerly, a very important change in the mode of

* Boerhaave, Prefat. ad Aphrodisiac.

treating lues venerea was established. Nevertheless, so firmly were the generality of physicians persuaded of the anti-venereal virtues of Guaiacum, that the same men who contended for the necessity of a nominal salivation, maintained that this vegetable was not less real, though not quite so potent an antidote.* "When I was intrusted with the care and management of the Lock Hospital in 1781," says Mr. Pearson, "I observed, that Mr. Bromfield and Mr. Williams had been long accustomed to repose great confidence in the medicinal powers of a decoction of the Guaiacum wood; and that a method somewhat similar to that proposed by Ulric Hulten,† and strongly recommended by Boerhaave, had been adopted in the hospital during many years. The patients for whom it was directed, were those who had previously used the usual quantity of mercury, but who complained of nocturnal pains; who had gummata, nodes, ozæna, and such other effects of the venereal virus, connected with secondary symptoms, as did not yield to a course of mercurial frictions. The diet of these patients consisted of raisins, and hard biscuit; they drank from two to four pints of the decoction of Guaiacum every day; they were ordered to use the hot bath twice in the week; and they commonly took a dose of antimonial wine, and laudanum, or of Dover's powder, every evening.

"It was not thought necessary, however, to confine such patients to their beds; and they were seldom exposed to the vapour of burning spirit to excite perspiration; for it was deemed sufficient to produce and support a moist state of the skin, without urging the process so far as to occasion profuse sweating. This plan of treatment was sometimes of singular advantage to those whose health had sustained injury from the complicated operation of the disease, combined with confinement, and a long course of mercury. The breaches made in the constitution were repaired; the strength recruited; untractable ulcers were frequently healed; carious bones exfoliated; and those anomalous symptoms which would have been exasperated by mercury, yielded readily to the decoction of Guaiacum. In tracing carefully the history of this

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* Brassavolus, Fallopius, &c.

† De Morbi Gallici curatione per administrationem Ligni Guaiaci.

once celebrated remedy, nothing can be more evident than this, that it was administered to persons afflicted with very different forms of disease. One numerous class of patients consisted of those, who having used mercury according to the severe, and often injudicious mode which was practised two centuries ago, found themselves harassed with pains, nodes, ulcers, and several other symptoms, from which they were finally relieved by a course of Guaiacum. Hence it was concluded that this medicine was superior, as an antidote to mercury. Another class adopted the Guaiacum course from the first attack of their disease, and deriving sensible benefit, hastily presumed that a cure was accomplished; but, although their frequent relapses might have shaken their confidence, yet, as the renewal of their Guaiacum course mitigated the violence of their symptoms, and often produced considerable appearances of amendment, they preferred this palliative method of proceeding, to the more distressing concomitants of a course of mercury.

"In addition to these observations, it may be further suggested, without any violation of candour, or of respect to our predecessors, that at a time when the natural history of Lues Venerea was so imperfectly understood, many morbid appearances totally unconnected with that poison, were nevertheless referred to it; and that the cure of such mistaken symptoms, would contribute greatly to augment the fame of the remedy. When it is therefore considered, that the good effects of Guaiacum are not absolutely confined to those cases, where a quantity of mercury, sufficient to destroy the syphilitic virus has been introduced into the system; but, that it may operate like a true antidote, suspending for a time the progress of certain venereal symptoms, and removing other appearances altogether; when subsequent experience nevertheless evinces, that the subdued virus yet remains active in the constitution; we shall be competent to the explanation of many of those contradictory assertions which abound in writers upon this subject.

"This decoction, (continues Mr. Pearson,) excites a grateful sensation of warmth in the stomach; it gives a sense of dryness to the mouth, and creates a thirst; it also increases the natural

temperature of the skin, and renders the pulse more frequent. If the patient drink the decoction warm, and lie in bed, it generally proves moderately sudorific; and this effect may be heightened as much as we please, by employing the hot bath, the vapour bath, antimonials combined with opium, or Dover's powder. When the decoction has been continued during ten or twelve days, in the quantity of four pints each day, the patient often complains of heart-burn, accompanied with flatulence; and he is usually costive during the whole course. If the person expose himself freely to the air while he is taking this medicine, the secretion of urine will be augmented; but no sensible alteration will take place in the state of the skin. When I have exhibited the decoction in pains of the bones, confining the patient to bed, and enjoining a diet consisting of fluids only, I have rarely seen any beneficial consequences result from the use of it, excepting when it acted as a sudorific: and, in this respect, I think its qualities manifestly inferior to antimony or volatile alkali. In several instances, after persisting in a course of it during four or five weeks, I have not gained any material advantage, and I have remarked, that when the *dolores ostocopï* were not connected with some morbid alteration of the structure of a part, this medicine was of little avail. When the strength, and vigour, have been reduced by a successful mercurial course, with confinement to the house, and when a thickened state of the ligaments, or of the periosteum, remains, or where there are foul, indolent ulcers, these sores will often heal, and the enlarged membranes will subside, during the administration of this decoction. It will often suspend the progress of certain secondary symptoms of Lues Venerea for a short time; such as, ulcers of the tonsils, venereal eruptions, and even nodes: but, I never saw one single instance in which the powers of this medicine eradicated the disease. I have been recommended by many people to combine Guaiacum with mercury, with the intention of improving the specific power, and of counteracting the injurious effects of that mineral. The advantages to be derived from this compound mode of treatment are by no means well established: for Guaiacum is certainly no antidote against syphilis; nor have any proofs been given to the public of its ameliorating the action of mercury. When the de-

coction is given during the mercurial course, it sometimes seems to improve the health; but, as it is very liable to produce complaints in the stomach and bowels, the palpable inconveniences commonly surpass the uncertain disadvantages connected with it; and as no previous course of the decoction renders the disease milder, nor authorises us to rest satisfied with a smaller quantity of mercury than usual, it will seldom happen that a satisfactory reason can be assigned, for giving the two medicines at the same time.

"In concluding, I would remark, that I have given the decoction of Guaiacum with the best effects to a great number of patients in cutaneous diseases, in the ozæna, and in scrofulous affections of the membranes and ligaments; and it appears to me, that it is equally efficacious in such morbid alterations, which are not at all connected with Lues Venerea, nor with the mode of treating it, as in those cases for which it has been most highly celebrated." To sum up the virtues of Guaiac, it may be said that it is a stimulating medicine; proving diaphoretic in a dose of a scruple, or half a drachm; purgative, in large doses; and when it fails to act on the skin, it increases the secretion of urine. It is frequently employed in chronic rheumatism, to excite sweat; or in smaller doses still, to keep up a gentle determination to the skin. Combined with opium, its sudorific effects are increased; and the decoction of the wood is said to increase the power of senna, and to prevent its griping. It is either given in substance in the form of a bolus, or diffused in water by the medium of mucilage. The volatile tincture is more highly stimulating than the simple, and is more generally employed. In full doses, it is said to prevent the formation of that membranous substance which is thrown off by the uterus, and which is often found to accompany the *Paramenia difficilis* of Dr. M. Good.

OFF. PREP. Decoctum Sarsaparillæ comp. *L. D.*
Decoctum Guaiaci comp. *E.*
Mistura Guaiaci. *L.*
Tinctura Guaiaci. *L. E. D.*
Tinctura Guaiaci Ammoniata. *L. E. D.*
Pulvis Aloes comp. *L. D.*
Pilulæ Hydrargyri Sub-muriatis comp. *L. E.*

Arbutus Uva Ursi L.

Weddell Fecit

Published by J Churchill Leicester Square Oct^r 1828.

ARBUTUS UVA URSI.

Trailing Arbutus, or Red Bear-berry.

Class X. DECANDRIA.—*Order* I. MONOGYNIA.
Nat. Ord. BICORNES, *Lin.* ERICÆ, *Juss.*

GEN. CHAR. *Calyx* 5-parted. *Corolla* ovate, pellucid at the base. *Berry* superior, 5-celled.

SPEC. CHAR. *Stems* procumbent. *Leaves* entire, evergreen.

Syn.—Vaccinia ursi, sive Uva ursi apud Clusium, *Ger. Em.* 1416.
Vaccinia rubra, foliis myrtinis crispis, *Raii Syn.* 457; *Merr. Pin.* 123.
Vitis Idæa, foliis carnosis et veluti punctatis, *Bauh. Pin.* 470.
Uva Ursi, *Clus. Hist. v.* 1. 63. *f.*; *Lob. Obs.* 547. *f.*; *Ic.* 366. *f.*
Arbutus, *n.* 1018; *Hall. Hist. v.* 1. 434.
Arbutus Uva ursi, *Sp. Pl. Willd. v.* 2. 618; *Fl. Brit.* 443; *Eng. Bot. v.* 10. *t.* 714; *Hook. Scot.* 126; *Woodv. v.* 1. *t.* 70; *Fl. Dan. t.* 33.

PROVINCIALLY.—*Bear-berries; Bear Wortle-Berries. Braoileagna-na-con,* of the Scottish Highlanders.

FOREIGN.—*La bouserolle ou l'arbousier trainant, vulg. le Raisin d'ours,* Fr.; *Corbezzolo uva d'orzo,* It.; *Uba d oso; ubaduz, gayuba, gayubera, ayauja, avujes,* Sp.; *Uva de orso,* Port.; *Die Bärentraube, die Bärenbeere, die Mehlbeere-*Ger.; *Meelbær-Rüs,* Dan.; *Mjölon,* Swed.; *Beerendruif,* Dut.; *Tolokn-janka,* Russ.

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; 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. It is the plant mentioned in Ray's Synopsis, p. 458, as found by Mr. Lhwyd, growing plentifully in the isle of Mull, at the end next Y-Columb-kill, for the space of several miles. It was perceived many years ago by Lightfoot, at the top of east common wood, about a mile from Hexham, in Northumberland; and is said by Mr. Winch to flourish on Cronkley Fell, and Blanchland in the same county, at an elevation of 200 to 2,000 feet.*

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, obovate, 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 extremities 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 pale 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. Fig. (*a*) represents the calyx; (*b*) a flower cut open to show the stamens; (*c*) a stamen, with its anther; (*d*) the berries; (*e*) a berry divided transversely, to show the seeds.

The plants of this genus are very nearly allied to those of the

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* See a paper on the Geography of Plants, in the *Annals of Philosophy*, May, 1818.

Vaccinium, or Wortle-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, shews that they abound in tannin. A solution occasioning a copious precipitate; sulphate of iron an equally copious one of a black colour. Nitrate of mercury gives a precipitate 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 αρκτον 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 much 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 the diseases of the urinary organs. 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, purging, and other preliminary measures, the uva-ursi imparts tone to the stomach, and frequently mitigates this particular affection of the kidnies. It was at one time supposed to be useful in calculous cases, and experiments were instituted to ascertain whether it were not capable of dissolving stone in the bladder. The results most in favour of its solvent power, were those of Girardi, who diminished the weight and consistency of urinary calculi, by digesting them in a preparation of this plant. It appears, however, that the preparation which he employed was an acid liquor, obtained by a destructive distillation of the leaves, and probably not superior to other weak acids in its solvent powers. On the other hand, Professor Murray found, what might reasonably be expected, that these calculi were not materially affected by long digestion in a decoction of this plant, at various temperatures. Professor Barton found the plant of great

service in his own case of nephritic paroxysms, alternating with gout in the feet: and in those which were brought on by gravelly concretions, the uva-ursi appeared to Professor Bigelow, to allay irritability, and to hasten the relief of the symptoms.

It was in consequence of its apparent virtue in counteracting a protracted disease of the urinary passages, 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 the work alluded to, 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 pulsations 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, a wine-glass-full may be taken every hour.

Pl 92.

Citrus Medica.

W. Clark del.

Weddell Sc.

CITRUS MEDICA.

The Lemon Tree.

SPEC. CHAR. *Petioles* linear. *Leaves* ovate, acuminate.

Syn.—Malus medica, *Bauh. Pin.* 435.
Citrus Limon, *Brown Jam.* 309. *n.* 6; Lourier. *Cochin-chin.* 465; *Sloane Jam.* 2. 187; *Lamarck Illust. t.* 639. *f.* 2.
Lima acris *Ferr. Hesp.* 331. *f.* 333.
Citrus medica, *Lin. Sp. Pl.* 1100, *Willd.* 3. 1426; *Raii. Hist.* 1654; *Ger. Em* 1462; *Woodv. t.* 184.

FOREIGN.—*Limonier*, Fr.; *Limone*, It.; *die Limone*, Ger.

THOUGH the Lemon-tree, as well as the Orange, has long been successfully cultivated in the West Indies and the South of Europe, it is, properly speaking, a native of Asia, whence it was brought into Greece and Italy. The citron and the lime, are generally considered as mere varieties of the Lemon, differing chiefly in the form and qualities of the fruit; but Dr. Roxburgh, in the Hortus Bengalensis, seems to regard the lime as a distinct species, under the name of Citrus *acida*. All the varieties have linear petioles, a character by which they may readily be distinguished from the orange and the shaddock, which have winged leaf-stalks. Both the citron and the lime appear to have been well known to the Romans in the days of Virgil and Pliny; though their propagation and culture were but little understood. The latter writer, in his 13th book, chap. iii., speaking of fruit trees, says: "I will begin with that, which of all others is the most wholesome, the citron-tree, called also the Assyrian-tree, and by some the Median-apple; the fruit is a counter-poison, and singular antidote against all venom: the leaves, he says, are like those of the arbutus, and the tree is armed with thorns. The pome-citron," he continues, "is not good to be eaten as a fruit, but is very odoriferous, as are the leaves, which are used to be put in wardrobes among apparel, to give a perfume, and to drive away moths and spiders." "This tree," he

adds, " bears fruit at all times of the year, for when some fall, others begin to ripen, and some to blossom. Many have tried to transplant the trees into their own country; and for this purpose they have had pots made, and enclosed them well with earth; but for all the care and pains taken about them, to make these trees grow in other countries, yet would they not forget Media and Persia, and liking no other soil, would soon die."

The Lemon-tree is a beautiful evergreen, attaining, in warm countries, the height of twenty feet or more, but in our hot-houses seldom exceeding the size of a large shrub. The leaves are stiff, like those of the laurel; alternate, ovate-oblong, pointed, three or four inches long, of a bright green colour, shining, smooth, slightly serrated, and without an appendage to the foot-stalks, it being linear. The flowers, which appear the greater part of summer, are large, white, odoriferous, and placed on simple, or branched peduncles, arising from the smaller branches. The petals, calyx, filaments, germen, and other parts of inflorescence, resemble those of the orange, which has been already described. The germen is oval, and becomes an oblong berry, with a nipple-like protuberance at the end; it is externally of a straw-yellow colour, internally divided into many cells, usually nine, but sometimes only seven or eight, containing four seeds in each, and filled with vesicles abounding in an extremely acid juice. The rind, like that of the orange, consists of two coats, or layers; the exterior coat thin, yellow, and containing, in minute vesicles, a very fragrant oil; the interior thicker, whitish, and coriaceous. Our figure was made from a specimen which grew in the Botanic Garden, Chelsea.—Fig. (*a*) represents the stamens, &c.; (*b*) the calyx removed to show the germen and style; (*c*) a transverse section of the fruit to shew the cells, which, in this individual, are eight in number.

VARIETIES.—The Lemon-tree was cultivated in the Botanic Garden at Oxford in 1648, and is common in our green-houses; where, under proper management, it produces large and ripe fruit. The most remarkable sub-varieties, according to Miller, are the sweet-lemon, plain and variegated; the pear-shaped; the imperial; the lemon called Adam's Apple; the furrowed fruited:

the childing ; and the lemon with double flowers. The orangeries in this country are supplied, either by plants raised from the seed, and budded, inarched, or grafted by our gardeners, or by small budded trees imported in chests from Italy. But it is chiefly the shaddock (Citrus *decumana*, L.) and citron that are thus imported. The *citron*, which is considered a variety of the lemon, is, like that fruit, a native of all the warmer parts of Asia. Another variety, the *lime*, is also a native of the East, and has long been cultivated in the West Indíes on account of its juice, which is esteemed a much more grateful acid than that of the lemon. From one of the varieties, the well-known perfume called *Essence of Bergamot* is obtained, which is said to have derived its name from Bergamo, in Italy, where the variety was first cultivated in Europe, and where it is still preserved.

Lemons are brought to England from Spain and Portugal, packed in chests, each lemon being separately rolled in paper.

Qualities and Chemical Properties.—Lemon-*juice* owes its sour taste to the *citric acid* which it contains, in combination with mucilage, extractive matter, a small portion of sugar, and water. Scheelé was the first who obtained this acid in a pure state ; his process consists in saturating lemon juice with chalk, an insoluble compound of citrate of lime being precipitated : as much sulphuric acid, previously diluted with six times its weight of water, is then added ; lastly, the solution, after being filtered, is set aside, and affords the acid, crystallized in double four-sided pyramids, or sometimes in rhomboidal prisms, which may be purified by repeated solutions, and crystallizations. The acid, thus obtained, has a less agreeable flavour than that of lemon-juice, but as it can be kept in its crystalized state for any length of time, it is generally substituted for it. The citric acid exists also in some other vegetables, and has been obtained in considerable quantities from the unripe fruit of the common gooseberry.

Medical Properties and Uses.—The juice of this fruit is one of the most grateful of the vegetable acids, and is the principal source of citric acid, a very valuable article both for pharmaceutical and culinary purposes. Properly diluted with water, and rendered palatable by the addition of sugar, it forms

lemonade, which is perhaps the most agreeable, and refreshing beverage that can be employed to quench thirst and diminish heat in febrile, and inflammatory diseases. The juice is also used in the same manner as the acetic acid, in the preparation of effervescing, and saline draughts. A draught of this sort made with ℈i of the carbonate of potass, dissolved in one ounce of any aromatic water, and ℥ss of lemon-juice, taken in a state of effervescence, is advantageously employed to check vomiting, and diminish morbid irritability of the stomach. Dr. Whytt, found the juice given alone to the extent of a table-spoonful for a dose, to allay hysteria, and palpitations of the heart; and Dr. Bancroft, in his History of Guiana, assures us, that the usual remedy for the bites of poisonous animals, is a cataplasm of the pulp of lemons, mixed up with sea-salt, and applied to the wounded part. Like the other vegetable acids, it is also given as a means of counteracting the fatal effects of narcotic poisons, especially opium. As it possesses very remarkable powers in the cure of scurvy, large quantities of it, in a concentrated state, are generally taken on board ships destined for long voyages. Lemon-juice is also given in combination with camphor mixture, cinchona, and aromatic confection; or mixed with ardent spirit, sugar and water, it forms *punch*, which is a useful cordial in gangrenous affections, putrid sore throat, and low fevers. The rind contains a very fragrant essential oil, which is used as perfume, and having a degree of bitterness, it enters into the composition of some stomachic medicines.

OFF. PREP.—Syrupus Limonis, L. E. D: Aqua Citri Medicæ, E.
Infusum Aurantii comp. L.
Infusum Gentianæ comp. L. D.
Spiritus Ammoniæ Arromaticus, L. D.
Unguentum Veratri L.

CANDIED LEMON PEEL.—This well known sweatmeat is made by boiling lemon-peel with clarified syrup, and then exposing it to the air till the sugar crystallizes.

ESSENTIAL SALT OF LEMONS.—The preparation sold under this name, for the purpose of removing iron-moulds from linen, consists of cream of tartar and super-oxalate of potass, or salt of sorrel, in equal proportions.—*Paris's Pharm.*

Pl 93

a

b

Pyrola umbellata

Weddell fecit

XCIII

PYROLA UMBELLATA.

Umbel-flowered Winter-green.

Class X. DECANDRIA. *Order* I. MONOGYNIA.

Nat. Ord. BICORNES, *Lin.* ERICEÆ, *Juss.*

GEN. CHAR. *Calyx* in 5-deep segments. *Petals* 5. *Capsules* superior, 5-celled, bursting at the angles. *Anthers* opening by two tubular pores.

SPEC. CHAR. *Leaves* wedge-shaped, lanceolate, serrated. *Flowers* somewhat umbellate. *Stamens* smooth. *Style* immersed.

Syn.—Pyrola fructicans arbuti folio, *C. Bauh. Pin.* 191; *Tournef. Inst.* 256; *Moris Hist.* 3. *sect.* 12. *t.* 10. *f.* 5.

Pyrola folio arbuti, *Riv. Pent. t.* 139. *f.* 2.

Pyrola 3 fructicans. *Clus. Stirp. Pann.* 507. *Hist. p.* 117.

Chimaphila corymbosa, *Pursh Amer. Sept.* 1. *p.* 300.

Chimaphila umbellata, *Bart. Veg. Mat. Med. U. S. v.* 1. *t.* 1. 17. *Bot. Mag. t.* 778.

Chimaza umbellata, *Brown in Herb. Banks.*

Pyrola umbellata, *Lin. Sp. Pl.* 568; *Willd.* 2. *p.* 622; *Pollich. Palat. n.* 389; *Hoffm. Germ.* 144; *Krocker Siles.* 2. *p.* 14; *Roth. Germ.* 1. 151. *v.* 2. 464; *Mich. Amer.* 1. *p.* 251; *Lam. Encycl.* 5. *p.* 744; *Persoon Synop.* 1. 483.

FOREIGN.—*Pyrole, Verdure d'hiver,* Fr.; *Pirola,* It.; *Das doldenformige Wintergrün,* Ger.; *Vintergrönae, Rylort,* Swed.; *Borowaja trawa,* Rus.

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 lately been bestowed upon it as a powerful tonic and diuretic: and although widely diffused throughout

the northern hemisphere, is not found wild in this country. 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 called *Herbe de Paigne* by the Indians, and *L'Herbe a Pisse* by the Canadians. It is the most beautiful of all the genus; producing its elegant umbells of cream-coloured flowers in June and July, and continues a long time in bloom.

Michaux, Pursh, and some other botanists, have separated this and another species (*maculata*) from Pyrola, in order to constitute a distinct genus, to which they have given the name of Chimaphila. The former writer remarks, that these two species differ from the others in habit, in having a sessile, undivided stigma, and short-beaked anthers, with a sub-bivalve foramen. Upon these characters Pursh has attempted to establish the genus; but Retzius long ago observed the diversity of the style, which is different in almost every species, "and affords admirable specific, but no generic distinctions."

The genus Pyrola, as now constituted, comprises about 15 species, principally inhabiting northern countries, both in the new and old world. "In the temperate Zones," says Mr. Don, "they are chiefly met with in mountainous situations; some of the species, such as *uniflora* and *secunda*, extending to considerable elevations. In the frigid Zones, on the contrary, they are only to be found in the lowest and narrowest plains adjacent to the sea, and are never met with in these regions beyond the limit of trees. Most of the species extend across the continents of Asia, Europe, and America. There are specimens of *secunda* and *uniflora* in the Banksian Herbarium, from the islands on the north-west coast of America. The P. *picta* of SMITH is found on the north-west coast of America, and in mountainous situa-

tions in Japan. Some species, however, are of more limited diffusion; thus, P. *asarifolia, maculata*, and *elliptica*, have only been found in North America. The P. *dentata, Menziesii*, and *occidentalis*, are still more confined, being only found in particular districts."* All the species are herbaceous, or somewhat woody, astringent and tonic.

Like most others of this genus, the Pyrola *umbellata* has a long creeping perennial root, sending np 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.—Fig. (*a*) the anthers separated; (*b*) a seed—from Lamarck.

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 extracting 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 Göttin-

* See a Monograph of the Genus Pyrola, in the *Memoirs of the Wernerian Natural History Society*, by Mr. D. Don, Lib. Lin. Soc.

gen, 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, and leaving a white cinder.

MEDICAL PROPERTIES AND USES.—As we have no experience ourselves 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 to various cases.

"In the first of these cases, the Pyrola is entitled to attention and confidence. Some practitioners 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 lately cited, 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.

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* See Dr. Mitchell's Inaugural Dissertation. Philadelphia, 1803.

" 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 medicine 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 increased the urinal discharge, and at the same time 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.

" Dr. Wolf has given one very satisfactory case of the utility of our plant in ascites. He also found it to alleviate altogether the ardor urinæ attendant on gonorrhea.

" 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 in the first instance. 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 tumors 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. Miller, of Franklin, informs me 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. Tumors of long standing have in several instances disappeared under its use."

Sir Walter Farquar, it appears from Dr. Somerville's paper, 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 visceral derangement; the patients were stimulated powerfully, and in the third the patient 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 bucketfull 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. In one of them, the urine, which was considerably increased in quantity, was of a dark brown colour. Dr. Heberden has recorded a case of a similar colour being produced by the uva ursi. The Indians use a strong and warm decoction of this plant in rheumatism and fever: They employ the whole plant, 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 numhers 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 expressed to ℔j by measure.—*Dose* ℥j. to ℥iij, three times a day.

Pl 94

Coriandrum sativum.

W. Clarke Del

Weddell Sc.

XCIV

CORIANDRUM SATIVUM.

Common Coriander.

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

Nat. Ord. UMBELLATÆ.

GEN. CHAR. *Fruit* a single or double globe, smooth, without ribs. *Corolla* radiate. *Floral receptacle*, none.

SPEC. CHAR. *Fruit* globular, obscurely ribbed, and divisible into 2 hemispherical seeds. *Leaflets* of the lower leaves wedge-shaped.

Syn.—Coriandrum majus, *Bauh. Pin.* 158; *Moris. v.* 3. 269; *Riv. Pentap. Irr. t.* 71.

Coriandrum, *n.* 764, *Hall. Hist. v.* 1. 335; *Raii. Syn.* 221; *Ger. Em.* 1012. *f.*; *Camer. Epit.* 523. *f.*; *Bauh. Hist. v.* 3. *p.* 2. 89. *f.*; *Fuchs. Hist.* 345. *f.*; *Matth. Valgr. v.* 2. 121. *f.*

Κοριον, *'ή κοριαννον*, *Diosc. lib.* 3. *cap.* 71.

Κοριανδρον *'ή κουσβαρος* hodiè.

Coriandrum sativum. *Lin. Sp. Pl.* 367; *Willd. v.* 1. 1448; *Fl. Brit.* 320; *Eng. Bot. v.* 1. *t.* 67; *Fl. Græc. v.* 3. 76. *t.* 283.; *Woodv. t.* 181. *Mart. Rust. t.* 141.; *Stokes, v.* 120.

FOREIGN.—*La Coriandre*, Fr.; *Coriandro*, It.; *Cilantro*, Sp.; *Koriander*, Ger. Russ.

CORIANDER is an annual plant, a native of Italy and the East; but has naturalized itself in some parts of Essex, where it is extensively cultivated, for druggists and confectioners. It flowers in June and July, ripening its seed in August. We found it growing by the side of the Thames, near the Red House, Battersea, where it had probably sprung from seeds scattered there by Mr. William Anderson, of the Botanic garden, Chelsea.

The root is tapering: the stem branching, divaricated, leafy, round, striated, purplish at the lower part, and rises a foot or eighteen inches high. The leaves are compound; the lower

ones pinnated, with wedge-shaped, acutely notched, or fan-shaped leaflets; and the upper thrice-ternate, with fine linear-pointed segments. The flowers are white, or slightly tinged with red, and disposed in umbels at the upper part of the stem. Both general and partial umbels are many-rayed; the former generally consist of 4 or 5 rays, the latter of more numerous rays. The general bracteas are almost entirely wanting; but the partial ones are usually 3, linear-lanceolate, and placed laterally. The calyx consists of 5 acute, unequal leaves; the petals are 5 also, inversely heart-shaped, and inflected at the tips; those of the innermost flowers nearly equal and lobed, but those of the margin are irregular, larger, and not inflected. The filaments are thread-shaped, with roundish anthers, and the style spreading with small obtuse stigmas. The fruit is globular, obscurely striated, smooth, and divisible into two hemispherical concave seeds.—Fig. (*a*) is a floret of the radius; (*b*) a floret of the disc; (*c*) the germen and styles.

Qualities.—The leaves and stalk, when bruised, emit an intolerably fœtid odour, greatly resembling that of the insect known under the name of *Pentatoma viridis*, a species of the Linnean genus, Cimex, or Bug, and hence the origin of the generic name Coriandrum, from κορις, *cimex*, a bug. The seeds when fresh have also a disagreeable odour, but by drying they become grateful; to the taste, they are moderately warm and pungent, and have a pleasant aromatic odour. Alcohol extracts all their active principles, but water only extracts it partially. Distilled with water, a small quantity of essential oil is obtained, upon which the active properties of the seeds entirely depend.

Use.—The seeds agree in their medical properties with those of caraway; they are carminative and stomachic, and hence are frequently added to infusions of senna, and to other cathartics; to cover the unpleasant taste, and to obviate the irritating effects they are apt to produce on the stomach and bowels. Formerly, the young leaves were used in sallads and in soups; but their scent is disagreeable to most persons.

Dose.—From ℈j. to ʒj. Dr. Withering has known ʒvj. of the seeds taken at once, without any remarkable consequences.

Pl 95

Eugenia caryophyllata?

XCV

EUGENIA CARYOPHYLLATA.

The Clove Spice-tree.

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

Nat. Ord. HESPERIDIÆ, *Lin.* MYRTACEÆ, *Juss.*

GEN. CHAR. *Calyx* 4-parted, superior, persistent. *Petals* 4. *Germen* oblong, cylindrical, 2-celled, with many ovules in each cell. *Style* awl-shaped, in the centre of a quadrangular elevation. *Berry* oval-oblong, 1-seeded.

SPEC. CHAR. *Leaves* lanceolate, acuminate, entire. *Panicles* axillary and terminal, trichotomous.

Syn.—Caryophylli veri. Clusii, *Ger. Em.* 1533.
Caryophyllum *Rumph. Herb. Amb.* ii. 3. *t.* 1. 2. 3.
Myrtus Caryophyllus, *Spreng. Syst. Veget. v.* 2. *p.* 485.
Le Gerofle, Sonnerat *Voy. á la Nouv. Guin. p.* 196. *t.* 119.
Caryophyllus aromaticus, *Lin. Sp. Pl.* 735; *Gærtn. de Fruct. v.* 1. *p.* 167. *t.* 33; *Lamar. Illustr. t.* 417, *Dict. v.* 2. *p.* 718; *Bot. Mag. n. s. v.* 1. *t.* 2749; *Woodv. t.* 135; *Trans. Soc. of Arts, v.* 20. *p.* 371. *Stokes, v.* 3. *p.* 73.
Eugenia caryophyllata, *Sp. Pl. Willd. v.* 2. *p.* 965; *Ait. Kew. ed.* 2. *v.* 3. *p.* 188; *Thunb. Diss. de Caryoph. aromat. p.* 1. *Jour. de Physiq. tom.* xiv. 47. *t.* 1.

FOREIGN.—*Le Giroflier*, Fr.; *Il garfano aromatico*, It.; *Il clavo aromatico*, Sp,; *Gewürznäglein*, Ger.; *Givosditschka*, Rus.; *Laong*, Hind.; *Thenghio*, Chin.

THE Clove-tree is originally a native of the Moluccas; and the well-known spice was for a long period the staple commodity of Amboyna, one of the principal of these islands. The lucrative trade arising from this valuable article of commerce, or of

luxury, is entirely in the hands of the Dutch, who guard their monopoly with the most illiberal jealousy. Cloves are only produced in Amboyna, and the neighbouring islands; but to prevent smuggling, and to make their command of the market more secure, they have been at the utmost pains to extirpate the clove-trees from all the other islands, and to confine the culture of them to Amboyna alone. Notwithstanding, however, the vigilance of the Dutch to secure to themselves a monopoly in this valuable spice, the French obtained some plants, which they carried to the Isle of Bourbon, about the year 1770, and thence to Cayenne, from whence its cultivation has extended to the West Indies. The clove was introduced into the Royal Gardens at Kew, in 1797, by the Right Hon. Sir Joseph Banks.

The clove-spice is produced on a very handsome tree, somewhat resembling a large pear-tree. The trunk is from fifteen to thirty feet high, a foot thick, divided into branches, four or five feet from the ground, which are slender, opposite, usually horizontal, and form a dense, pyramidal head. The leaves are opposite, persistent, somewhat coriaceous, about four inches long, with a strong midrib, and parallel lateral nerves; ovate-lanceolate, quite entire, smooth on both sides, reddish and rather shining above, paler underneath, and sprinked with minute resinous dots, and tapering at the base into a slender foot-stalk, nearly two inches long, which according to Sonnerat is the most aromatic part of the plant. The flowers are odorous, from nine to fifteen or more on a branch, in short terminal pannicles, trichotomously divided, and jointed at every division. The calyx, which is superior, consists of four ovate, concave, spreading segments, at first green, but afterwards becoming red. The petals are four, ovate, concave, yellowish-red, larger than the calyx and caducous. In the centre of the calyx, and occupying the top of the germen, is a quadrangular elevated line, into which the stamens are inserted, surrounding the base of the shortish obtusely subulate style. The filaments are numerous, much longer than the petals, bearing small yellow ovate-cordate anthers. The germen is inferior, oblong, 2-celled, with many ovules in each cell; all of which,

as stated by Professor Hooker, become abortive, or *one* proves fertile, and by its great enlargement destroys the appearance of the rest of the ovules, and of the two cells; so that the fruit, which forms a rather large elliptical purple berry, is only 1-seeded.—Fig. (*a*) represents the petals ready to fall off; (*b*) the petals as they fall off, adhering in a calyptra; (*c*) a detached petal; (*d*) the petals cohering, the stamens gradually raising them; (*e*) the rudiment of the fruit in a longitudinal section, to show the insertion of the stamens; (*f*) the fruit nearly ripe; (*g*) longitudinal section of the fruit; (*h*) front view of, and *i* back view of a stamen; (*j*) vertical section of a berry; (*k*) vertical section of a flower.

The Clove-tree, as we have before observed, is a native of the Molucca Islands; and a short time before the Portuguese took possession of Amboyna, the Cerammers of Cambello secretly carried some seeds in hollow bamboos from Machian, and thus propagated this valuable tree all over Amboyna, Ceram, and the neighbouring islands; and in the space of from fifty, to sixty years, the whole of Hoewamoehil was covered with them. This was made known to the Dutch when they first went to Cambello; and some of the first-planted trees were shown to them behind the hill *Massili:* the memory of it is likewise preserved in the traditionary songs of the Amboynese. The brave and enterprising inhabitants of Cambello were rewarded for their candour, by the destruction of all their clove-trees; whereby they were deprived of the fruits of their industrious exertions. The implacable enmity which they in consequence entertained for the Dutch, and their repeated attacks upon their forts, established by the latter, have been stigmatized by Dutch writers as a base and wicked spirit of disobedience; so that Valentyn says, "It would have been better, if, instead of extirpating their trees alone, we had at the same time, exterminated this revengeful and sanguinary nation."

The islands Honimoa, Oma, and Noussa-lant, commonly called the *Uliassers;* together with Amboyna, were the only spots in which the Dutch East India Company allowed the tree to be cultivated, and they constantly caused it to be destroyed in every

other place within their reach, especially on little *Ceram*, or *Hoewamoehil*, (exclusive of the extirpation which took place from time to time in the Spice-Islands themselves,) that the great abundance of this article, with which the ware-houses, both at Batavia and in Holland, abounded, might be moderated.

Thus the Company ordered, in December 1769, that the number of clove-trees should not be allowed to exceed 500,000, and it was further ordered in 1773, that 50,000 more should be destroyed; so that in 1775, after three extirpations, the number of trees as nearly as could be ascertained, was 513,268. Besides this number, there were 22,310 *tatanamangs*, which are trees planted by the Amboynese at the birth of each child, whereby a rough calculation is made of their respective ages. Although the natives do not oppose the extirpation of the trees in the plantations, when some of their *tatanamangs* were cut down, an insurrection took place, which it was very difficult to overcome.

It is not easy, as Dr. Hooker justly observes, to determine when the Clove was first known to Europeans. J. Bauhin asserts, that the inhabitants of the Moluccas, were scarcely acquainted with the value of the Clove, till some Chinese vessels visited the country, and transported many plants into China, after which they were distributed into other districts of India; into Persia and Arabia. Sir James Smith says, that it does not appear to have been known by the ancient Greeks, and Romans; the first distinct mention of it being by Paulus Ægineta, a Greek physician of the seventh century, as a food and medicine. Sir J. Smith also supposes it to be the *Carunfel* of Serapion, and the *Carunfel bellum* of Avicenna; both of whom were Arabian physicians.

The Clove is now cultivated wherever human industry has carried it to a suitable soil and climate; and numerous other countries possess this precious vegetable. The French introduced it into the Islands of Mauritius and Bourbon, in 1769; and it has succeeded so well, that in 1802, when M. Bory de St. Vincent was in the Mauritius, he visited the first tree that had been planted by M. Poivre; saw it loaded with Cloves; and ascertained that it had, in some years, produced the extraordinary quantity of

125lbs of this spice; whereas, the average produce in Amboyna is 2 or 2½lbs. per annum. It requires five thousand cloves to weigh a pound; consequently, there were 625,000 flowers upon this single tree, independently of others which were left for seed; "a fact," says M. St. Vincent, "which would appear incredible, were we not to mention, that this beautiful tree is at least forty feet high, throwing out innumerable branches, some of which, falling down on all sides, form a pyramid of verdure." In 1791, Mr. Hubert, the proprietor of the original spice-estate, gave a fête champêtre in honour of the extended cultivation of the spice-trees; whilst the festivals, annually held by the Dutch in Amboyna, were instituted in commemoration of their destruction in the surrounding islands.

Another French gentleman, M. Céré, sent plants from the Mauritius, to Cayenne, about the year 1779; and in 1792 the plantations contained 2500 trees, which bore cloves equal to those of the East Indies, and which fetched a higher price in France than those from the Moluccas, Others were sent to Martinique, and the French West India Islands; so that the former furnished the London market in 1797, with 350lbs; and the following year with 200lbs.; at which time St. Kitt's sent 2981lbs.

From Martinique, the Clove-tree was introduced to the Island of St. Vincent,* and under the superintendence of Dr. Anderson, at the Botanic Garden, it is brought to great perfection. In Trinidad too, the Clove is extensively cultivated, and there can be but little doubt, but that it will there become a profitable article of commerce.

The Rev. Lansdown Guilding, who wrote an account of the Botanic Garden in the Island of St. Vincent, says, "that the tree is covered with its lovely blossoms, the greater part of which prove abortive, and falling to the ground, are collected and dried for sale. The berries which remain on the tree, gradually enlarge their calyx and develop the seed, and are gathered under the trees about July, having turned to a blackish purple, and

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*The gold medal of the Society for the Encouragement of Arts, Manufactures, and Commerce, was voted in 1802 to Dr. Anderson, for a communication on Cloves and Cinnamon produced in that island.

lost all their value as a spice. The seeds require to be set out immediately and planted near the surface, as they vegetate rapidly. The young plants are tender, and should be placed, if possible, where it is intended they should remain. The Clove was once cultivated to a great extent in Dominique; in our own island, the trees, which are little valued, produce annually upwards of a million of seeds, besides the abortive fruit, which is dried as spice. The colonists supposing from our overgrown trade with India, that it can never become an article of commerce, neglect even to plant the Clove in their hedges, although it, as well as cinnamon, and many other plants, which any overwhelming change in our Eastern possessions might render invaluable, would grow without any expence."

The clove of merchandize is the unexpanded flower; the corolla forming a ball or sphere on the top, between the teeth of the calyx; thus, with the narrow base or germen tapering downwards, giving the appearance of a *nail;* hence Sir James Smith informs us, the Dutch call it *Naghel;* the Spaniards *Clavo;* the Italians *Chiodo;* and the French *Clou,* from which the English *Clove* is evidently derived.

Cloves are gathered by the hand, or beaten with reeds, so as to fall upon cloths placed under the tree; and dried by fire, or what is better, in the sun. The fully-formed berries are preserved in sugar, and eaten after dinner to promote digestion.

QUALITIES.—The bark, fruit, roots and leaves of the clove spice-tree are all more or less aromatic. The cloves of commerce have a strong aromatic odour, and a warm pungent taste. Infused in water, they give out to it more of their smell than to spirit, but not so much of their flavour. Alcohol takes up all the virtue of cloves. By distillation with water, they yield a fragrant essential oil, which is not very pungent; but which is said to be generally rendered acrid, by a portion of the resinous extract obtained by the action of alcohol on cloves being dissolved in it.

Cloves should be chosen large sized, perfect in all parts, heavy, of a fine fragrant smell, and hot aromatic taste, so as almost to inflame the throat; the colour should be dark-

brown, almost approaching to black, and when handled should leave an oily moisture on the fingers. When *fresh gathered,* cloves will yield, on simple pressure, a fragrant, thick, reddish oil. Sometimes they have a considerable portion of their essential oil drawn from them, and are then mixed with those that retain it. By this mixture the purchaser may be deceived; but on examination, those Cloves which have lost their virtue, always continue weaker then the rest, and of a paler colour; and whenever they look shrivelled, having lost the knob at the top, and are light or broken, with but little smell or taste, they should be rejected. As Cloves readily absorb moisture, it is not uncommon when a quantity is ordered, to keep them near a vessel of water, by which means a considerable addition to weight is made. The ton is 12 cwt. for freight.

When new, *oil of cloves* is of a pale reddish brown colour, (which becomes darker by age) extremely hot and fiery, and sinks in water. The kind generally exported from India, contains nearly half its weight of an insipid expressed oil, which is discovered by dropping a little into alcohol; when, on shaking it, the genuine oil mixes with the spirit, and the adulteration seperates. It is sometimes adulterated with a cheaper essential oil: to discover this, dip a rag into it and hold it before the fire; the flavour of the genuine oil will fly off, leaving that of the added behind.

Medical Properties and Uses.—Cloves are generally conceded to be the most stimulating of aromatics, and are chiefly employed to impart a pleasant flavour, or to correct the irritative properties of drastic medicines. The essential oil is sometimes added to extracts for the same purposes, and is a popular remedy for tooth-ache. The infusion of Cloves is a warm and grateful stomachic, and is advantageously employed to "relieve the sense of coldness in the stomach, which attends some forms of dyspepsia," especially when arising from the abuse of ardent spirits, from chronic gout, or flatulent colic. The Dutch join it with cinchona and supertartrate of potass, in obstinate agues. Twenty cloves are added in powder to half an ounce of each of the other ingredients, and half a drachm is given

every third or fourth hour. In dyspepsia, and as a vehicle for other medicines, ʒij of cloves are infused in half a pint of boiling water, and administered in the dose of ounce and a half, or two ounces. The essential oil is made into an agreeable draught by diffusing it in water, with mucilage; and a syrup, is sometimes made from the aromatic clove, coloured with cochineal. Cloves are used in their native climate, and in almost every part of the civilized world, as an article of luxury, communicating a pleasant flavour to preserved fruits, sauces, ragouts, and liqueurs. They are likewise used by the perfumer.

Dose. In substance, from gr. v. to gr. x.

Off. Prep.—Infusum Caryophyllorum, L. D.

2/70/199 (4)