

PART II.

MATERIA MEDICA.

MATERIA MEDICA is that department of the science of medicine, that treats of the nature and properties of the substances which are employed as remedies to restore health in diseased bodies.

According to this definition, it should comprehend every remedy, whether it be a simple, the production of nature, or a compound artificially prepared by the pharmacopolist: but the British Colleges of Physicians confine the application of the term, in their pharmacopœias, to those remedies only which are simple, and such compounds as are articles of general commerce, or over the preparation of which they have no control. These pharmacopœias differ also from the works of the generality of systematic writers on *Materia Medica*, in arranging the substances alphabetically, without any regard to their affinities as natural objects, or their medicinal virtues. This mode, although it be not so scientific, yet is much less liable to objection than many of the other modes that have been occasionally adopted; as the best of these have been, generally, too much modified by the prevailing theoretical doctrines of the day, which, unfortunately for medical science, have, hitherto, had too slight a foundation on truth to secure their permanence. The plan of the pharmacopœias has consequently been judiciously followed by the compilers of Dispensatories; and the convenience and utility of it is so generally acknowledged, that we the more readily comply with our own opinion of its propriety in adopting it.

This part of our work, therefore, contains the lists of the *materia medica* of the pharmacopœias issued by the London, the Edinburgh, and the Dublin colleges; and subjoined to the name of each of the substances supplied by the vegetable and the animal kingdoms, a description of the plant or the animal which yields the remedy, is given in the language and after the method of Natural History. The chemical characters, as far as they are known, of these matters are also stated; and the analysis of such remedies as are more immediately the objects of chemical investigation, with the medical properties and uses of all of them, are detailed; so as to afford every useful information regarding them, in a form the most convenient for practical reference.

ABIIETIS RESINA. Vide *Pinus Abies*.

ABSINTHIUM. Vide *Artemisia Absinthium*.

ACACIA. *Spec. Plant. Willd.* iv. 1085.

Cl. 23. *Ord.* 1. Polygamia Monœcia. *Nat. ord.* Lomentaceæ Linn.
Leguminosæ Juss.

G. 1902. *Hermaph.* Calyx five-toothed. Corolla five-cleft, or formed of five petals. Stamens 4-100. Pistil. 1. Legume bivalve.

Male. Cal. five-toothed. Cor. five-cleft, or formed of five petals.
Stam. 4-100.

**** Leaves bipinnate, stipular thorns or prickles, elongated spikes.

Species 73. *Acacia Catechu*¹. *Catechu. Med. Bot.* 2d edit. t. 157.

***** Leaves bipinnate, stipular thorns, globular spikes.

Species 87. *Acacia vera.* *Acacia*, or Egyptian Thorn. *Med. Bot.*
2d edit. t. 158. *Vesl. Egypt.* t. 8. bona.

1. ACACIA CATECHU.

Official. CATECHU EXTRACTUM. *Lond.* ACACIÆ CATECHU EXTRACTUM, *Edin.* CATECHU; EXTRACTUM E LIGNO. *Dub.* Extract of Catechu.

Syn. Cachou (F.) Katchu; Kaschu (G.) Caro o Cateu (L.) Cutt. (*Hind.*)

This tree grows plentifully in the mountains of Kanhana in Hindostan; and flowers in June. It seldom exceeds twelve feet in height, and one foot in the diameter of its stem, which is covered with a thick, rough, brown bark, and towards the summit is divided into many close branches. The leaves are placed alternately on the younger branches; and are composed of fifteen or thirty pairs of partial pinnæ nearly two inches long, each having about forty pairs of linear leaflets, beset with short hairs; with a small gland on the petiole between the bases of each pair of the pinnæ. At the base of each leaf are two short, recurved spines. The flowers are hermaphrodite and male; axillary, and on close spikes four or five inches long: the calyx is tubular, hairy, dividing into five oval pointed segments; the corolla of one piece, whitish, twice the length of the calyx, and of the same form. The filaments are numerous, double the length of the corolla, crowned with roundish anthers, and adhering at the base of the germen, which is oval, supporting a slender style the length of the filaments, and terminated by a simple stigma. The fruit is a lanceolate, compressed, smooth, brown pod, with an undulated thin margin; and contains six or eight roundish flattened seeds, which emit a disagreeable odour when chewed.

The inner wood of this tree is of a brown colour; and from it, according to Mr. Kerr's statement², the catechu is prepared. "After felling the trees, the manufacturer carefully cuts off all the exterior white part of the wood. The interior coloured part is cut into chips, with which he fills a narrow-mouthed unglazed earthen pot, pouring water upon them until he sees it

¹ The name in Bahar is Coira, or Keira.

² *Med. Obs. and Enquir.* vol. v. p. 151.

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 place to cool 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 in the sun, until they are fit for sale." Before this account was published, catechu was generally supposed to be extracted from the *Areca* nut; there are, however, two other species, which are extracted from that nut; the one named *Cuttacambo*, the other *Cashcutti*, and both used by the Indian practitioners.

This extract when first introduced as a medicine into Europe was named *Terra Japonica*, from the supposition that it came from Japan, and was an earth. It is named *cult* by the natives of Hindostan, *cutch* by the English, and by different authors *khaath*, *cate*, *cachou*, *cachore*, and *catechu*.² There are two varieties of the true catechu; one brought from Bengal, the other from Bombay. It is imported into Britain in bags, and sometimes in boxes or chests, containing from 3 to 4 cwt. each: and occasionally in small squares, in boxes, which is at all times preferred. The pale and the dark-coloured are mixed in the same package.

Qualities. — Pale catechu is generally in small square cakes of a pale reddish brown colour, light and friable, with a lamellated texture, and rough fracture; has a bitterish and astringent taste with a degree of sweetness; and is inodorous. The dark which is in round masses, has a deep chocolate-colour internally, with the hue of rusty iron on the outside; the texture is uniform, and the fracture resinous and shining. It is heavier than the pale; and has a more austere and bitter taste; but in other respects agrees with it. Both are often much adulterated with sand, and other impurities. According to the analysis of Sir H. Davy there appears to be very little difference between the two varieties. Either is almost entirely soluble in the mouth: 100 grains in 18 fluid ounces of water at 52°, left seven grains and a quarter only undissolved, and these were chiefly lime, aluminous earth, and sand. The solutions are inodorous, and slightly redden tincture of litmus. Sulphate of iron and gelatine throw down precipitates in them, demonstrating the presence of *gallic acid* and *tannin*: what remains after the action of alcohol is nearly a pure *mucilage*; and when fine powder of catechu is washed

¹ Bolduc, *Mem. Acad.* 1709, p. 293.

² This name is said to be compounded of two Oriental words, *cate*, which signifies a tree, and *chu*, juice. *Kerr*, l. c.

with water until all the tannin and mucilage are dissolved, a pale red *extractive matter*, very slightly astringent, sweetish, and soluble in water and in alcohol, is obtained as a residue. The proportions of these constituents according to Davy were as follows: Two hundred grains of *Bombay catechu* afforded 109 of tannin, 68 of extractive matter, 13 of mucilage, and 10 of earths and other impurities. The same quantity of *Bengal catechu* gave 97 of tannin, 73 of extract, 16 of mucilage, and 14 of impurities.¹

Medicinal properties and uses.—Catechu is one of the most valuable of the vegetable astringents; and as the dark-coloured contains the greater quantity of tannin, on which its astringency depends, it is to be preferred for medicinal use. It is employed with the best effects in dysentery, and diarrhoea, when the use of astringents is admissible; in alvine and uterine hæmorrhages, leucorrhœa, gleet, and in obstinate catarrhal affections. As a local astringent it is used in sponginess of the gums, and aphthous ulcerations of the mouth and fauces: and we have found the slow solution of a small piece of it in the mouth, a certain remedy for the troublesome cough induced by a relaxed uvula, hanging into and irritating the glottis.

An ointment composed of ʒiv of catechu, ʒiv of alum, ʒiv of white resin, and fʒx of olive oil, with a sufficient quantity of water, is in great repute in India as an application to ulcers.

The dose of catechu may be from grs. xij to ʒj.

Official Preparations. *Infusum catechu*. L. E. *Tinctura catechu*. L. E. *Electuarium catechu compositum*. E. D.

2. ACACIA VERA.²

Official ACACIÆ GUMMI. Lond. ACACIÆ ARABICÆ GUMMI.

Edin. GUMMI ARABICUM. Dub. Acacia Gum, or Gum arabic.

Syn. Gomme Arabique (F.) Arabischen gummi (G.) Gomma Arabica (L.) Goma Arabica (S.) Vullām pisin (Tam.)

This species of acacia is found in almost every part of Africa; but the trees that yield the gum which is exported from Barbary to Great Britain, grow principally in the Atlas mountains, and at Bled-eljerrede; flowering in July. It has a hard withered aspect, and does not rise many feet in height. The stem is crooked, and covered with a gray bark, which on the branches has a purplish tinge: the leaves are alternate, bipinnatifid, composed of several pairs of opposite partial pinnæ furnished with a small gland between the base of each pair, and having numerous pairs of narrow elliptical, smooth leaflets. On each side of the base of the leaves are two long diverging, white spines. The flowers are hermaphrodite and male, crowded in-

¹ *Philosophical Transactions*, 1803.

² *Acacia* Dioscoridis. In Barbary it is named *attaleh*, — Jackson's Account of Morocco, 4to, p. 33 or *al thlah* or *tolh*, — Nicholson's Journal, iv. 370.

to globular heads, (*capitula*) rather than spikes, which are supported on slender peduncles, and rise, four or five together, from the axillæ of the leaves: the calyx is small, bell-shaped, and five-toothed; the corolla is divided into five narrow yellowish segments; the filaments are numerous, capillary, bearing roundish yellow anthers; the germen is conical, with a slender style and simple stigma; and the pods, which are three or four inches long and half an inch broad, contain several flattish brown seeds.¹

The gum exudes naturally from the bark of the trunk and the branches of the tree, in a soft, nearly fluid state, and hardens in the air without losing its transparency. It is collected about the middle of December. "It appears," Mr. Jackson informs us, "to be the product of disease; for in the hottest seasons, and from the most sickly trees, the greatest quantity is procured. Very little or none is got in a moist, cool, or mild summer. It is gathered in July and August when the weather is hot and parching; has a faint smell when first stowed in the warehouses, and is heard to crack spontaneously for many weeks. The best gum is procured from Morocco, Ras-el-wed in the province of Suse, and Bledhummer in the province of Abda."² It is imported from Barbary and Morocco in large casks. Gum Senegal, which was introduced into Europe by the Dutch in the 17th century, is obtained from various trees, but chiefly from two, one called *verack*, which yields a white gum, the other called *nebucl*, which yields a red gum.

Qualities. — Gum is generally in irregularly shaped pieces, hard, brittle, semitransparent, its fracture possessing a considerable degree of lustre; and is neither fusible nor volatile. When pure, it is almost colourless, or of a pale yellowish hue; is insipid, inodorous, and dissolves completely away in the mouth. Its specific gravity varies from 1,3161 to 1,4317. It is often mixed with the gum Senegal, which is as pure, and with other gums less pure, particularly a kind brought from the East Indies, which is darker-coloured and less soluble.³

Gum is soluble in water, either cold or hot, and forms a viscid solution; which, if evaporated, becomes very thick and adhesive, and at length the gum is obtained in a concrete form, equally soluble as before. It is also soluble in the vegetable acids; but is insoluble in alcohol, ether, and in oils: yet, owing to its viscosity, it renders by trituration both the volatile and

¹ From the unripe pods the *acaciæ veræ succus* of the ancients was expressed. Vide Murray, *App. Med.* ii. 412. The seeds yield a reddish dye. Jackson, l. c. ² Jackson, p. 83. In 1805, the quantity exported from Mogodor to London was 277534lbs. Ib. l. c.

³ Gum exudes from the cherry, plum, and other trees of the genus *Prunus*, in this country: but the gum alluded to, which is very similar to gum arabic, is furnished by the *Acacia Aralica*, or Babul tree of Hindostan. The gum is called *Babulæ gumi*, by the natives.

fixed oils and resins miscible with water, forming a white opaque mixture. Concentrated sulphuric acid blackens, and partially decomposes it, and acetic acid is produced: strong nitric acid converts it into the oxalic, malic, and saccholactic acids; muriatic exerts very little action on it; but the oxymuriatic changes it into citric acid. Solutions of the alkalis and alkaline earths dissolve it without producing on it much change. For an account of the action of other agents on it, see *Mucilago acaciæ*.

The chemical analysis of gum, by Gay Lussac and Thenard shows, that its constituents are 42,23 of carbon, 6,93 of hydrogen, and 50,82 of oxygen, with a small proportion of nitrogen and lime; which last element is supposed to render it incapable of undergoing the fermentative process.¹

Medical properties. — Gum exerts no action on the living system²; but is a simple demulcent, serving to lubricate abraded surfaces, and involve acrid matters in the primæ viæ. In the solid form it is scarcely ever given, unless to sheath the fauces, and allay the tickling irritation which occasions the cough in catarrh and phthisis pulmonalis; in which cases a piece of it is allowed to dissolve slowly in the mouth. It is chiefly used in the state of mucilage. Vide *Mucilago acaciæ*.

Official preparations. *Mucilago acaciæ*. L. E. D. *Emulsio acaciæ Arabicæ*. E. *Emulsio arabica*. D. *Troc. gummosi*. E.

ACETOSÆ FOLIA. Vide *Rumex Acetosa*.

ACETOSELLA. Vide *Oxalis Acetosella*.

ACETUM. Lond. Edin. ACETUM VINI. Dub. Vinegar. *Syn.* Vinaigre (F.) Essig (G.) Aceto (I.) Vinagre (S.) Khull (Arab.) Chaoca (Malay.)

This is a well known acid liquor, produced by exciting the acetous fermentation in substances which have undergone, or are susceptible of, the vinous fermentation. Sugar and water, the saccharine vegetable juices, infusions of malt, malt liquors, cyder, and wine³, may be converted into vinegar, by adding to them yeast or any other ferment, and exposing them in vessels to which the air has access, in a temperature between 75° and 90°. In wine countries, as France and Italy, vinegar is made from the lees of wine, which are worked up with new wine, then strained, and exposed to the heat of the sun, or placed in stoved rooms, in casks set upright, with a hole cut through the heading, and left open until the whole of the liquor is thoroughly acidified. In this country it is prepared chiefly from malt. An infusion of malt is made, then properly cooled, and put into large and deep fermenting tuns; "where it is mixed with yeast,

¹ *Murray's Chemistry*, vol. iv. 180. The last analysis, which is by Berzelius, makes the components in 100 parts to be, hydrogen 6,792, carbon 41,752, and oxygen 51,456.

² It is sometimes used as food by the Moors.

³ New wines are better for this purpose than old, as they contain more extractive matter.

and kept in fermentation for four or five days." The liquor is now distributed into smaller vessels, placed in a chamber heated by means of a stove; and kept there for about six weeks, or until the whole is soured. This is emptied into common barrels which are placed in the open air, the bung-hole of each being simply covered with a tile to keep out the wet; and in this situation such a gentle fermentation goes on, that in four or five months, according to the heat of the weather, perfect vinegar is formed. The process is then completed in the following manner: "Large tuns are employed, with a false bottom, on which is put a quantity of the refuse of raisins and other fruit, left by makers of home-made wines, called technically *rape*. These rape tuns are worked by pairs; one of them is quite filled with the vinegar from the barrels, and the other only three quarters full, so that the fermentation is excited more easily in the latter than the former, and every day a portion of the vinegar is laded from one to the other till the process is finished."

The theory of the acetous fermentation is not yet fully understood. Air and a moderate temperature are necessary for exciting and keeping it up. The former affinities between the components of the ingredients are broken, and new ones formed; while a quantity of carbon is thrown off, and uniting with the oxygen of the air, produces the carbonic acid gas, which appears during the process. Although alcohol alone cannot be converted into vinegar, yet the strongest wine produces the best vinegar; and hence that made from malt is weaker, less pure, and more liable to spoil, than wine vinegar. The essential part of vinegar is *acetic acid* largely diluted with *water*; but it also contains some undecomposed *alcohol*, *gluten*, *mucilage*, *sugar*, *extractive matter*, and often some *malic* and *tartaric acids*.

Qualities.—Vinegar, when well made, is clear and limpid; has an agreeable penetrating odour, and a pleasant acid taste.

The colour varies from a pale yellow to a deep red; and as it is derived from the extractive matter, malt vinegar is always higher coloured than wine vinegar. When long kept, particularly if it be exposed to the air, vinegar becomes muddy and ropy, acquires an unpleasant smell, loses its acidity, and putrefies. It, however, may be kept good for a much longer time, if it be boiled for a few minutes, so as to coagulate and separate the gluten, on the presence of which the above changes depend; and be preserved in well corked bottles. It is sometimes adulterated with sulphuric acid, which is detected by a solution of nitrate of barytes, forming, when dropped into the suspected vinegar, a white precipitate, which is insoluble in nitric acid, after being exposed to a strong heat.

¹ Aikin's Dictionary of Chemistry, art. *Vinegar*.

The use of vinegar as a condiment, and an antiseptic, for pickling and preserving animal and vegetable matter, is well known.

Medical properties and uses. — Vinegar, when taken into the stomach, acts as a refrigerant, promotes diaphoresis and the discharge of urine; and is a powerful anti-narcotic: its external action on the living fibre is moderately stimulant and astringent.

In inflammatory fevers it may be used to acidulate the ordinary beverage. It is given as a remedy in putrid diseases and scurvy; and is the most easily procured, and the best means of counteracting the fatal effects of over doses of narcotic poisons; for which purpose it should be administered in doses of a table spoonful, frequently repeated, after the stomach has been freely emptied by a proper emetic. It is employed as a glyster in obstinate costiveness; and externally in the form of fomentation, or of lotion, in burns, bruises, sprains, and chronic ophthalmia; and diluted with water, it is the best lotion for clearing the eye of small particles of lime, when they adhere to any part of the ball or the lids. Its vapour is inhaled in putrid sore throat; and is, diffused through sick rooms with the view of neutralizing pestilential effluvia: but as a fumigation it has little efficacy. The dose of vinegar is $\text{f}\frac{3}{4}$ to $\text{f}\frac{5}{4}$; and the quantity given in glysters $\text{f}\frac{3}{4}$ to $\text{f}\frac{5}{4}$.

Official preparations. *Acidum aceticum*. L. E. D. *Acidum acetum forte* E. D. *Syrupus aceti*. E.

A'CIDUM CITRICUM CRYSTALLIS CONCRETUM.

Dub. Vide *Acidum citricum* among the Preparations.

A'CIDUM SULPHURICUM. *Lond. Edin. Dub.* Sulphuric Acid. (*Specific gravity* 1,850. *Lond.* 1,845. *Edin. Dub.*)

Syn. acide sulphurique (F.) Schwefelsaure (G.) Acido solfarico (I) Gündai-ea At. (H.)

This acid is said to be found in a concrete state, in the cavities of some volcanic mountains, and dissolved in some mineral waters; but for the purposes of medicine, and the arts, it is prepared artificially, either by decomposing sulphate of iron¹ by the process of distillation in close vessels; or by the combustion of sulphur. The first mode is the most ancient, and is still employed in several places on the continent; but the second is that generally adopted by the manufacturers in Great Britain, and therefore, requires particularly to be described.

Into a chamber lined with sheet lead, having no opening but a small door placed a few inches from the floor, and made to shut very close, water is poured so as to cover the floor, and rise upon it to the height of one or two inches. A stand is then introduced, on which is placed an earthen pot containing a mixture of nine parts of refined Sicilian sulphur, and one of nitre, which is kindled by means of a red-hot iron, and the door instantly closed.² The oxygen of the air of the chamber, and

¹ Hence the old name of oil of *vitriol*, which is still the commercial name of this acid, from *green vitriol*, the old name of the sulphate of iron.

² This process was first used by Dr. Roebuck in 1749. *Edin. Phil. Trans.* vol. iv.

of the nitre, keeps up the combustion of the sulphur and forms sulphurous acid gas, and nitrous acid, which uniting, lose their gaseous character, and coming in contact with the water below, the sulphurous acid is changed into sulphuric at the expence of the nitrous acid, which being thus robbed of its oxygen, escapes in the form of nitrous gas. But repeated charges of the sulphur and nitre are required to be constantly introduced at intervals of six or eight hours, for the space of two or three weeks, before the water is sufficiently acidified. It is then drawn off through a leaden pipe with a stop-cock at the bottom of the chamber; and contains, besides sulphuric acid, some sulphurous acid, and a portion of nitric oxide. The liquor is at first of a brownish colour; but after it is concentrated and purified, first by evaporation in leaden boilers, and afterwards by boiling in large green glass retorts, it becomes a colourless, dense fluid, having when perfectly pure a specific gravity not exceeding 1.8455; and is thus brought to market in large globular glass bottles, surrounded with wickerwork, & sold under the name of *oil of vitriol*.

Sulphuric acid thus prepared is not perfectly pure, but is united with about $\frac{1}{4}$ of a part in the hundred¹ of sulphate of potass, (owing to the acid uniting with the potass of the nitrate employed in the combustion of the sulphur,) and a minute portion of sulphate of lead. Both these impurities are precipitated by adding three parts of distilled water to the acid, which can again be concentrated by distillation: hence the addition of water is a good test of the purity of this acid. The amount of these impurities may be readily ascertained by evaporating a definite weight of the acid in a platina cup, placed on the red cinders of a common fire. According to Dr. Ure, the pure acid consists of about 81.54 parts of real acid, and 18.16 of water; and the elements of the real acid, according to the estimate of Dr. Thomson,² which is probably the most accurate on this subject, are 40 of sulphur, and 60 of oxygen, in 100 parts of acid: but with regard to these proportions chemists are not agreed.

Qualities.—Liquid sulphuric acid, when pure, is as colourless and transparent as water, inodorous, heavy; and has the consistence of oil. It has all the generic characters of an acid; reddens the vegetable colours; and, even when largely diluted, has an intensely acid taste. When rubbed between the fingers it feels at first unctuous, owing to its dissolving the cuticle, and afterwards excites a burning sensation. It freezes at 15° into six-sided prismatic crystals,³ bevelled at both extremities; and

¹ The common acid of the shops contains 3 or 4 per cent. of saline matter.

² Dr. Ure, who suggested this test, says, "if more than 5 grains of matter remain from 300 of acid, we may pronounce it sophisticated." *Journ. of Science and the Arts*, vol. iv. p. 115.

³ *System of Chem.* 5th ed. vol. i. p. 283.

⁴ *Macnaul, Hudson's Bay*.

when of the spec. gravity 1·845, boils at 560°.¹ It attracts water rapidly from the atmosphere, so as to double its weight in the course of a month, (hence the necessity of keeping it in well stopped bottles;) and at the moment it unites with water the temperature of the mixture is much raised. It acquires a brown colour when mixed with any vegetable matter,² and therefore bottles in which it is kept must be stopped with glass stoppers. It forms neutral salts with the alkalies, earths, and metallic oxides, and decomposes the alkaline and earthy sulphurets.

Medical properties and uses. — This acid is a valuable tonic, astringent, and antiseptic; but as it is employed internally in a diluted state only, its medicinal powers shall be explained under the article *Acidum sulphuricum dilutum*. Although it powerfully corrodes the skin, yet, on account of its fluidity, it cannot be applied as an escharotic: but when united with sixteen times its weight of lard, it forms an ointment which has been successfully used in the cure of scabies.

Official preparations. *Acidum sulphuricum dilutum*. L. E. D. *Acid. sulphuricum aromaticum*. E. *Sulphas potassæ*. E. *Ferri sulphas*. L. E. D. *Hydrargyri Oxymurias*, L. E. D. *Sub-sulphas hydrargyri flavus*. E. *Zinci sulphas*, L. E. D.

ACIPENSER. *Syst. Nat. Gmelin*. 1483.

Cl. 4. Ord. 6. Pisces, Chondropterygii.

G. 134. Head obtuse; mouth far beneath the head, without teeth; cirri four under the nose, before the mouth. Branchial apertures lateral. Body elongated, with many series of angular tubercles.

Spec. 2. *Acipenser Ruthenus*. The Sterlet, or small sturgeon.

Spec. 3. *Acipenser Huso*. The Beluga, or great sturgeon.

Official. ICHTHYOCOLLA. *Dub. Isinglass*.

Syn. Ichthyocolle (F.) Hocusenblase (G.) Colla di Pisce o Ittiocolla (L.)

The beluga, the sterlet, and other species of sturgeon, are caught in the Volga, Danube, Ural, Oby, and Irtysh rivers; and the Caspian sea. The sturgeon is oviparous. The body is pentagonal, in length from 5 to 24 feet, of a dirty olive colour on the upper part, which is studded with five rows of bony tubercles, one row on the back and two rows on each side; while the underside of the fish is flat, and of a silvery white colour. There is a single dorsal fin near the tail, one ventral also near the tail, one anal, and two pectoral fins. The tail is bifurcated; and the upper part longer than the under.

Isinglass is prepared in Russia from the air-bladders or sounds of all the species of the sturgeon; and in Lapland it is made from several species of the perch.³ That however, which is

¹ Dalton.

² This is owing to its strong affinity for water, breaking the affinities which exist between the vegetable components, so as to occasion the hydrogen and oxygen to unite and form water, while the carbon is precipitated.

³ Isinglass might be made from the sound of the cod-fish, *Gadus merrhua*; hake, *Gadus merluccius*; and ling, *Gadus molva*, which frequent the British seas.

made from the beluga is reckoned the best. The process which is carried on during summer only, as frost it is said impairs its qualities, varies in different places: and on this account the quality of the isinglass made from the same fish at one place differs from that which is made at another. On the Volga, the sound is taken from the fish, slit open, well washed, and freed from the thin membrane which envelopes it; then exposed to stiffen a little in the air, rolled, and pinned, by means of a wooden peg, into a heart shape; in other places it is folded into leaves, or simply dried without any care, or boiled.¹ The first kind is the best. Isinglass is imported from Petersburg in bales. Four sorts are brought; *long staple*, *short staple*, *book* and *leaf*. "The finest is that which has the longest *staple* as it is called; is the thinnest and most flexible;" and perfectly devoid of odour and taste. It should be composed of dry, whitish, nearly transparent, inodorous membranes.

Qualities.—Isinglass is insipid, and inodorous; when soaked in cold water it swells, softens, and becomes opalescent; and in one hundred grains of it, rather more than ninety-eight, according to Mr. Hatchett, are soluble in water. Three drachms of good isinglass, dissolved in one pint of warm water, produce on cooling a pretty firm, slightly opaline-coloured jelly, which is a compound of pure animal gelatin and water. Gelatin is soluble in the acids and pure alkalies; but is precipitated from its solution by infusions and decoctions of astringent vegetables, the tannin of which forms with it an insoluble compound²; carbonate of potass also throws down a precipitate; and alcohol separates it from water when added to its solution in any considerable quantity. The solution putrefies when kept for a few days. According to John, isinglass contains also traces of saline matter.³

Medical properties and uses.—The solution of ichthyocolla was formerly much given in cases of fluor albus and diarrhœa; but is now rarely used as a medicine. Its nutrient qualities are more obvious. By dissolving it in water, and adding a little sugar and lemon juice, an excellent nutritious jelly is produced, well adapted for the sick and convalescent. It is employed in the preparation of English court plaster.

ACONITUM. *Spec. Plant. Willd.* ii. 1235.

Cl. 13. *Ord.* 3. Polyandria Trigynia. *Nat. ord.* Multisiliquæ *Linn.*
Ranunculaceæ Juss.

G. 1062. *Cal.* none. *Petals* five, the highest arched. *Nectaries* two, peduncled, recurved. *Pods*, three or five.

** *With blue corollas.*

¹ *Philosophical Transactions*, vol. lxiii. pt. i.

² Gelatin is a nice test of the presence of tannin, for which purpose Sir H. Davy recommends 120 grains to be dissolved in 20 ounces of distilled water.

³ *Labor. chim.* 1808.

Sp. 8. *A. Napellus*. Common Monkshood. (Lond. Edin.) *Med. Bot.* 2d ed. 461. t. 165.

— 9. *A. neomontanum*, (Dub.) Jaquin. *Flor. Austr.* t. 381. *Officinal.* ACONITI FOLIA. Lond. ACONITI NAPELLI FOLIA. Edin. ACONITUM; FOLIA. Dub. The leaves of Monkshood.

Syn. Aconit, chaperon de Moine (F.) Blauer-strumhut (G.) Napello (I.) Aconito (S.)

The species of aconite cited by the London and Edinburgh colleges has been, generally, regarded as the plant originally used by Stoerk: an error which originated with Stoerk himself, but, after a minute comparison of the plant with the description, we agree with Willdenow, and the Dublin college, that the *neomontanum* is the species which should be medicinally used. It is a perennial plant, flowering in July: and found native in the alpine forests of Carinthia, Carniola, and the mountainous parts of Germany.

The stem is firm, elongated, rising to the height of five or six feet, leafy, and terminating in a long sparse spike of flowers, racemose and branched below, with single flowered peduncles. The lower leaves are few, alternate on long channelled petioles; palmated or rather pedate, being divided to the base into five broad cuneiform divisions, deeply cleft and toothed; the petioles are shorter, and the leaves less divided the nearer they are to the summit of the stem: the colour of the whole is a deep green on the upper disk, and a pale green on the under; both sides are naked, smooth, and shining. The flowers are of a deep violet colour, and stand alternately on the spikes, on unifloral, erect, axillary peduncles. They have no calyx; but two small, erect, calycinal stipules are placed one on each side of the peduncle within a few lines of the flower; the petals are five, the uppermost helmet-shaped and beaked, covering two singular, peduncled nectaries; the lateral ones broad, and roundish, the lower oblong, elliptical, and divaricating. These four are slightly pubescent. The filaments are spread and white at the base, where they closely cover the germens; but the upper part is filiform, purple, spreading, and bearing whitish anthers. The germens are three, four, or five, with simple reflected stigmas; and become capsules, containing many angular seeds.¹

For medicinal use the leaves should be gathered when the flowers appear.

Qualities. — Aconite leaves when fresh have a faint narcotic odour: and a moderately bitter, acrid taste, leaving a painful sensation of heat in the mouth, when they are much chewed. The whole of the plant is poisonous; but the deleterious qualities are lost in a considerable degree when it is dried, or long

¹ The flower-spikes of *A. Napellus* are shorter, denser, and the segments of the leaves narrower, and more linear, than those of *A. Neomontanum*.

kept, and much of its acrimony is dissipated. Both water and alcohol take up the active matter of aconite.

Medical uses and properties. — Aconite is narcotic, diaphoretic, and in some cases diuretic. In over doses it occasions violent nausea, vomiting, hypercatharsis, vertigo, cold sweats, mania, and convulsions which terminate in death; and these effects appear to depend on its action on the nervous system, as dissections of fatal cases have not displayed any particular marks of organic disease.

Stoerk first administered aconite internally in chronic rheumatism, gout, exostosis, paralysis, and scirrhus; and since the publication of his experiments in 1702, it has been advantageously employed in similar cases, and also in amaurosis, scrophula, cancer, itch, venereal nodes, and intermittents. Much caution is required in the exhibition of it; and it is absolutely necessary to know the length of time it has been gathered, as its activity varies so very considerably, as to require this to be ascertained before the dose can be apportioned. It is given in the form of powder, extract, and tincture; and may be combined with calomel, antimonials, camphor, and guaiacum. The dose of the powder is one or two grains, gradually increasing it to six or eight.

Official preparations. *Extractum Aconiti*. L. E.

ACORUS. *Spec. Plant. Willd.* ii. 199.

Cl. 6. Ord. 1. Hexandria Monogynia. Nat. ord. Piperitæ Linn. Aroideæ Juss.

G. 663. *Spadix* cylindrical, covered with florets. Cor. petals six, naked. Style O. Capsule three-celled.

Sp. 1. A. Calamus. The Sweet-flag. *Med. Bot.* 2d ed. 725 t. 248. *Smith Flor. Brit.* 1, 373.

Offic. CALAMI RADIX, Lond. ACORI CALAMI RADIX. *Edin.* ACORUS; (CALAMUS AROMATICUS) RADIX. *Dub.* Sweet Flag.

Syn. Acorus odorant (F.) Kalinus nurtzil (G.) Calamo aromatico (L.) Acoro calamo (S.) Bach. (H.) Vacha (San.)

The sweet-flag is found growing in marshes and rivulets, over the greater part of Europe and Asia; and in Britain, in many parts producing its flowers in May and June.*

The root is perennial, horizontal, long, somewhat flattened, crooked; full of joints or rings, whence the radical fibres spring from the underside, branched; from half an inch to one inch in thickness; externally, when fresh, of a greenish yellow colour, internally whitish, and spongy. The leaves spring from the root; are sword-shaped, about three feet in length, and generally waved along one of the edges; of a bright green colour, and emitting a strong aromatic odour when bruised. The flowers are small, and produced on a very close tessellated conical spike

* In the rivers of Norfolk plentiful. On Hillington common, Middlesex, and other places about London. *Smith*, l. c.

four inches long, pushed out from the side, above the middle, of a naked stalk or scape, two-edged, and terminating like a leaf. They have no calyx. The petals are six: small, erect, regular, with the apex inflected, and of a pale, green colour. The filaments are alternate, with the petals, thread-like, supporting double anthers. The germen is elliptical, crowned with a sessile-pointed stigma.

The greater part of the roots in use are now brought from Norfolk; those from the Levant not being superior.

Qualities.—The root of sweet-flag has a pleasant aromatic odour, similar to that of a mixture of cinnamon and allspice; the taste is warm, bitterish, pungent, and aromatic.¹ In the dried state, the cuticle is corrugated, of a yellowish brown colour, with many small white elevated circles on the under side, whence the radical fibres issued. It breaks with a short rough fracture; is internally of a pale buff colour, and a spongy texture. Both the smell and taste are improved by exsiccation. The aromatic principle is an essential oil, which can be obtained by distillation, and with the bitter matter is extracted by infusion in boiling water. Like the root of Florentine iris it contains a considerable quantity of fecula, which is dissolved in the infusion, and copiously precipitated from it by acetate and superacetate of lead.

Medical properties and uses.—This root is tonic, and aromatic. It has been successfully used in intermittent fever, even, we are told, after bark had failed: and is a useful addition to other bitters, and stomachic infusions, in cases of dyspepsia; particularly when vertigo is one of the symptoms. It is too seldom prescribed. The dose in substance is from ℥j. to ʒi; and of the infusion, made with ʒvi. of the bruised root in fʒxij of boiling water, a cupful three or four times a day.

ADEPS. Vide *Sus Scrofa*.

ÆSCULUS. *Spec. Plant. Willd.* ii. 285.

Cl. 7. Ord. 1. Heptandria Monogynia. *Nat. ord.* Trihilatæ Linn. *Aceræ Juss.*

G. 717. *Cal.* one-leafed, five-toothed, swelled out. *Cor.* 4 or 5 irregularly coloured petals inserted into the calyx. *Cap.* three-celled.

Sp. 1. *Æ. Hippocastanum.* Common Horse Chesnut. *Med. Bot.* 2d edit. t. 217. *Gartner de fructibus*, ii. 135.

Officinal.—CORTEX. *Dub.* The bark.

Syn. Marronier d'Inde (F.)

The horse chesnut is a native of the north of Asia, but cultivated in almost every part of Europe.² In this country it

¹ Linnæus erroneously considered it the only native aromatic plant of northern climates. — The candied root is employed at Constantinople as a preservative against epidemic diseases.

² The horse chesnut was brought into Europe by Clusius in 1550; and first cultivated in England by John Tradescant in 1632.

attains to great perfection, constituting one of the chief ornaments of our parks and avenues. It flowers in May.

This tree rises to a considerable height, branching, from the upper part of the trunk, so as to form a roundish conical mass. The leaves stand on long foot-stalks, are large, and digitated, each consisting of seven leaflets proceeding from a common centre; of a deep-green colour, and spatulate form; ribbed, pointed, and serrated. The middle leaflet of a full-grown leaf is about six inches long, and two broad near the top, the three lateral ones on each side gradually decrease in size, to the smallest, which are only three inches in length and one in breadth. The flowers are peduncled and disposed in handsome, terminal, erect, conical spikes. The calyx is one-leaved, of a pale green, bell-shaped, divided at the edge into five blunt teeth; the petals are five, ovate, slightly waved at the margin, ciliated, with claws inserted into the calyx, all inclining to one side so as to leave a gape betwixt the two innermost; white with an irregular spot of red, or yellow, directly above the claw. The filaments are awl-shaped, gracefully curved, supporting reddish, upright double anthers: the germen is cylindrical, with a pointed stigma. The fruit is a large, roundish, green-coloured, three-celled, three-valved capsule, having the bark armed with short spines; and generally containing two subglobular seeds or nuts.

The fruit consists almost entirely of fecula. It is eaten with avidity by deer and some other animals; and were the acrimony destroyed by fire, it might be rendered fit food for men, in times of scarcity. For medical purposes the bark is taken from the middle-aged branches.

Qualities. — The *bark* is inodorous; and tastes bitter, astringent, and slightly aromatic: both water and alcohol extract its virtues. Its infusion has a brown colour; sulphate of iron and sulphate of zinc strike a black colour when added to it, and throw down a dark-coloured precipitate; oxymuriate of mercury and superacetate of lead precipitate it white. Gelatin also precipitates tannin from it; but much less than from oak bark: These substances, therefore, are incompatible in prescriptions with infusion or decoction of this bark.

Medical properties and uses. — The *bark* of the horse chestnut is tonic and astringent; and has been successfully used, particularly on the continent, in intermittents, typhus, and other cases in which cinchona is used; externally its decoction has been employed as a lotion in gangrene. We have had no opportunity of trying this bark; but we doubt much if it can supersede the cinchona in any case in which it is properly indicated.

The dose of the powder is ʒss ; and of the strained decoction,

(made with an ounce of the bark to a pint of water,) fʒjss or fʒij, every three or four hours.

AGRIMONIA. *Spec. Plant. Willd.* ii. 875.

Cl. 11. Ord. 2. Dodecandria Dygynia. *Nat. ord.* Senticosæ Linn. Rosaceæ Juss.

G. 957. *Calyx* five-toothed, guarded by another. *Petals* five. *Seeds* two, in the bottom of the calyx.

Species 1. A. *Eupatoria*. Common Agrimony. *Med. Bot.* 2d ed. 500. t. 180. *Smith. Flor. Brit.* 511. *Flor. Dan.* t. 588.

Officinal. — AGRIMONIA; HERBA. *Dub.* Agrimony; the herb.

Syn. Aigremonie (F.) Agrimonia (L.)

This is an indigenous perennial plant, common about the borders of fields, and hedges, flowering in June and July.

The stem rises two feet in height, erect, leafy, angular, hairy, and of a reddish hue. The leaves are alternate, interruptedly pinnate, with three pair of opposite leaflets, and a terminal one somewhat lyre-shaped and hairy; the leaflets obovate, pointed, deeply serrated; the terminal one petiolate; the intermediate ones much smaller, entire or trifid. Stipules two, deeply cleft. The flowers, which are small, golden yellow, and peduncled, are in long, terminal, erect, hairy spikes; with trifid bractes. The calyx is persistent, inclosed within an involucre at the base of the germen, furrowed, and divided into five ovate, pointed segments, surrounded with rigid, hooked awns: the corolla consists of five ovate, spreading petals inserted into a glandular substance at the base of the germen. The filaments are from five to twelve; the anthers two-lobed. The germen is inferior, supporting two styles with blunt stigmas. The seeds two, one often abortive, contained in a capsule formed of the calyx.

For medical use this herb should be cut when fully in flower.

Qualities. — Agrimony when fresh has an agreeable aromatic odour, depending on a volatile essential oil, which is lost when the herb is dried. The taste is bitterish and subastringent. The infusion of it in water reddens the more delicate vegetable blues, and strikes a black colour with sulphate of iron. Potass and its carbonate first change it to a yellow, then an orange colour, and lastly throw down a white precipitate.

Medical properties and uses. — Agrimony was formerly regarded as a remedy of much importance, as a tonic and deobstruent: but it is now very seldom or never prescribed. The dose in powder is from ʒi to ʒj, two or three times a day.

ÆRUGO. See *Cuprum*.

ALLIUM. *Spec. Plant. Willd.* ii. 63.

Cl. 6. Ord. 1. Hexandria Monogynia. *Nat. ord.* Spathaceæ Linn. Asphodeli Juss.

G. 626. *Corolla* six-parted, spreading. *Spathe* many-flowered.

* The oil, which is yellow, can be obtained by distillation with water. — *Lewis*.

Umbel heaped together. *Capsule* superior.

*** *Stem-leaves* plane. *Umbel* bulbiferous.

Species 14. *Allium sativum*. Garlic. *Med. Bot.* 2d edit. t. 256.

*** *Leaves* radical. *Stem* naked.

Species 43. *Allium Cepa*. The Onion.

1 ALLIUM SATIVUM.*

Official. ALLII RADIX.² *Lond.* ALLII SATIVI RADIX. *Edin.* ALLIUM; RADIX. *Dub.* Garlic root.

Syn. Ail. (F.) Knoblauch (G.) Aglio (I.) Ajo sativo (S.) Lasúnia (San.) Lehsen (H.)

Garlic is a perennial bulbous plant, found wild in Sicily, and cultivated in most parts of Europe, for culinary and medicinal use. It flowers in July.

The bulbs of this species of allium are numerous; three or more being inclosed in one covering forming a nucleus, round which others are disposed, and the whole enveloped in a common membrane, from the base of which proceed long white fibrous roots. The stem rises two feet in height, surrounded with many long, flat, linear, grass-like leaves, proceeding chiefly from the bulbs; and is terminated by a mixed cluster of flowers and bulbs, inclosed in a spathe, which opens at one side and withers. The flowers are small, consisting of six oblong white petals, with tapering filaments, shorter than the corolla, and supporting erect anthers: the germen is superior, short, angular, bearing a simple style with a sharp stigma; and becoming a short, broad, three-celled capsule, containing roundish seeds.

Garlic is dug up for use in the month of August, then cleaned and dried in the sun, and generally preserved in bunches in a dry place. In this state the exterior membrane is of a dirty white colour, and of a withered aspect; but the bulbs, which are called *cloves*, are white, succulent and juicy. On drying, they lose nine parts in fifteen of their weight.

Qualities.—All the parts of the plant, but particularly the bulbs, have a pungent offensive odour, and an acrimonious biting taste. These properties depend on an essential oil, that can be obtained separate by distillation with water; of a thick and ropy consistence, a yellow colour, heavier than water, and possessing in an eminent degree the sensible qualities of the garlic. It blisters the skin when applied to it, and strikes a black colour when triturated with oxide of iron. Simple coction with water

* *Xenodorus* Dioscoridis.

² The root, strictly speaking, is not the part of the plant intended to be ordered. This error has arisen from the bulbs of plants having been generally placed by botanists among the roots, under the title "*radices bulbosae*:" they however have no affinity to roots, but the closest to leaf-buds. The roots of bulbous plants are fibrous, and issue from a radical plate at the bottom of the bulb. The clearest definition of the bulb is given by Gartner, in his work *De Fructibus*, &c. Introduc. p. 111. "*Bulbus est germen compositum, subglobosum, subaphyllum, ex carina brevissima, et squamis succulentis crassis compaginatam, quod tandem sponte a matre sua solvitur.*" The Colleges, therefore, should have used the word *bulbus* instead of *radix*.

renders garlic mild and inert. The acrimony is obtained with the juice by expression : and it is in a less degree extracted by water, by alcohol, and by acetic acid. The odour is so penetrating, that when garlic is applied to the soles of the feet it is perceived in the breath, the urine, and the perspiration. From 1406 parts of fresh garlic, Cadet² obtained 520 of muci-
lage, 37 of albumen, 48 of fibrous matter, and 801 of water by estimate. Bouillon la Grange³ found, besides, in it sulphur, vegetable albumen, and sugar.

Medical properties and uses. — Garlic is stimulant, diaphoretic, expectorant, diuretic, and anthelmintic, when exhibited internally; and rubifacient when externally applied.

It has been successfully given in intermittents, and in fevers of the typhoid type. If the body be kept warm during its use, it acts powerfully by diaphoresis. It has long been esteemed a valuable remedy in pituitous asthma, chronic catarrh, flatulent colic, calculus, and dropsies; and as a preventive of worms. Externally it is applied bruised to the soles of the feet, in the coma of typhus; and in confluent small-pox when the determination to the head is considerable. A poultice made of it is a good resolvent of indolent tumours. A clove of it, wrapped in cotton or gauze, or a few drops of the juice introduced into the external ear, is said to be extremely efficacious in atonic deafness; and applied to the pubis as a poultice in retention of urine, owing to a want of action in the bladder, it sometimes is effectual in renewing the discharge. The juice is also applied united with oil to herpetic eruptions.

Garlic may be exhibited in substance, the whole clove or pieces of it being dipped in oil and swallowed; or it may be formed into pills. The expressed juice also is given mixed with sugar: or the bulb may be infused in milk, which was Rosenstein's mode of administering it to children afflicted with worms. It is frequently united with calomel in the form of pill or bolus, in hydropic cases. An ointment is formed by mixing the juice with oil. The bruised bulb has also been used as a suppurative.

The dose in substance is from ʒj to ʒij; or from one to six cloves swallowed whole, twice or thrice a day; and in pills, united with soap or calomel, from grs. xv to ʒj. Of the juice, fʒss is given for a dose in any proper vehicle.

An over-dose, or the too liberal use of it as a condiment, is apt to occasion head-ache, flatulence, thirst, fever, inflammation, and discharges of blood from the hæmorrhoidal vessels.

Official preparation. *Syrupus Allii*. D.

¹ With alcohol, a reddish yellow tincture is obtained, which leaves, when evaporated, a very acrid brown extract, that attracts moisture from the air.

² *Ann. de Chimie*. lix. p. 106.

³ *Journ. de Pharm.* No. viii. p. 357.

2. ALLIUM CEPA.¹*Officinal.* CEPA; RADIX. *Dub.* The Onion.*Syn.* Oignon (F.) Swiebel (G.) Cipolla (I.) Cebolla (S.) Palandoo (San.) Peetj (H.) Bassul (A.)

The onion is also a perennial bulbous plant, cultivated all over Europe for culinary purposes: flowering in June. It is so well known as scarcely to require a particular description. The bulb is simple, formed of concentric circles, with a radical plate at the bottom, and fibrous roots. The stem is a naked, swelling scape, with fistular, pointed, spreading leaves, sheathing at the base. The flowers are produced in a capital or head, inclosed in a deciduous spathe.

Qualities. — The odour and taste of the onion do not materially differ from those of garlic, but are much weaker. A little acrid, volatile essential oil combined with sulphur² is obtained by distillation; and the recent juice contains sugar, mucus, phosphoric acid, phosphate of lime, and citrate of lime.³

Medical properties and uses. — The onion is "considered rather as an article of food than of medicine; when eaten liberally, it is said to produce flatulencies, occasion thirst, head-aches, and turbulent dreams." As a medicine it is stimulant, diuretic, and expectorant; and may be used in the same cases as garlic. On account of the free phosphoric acid it contains, the juice is supposed to be useful in calculous cases, as it dissolves phosphate of lime out of the body. Onions are, however, scarcely ever employed, except externally, as suppurative cataplasms; for which purpose they are generally roasted, split, and applied to tumours.

*ALOE. Spec. Plant. Willd. ii. 184.**Cl. 6. Ord. 1. Hexandria Monogynia. Nat. ord. Coronariæ Linn. Asphodeli Juss.**G. 659. Corolla erect, mouth spreading, bottom nectariferous. Filaments inserted into the receptacle.**Species 2. Aloe spicata. Spiked Aloe.**3. Aloe vulgaris. Common Aloe. Sibthorp. Flor. Græc.*

1. ALOE SPICATA.

*Officinal. ALOES SPICATÆ EXTRACTUM. Lond. ALOES EXTRACTUM Edin. Dub. Extract of Aloes.**Syn. Suc. d'Aloes (F.) Glausinde Aloe (G.) Aloe (L.) Aloe (S.) Elwa (H.) Muschher (A.)*

The spiked aloe is undoubtedly the species which yields the best extract brought from the Cape of Good Hope; and it is also supposed to yield the extract brought from the island of Socotora; which was formerly the only place of export for the

¹ Derived from *caput*, a head, on account of the form of its bulb. ² It is this sulphuretted oil which blackens silver plate in which onions are placed; and which occasions the disagreeable odour of this bulb in putrefying. ³ Fourcroy and Vauquelin, *Ann. de Chim.* lxx, 161.

best aloes, thence named Socotrine aloes. It grows abundantly in the interior of the Cape, particularly at Zwellendam near Mossel Bay. The stem is round, about four inches in diameter, rising three or four feet in height, and leafy at the top. The leaves are spreading, about two feet long, subverticillate, broad at the base, gradually drawn to a point, channelled, acute with remote teeth. The flowers spread horizontally, in very close spikes, a foot in breadth. Under each flower is a single ovate, acute, broad, membranaceous bracte, white with three green streaks, and a little shorter than the corolla. This is bell-shaped, and six-petalled: the three inner segments are white marked with three green lines, not connected together, ovate, blunt, and broader than the three outer; which are connected with them at the base, and resemble them, but are narrower and less concave. The flower contains a large portion of a purple honey juice. The seeds, which are numerous, with a membranaceous membrane attached to each, are contained in a superior capsule.

At the island of Socotora the leaves are cut off close to the stem, then cut in pieces, and the juice expressed: this is allowed to remain at rest for forty-eight hours, during which time a feculent matter is deposited; after which the supernatant liquor is poured off into flat dishes and evaporated in the sun. At Zwellendam, in the month of July, the leaves are pulled, then cut into pieces, the juice expressed, and inspissated by means of heat.

The real Socotrine aloes, which are now scarce in the market, and supposed to come from the island of Socotora, or Zocotora, near the straits of Babelmandel, are brought to this country by way of Smyrna and Malta, in chests and casks. Those from the Cape are brought in similar packages. The greater part of what are now sold as Socotrine aloes, are brought from Bombay, and are the real Hepatic aloes. The Bombay aloes are rather duller and browner, but in other respects have nearly the same characters as the Socotrine, which are sometimes mixed with the Indian. They are imported in casks containing from two to eight hundred weight, and sometimes in skins.¹

Qualities.—The real *Socotrine* extract has a peculiar aromatic odour, not unlike that of the russet apple decaying; and a very permanent intensely bitter taste. It is in pieces of a deep reddish-brown colour, glossy as if varnished; breaking with a smooth conchoidal fracture. The thin edges and small fragments are reddish or golden yellow and semitransparent. It

¹ Mr. Barrow states that the quantity of Cape aloes sent to London, from 1799 to 1802 inclusive, was 341,927 lbs. Vide *Travels in Africa*.

softens in the hand, and is adhesive; yet is sufficiently pulverulent; and the powder has a bright golden yellow hue.

The *Cape* aloes have a stronger and more disagreeable odour than the *Socotrine* and *Hepatic*; the taste is nearly the same. The outside of the pieces is more friable, has more of a yellow cast, and is less glossy; but the inside is apt to continue soft and pliable. The colour of the powder is a beautiful greenish yellow, resembling gamboge, but less bright. They are imported in chests and casks.

2. ALOE VULGARIS.¹

Officinal. ALOES VULGARIS EXTRACTUM. *Lond.* ALOE HEPATICA; EXTRACTUM. *Edin.* GUMMI RESINA. *Dub.* Extract of the Common Aloe, or Barbadoes Aloes.

The British Pharmacopœias formerly considered the plant which yields the Barbadoes aloes as a variety of the Aloe *perfoliata*; but the London College, on the authority of Sir E. Smith, the learned editor of Sibthorp's *Flora Græca*, has marked the above-named plant, which is a distinct species, as the one that Sloane describes in his History of Jamaica as producing the Barbadoes extract. The volume of Sibthorp's work, in which the plant will be fully described, and proved to be the true *Αλγη* of Dioscorides, is yet unpublished, and therefore we cannot avail ourselves of the description.

The month of March is the period for cutting the aloes in the island of Barbadoes. The leaves are cut off close to the stem, and disposed in tubs, in such a manner that the juice runs out. After a sufficient quantity of it is collected, it is exposed to heat in copper boilers; and as it becomes more inspissated by a constant and regular fire, it is ladled from one boiler to another, and fresh juice added, until that in the last, which is called the *teache*, acquires the consistence of honey; when it is poured into calabashes, and hardens by age. It is brought home in these calabashes, or large gourd-shells, which contain from six to seventy pounds each. They are often passed off as *Hepatic aloes*.

There is still another kind of aloes, named *Fætid* or *Cabaline*, but on account of its *fætid* odour it is not used in medicine: and a *Mocha* aloes resembling the *Cape*, but less purgative.

Qualities.—The odour of the Barbadoes aloes is stronger and less pleasant than that of the *Socotrine*, and has some resemblance to the odour from the human axilla. The taste is nauseous and intensely bitter. The pieces are also of a duller brown colour, less glossy, not so smooth in the fracture, but easily splinter. The edges are not so sharp and transparent; but rather blunt, and of a dull yellowish hue. It softens in the hand, and is adhesive. The colour of the powder is a dull olive yellow.

¹ *Αλγη* Dioscoridis, l. 3. c. 25.

All the kinds of aloes, when analysed, yield a small portion of vegetable mucus, resin, and a peculiar extractive matter. Braconnot found aloes to consist chiefly of a peculiar bitter matter, which he has termed the resinous bitter principle.¹ The odour, taste, and medical virtues of the drug reside chiefly in the extractive; and the superiority of the Socotrine and Cape and Bombay aloes is correctly supposed to arise from their containing a larger proportion of it, and consequently less resin, than the Barbadoes. Boiling water dissolves nearly the whole of any of the kinds; but as the solution cools, the resinous part is deposited; and by boiling aloes in water the extractive is altered, rendered insoluble in water, and approaches in its properties to the nature of resin. When the Socotrine aloes is distilled, a volatile oil is obtained, which is not procured from the Barbadoes.

Medical properties and uses.—Although all these kinds of aloes differ in their sensible qualities, yet they agree in their medical properties. They are warm, stimulating cathartics, acting chiefly on the colon and rectum, and thence producing, by the extension of their stimulus to the uterine vessels, emmenagogue effects. This operation is slow and moderate, but tolerably certain. From the stimulant property of aloes, they are useful in cases where the intestines are in a sluggish, relaxed, and insensible state, attended with viscosity of the abdominal secretions: as in the habitual costiveness of the sedentary and hypochondriacal; or that arising from a paucity of bile, in jaundice, chlorosis, and scrophula: and by their powerful effects on the rectum they have been found very serviceable in expelling ascarides. Their use is contraindicated in hæmorrhoidal cases, the symptoms of which they are apt to aggravate; and also in very irritable and plethoric constitutions, in phthisis pulmonalis, and during the flow of the menses. Aloes, and aloetic compounds, have been likewise regarded as improper in pregnancy; but Dr. Denman has justly remarked, that “they are in common use among the lower class of people, because they are cheap, and conveniently given in the form of pills;” and no bad effects are observed to follow.

Aloes may be given in substance, in doses from grs. iij to grs. xx; larger doses not operating more effectually. Whether in the simple state, or when compounded with soap, bitters, and other substances, the form of pill is to be preferred on account of the nauseous taste of the medicine.

Officinal preparations. *Pulvis aloes comp.* L. *Pilule aloes.* E. D. *Pil. aloes comp.* L. *Pil. aloes cum myrrha.* L. E. D. *Pilul. aloes et assafetidæ.* E. *Pil. scammonii comp. cum aloes.* D. *Decoctum aloes comp.* L. *Extractum aloes.* L. D. *Tinctura aloes.* L. E. D. *Tinct.*

¹ *Ann. de Chimie*, lv. 152.

² *Introduction to Midwifery*, vol. i. 287.

aloes comp. L. E. D. *Tinct. aloes ætherea.* E. *Tinct. rhei & aloes.* E.
Vinum aloes. L. E. D.

ALTHÆA. *Spec. Plant. Willd.* iii. 770.

Cl. 16. *Ord.* 8. Monadelphia Polyandria. *Nat. ord.* Columniferae *Linn.* Malvaceæ *Juss.*

G. 1239. *Cal.* double; the exterior 6 or 9-cleft. *Caps.* numerous, 1-seeded.

Sp. 1. *A. officinalis.* Common Marsh Mallow. *Med. Bot.* 2d edit. 552. t. 198. *Eng. Bot.* t. 147. *Smith's Flora Britan.* 3. 739.

Officinal. ALTHÆÆ FOLIA, ET RADIX. *Lond.* — RADIX. *Edin.*
 The leaves and root of Marshmallow.

Syn. Guimaive (F.) Eibisch (G.) Altea (I.) Malvarisco (S.)

The marshmallow is an indigenous plant, which grows, as its name imports, in marshy places, particularly salt-marshes, and on the banks of rivers, throughout Europe. It flowers in June and July, and ripens its seeds in September. The root is perennial and fusiform. The stems are annual, herbaceous, upright, rising from two to three feet in height, round, naked and purplish below, but leafy and branching above. The leaves are alternate and petiolate, longer than they are broad, slightly five-lobed, and unequally serrated: both surfaces are downy, and give a soft velvety feeling when rubbed between the fingers. From the axillæ of the leaves the flowers spring in short thick panicles. Both the calyxes are persistent; the exterior has 7, 9, 10, or 12 very narrow unequal divisions; the interior is more regularly, but less deeply, cleft into five broader and sharper segments. The petals are five, cordate, coalescing at their bases, of a pale blush colour. The stamens are many, united at their bases into a tube, and support reniform anthers. The germen is orbicular, bearing a cylindrical style, divided into many stigmas, which rise above the anthers. The capsules, generally about twenty in number, are of a rounded kidney shape, united laterally in a circle, so as to form a flattened wheel-shaped seed-vessel; and each contains a solitary reniform, flattened, smooth, brown seed. The roots, which are the parts medicinally used, are dug up in autumn.

Qualities. — Marshmallow root is inodorous, mucilaginous when chewed, externally tough and of a yellowish colour, internally white and fibrous; and contains a very considerable portion of mucus, which is yielded to water by coction.

Medical use. — The preparations of this plant, which derive their virtues from its mucus, are useful demulcents in visceral inflammations and calculous complaints. The roots well boiled, and bruised, are sometimes used as an emollient suppurative cataplasm; and a decoction of the leaves forms a useful foment-

¹ *Althæa* Dioscoridis. ² Mucus differs from mucilage of gum arabic, in not being precipitated by silicated potash, nor affected by red or oxysulphate of iron. Besseck. *Nicholson's Journ.* xviii. 31.

ation in external abrasions; and in cutaneous eruptions accompanied with a sharp ichorous discharge.

Official preparations. *Decoctum althææ officinalis*. E. *Syrupus althææ*. L. E.

ALUMEN. *Lond. Edin. Dub.* Alum.

Syn. Alun (F.) Alaun (G.) Allume (I.) Alumbre (S.) Sp'hatica (San.) P'hitcari (H.) Shub (Arab.)

This salt is a ternary compound of alumina, potash, and sulphuric acid. It is found native in some places, either effloresced on bituminous schistus, as at Göttwig in Austria; or united with the soil in volcanic regions, as at the Solfatara near Naples, where the only processes requisite for its extraction are lixiviation and evaporation.¹ But the greater quantity of the alum of commerce is prepared by a peculiar management of schistose pyritic clays, usually denominated alum ores. At La Tolfa, near Civita Vecchia, where the best Roman alum is made, the ore is *alum stone* found in large stratified masses among compact iron-shot argillaceous limestone;² but at other places, both on the continent and in Great Britain, it is *alum slate*, which occurs amorphous, or in concentric balls. At Hurrell, near Glasgow, the largest alum mine in this country, the schistus lies ten inches thick above coal.

To prepare the alum, the ore is properly exposed to the atmosphere, when the sulphur of the sulphuret of iron present in it is oxygenized by the air, and converted into sulphuric acid, which combining with the alumina, the alum effloresces. In general, however, the ore is first calcined with a low heat, so as to destroy the bituminous matter of the slate, and partly convert the sulphur into sulphuric acid: the oxygenization is then completed by exposing the roasted ore to air and moisture, by which means a supersulphate of alumina is formed, which is extracted by lixiviation. To the solution concentrated, is added the impure subcarbonate of potash of commerce, or supersulphate of potash or putrid urine, or muriate of potash; and by evaporation the alum is obtained.

Although the ancients were certainly acquainted with alum, yet the first regular works appear to have been established by the Asiatics, in the middle ages, particularly at Roccha in Syria, whence the name *Roch alum*, and from them Europe was supplied till the fifteenth century. After this period, works were begun at Tolfain Italy, in Germany, and Spain; and in England, in the reign of Elizabeth, by Sir Thomas Chaloner, who established the first alum work in England at Gisborough, in

¹ These processes are performed in pans sunk in the ground, the heat of which is sufficient to carry on the evaporation. ² An alum is found near Moscow which contains much sulphate of iron. *Mem. de la Soc. Imp. de Moscou*, t. i. p. 22.

Yorkshire. The largest manufacturers of alum at present, in this country, are Lords Dundas and Mulgrave, at Whitby, in Yorkshire.

The best alum is the Roman, which is in irregular octahedral crystalline masses, powdery on the surface: the English is in large, irregular, semitransparent, colourless masses, having a glassy fracture, not efflorescent, and difficult to pulverize; and that from the Levant, or Roch alum, is in small morsels, about the size of an almond, rather friable, and of a pale rose colour. The form of the regular crystal of alum is an octahedron. Its specific gravity is 1.7109. According to Vauquelin, its constituents are, acid 30.52, alumina 10.50, potash 10.40, and water 48.58, in 100 parts: but by a more recent analysis, Berzelius makes them sulphate of alumina 36.85, sulphate of potash 18.15, and water 45.00; but it also generally contains ammonia; and none of the alum of commerce, except the Roman, is free from a minute portion of iron.

Qualities — Alum is inodorous, and has a sweetish, acidulous, astringent taste. It reddens vegetable blues, owing to the excess of its acid; ¹ is in a small degree efflorescent; and soluble in sixteen parts of water at 60°, and in three-fourths of its weight of boiling water. When exposed to a gentle heat it undergoes the watery fusion, and in a stronger heat swells, loses 44 per cent. of its weight, which is water, and becomes an opaque, white, friable spongy mass. It is decomposed by the alkalies and alkaline earths, which attract the greater part of its acid, and precipitate the alumina united with a small portion of acid and potash. Gallic acid also precipitates its earth: hence the alkalies and their carbonates, magnesia, lime, carbonate of magnesia, chalk, and infusions of galls are incompatible in prescriptions with solutions of alum; as is also the superacetate of lead.

Medical properties and uses. — Alum is a powerful astringent. It is used both as an internal and external remedy for restraining violent hæmorrhages; and also in cases of obstinate diarrhoea, diabetes, and fluor albus; but we agree with Dr. Cullen, that it is not to be depended upon in the two latter diseases. It has been recommended as an auxiliary to cinchona in intermittents, and in confluent small-pox when the pustules are bloody; and Dr. Percival regarded it as a prophylactic in colica pictorum, and a cure for slighter cases. ² It is used locally in gargles, in cases of cynanche, relaxation of the uvula, and aphthæ; and as the basis of injections, in cases of gleet and leucorrhœa, and of collyria in chronic ophthalmia.

The dose in hæmorrhages is from grs. v to ʒj, repeated every hour or two till the bleeding abates: in other cases smaller doses

¹ Much of the English alum we have lately examined strikes a green with syrup of violets.

² *Observations on Lead, &c.*

are more advisable; larger being apt to nauseate the stomach, and occasion violent constipation. The addition, however, of an aromatic, prevents it, to a certain degree, from exciting nausea. It is sometimes administered dissolved in the serum of milk, in the form of whey, (*serum lactis aluminosum*), which is prepared by boiling zij of powdered alum in a pint of milk, and straining. The dose of the whey is fʒij or fʒiij.

Official preparations. *Alumen exsiccatum*. L. E. D. *Liquor aluminis comp.* L. *Pulvis aluminis comp.* E.

AMMONIÆ MURIAS. *Lond.* MURIAS AMMONIÆ. *Edin.*
SAL AMMONIACUM. *Dub.* Muriate of Ammonia.

Syn. Sel Ammoniac (*F.*) Salmiak (*G.*) Sale Ammoniaco (*I.*) Sal Armoniaco (*S.*) Nosader (*H.*)

This salt, which is a compound of muriatic acid and ammonia, is found in small quantities as a product of volcanoes; but for the purposes of medicine and the arts it is artificially prepared.

Muriate of ammonia was originally manufactured in Egypt, by sublimation from the soot of fuel, formed of the dung of phytivorous animals kneaded with straw into clods, and dried in the sun. From this source all the European states were formerly supplied: but since the manufacture of it in Europe, begun about sixty years ago, the importation of Egyptian sal ammoniac has been discontinued. The process differs in different places, and is generally kept secret; but the following is a sketch of the actual practice at a large establishment, which was carried on some years ago near London, and is probably the mode usually adopted in this country.*

Bones, chopped into small pieces, and boiled in order to extract the marrow and fat, were distilled from an iron cylindrical still into a leaden receiver, cooled by a refrigeratory, which was its cover, and contained about four inches in depth of water. Six parts of impure alkaline liquor and five of foetid oil were thus procured; the oil was skimmed off, and the alkali mixed with pulverized gypsum. By double decomposition sulphate of ammonia and carbonate of lime were thus formed; the liquor which contained the former was then mixed with common salt (*muriate of soda*); and thus, by a second decomposition, the sulphuric acid of the sulphate of ammonia uniting with the soda of the muriate of soda, and the muriatic acid with the ammonia, muriate of ammonia and sulphate of soda were formed in the liquor. This solution was clarified by subsidence and decantation; and by a skilfully managed evaporation in leaden boilers, the two salts were separated as they crystallized. The water of crystallization was then driven off from the muriate of ammonia, by exposing it to heat in a kind of oven; and the spongy, friable, ash-coloured mass, into which it changed, was put, while hot, into

* Aikin's Dictionary of Chemistry, art. Sal ammoniac.

globular bottles, or glazed earthen jars furnished with a moveable perforated cover, in which the muriate was sublimed by exposing them to a heat of 320° in iron pots filled with sand. The cakes of salt produced, after being placed "for a day or two in a damp atmosphere," to soften their surface, and facilitate "the removal of any superficial impurities," were packed in casks for sale. As soot of coal affords, by maceration in water, a quantity of sulphate of ammonia, it is used in the Scotch manufactories instead of bones.

The cakes of muriate of ammonia are hemispherical, about an inch thick; elastic; and when broken are towards the convex surface white, striated and opaque; but towards the concave, have a more crystallized appearance, and are nearly semi-transparent. It is also sometimes crystallized in conical masses, that are deliquescent, owing to the presence of muriate of lime, which renders it unfit for medicinal purposes.

The greater part of the sal ammoniac in the London market is made in the north of England; but an inferior sort is imported in chests from the East Indies.

Qualities. — This salt is inodorous; has a salt, bitterish, acrid and cool taste; very slightly attracts moisture from the air; and has a specific gravity of 1.450. It is rather ductile, and therefore not very easily pulverized. It requires 3.25 times its weight of water at 60° , and its own weight at 212° , to dissolve it; and during its solution a great reduction of temperature takes place. At a high temperature it sublimes without melting, and is unchanged. When dissolved in boiling water, it forms, as the solution cools, in tetrahedral, pyramidal, or in flaky, plumose crystals. Its components are 31.95 of ammonia, 49.55 of acid, and 18.50 of water. The sulphuric and nitric acids unite with its alkali, and set free the muriatic acid. Potass and its carbonate, carbonate of soda, barytes, strontites, lime, chalk, magnesia, carbonate of magnesia, combine with its acid, and set free the ammonia: and superacetate of lead, when added to a solution of it, throws down a precipitate of muriate of lead: hence these salts are incompatible in prescriptions with muriate of ammonia.

Medical properties and uses. — This salt was formerly considered a powerful aperient and attenuant of viscid humours, acting as a diaphoretic, diuretic, purgative, and emetic, according to the mode of exhibition, or its dose; but it is now scarcely ever ordered as an internal medicine. Externally, it is advantageously employed, on account of the cold produced during its solution in water, to abate the pain and heat of inflammation, and to allay violent head-ache; also in cases of mania, plethoric apoplexy, injuries of the head; and to assist in the reduction of hernial tu-

¹ Berzelius.

mors. It is also a useful application in dropsy of the thyroid gland.¹ Owing to its stimulant qualities, it forms an excellent discutient, when dissolved in the proportion of $\frac{3j}{\text{℥}}$ of the salt, in $\frac{f\text{℥}ix}{\text{℥}}$ of water, with $\frac{f\text{℥}j}{\text{℥}}$ of alcohol, in indolent tumors, gangrene, scabies, and chilblains; and as a gargle, it is occasionally useful in cynanche.

Off. prep. *Ammonia subcarbonas*. L. E. D. *Liquor Ammonia*. L. *Aqua ammonia*. E. D. *Hydrarg. præcip. alb.* L. *Alcohol ammoniatum*. E. D. *Ferrum ammoniatum*. L. E. D. *Aqua cupri ammoniati*. D. *Sulphuret. ammonia*. D. *Murias ammonia et ferri*. D.

AMMONIACUM. Vide *Heracleum gummiferum*.

AMYGDALUS. *Spec. Plant. Willd.* ii. 982.

Cl. 12. Ord. 1. Icosandria Monogynia. Nat. ord. Pomaceæ Linn. Rosaceæ Juss.

G. 981. Cal. 5-cleft, inferior, Pet. 5. Drupe with a nut perforated. Sp. 2. A. communis. The Common Almond-tree. *Med. Bot.* 2d edit. t. 183.

Varieties. β . *Amygdalus sativa*. Sweet Almond-tree.

γ . *Amygdalus amara*. Bitter Almond-tree.

Official. AMYGDALÆ AMARÆ.—DULCES. Lond. AMYGDALI COMMUNIS NUCLEI. Edin. AMYGDALÆ DULCES. Dub. Bitter and Sweet Almonds.

Syn. *Amandes douces et ameres* (F.) *Bittere und Süsse Mandeln* (G.) *Mandorli dolce ed amare* (I.) *Almendra* (S.) *Bādāmie Farsie* (Hind.) *Lowz* (A.)

The almond-tree is a native of Syria and Barbary; but it is now naturalized in the south of Europe, and even in England²; where, however, the fruit seldom ripens. The flowers display themselves in March and April before the leaves are expanded. It rises to the height of twenty feet, and divides into many spreading branches, which are covered with a dark grey bark. The leaves stand upon short foot stalks, are about three inches long, and three-fourths of an inch broad, elliptical, pointed at both ends, minutely serrated, with the lower serratures glandular, and of a bright green colour. The flowers, which are supported on very short peduncles, are of a pale rose or blush colour, varying to white: the calyx is tubular, with the lip divided into five blunt segments; the petals are five, oval, and convex; the filaments about thirty, inserted into the calyx, tapering, spreading, of unequal lengths, and furnished with orange-coloured, simple anthers: the germen is downy, with a simple style, supporting a round stigma. The fruit is of the peach kind, but flatter, with a tough coriaceous covering instead of the rich pulp of the peach, which opens spontaneously at the longitudinal furrow when ripe. The kernel or almond, which is inclosed in a tender, thick, brittle, spongy shell, is oblong, flattish,

¹ Burns on the Anat. of the Neck, p. 191.

² It was cultivated in England by Lobel before 1570.

rounded at one end and pointed at the other, and composed of two white cotyledons enveloped with a thin, pale brown, veined, bitter skin, covered with an acrid meal.

These two varieties of the *Amygdalus communis* are not distinguished from each other, but by the taste of the kernel of their fruit. The *Valentia* almond is a sweet, large, flat almond, pointed at one extremity, and compressed in the middle as if with the thumb. The *Italian* are not so sweet, smaller, and less depressed in the middle. The *Jordan* almonds, which come from Malaga, and are the best sweet almonds brought to England, are said to be the produce of a distinct species of *Amygdalus*. They are longer, flatter, less pointed at one end, and less round at the other, and have a paler cuticle than those we have described.

Sweet almonds are imported in mats, casks, and cases: the bitter, which come chiefly from Mogadore, arrive in boxes.

When the almond is not well preserved, it is preyed on by an insect that eats out the internal part; or, if this does not happen, the oil it contains is apt to become rancid.

Qualities. — The cuticle of both kinds of almonds has an unpleasant bitterish austere taste; but it is easily detached by putting the almonds into boiling water; and thus decorticated they are said to be blanched.

The blanched *sweet almond* is inodorous; has a sweet, pleasant, bland taste: and consists chiefly of fixed oil, mucus, saccharine matter, and albumen. When eaten as food, it is not very digestible, and requires to be well masticated. The *bitter almond* is also inodorous when entire, but when triturated with water has the odour of the peach blossom; and the taste is the pleasant bitter of the peach kernel. It contains less fixed oil and more albumen than the sweet, and besides a portion of prussic acid,¹ upon which its narcotic power is supposed to depend. It is said to operate as a poison on dogs and some other animals, but not generally on the human species. The fixed oil that both varieties yield by expression in large quantity is insipid, inodorous when heat has not been employed.

Medical properties and uses. — Sweet almonds are used more as food than as medicine; but they afford little nourishment. Heartburn is said to be relieved by eating six or eight of them decorticated. When triturated with water, milky mixtures or emulsions are formed, which shall be afterwards noticed; and they are also used in pharmacy for assisting by trituration the combination of some substances, such as

¹ This was discovered by Bohn, who found that when potash was added to the water distilled from the bitter almond, solution of sulphat of iron threw down a blue precipitate, the sure test of prussic acid. Murray's *Chemistry*, iv. 342.

camphor and the resins, with water. Bitter almonds are scarcely ever used medicinally, although Bergius' mentions a case of intermittent having been cured by them, when the Peruvian bark had failed. Owing to a peculiar idiosyncrasy of some habits, the smallest quantity produces urticaria, and other unpleasant effects.

Official preparations, *Oleum amygdalæ*. L. E. D. *Emulsio amygdalæ comp.* E. D. *Emulsio acaciæ arabicæ*. E. D. *Emulsio camphoræ*. E. *Confectio amygdalarum*. L.

AMY'LUM. Vide *Triticum hybernum*.

AMYRIS. *Spec. Plant. Willd.* ii. 333.

Cl. 8. Ord. 1. Octandria Monogynia. Nat. ord. Terebintaceæ Juss. G. 755. Cal. 4-toothed. Pet. 4 oblong. Stig. 4-cornered. Berry drupaceous.

Spec. 2. *Amyris elemifera*. Elemi tree.

Spec. 6. *Amyris gileadensis*. Balsam of Gilead tree. *Med. Bot.*

2d ed. 603. t. 214. *Bruce's Abyssinia*, vol. v. p. 16. t. 2, 3.

I. AMYRIS ELEMIFERA.

Official. ELEMI. Lond. ELEMI; RESINA. Dub. Elemi.

Syn. Eleme (F. G. I.)

The elemi tree, of the botanical characters of which we know very little, is a native of Carolina and the Brazils. It does not, according to Catesby, rise to a great height; and the trunk is small, and covered with a grey bark. The leaves are opposite, on footstalks; ternate and sometimes pinnate; with stiff, pointed leaflets of a bright green colour, shining, and downy underneath. The flowers are in terminal corymbs; small, white, with the petals inflex at the tips. The fruit is the size and figure of an olive.

The resin is obtained by making incisions in the bark in dry weather; and is left to dry in the sun as it exudes. It used to be brought from Turkey in long roundish cakes, wrapped in flag leaves; but the elemi now brought, comes in mats and chests, each containing from four to six pounds weight.

Qualities.—True elemi has a fragrant, aromatic odour, not unlike that of fennel seeds, but stronger. The taste is very slightly bitter, and warm. The cakes are of a pale yellow colour, semitransparent, brittle on the outside, soft and tenacious within, and very fusible. Spec. grav. 1·0182. When distilled with water, it affords $\frac{1}{6}$ of a thin pale-coloured essential oil, on which its fragrance and softness depend; and the residue is a brittle, inodorous resin. Alcohol dissolves the greater part of elemi; but a white flaky, inodorous matter remains, which is almost entirely soluble in water; hence we may consider the constituents of elemi to be gum, resin, and essential oil. But no true elemi is now to be found in the shops.

Medical properties and uses.—This resin is stimulant, but

¹ *Mat. Med.* art. *Amygdalus*.

is very rarely used as an internal remedy, being chiefly employed for forming the mild digestive ointment which bears its name.

Official preparation. *Unguentum elemi compositum*. L. D.

2. AMYRIS GILEADENSIS.

Official. —, RESINA LIQUIDA. *Edin.* Balsam of Gilead.

Syn. Balsamier de la Mecque (F.) Opobalsamo (L.) Balsamo (S.) Akooyeclarsemoonroome (Arab.)

This species of amyris is a native of Abyssinia, growing, according to Bruce, among the myrrh-trees behind Azab, all along the coast to the Straits of Babelmandel. It appears, however, to have been transplanted into Judea 1730 years before Christ; and as it was from Gilead in Judea that the merchants brought its resinous product, in early times, to Egypt, it thence derived its appellation *Balessan*, or *Balsam of Gilead*.

This tree rises above fourteen feet in height; has a flat top and stunted aspect, with many spreading, crooked branches going off nearly at right angles; the wood is light, open, and covered with a smooth bluish white bark. The leaves are thinly scattered, small, composed of one or two pair of opposite leaflets, with an odd one; these are obovate, entire, veined, and of a bright green colour. The flowers are white, appearing upon the young shoots, three upon one stalk; but two generally drop, and one only produces fruit. The calyx is permanent, divided into four expanded sharp teeth: the petals are four, oblong, concave, spreading: the filaments eight, erect, supporting oblong anthers: the germen is superior, ovate, with a thick style, the length of the filaments, crowned with a quadrangular stigma. The fruit opens with four valves, and contains a smooth nut.

The ancients held the balsam obtained from this tree in great esteem, but it does not appear that they were well acquainted with the tree itself. To obtain the balsam, the bark is "cut by an ax, when the juice is in its strongest circulation, in July, August, and the beginning of September. It is then received into a small earthen bottle, and every day's produce gathered and poured into a larger, which is kept closely corked." The first that flows, called opobalsamum, "is of a light yellow colour, apparently turbid." It afterwards becomes clear, fixed, and heavier; and the colour by degrees deepens to a golden yellow. The opobalsamum of the ancients was the green liquor found in the kernel of the fruit: the carpobalsamum, the next in esteem, was made by the expression of the ripe fruit; and xylobalsamum, or the worst kind, by the expression or decoction of the small twigs.

¹ Bruce's *Abyss.* App. p. 16. The whole of Mr. Bruce's account of this tree is highly interesting, and we regard his authority undoubted.

² Willdenow has a distinct species under the name *Amyris opobalsamum*; but, in a note, says — "sunt forte non distinctæ species, sed varietates ab ætate vel solo ortæ." *Spec. Plant.* vol. ii. p. 334.

The real balsam rarely finds its way into this country, dried Canada balsam being generally substituted for it; but it wants the peculiar odour of the true balsam.

Qualities. — The odour is at first violent and strongly pungent; but the pungency is lost by exposure to the air and age; and the balsam gradually acquires the consistence of turpentine. The colour is yellowish exteriorly, and paler in the inside, the taste is acrid, rough, and pungent. When pure it dissolves easily in water.

Medical properties and uses. — This balsam was esteemed in the earlier ages as a medicine possessed of almost universal virtues; and at the present day the Arabs use it "in all complaints of the stomach and bowels," reckoning it a powerful antiseptic, and preventive of the plague. Its chief use, however, is as a cosmetic by the Turkish ladies. It is never brought genuine to this country; and we know not why the Edinburgh College retain it in the list of Materia Medica.

ANCHUSA. *Spec. Plant. Willd.* i. 756.

Cl. 5. Ord. 1. Pentandria Monogynia. Nat. ord. Asperifoliæ Linn. Borraginæ Juss.

G. 277. Corolla funnel-shaped. The throat closed with arches. Seed engraved at the base.

Spec. 7. *Anchusa tinctoria*. Dyer's Alkanet. Lobel. *Icon.* 578.

Officinal. —, RADIX. *Edin.* ANCHUSA; RADIX. *Dub.* Alkanet root. *Syn.* Orcanette (F.) Alcanna (L.)

This species of anchusa is perennial, a native of the south of Europe; where it is cultivated in great abundance, particularly near Montpellier. It is found in our gardens as an ornamental plant; but its roots do not acquire in Britain the beautiful colour for which the foreign are prized. It flowers from June until October. The root is long, round, fibrous, white within, and covered with a purplish red bark. The stem rises eighteen inches in height; is round, rough, hairy, and branched; with long, alternate, sessile, lanceolate, obtuse, hairy leaves. The flowers are of a reddish purple colour, and terminate the branches in close clusters. The calyx is persistent, divided into five oblong erect segments; the corolla funnel-shaped, consisting of a cylindrical tube the length of the calyx, and a five-toothed expansion, closed by five scaly leaflets. The filaments are shorter than the corolla, bearing simple anthers; the germens four, with filiform styles the length of the filaments, each crowned with an obtuse notched stigma.

Alkanet root is brought to this country chiefly from France. It is in twisted pieces, which have a withered dusky red, easily separated bark. The smaller roots are the best, as they have proportionally more bark than the larger.

¹ Ab *αρχω* strangulo, suffoco; the ancients believing that this species of plants choked and destroyed serpents. Vide *Bod. in Theophrast.* p. 835.

Qualities.—It has a very faint odour, and a bitterish astringent taste when fresh; but the dried root is inodorous and insipid. It imparts a fine deep red colour to alcohol, ethers, oils, fats, and wax; but to water, even when hot, only a brown colour. Sulphate of iron strikes a black with the watery infusion; and sulphate of zinc throws down a copious dark-coloured precipitate.

Medical properties and uses.—Alkanet root was formerly prescribed as an astringent in several diseases; but it is properly rejected from modern practice, and is used as a colouring matter only for oils, ointments, and plasters.

ANETHUM.¹ *Spec. Plant. Willd.* i. 1469.

Cl. 5. Ord. 2. Pentandria Digynia. *Nat. ord.* Umbellatæ.

G. 560. Fruit nearly ovate, compressed, striated. *Pet.* involuted entire.

Species 1. *A. graveolens.* Common Dill. *Med. Bot.* 2d ed. 125. t. 48.

Species 3. *A. feniculum.* Sweet Fennel. *Med. Bot.* 2d ed. 127. t. 49. *Smith Flor. Brit.* 329.

1. ANETHUM GRAVEOLENS.

Officinal. ANETHI SEMINA. *Lond.* Dill seed.

Syn. Fenouil puant, ou persil odorant (*F.*) Dill. (*G.*) Eneldo de olor pesado (*S.*) Appio palustre, sellano, Sello (*J.*) Sadācoopay (*Tam.*) Sowa, (*Hind.*)

This plant is an annual, a native of Spain and Portugal, growing generally in corn-fields, and flowering in June and July. It is cultivated in this country.² The root is fusiform and long, striking deep into the ground; and sending up several erect-grooved, jointed stems, about two feet in height, and branched. The leaves are glaucous and odorous, upon sheathing footstalks; doubly pinnated, with the pinnæ linear and pointed. The flowers are in large, flat, terminal umbels, without either universal or partial involucre; the corolla consists of five ovate, obtuse, concave, yellow petals, with the apex inflected: the filaments yellow, and longer than the corolla: with an inferior germen, covered by the nectary, and supporting two short styles, terminated by obtuse stigmas.

The seeds of dill, which are the parts of the plant medicinally used, are scarcely the length of a caraway seed, but broader and flatter; oval, concave on one side, convex and striated on the other, of a brown colour, and surrounded with a dull pale yellow or straw-coloured membranous expansion.

Qualities.—The dried seeds have an aromatic, sweetish odour, not very agreeable, nor yet unpleasant; the taste is moderately warm and pungent. These qualities depend on an essential oil, which is extracted by distillation with water, and imparted to alcohol by digestion. The bruised seeds yield their flavour to boiling water by infusion.

¹ *Anethon* Dioscoridis. ² It was first cultivated by Gerard in 1597.

Medical properties and uses. — Dill seeds are carminative and stomachic. They are scarcely ever employed except in hiccough and the flatulent colic of infants. The dose of the powdered seed is from grs. xv. to ʒj.

Official preparation. *Aqua Anethi*. L.

2. ANETHUM FENICULUM.

Official. FENICULI SEMINA. Lond. Edin. FENICULUM DULCE; SEMINA. Dub. The seed and root of Sweet Fennel.

Syn. Fenonil ou Anis douce (F.) Fenchelsamen (G.) Eneldo hinojo (S.) Finocheio (L.) Petumsiragam (Taru.) Mayuri (Hind.)

Fennel is a biennial plant, originally found in the south of Europe only, but now growing abundantly on our chalky soils and cliffs, and flowering in July and August. The root is fusiform, elevating a stem about four feet in height, erect, branching, leafy, striated, and smooth. The leaves are alternate, tri-pinnate, composed of long, smooth, depending, linear, leaflets, of a very deep green colour. The flowers are in large, terminal, many-rayed, flat umbels: the petals five, ovate, emarginate, with their points turned inward; and of a yellow colour: the filaments shorter than the petals, spreading, also yellow and bearing double anthers. The germen is similar to that of *dill*: the seed ovate, very little compressed, of a brownish olive colour when ripe, three-ribbed, and encircled with a membranous margin.

There are three varieties of fennel; the root of the first of which, the *common fennel*, and the seed of the second, the *sweet fennel*, are officinal. The roots found in the shops are the produce of our own country, and are taken up in the spring; but the seeds are generally imported from Italy.

Qualities. — The roots are covered with a brown bark, woody and white within, have scarcely any odour, and only a slightly sweetish taste, with very little aromatic warmth; but the *seeds* have a fragrant odour, and a sweet warm aromatic taste. These qualities depend on an essential oil, which is dissipated by decoction in water, and separated by distillation. They are completely imparted to alcohol, but only imperfectly to boiling water, by infusion. The seeds contain also a fixed, inodorous, insipid oil.

Medical uses and properties. — Fennel was formerly esteemed as a remedy; and supposed to be resolvent, diuretic, carminative, and stomachic; but even as a carminative it is not superior to anise seed and caraway; and it is therefore now seldom employed. The dose of the bruised seed may be from ʒj to ʒj.

Official preparations — *Aqua Fœniculi*. L. D. *Oleum Seminum Fœniculi dulcis*. D.

ANGELICA. *Spec. Plant. Willd.* i. 1428.

Cl. 5. Ord. 2. Pentandria Digynia. Nat. ord. Umbellatæ.

G. 343. Fruit roundish, angular, solid, with reflected styles. Corollas equal. Petals bent inward.

Species 1. Angelica archangelica, Garden Angelica. *Med. Bot. 2d ed.* 86. t. 35. *Smith Flor. Brit.* 1. 311.

Officinal. —, RADIX. *Edin.* The root of Angelica.

Syn. Angelique (F.) Angelikawurzel (G.) Angelica domestica (L.) Angelica (G.)

This species of angelica is a native of the more northern parts of Europe: but although it has been found growing wild in England, as at Broadmoore near Birmingham, and some other parts, yet it is uncertain whether it be indigenous. It is however abundantly cultivated for medicinal and other purposes; flowering in June and August.¹ The root is biennial, thick, fleshy, and resinous; the stem erect, hollow, round, smooth, furrowed, of a purplish hue, rising upwards of five feet in height, and sending off many branches, which terminate in globular many-rayed umbels, composed of dense, hemispherical umbellets. The leaves are numerous, petiolated, large, pinnated; with the leaflets ovate, pointed, cleft, and acutely serrated, smooth, somewhat decurrent, and the terminal ones three lobed: the petioles membranous at the base, nerved, greatly dilated, and bellying. The involucres are deciduous; the involucels short, consisting of five linear lanceolate leaves. The calyx is 5-cleft, minute: the corolla small, of a greenish white colour; petals 5, with the points turned inward: the stamens spreading, longer than the petals; and the germen inferior, supporting two reflected styles with obtuse stigmas. The seeds are large, elliptical, flat on one side, convex on the other, emarginate at both ends, and acutely three ribbed.

The roots of angelica, when wounded in the spring, yield an odorous yellow juice, which being slowly desiccated, proves an elegant gum-resin, very rich in the qualities of the plant. For medicinal purposes, the roots should be dug up in the autumn of the first year; in which case they are more easily preserved; but when gathered in the spring, they become mouldy, and are preyed on by insects. They should be thoroughly dried, and kept in a well-aired, dry place: and in order to secure their preservation, Lewis suggests "the dipping them in boiling spirit, or exposing them to steam, after they are dried." The leaves and seeds do not retain their virtues when kept. The stems are cut, when tender, in May, and made into an agreeable sweetmeat by the confectioners.²

Qualities. — The odour of every part of the recent plant is fragrant and aromatic; the taste sweetish at first, then aromatic, warm, and slightly bitter. The dried root is corrugated, and of a grayish brown colour externally; breaks short with a starchy fracture, and presents a firm interior, whitish with

¹ It was first cultivated in England before 1568.

² The Icelanders eat the stems and roots of angelica raw with butter. Vide *Sir Geo. Mackenzie's Travels in Iceland*, 4to. p. 255.

many resinous brown and yellow points. It has the same odour and taste as the recent plant; and yields these qualities to alcohol, and in some degree to boiling water.

Medical properties and uses. — The leaves and seeds when recent, and the root both in the fresh and dried state, are tonic and carminative; but although the most elegant aromatic of northern growth, yet, they are scarcely ever prescribed in modern practice. The dose in substance is from ʒfs to ʒj, three or four times a day.

ANISI SEMINA. Vide *Pimpinella Anisum*.

ANTHEMIS.¹ *Spec. Plant. Willd.* iii. 2174.

Cl. 19. Ord. 2. Syngenesia Superflua. Nat. ord. Compositæ Discoidæ Linn. Corymbiferae Juss.

G. 1517. Receptacle chaffy. Seed down none, or a membranaceous margin. Calyx hemispherical, nearly equal. Florets of the ray more than five.

* With a colourless or white ray.

Species 15. *A. nobilis*. Common Chamomile. *Med. Bot.* 2d ed. 47. t. 19. *Smith Flor. Brit.* 904.

— 25. *Pyrethrum*. Pellitory of Spain. *Med. Bot.* 2d. ed. 50. t. 20. 1. ANTHEMIS NOBILIS.

Officinal. ANTHEMIDIS FLORES. Lond. Edin. CHAMÆMELUM; FLORES. Dub. Chamomile Flowers.

Syn. Camomille Romaine (F.) Roemische hamiller (G.) Camomilla Romana (L.) Manganelle de Botera (S.) Châmaindoopoo (Tam.) Baboenui (A.)

This species of anthemis is an indigenous perennial plant, growing in dry pastures, and flowering in August and September. The greater part of the chamomile, however, which is medicinally used, is cultivated by the growers of physical plants.² The roots are woody, fibrous and spreading: the stems trailing, about a span in length, foliaceous and downy: the leaves verticillately bipinnate, the pinnæ distant, and the leaflets small, threadlike, sharp, generally cleft into three segments; odorous, and of a pale green colour. The flowers are on solitary, terminal, unifloral, naked, striated hairy peduncles. The calyx is common to all the florets, hairy, with broad membranaceous edges: the disc is yellow and convex; the florets of the radius white, spreading, long, and somewhat elliptical, three-toothed, and turned down; and the seed obscurely crowned.

Both the single, and the double-flowered varieties are cultivated; but as the sensible qualities of the flower reside chiefly in the disc florets, the single kind is preferred: and as these qualities are also stronger before the tubular florets are blown, they are then picked, and carefully dried for use.

Qualities. — The whole of the plant is gratefully odorous.

¹ *Antiquus* Dioscoridis. ² Much of what is brought to the London market is grown about Mitcham in Surry. The soil best adapted for it is a dry sandy loam. A wet summer weakens the flavour of the flowers. *Stevenson's Survey of Surry*, 379.

The smell of the flowers is strong and fragrant; their taste bitter and aromatic, with a slight degree of warmth; and both the odour and the taste are extracted by water and alcohol. By distillation with water, they yield a small quantity of brownish yellow essential oil, on which the odour and the antispasmodic powers of the plant seem to depend. Hot water takes up nearly one-fourth of the weight of the dry flowers, and when the infusion is evaporated, a bitter extractive matter and a small portion of resin remain. The active principles, therefore, of chamomile flowers appear to be bitter extractive, resin, and essential oil.

Medical properties and uses. — Chamomile flowers are tonic, carminative, and slightly anodyne: yet when a strong infusion of them is taken in a tepid state, it proves powerfully emetic. Given in substance, united with opium and astringents if the bowels be easily affected, they have been successfully used for the cure of intermittents: and the infusion, in combination with ginger, or other aromatics, and the alkalies, is an excellent stomachic in dyspepsia, chlorosis, gout, flatulent colic, and chronic debility of the intestinal canal. The tepid strong infusion is a ready emetic, and is often employed to promote the operation of other emetics. By coction in water the essential oil is dissipated; chamomile flowers, therefore, ought never to be ordered in decoctions. Externally they are used as fomentations in colic, intestinal inflammation, and to phagedenic ulcers: and their infusion is also found to be an useful addition to emollient anodyne glysters in flatulent colic, and irritations of the rectum producing tenesmus. The dose of the powdered flowers is from ʒfs to ʒij, twice or thrice a day.

Off. preparations. *Decoctum Anthemidis nobilis*. E. D. *Infusum Anthemidis* L. *Extractum Anthemidis* L. E. *Oleum Anthemidis* L.

2. ANTHEMIS PYRETHRUM.¹

Officinal. PYRETHRI RADIX. Lond. Edin. PYRETHRUM; RADIX. Dub. Pellitory root

Syn. Pyrèthure (F.) Bertram Wurtzel; Zahn wurtzell (G.) Piretro (I.) Anthemis pelitri (S.) Akkārācārūm (Tam) Akurkurha (A.)

This is a perennial plant, a native of the Levant, Barbary, and the south of Europe. It is sometimes cultivated in Britain,² flowering from June to July. The root is long, tapering, about the thickness of a finger, with a brownish cuticle, sending off several lateral fibres; and throwing up many trailing stems, more commonly simple and unifloral than branching. The leaves are doubly pinnate, with narrow linear segments of a pale green colour. The flowers are large, with the florets of the radius white on the upper, and purple on the under side, and those of

¹ Πυρῆθρον Dioscoridis.

² It was cultivated in England by Lobel in 1570.

the disc yellow. In form they resemble the flowers of *Anthemis nobilis*.

Pellitory root is brought into this country from the Levant, and the coast of Barbary, packed in bales. It is frequently mixed with other roots, from which, however, it is easily distinguished.

Qualities.—The dried root, as we receive it, is inodorous. When chewed it appears at first insipid, but after a few seconds, excites a glowing heat, and a pricking or thrilling sensation on the tongue and lips, which remains for ten or twelve minutes. The pieces break with a short resinous fracture; the transverse section presenting a thick brown bark studded with black shining points, and a pale yellow radiated inside. The pungency appears to depend on a resinous matter, as it is completely extracted by alcohol and sulphuric ether.

Medical properties and uses.—Pellitory root possesses powerful stimulant properties. Its chief use is as a sialagogue, to relieve and to stimulate the excretories of the salivary glands, and excite an increased flow of saliva; by which inflammations and congestions of the neighbouring parts are relieved. Hence it has been found useful when chewed in some kinds of headach, apoplexy, chronic opthalmia, rheumatic affections of the face, and toothach; and by its direct stimulus in paralysis of the tongue and muscles of the throat.

ANTIMONIUM. *Στυμνι. Stibium. Antimony.*

Syn. Antimoine (F.) Spiessglanzmetall (G.) Antimonie (L.) Antimónio (S.)

The term antimony was formerly given to an ore, in which antimony was combined with sulphur; but it is now solely appropriated to express the pure metal. It is found in various parts of the world in different states of combination.

A. Metallic. (at Stalberg, Sweden, and Allemont in France.)

- | | |
|---------------------------|---------------------------------------|
| i. combined with arsenic. | Sp. 1. <i>Native antimony.</i> |
| ii. ————— with sulphur. | 2. <i>Gray sulphuret of antimony.</i> |
| | Var. a. compact. |
| | b. foliated. |
| | c. striated. |
| | d. plumose. |

- | | |
|---|-----------------------------|
| B. Oxidized. iii. combined with oxide of iron. | 3. <i>Red antimony.</i> |
| C. Acidified. iv. combined with either phosphoric or muriatic acid. | 4. <i>White antimony.</i> |
| | 5. <i>Antimonial ochre.</i> |
| | 6. <i>Yellow antimony.</i> |

The grey sulphuret is the ore in which it is most abundantly procured, and from which the pure metal is generally obtained. Pure antimony is of a white colour with a blueish shade, brilliant, and very slowly tarnished in air of a low temperature. The texture is foliated; moderately hard; brittle and pul-

verulent. It is fusible at 809° : in a higher temperature it volatilizes in close vessels; but, if exposed to the air, is very rapidly oxidized. It decomposes water when ignited, and is oxidized by, and combines with, the sulphuric, nitric, and muriatic acids; but the other acids unite with its oxides only. It readily combines with sulphur and phosphorus. Its specific gravity, according to Brisson, is 6.702. The pure metal exerts no action on the body, nor is it used for officinal purposes.

Officinal. ANTIMONII SULPHURETUM. *Lond.* SULPHURETUM ANTIMONII. *Edin. Dub.* Sulphuret of Antimony.

Syn. L'Antimoine sulfure (*F.*) Spießglanz (*G.*) Sulfuro d'Antimonio (*I.*) Kohnl (*Arab.*) Surmeh (*H.*) Saubira (*San.*)

Sulphuret of antimony is commonly sold in loaves, and is the gray ore, separated from the stony matter and other gross impurities with which it is naturally combined. It is the *striated variety*, the most common of all the antimonial ores, found both in masses and crystallized in Hungary, Saxony, France, Tuscany, Spain, and Cornwall in England; generally "in micaceous schistus and clay porphyry, mixed with pyrites and oxides of iron." It is fitted for the market by the following process. The ore is separated from the greater part of the stony gangue by hand, and then placed in the bed of a reverberatory furnace, covered with charcoal powder. As it is brought to a low red heat, the sulphuret of antimony is fused, while the earthy parts float on the surface, and are taken off with a rake or ladle: and the fluid portion, cast into the form of loaves or large cakes, is fit for sale, and forms the *crude antimony* of commerce.¹ These loaves are dark-gray externally, but internally they have a striated structure, and considerable brilliancy. Their goodness depends on their compactness and weight, the largeness and distinctness of the striae, and the volatility of the sulphuret. When they contain much lead, the structure is more foliated, and the volatility diminished; arsenic is discovered by the garlic odour emitted when the sulphuret is thrown on live coals; and manganese and iron, by their not being volatilized when it is exposed to a red heat. The specific gravity of the sulphuret is about 4.368; and its constituents are antimony 100, sulphur 35.572.² The greater part of the sulphuret used in this country is imported from Germany and Holland.

Qualities.—Sulphuret of antimony is inodorous, insipid, of a leaden gray or steel colour, staining the fingers; has a rough

¹ *Journal des Mines*—*Aikin's Dictionary of Chemistry*.

² I have adopted Dr. Thomson's proportions, because they are nearly a mean of all the other analyses that have been published: Vauquelin stated them to be, antimony 100, sulphur 33.333; Dr. J. Davy, antimony 100, sulphur 34.960; and Berzelius, antimony 100, sulphur 37.000.

spicular fracture, and is insoluble in water. Its brilliancy is dulled by long exposure to the air; in a red heat it melts, and is partly dissipated along with its sulphur in the form of a white smoke; and what remains in the crucible is a gray ash-coloured oxide. It decomposes the sulphuric and nitric acids when assisted with heat; the metallic part of the sulphuret is oxidized, and sulphureous acid and nitrous gases are disengaged: the muriatic, even in the cold, decomposes it, and sulphureted hydrogen is extricated. The fixed alkalies combine with it, and form compounds used in medicine.¹

Medical properties and uses.—Sulphuret of antimony is not an active medicine when taken into the stomach, unless it meets with acid in that viscus and the bowels. It was not employed internally until the middle of the fifteenth century; and now, owing to the uncertainty of its operation, and the difficulty of obtaining it perfectly free from other noxious metals, as copper, lead, and arsenic, it is almost entirely discarded from modern practice. It has been given in gouty and rheumatic affections, scrofula, and in chronic cutaneous eruptions.

It produces perspiration; and in a few instances in which it was given in large doses, Dr. Cullen found that some nausea, and even vomiting, were excited. Its chief use is for the preparation of the other antimonial remedies.

The dose of the sulphuret may be from ten grains to two drachms, or more if the stomach can bear it.

Official preparations. The table drawn up by Dr. Black has generally been given as presenting the best view of the official preparations of which antimony is the basis; but as many of those mentioned in it have been long since disused, and the nomenclature of all is changed, we have altered it so as to present, on the same plan, a distinct view of the preparations now found in the British Pharmacopœias.

Medicines are prepared from SULPHURET of ANTIMONY,

- I. By trituration in the metallic state united with sulphur.
 1. *Sulphuretum Antimonii præparatum.* E. D.
- II. By the action of heat with phosphate of lime; (*oxidized.*)
 2. *Oxidum Antimonii cum Phosphate Calcis.* E. *Pulvis antimonialis.* L. D.
- III. By the action of alkalies; (*oxidized.*)
 3. *Antimonii Sulphuretum præcipitatum.* L. E. *Sulphur antimoniatum fuscum.* D.
- IV. By the action of acids; (*oxidized.*)
 4. *Antimonii Oxydum.* L. *Oxydum Antimonii nitro-muriaticum.* D.
 5. *Antimonium tartarizatum.* L. *Tartris Antimonii,* olim *Tartarus emeticus.* E. *Tartarum antimoniatum,* sive *emeticum.* D.
 6. *Liquor Antimonii tartarizati.* L. *Vinum Tartritis Antimonii.* E.

¹ The sulphuret is used by the Turkish ladies for staining the eyelashes black, which softens the appearance of the eye; a custom of very ancient origin.

All these preparations of antimony have one general mode of action, and possess, therefore, the same medicinal virtues. Their general operation is evacuant, either by the stomach, the bowels, or the skin; but their determination to these particular parts depends more on the dose, and the constitution and state of the patient, than on the nature of the preparation. In small doses they produce nausea, and diaphoresis; in larger doses, vomiting and purging.

Antimonials are principally employed for the cure of febrile and inflammatory diseases, when the excitement is great; but in the latter stage of fever, when much debility prevails, their use is contraindicated. Some have imagined that the preparation which produces the least sensible evacuation, the antimonial powder of the London College, or its prototype James's powder, is to be preferred in typhus, and the tartarized antimony in synochus; believing that the benefit in the first disease is greater when no sensible evacuation is produced: but as this implies some inexplicable specific action of that preparation, we are not inclined to admit the distinction.

ARBUTUS. *Spec. Plant. Willd.* ii. 616.

Cl. 10. Ord. 1. Decandria Monogynia. *Nat. ord.* Bicornes *Linn.*
Ericæ Juss.

G. 871. *Cal.* five-parted. *Corolla* ovate, the mouth pellucid at the base. *Berry* five-celled.

Species 7. *A. Uva Ursi.* Trailing Arbutus or Bearberry. *Med. Bot.* 2d edit. 287. t. 100. *Smith's Flora Britan.* i. 403.

Officinal. UVÆ URSI FOLIA. *Lond. Dub.* ARBUTI UVÆ URSI FOLIA. *Edin.* Leaves of Uva Ursi, Bearberry, or trailing Arbutus.

Syn. Bousserole; Raisin d'ours (*F.*) Baerentraube; Sandberren (*G.*) Uva Orsina (*L.*) Madronna Uva de Osô; Guayuba (*S.*)

This shrub is a native of the north of Europe, and is found growing wild on the heathy mountains of Scotland, flowering in June. It is a low shrub, with the branches nearly trailing; woody, and the bark smooth. The leaves are not unlike those of the myrtle, thick, evergreen, alternate, obovate, or wedge-shaped, on short petioles; with a net-work of veins on the under surface, which is pale green, whilst the upper is of a very deep green colour, and glossy. The flowers are in small clusters, each supported on a red pedicel. The calyx is small, and obtusely five-toothed; the corolla tubular, oval, flesh-coloured, or whitish with a red lip, divided at the margin into five minute, obtuse reflex segments; containing ten short, downy filaments crowned with erect reddish anthers; and an oval germen, bearing a style longer than the anthers, with a simple stigma. The fruit is a small, round, smooth, glossy,

red berry, with a depressed umbilicus, five-celled, of an austere taste, and containing five angular seeds.

The plant should be procured in autumn; and "the green leaves alone selected and picked from the twigs, and dried by a moderate exposure to heat."

Qualities.—The fresh leaves are inodorous, and have a slightly bitter astringent taste, leaving a sweet sensation in the mouth. When properly dried and powdered they acquire an odour similar to that of hyson tea; but the taste remains the same, the degree of bitterness only being increased. The colour of the powder is a light brown, with a shade of greenish yellow. Both water and alcohol extract its virtues, and the watery infusion strikes a deep black colour with sulphate of iron. According to the analysis of Melandri and Moretti, the leaves yield tannin, mucus, bitter extractive, gallic acid, some resin, lime, and its oxygenizable extract.

Medical properties and uses.—Uva ursi possesses astringent properties,¹ on which account it was employed by the ancients in several diseases; but it was not till after the middle of the last century that the attention of modern practitioners was directed to it, as a remedy for calculous complaints, and ulcerations of the urinary organs, by De Haen. His observations were confirmed by Cullen; who, however, referred the good effects it produced to its action on the stomach. It has also been employed in menorrhagia, cystirrhœa, diabetes and other fluxes; and Dr. Bourne has lately recommended it in phthisis pulmonalis. He combined it with cinchona and opium, but the cases he published were scarcely sufficiently decisive to confirm its use in this complaint. The dose of the powdered leaves is from ʒj to ʒj two or three times a day.

ARCTIUM³. *Spec. Plant. Willd.* iii. 1630.

Cl. 19. Ord. 1. Syngenesia Æqualis. Nat. ord. Compositæ Capitatæ Linn. Cinarocephalæ Juss.

G. 1429. Receptacle chaffy. Calyx globular; the scales at the apex with inverted hooks. Seed-down bristly-chaffy.

Spec. 1. Arctium Lappa. Common Burdock. *Med. Bot.* 2d edit. 32. t. 13. *Eng. Bot.* 1228. *Smith's Flora Britan.* ii. 844.

Official.—ARCTII LAPPÆ SEMINA ET RADIX. *Edin.* BARDANA; RADIX. *Dub.* The root of Burdock.

Syn. Bardane (F.) Bardana (L) Bardána (S.)

This is an indigenous biennial plant, common on the sides of roads and in waste places; flowering in July and August. It is so well known as scarcely to require a description. The root is spindle-shaped, simple, externally of a brown colour, and in-

¹ Cases of Pulmonary Consumption, &c. healed with Uva Ursi, by Robert Bourne, M. D., 8vo., Lond. 1806.

² It is used in Russia for tanning leather.

³ *Agrios* Dioscoridis.

ternally white; the stem succulent, rising three or four feet in height, with spreading branches; and very large, undulated, cordate leaves, of a dark green colour above, and whitish underneath, supported on long footstalks. The flowers are in terminal panicles; the calyx is common, globular, composed of imbricated scales, with hooked extremities, by which they adhere to clothes, and the fur of animals; the corolla is compound, with purple uniform florets, tubular, five-cleft, and all fertile. The receptacle is punctured; has many rough prickly seed downs, and quadrangular seed.

Qualities. — The roots of burdock are inodorous, the taste sweetish, with a slight degree of bitterness and astringency. The seeds, which are sometimes used, are aromatic, bitterish, and subacrid.

Medical properties and uses. — The seeds and roots of this plant possess some diuretic powers, and are said to determine also to the surface, without exciting nausea, or increasing irritation. They have been employed, and, as far as report can be credited, with advantage, in scurvy, arthritic affections, lues venerea, phthisis, and nephritic complaints. We have no experience of their efficacy; but are ready to believe that the remedy is at least safe. A decoction, made by boiling two ounces of the fresh root in three pints of water to two, should be taken, in divided doses, in twenty-four hours.

ARGENTUM. *Lond. Edin.* ARGENTUM; IN LAMINAS EXTENSUM. *Dub.* Silver. Silver Leaf.

Syn. Argent (*F.*) Silber (*G.*) Argento (*I.*) Pláta (*S.*) Villie (*Tam.*) Rupáh (*H.*) Fizeh (*A.*)

Silver exists native, and mineralized, in different parts of the globe, but not in any very great abundance. It is found

A. In its metallic state;

- | | |
|------------------------------|----------------------------------|
| a. pure, crystallized. | Sp. 1. <i>Native silver.</i> |
| b. alloyed with gold. | 2. <i>Auriferous silver ore.</i> |
| c. ——— with mercury. | 3. <i>Native amalgam.</i> |
| d. ——— with antimony. | 4. <i>Antimonial silver.</i> |
| e. ——— with iron and arsenic | 5. <i>Arsenical silver.</i> |

B. Sulphurets;

- | | |
|--|--------------------------------|
| f. combined with sulphur. | 6. <i>Sulphuret of silver.</i> |
| g. ——— with lead, anti-
mony, and iron. | 7. <i>White silver ore.</i> |

C. Oxidized;

- | | |
|--|--|
| h. ——— with antimonial
sulphuret of silver. | { 8. <i>Red silver ore.</i> Subsp.
a. dark red. b. light red. |
|--|--|

D. Salts;

- | | |
|---------------------------------------|--|
| i. ——— with muriatic acid. | { 9. <i>Horn silver, common and
earthy.</i> 10. <i>Sooty silver ore.</i> |
| k. ——— with carbonate of
antimony. | 11. <i>Carbonate of silver.</i> |

Besides these ores, there are many metallic ores which contain silver in sufficient quantity to render the extraction of it profitable. It is obtained in its pure metallic state either by fusion or by amalgamation. By the first process the ore is roasted to expel the sulphur, antimony, arsenic, or other volatile principles; the residuum is then fused with lead, and exposed in a cupel, (a vessel made of bone or of wood ashes,) to a strong heat in the hearth of a refining furnace: when the lead and the foreign metals being thus oxidized, are in part absorbed by the porous cupel, and in part volatilized and driven off by the current of air from the bellows or the blast pipe. An experienced eye knows when the silver is sufficiently pure; but in general it requires a second cupellation at a higher temperature to purify it completely from the lead with which it is combined. By the second process, the ore is first roasted, then ground to a fine powder, washed, and formed into an amalgam with mercury, by being mixed in small barrels made to revolve very rapidly on their axes by means of machinery. The silver is then separated from the mercury by distillation.

Qualities.—Pure silver is a brilliant white, insipid, inodorous, sonorous metal, with a very rich lustre, which it loses when long exposed to the air, owing to sulphureted hydrogen being almost always present in the atmosphere. It is in hardness between iron and gold, of considerable malleability, the finest silver leaf being only one-third thicker than gold leaf. It is of inferior ductility to gold, platina, and iron. Its specific gravity is 10.47. Silver is fusible at 28° Wedgwood; volatilized by a stronger heat; but difficult of oxidization by the action of heat and air. It is oxidized by several of the acids, and combines with them; but none of the compounds, except that produced with the nitric acid, are used in medicine.

Medical properties and uses.—Metallic silver has no action on the human body; but when combined with nitric acid, it forms a very powerful remedy. Many of the instruments used by the surgeon require to be made of silver.

Official preparation. *Argenti Nitras*. L. E. D.

ARISTOLOCHIA¹. *Spec. Plant. Willd.* iv. 151.

Cl. 20. Ord. 4. Gynandria Hexandria. Nat. ord. Sarmenaceæ
Linn. Aristolochiæ Juss.

G. 1609. Cor. of 1 petal, strap-shaped, ventricose at the base. Cap. 6-celled, inferior, containing many seeds. Stem twining, frutescent.

Spec. 27. *A. serpentaria*. Virginia Snakeroot, or Birthwort. *Med. Bot.* 2d edit. 152. t. 59.

¹ *Ἀριστολόχεια*. Dioscoridis gives name to the genus, but is not the official plant, which was introduced only since the settlement of Europeans in America.

Officinal. — SERPENTARIE RADIX. *Lond.* — RADIX. *Edin.* SERPENTARIA VIRGINIANA; RADIX. *Dub.* *Serpentaria Root.*

Syn. Serpentaire (F.) Virginische Schlangenzwutel (G.)

This plant is a native of North America, from Pennsylvania to Florida, and flowers in August. The root is perennial, consisting of bundles of fibres attached to a contorted horizontal trunk, from which several stems rise about ten inches in height, slender, crooked, and jointed; supporting on long footstalks at each knot, thin, cordate, entire, pointed, trinerved leaves, of a yellowish green colour. The flowers proceed from the joints near the root, and stand upon long sheathed articulated peduncles: there is no calyx; the corolla is of a brownish purple colour, globular at the base, contracted and bent in the middle, and terminating in a triangular lip. The anthers are sessile, attached to the under side of the stigma, which is roundish, divided into six parts and almost sessile, rising from an oblong, angular, hairy, inferior germen. The seeds are flat, and contained in a six-celled, hexagonal capsule.

Dried serpentaria root is imported into this country in bales, each containing from two to five hundred weight.

Qualities. — The dried root has an aromatic odour, not unlike that of valerian; and a sharp, warm, bitter taste, resembling in some degree that of camphor. Water extracts all the sensible qualities of the root, affording a yellowish brown infusion which is not altered by sulphate of iron or zinc, nitrate of silver, oxy-muriate of mercury, tartarized antimony, the mineral acids, and the alkalies; nor is it precipitated by gelatine or tannin. The superacetate of lead throws down a flocculent precipitate, which is not soluble in acetic acid, showing the presence of mucus. With alcohol it affords a bright greenish tincture, which is rendered turbid by the addition of water. The active principles of serpentaria, therefore, appear to reside in a bitter resin; and an essential oil.

Medical properties and uses. — Serpentaria root is a stimulating diaphoretic and tonic. It is beneficially employed in typhoid and putrid fevers, whether idiopathic, or accompanying the exanthemata, to excite diaphoresis, and support the powers of the system; and is found frequently to increase the efficacy of cinchona in removing protracted intermittents. It is also an excellent remedy in dyspepsia, particularly when the skin is dry and parched; and is sometimes used as a gargle in putrid sore throat. On account of its stimulant properties, it is contraindicated in the inflammatory diathesis; and previous to its exhibition the bowels should be well evacuated.

It may be given in substance, or in infusion made by macerating ʒiv of the bruised root in fʒxij of boiling water, in a cover-

ed vessel for two hours, and straining. Decoction is a bad form of giving serpentaria, as the boiling dissipates the essential oil, on which the virtues of the remedy chiefly depend. The dose of the powdered root is grs. x. or grs. xx. increased to ʒss; that of the infusion fʒjss to fʒij. every fourth hour.

Official preparations. *Tinctura Serpentariæ*. L. E. D. *Tinctura Cinchonæ composita*. L. D. *Electuarium opiatum* E.

ARMORACIÆ RADIX. Vide *Cochlearia Armoracia*.

ARNICA. *Spec. Plant. Willd.* iii. 2106.

Cl. 19. Ord. 2. Syngenesia Superflua. Nat. ord. Compositæ Discoideæ Linn. Corymbiferae Juss.

G. 1491. Recep. naked. Seed-down simple. Cal. with equal leaflets. Corol. of the ray have more frequently five filaments without anthers.

Spec. 1. A. montana. Mountain Arnica. *Med. Bot.* 2d ed. 41. t. 17. *Flor. Dan.* t. 728.

Official. ARNICÆ MONTANÆ FLORESET. RADIX. Edin. ARNICA; FLORES, RADIX. Dub. The flowers and root of Arnica.

Syn. Arnique (F.) Arnika, Woheverleih (G.) Arnica (L.)

This species of Arnica is a native of the northern parts of the continent of Europe, and of Siberia; flowering in July. It is cultivated in our gardens.¹ The root is perennial, woody, præmorse, with bundles of long fibres attached to it: the stem which rises about a foot in height, is obscurely angular, striated, rough, hairy, and terminated by two or three upright peduncles, each bearing one flower. The radical leaves are ovate, entire, and more obtuse than those of the stem, which are in opposite pairs and lance-shaped. The flowers are of a deep yellow colour tinged with brown; the calyx is a dirty green, composed of fifteen or sixteen lancet-shaped hairy scales with purple points: the ray consists of about fourteen ligulate flowers twice as long as the calyx, striated, three-toothed, and hairy at the base. The seeds are oblong, striated, hairy, and crowned with a russet-coloured down.

The herbaceous part of the dried herb, which is used equally with flowers and root, seems as if covered with a hoary powder.

Qualities. — The dried plant has a pleasant, weak, aromatic odour, and excites sneezing. The taste of the leaves and flowers is slightly aromatic, bitter, and pungent; that of the root bitter and acrid. The leaves and flowers macerated in boiling water, yield an olive brown infusion, which has an odour not unlike that of senna, and a bitter, hot taste. It reddens tincture of litmus; but does not precipitate glue, nor alter solutions of tartarized antimony, and of oxymuriatic of mercury. With sulphate of iron and of zinc it strikes a deep green colour, and gives dark preci-

¹ It was introduced by Mr. P. Miller in 1759.

pitates. Superacetate of lead coagulates it. The mineral acids render it muddy, and of a dirty white colour, occasioning brown precipitates; but the alkalies only deepen its proper colour. Both alcohol and sulphuric ether take up from the flowers and leaves a resinous matter, which can be separated from the alcohol by water, and from the ether by evaporation. Hence we may conclude that arnica contains a peculiar acid,¹ a bitter resinous matter, and mucus; and that sulphates of iron and of zinc, superacetate of lead, and the mineral acids, are incompatible in prescriptions with infusions of its leaves and flowers.

Medical properties and uses.—The leaves and flowers of arnica are narcotic, stimulant, and diaphoretic; and in large doses, emetic and cathartic: the root is tonic and aromatic. The former have been used with advantage in paralytic affections, amaurosis, gout, rheumatism, and chlorosis. They have been extolled also in convulsive diseases, diarrhœa, and dysentery; but in the latter their stimulant properties prove often hurtful. In paralysis their good effects are generally preceded by a pricking sensation in the affected part; but in general they do not produce any sensible operation, unless when exhibited in too large doses: in which case they produce great anxiety, pain, vomiting, and the other deleterious effects of powerful narcotics. The root has been much extolled in Germany, as a succedaneum for cinchona in intermittents, putrid fevers, and gangrene; particularly by Dr. Collin of Pazman; but in the hands of British practitioners it has not deserved the high encomiums he has bestowed on it in these cases. It is regarded by the French practitioners as an excellent tonic in paralysis.²

Externally the powdered leaves may be used as an errhine.

Arnica may be exhibited in substance; or in an infusion, made by macerating ʒjss of the leaves and flowers, or ʒij of the bruised root, in fʒxiij of boiling water, and straining through linen. The infusion soon ferments. A dose of the powder is from grs. v. to grs. x.; that of the infusion fʒjss twice or thrice a day.

ARSENICUM³, Arsenic.

Syn. Arsenic (F.) Arsenick (G.) Arsenico (I.) Arsénico (S.)

This metal is found in most parts of the world, accompanying other metals; and occasionally uncombined forming distinct and peculiar veins. The following are the states in which arsenic is found:—

A. In its metallic state:

i. Alloyed with iron,

silver, gold, cobalt. *Sp.* 1. Native arsenic.

¹ Bouillon la Grange thinks it is the Gallic acid.

² Vide, *Nouveaux Elémens de Therapeutique*, par I. L. Alibert, 2d. ed. vol. i. p. 141.

³ From *arsenikon* Dioscoridis, which, however, is not the metal, but one of the species of the sulphuret, realgar; *συνδαρχη* of the other Greeks.

B. United with sulphur :

ii. sulphuretted

2. *Arsenical pyrites.*3. *Orpiment.* Var. *a* *Realgar.**b.* *Yellow orpiment.**C.* United with oxygen :

iii. oxidized.

4. *Native white oxide.**D.* Acidified :

iv. Combined with lime

5. *Arsenate of lime.* *Pharmacolite*

v. ———— with copper.

6 *Arsenate of copper.*Var. *a* *Foliated.**b* *Lenticular.* *c* *Oliven ore.*

vi. ———— with iron.

7. *Arsenate of iron.* *Cube ore.*

vii. ———— with lead

8. *Arsenate of lead.*

viii. ———— with cobalt.

9. *Arsenate of cobalt.* *Red cobalt ore.*Var. *a.* *Cobalt crust.**b.* *Cobalt bloom.*

As metallic arsenic is not used in the arts; it is not extracted from its ores; but is prepared for the purposes of experiment or of curiosity from the white oxide, which is commonly procured in roasting the arseniate of cobalt. It is necessary, however, to be acquainted with the appearances and properties of metallic arsenic, as one mode of ascertaining whether the white oxide has been used as a poison, in cases of suspected death, is by reducing the oxide.

Its colour is blueish gray, something like that of steel, with much brilliancy. It is quickly tarnished by exposure to the air, becomes black, and falls into powder. It is extremely brittle, and pulverulent. Its specific gravity is 8.310. It volatilizes at a heat of 356° Fahrenheit in dense white fumes, which have the odour of garlic, although the solid metal is inodorous. In its metallic state arsenic exerts no action on the animal system; but when oxidized it is a virulent poison.

Officinal. ARSENICI OXYDUM. *Lond.* OXIDUM ARSENICI *Edin.*

ARSENICUM; (*Oxydum album*) *Dub.* Oxide of Arsenic.

Syn. Arsenic oxyde natif (*F.*) Naturlicher Arsenickhalk (*G.*) Arsenico iuxneo (*I.*) Arsenico herabulhalik (*Arab*) Samuel-k'har (*H*) Sane'hya (*San*)

The greater part of the white oxide of arsenic of commerce is obtained in Bohemia and Saxony, in roasting the cobalt ores, and sometimes by sublimation from arsenical pyrites. The roasting is performed in furnaces with long flues, in which the impure oxide is condensed: and this is purified by sublimation in the following method. Large square boxes of cast iron, furnished with conical heads, which are closely luted to them with clay, are disposed in a brick area heated by the flues of two furnaces placed a little beneath them. When these boxes are red hot, the impure arsenic, by fifteen pounds at a time, is put into them, where it melts, and soon sublimes in the conical head. Successive additions are thus submitted to the action of heat,

till about 150 pounds have been used to each vessel; and then the apparatus is allowed to cool. The conical head is now separated from the box, and carried with its contents into another place, where the workmen break off with hammers the sublimed oxide, separating the impurities for a second operation.¹

The oxide or *arsenous acid*, thus obtained is a dense, semi-transparent, solid cake; which becomes opaque, of a snowy whiteness, and pulverulent, when exposed to the air. It is met with in both these forms in the shops; and often is sold in powder, in which state it is sometimes adulterated with white sand, chalk, and gypsum: but the fraud is easily detected by heating a small portion of the suspected powder; by which the oxide is entirely dissipated, and the impurities left behind.

The greater quantity of the oxide of arsenic used in this country is brought from Germany, in casks, each containing from two to five hundred weight.

Qualities. — White oxide of arsenic is inodorous; has an acrid taste, leaving on the tongue a sweetish impression; and is highly corrosive.² When pure, if it has not been freely exposed to the action of the air, it is in transparent, colourless, shining masses, which resemble glass, and break with a conchoidal fracture. It is soluble in 400 parts of water at 60°, and in 13 parts of boiling water; and the latter solution, on cooling, retains 3 parts of the white oxide for every 100 of water, and deposits the remainder in tetrahedrous crystals.³ Both solutions redden infusion of litmus, and combine with the alkalies. It is soluble also in alcohol and oils. When heated in the open air, this oxide is volatilized in a temperature of about 383° Fahr., and the vapour has no odour. The specific gravity of the oxide in its ordinary state is 3.706, that of the glass 3.699. According to the average of the experiments by different chemists, 100 parts of the oxide consist of between 74 and 75 of arsenic, and 34 and 35 of oxygen.⁴ On the simple watery solution of the oxide no change is produced by a solution of sulphate of iron, of oxymuriate of mercury, tartarized antimony, the mineral acids, or the alkalies: but nitrate of silver throws down a yellowish precipitate, which gradually passes to a brown colour; and a white precipitate is produced by superacetate of lead. Lime water also precipitates it white; sulphurets of the alkalies, pale yellow; and sulphuretted hydrogen gas, golden yellow.

¹ *Journal de Physique*, tom. i. p. 44.

² With Fourcroy the majority of Chemists now regard it as an acid.

³ Klaproth, *Schweigger's Journal*, vol. vi. p. 232; and *London Med. Repository*, vol. ii. p. 250. ⁴ Dr. Thomson's proportions are, arsenic 100 + 34.930 oxygen, *Annals of Phil.* iv. p. 176.

Medical properties and uses. — Although white oxide of arsenic is the most virulent of the mineral poisons, yet, when properly administered, it is a medicine of great efficacy; and is employed internally as a tonic, and externally as an escharotic. It had been long used as an internal empirical remedy in cancer, and some cutaneous affections, both in Europe and the East Indies; and for the cure of intermittents in Hungary; and in Lincolnshire under the name of "the ague drop:" but its effects were not clearly understood, nor the proper mode of administering it known, till Dr. Fowler of Stafford published his Observations on its use in the cure of remitting fevers and periodical head-achs. Since that time the authority of many respectable practitioners has been brought forward in confirmation of its efficacy in these diseases; and in lepra, chronic rheumatism, intermittent hemicrania or *megrim*, scirrhus: and some local painful affections "of the ends of the bones, cartilages, or ligaments, or of all three together." It has also been used in dropsy, hydrophobia, syphilis, visceral and glandular obstructions, and in many other diseases, in which, however, its efficacy is by no means established.¹ In the East Indies the native physicians employ arsenic (*sanc'hya*) made into pills with six parts of black pepper, for the cure of confirmed lues (*Persian fire*), and a species of elephantiasis (*Judham*).²

The internal use of white oxide of arsenic is contraindicated in all cases attended with strong arterial action; and where there are any pulmonary symptoms: and should a cough even intervene during its use, it should be instantly discontinued. When it is exhibited in proper cases, and with necessary precaution, the effects it produces must be carefully observed: "the feeling of swelling and stiffness of the palpebræ and face, heat, soreness and itching of the tarsi, or tenderness of the mouth³," are indications that the dose of the remedy has been carried to its full extent, and should then be diminished. If erythema or salivation appear, the use of it must be suspended: and it should be altogether abandoned if pain of the stomach, nausea, vomiting, head-ach, vertigo, or cough be induced.

The white oxide is exhibited either in substance or in solution. The best mode of giving it in substance is in the form of pills, formed by rubbing one grain of the oxide with ten grains of sugar, and then beating the mixture with a sufficient quantity of crumb of bread, so as to form ten moderately-sized pills; one of which is a dose. The solution, however, is more ma-

¹ For a list of these diseases, see a paper by Mr. Hill of Chester. *Edinburgh Med. Journ.* v. 19, 312, and vi. 55.

² Asiatick Researches, 8vo. 5th edit. vol. ii. p. 153.

³ Dr. Kellie, *ibid.*

nageable. The most common form of it is that of the London College; (vide *Liquor arsenicalis*;) but the simple solution in distilled water, in the proportion of four grains to a pint, is also given according to M. Le Febvre's method. A table spoonful of the solution, mixed with a little syrup of poppies and half a pint of milk, is directed to be taken in a morning fasting, and the frequency of the dose increased until six spoonsful be daily taken.

As an external application the oxide of arsenic has been long employed in cases of cancer; and has certainly done more to improve the ulceration, and give it a disposition to contract and heal, than any other external application. It has been sprinkled, in the form of powder, upon the sores; but the most violent pain follows this mode of applying it; and in some instances, probably from its absorption, the general system has been dangerously affected. The more usual mode of using it is in the form of a lotion, composed of eight grains of the oxide, and the same quantity of subcarbonate of potass, dissolved in four fluid ounces of water; or as an ointment, formed by rubbing together one drachm of the oxide and twelve drachms of spermaceti ointment. These applications produce little pain and irritation, cause the diseased parts to slough off, and amend the fetid discharge; but, although, to a certain extent they produce the most beneficial effects, yet, the instances in which a cure has been effected are very rare.

The white oxide of arsenic is not unfrequently the cause of death; arising from accidents occurring to those artists who use it in their manipulations; as glass-makers, dyers, and workers in gold: or from ignorance of the proper dose of its preparations when medicinally used; or from the employment of it as a poison. The symptoms which occur are those of inflammation of the stomach, incessant vomiting, purging, and pain of the stomach; constriction of the throat, and great heat of the mouth; sinking of the pulse, cold sweats, convulsions, and death: but if the quantity be not sufficient to produce speedy dissolution, the first-mentioned symptoms are succeeded by paralysis, hectic, and other symptoms of extreme debility.¹ When death takes place, symptoms of putridity are said soon to present themselves, but this is not always the case, although the body is often marked with livid stripes and covered with enchymoses; and on dissection the stomach often, although not always, appears either abraded, or completely eroded in several parts; with appear-

¹ In a case detailed by Dr. Yelloly, no pain of the stomach, convulsions, nor delirium occurred, although it terminated fatally. *Edin. Med. and Surg. Journ.* v. 389.

² On this subject our readers will find much practical information in the *London Medical Repository*, vol. v. p. 97.

ances of inflammation extending through the whole abdominal viscera. Particles of the arsenic are occasionally found adhering to the abraded parts of the villous coat of the stomach.

Various methods of counteracting the poison of arsenic have been recommended. Whatever antidote is adopted, the stomach should, in all cases, be immediately evacuated: and the best mode of doing this is by administering large draughts of tepid mucilaginous fluids. In order to render the arsenic inert, solutions of the alkaline sulphurets, and vinegar, have been advised; but the experiments of Renault have demonstrated how little reliance is to be placed on these articles. Hahneman orders one pound of soap to be dissolved in four pounds of water, and a cupful taken, tepid, every three or four minutes; and as this is the antidote most readily procured, if lime-water or chalk and water cannot be at hand, it should always be the first employed. Lime-water proves useful by coating the particles of the arsenic with an arseniate of lime, which is insoluble, and consequently inert.¹ Dr. Yelloly, reasoning on the probability that the inflammation induced is often the cause of death, even after the stomach is freed from the whole of the poison, suggests the propriety of early blood-letting in these cases.²

As medical men are often called upon in courts of law to establish the fact of white oxide of arsenic having been used as a poison, it is necessary to know the best tests by which it may be recognised. If on searching in the stomach, or among its vomited contents, any considerable quantity of the suspected poison be discovered, a little of it must be mixed with three times its weight of black flux; or one of finely-powdered charcoal, and two of dry carbonate of potash; or, to a grain of the poison are to be added half a grain of charcoal, and a grain of dried carbonate of potash. These must be put into a thin glass tube, about eight inches in length and 1-4th inch in diameter, hermetically closed at one end, and thinly coated with a mixture of pipe-clay and sand.³ The open extremity must then be slightly plugged with a piece of paper (taking care to clean the upper portion of the tube by means of a feather), and the tube kept for a quarter of an hour in a well-burnt coal fire; when, if the powder introduced into the tube contain arsenic, metallic arsenic will sublime and be found lining with a brilliant crust the inside of the tube. That it was arsenic may be further proved by volatilizing a small portion of the reduced

¹ See our experiments on this subject, in the *London Medical Repository*, vol. viii. p. 157.

² *Edinburgh Med. and Surg. Journal*, v. 392.

³ The coating of the tube is not absolutely necessary.

metal on a red-hot iron, and observing whether it presents the garlic odour peculiar to the vapour of metallic arsenic. But when the poison is found in very small quantity only, let it be dissolved in two drachms of hot rain or distilled water, with three grains of subcarbonate of potash, or, what is to be preferred, the subcarbonate of ammonia; then add to this, a warm solution of five grains of sulphate of copper, which will produce a lively grass-green precipitate if arsenic be present. When no powder is discovered in the stomach, its contents and the vomited matter must be washed with hot water and filtered, carbonate of potass added to the filtered fluid, and then a warm solution of the sulphate of copper, as above described. A still more delicate test than any of those already mentioned has been proposed by Mr. Hume¹: one part of the suspected poison, and three parts of subcarbonate of potass, are to be dissolved in a sufficient quantity of rain or distilled water at 212°; and the surface of this solution slightly touched with a piece of nitrate of silver. If oxide of arsenic be present, a sulphur-yellow coloured precipitate will be seen falling rapidly from the point where the nitrate is applied. In our experiments we have found that the sixtieth part of a grain of the oxide is clearly discovered in two ounces of water by this test. All these experiments should be performed in the day-time; and the precipitated fluid examined by reflected, not transmitted light.²—But the great difficulty is to detect the presence of the poison in the stomach. Besides examining the contents of this viscus by filtration and dilution, if no arsenic can be detected, Orfila advises the viscus to be cut in pieces, and separately examined³, by boiling them in water and testing the solution.

When any of the vehicle in which the poison has been exhibited can be procured, more satisfactory results will be obtained from the examination of it than from that of the contents of the stomach. If it be found in the form of powder, the most satisfactory proof is that of reducing it to the metallic form, as already described; but if the whole of the arsenic be dissolved, it must then be tried by different reagents. One of the simplest methods which I have tried, is the following. Into the suspected solution stir a moderate quantity of charcoal powder; allow it to settle; then pour off the clear supernatant fluid, or filter the mixture; and when the powder which remains on the filter is dry, sprinkle some of it on a red hot poker: if the solution contained arsenic, the odour of garlic will be rendered sensible. This effect becomes more

¹ *Philosophical Mag.* May 1809.
v. 170.

² Bostock—*Edin. Med. and Surg. Journ.*

³ *Traité des Poisons*, &c. par M. P. Orfila, vol. ii. p. 169.

obvious if a few grains of dried subcarbonate of potash be added to the dried charcoal powder.¹ The results from no single test should, however, be relied upon: and as a knowledge of the appearances produced by the four principal reagents usually employed for the detection of arsenic, must greatly facilitate such an examination, we have constructed the following table, from actual experiments; comparing the results obtained from solutions of arsenic with those from solutions of corrosive sublimate, tartarized antimony, and muriate of barytes, which are the only substances likely to be mistaken for arsenic. It is necessary to remark, that the broth employed was made with beef, and contained a moderate proportion of carrots, turnips, and onions; and that the coffee and the tea contained milk and sugar in the usual proportions employed in these beverages.

¹ To ascertain the delicacy of this test, the following experiments were made.—
Exp. 1. Half a drachm of white oxide of arsenic being boiled in two ounces of water, and the fluid filtered when cold, it was found to retain 28 grains of the white oxide in solution. Exp. 2. One drachm of this solution being mixed with two ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a *very faint* odour of garlic. Exp. 3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was *very perceptible*. Exp. 4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was *extremely strong*. From these experiments it is evident that this test will detect arsenic in any solution strong enough to act as a poison.

Solutions of Arsenic	Corrosive Sublimate	Tartarized Antimony	Muriate of Barytes	Broth	Coffee	Tea
1. 1 drachm of white oxide of arsenic in 2 ounces of water, filtered when cold, retained 28 grains of the white oxide in solution.	1. 1 drachm of corrosive sublimate in 2 ounces of water, filtered when cold, retained 28 grains of the white oxide in solution.	1. 1 drachm of tartarized antimony in 2 ounces of water, filtered when cold, retained 28 grains of the white oxide in solution.	1. 1 drachm of muriate of barytes in 2 ounces of water, filtered when cold, retained 28 grains of the white oxide in solution.	1. 1 drachm of white oxide of arsenic in 2 ounces of water, filtered when cold, retained 28 grains of the white oxide in solution.	1. 1 drachm of white oxide of arsenic in 2 ounces of water, filtered when cold, retained 28 grains of the white oxide in solution.	1. 1 drachm of white oxide of arsenic in 2 ounces of water, filtered when cold, retained 28 grains of the white oxide in solution.
2. 1 drachm of this solution being mixed with 2 ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a <i>very faint</i> odour of garlic.	2. 1 drachm of this solution being mixed with 2 ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a <i>very faint</i> odour of garlic.	2. 1 drachm of this solution being mixed with 2 ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a <i>very faint</i> odour of garlic.	2. 1 drachm of this solution being mixed with 2 ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a <i>very faint</i> odour of garlic.	2. 1 drachm of this solution being mixed with 2 ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a <i>very faint</i> odour of garlic.	2. 1 drachm of this solution being mixed with 2 ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a <i>very faint</i> odour of garlic.	2. 1 drachm of this solution being mixed with 2 ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 of water, a scruple of finely powdered charcoal was added, and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder when dry, on being thrown upon a red hot shovel, emitted a <i>very faint</i> odour of garlic.
3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was <i>very perceptible</i> .	3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was <i>very perceptible</i> .	3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was <i>very perceptible</i> .	3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was <i>very perceptible</i> .	3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was <i>very perceptible</i> .	3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was <i>very perceptible</i> .	3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution, as 1 to 308: the garlic odour was <i>very perceptible</i> .
4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was <i>extremely strong</i> .	4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was <i>extremely strong</i> .	4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was <i>extremely strong</i> .	4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was <i>extremely strong</i> .	4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was <i>extremely strong</i> .	4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was <i>extremely strong</i> .	4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 171, the garlic odour was <i>extremely strong</i> .

COMPARATIVE TABLE of the Precipitates obtained from Solutions of White Arsenic, of Oxymuriate of Mercury, of Tartarized Antimony, and of Muriate of Barytes, with different Tests.

1st Test.—WATER SATURATED WITH SULPHURETTED HYDROGEN GAS.				
Solvents.	Precipitates from Solutions of ARSENIC.	Precipitates from Solutions of CORROSIVE SUBMURIATE.	Precipitates from Solutions of TARTAR EMETIC.	Precipitates from Solutions of MURIATE of BARYTES.
Water.	Bright golden yellow, which was deepened by the addition of a few drops of strong acetic acid. ¹	Yellow at the instant of its formation, but soon becoming black. On shaking the tube a dirty white.	Orange, curdy partly suspended partly thrown down. Ultimately bright orange.	Heavy; and of a dirty, dark brown colour.
Broth.	Scarcely any at first, but on adding a few drops of strong acetic acid, a pale yellow.	Whitish yellow at first, quickly changing to mixed floes of yellow, black and white.	Pale orange at first, soon changing to a deeper bright orange.	Dirty pale brown, heavy.
Milk.	Little change, but on the addition of a drop of strong acetic acid, a straw-coloured precipitate.	Light ochre, requiring for its formation a large quantity of the test.	Golden yellow, with a shade of orange.	Dirty nankeen, with a shade of brown.
Tea.	At first very pale yellow, after some time a pale greenish yellow. The precipitate was curdy.	Brownish white, and yellow mixed.	Deep orange, curdy, slowly formed, supernatant fluid yellow.	Dirty light brown, deepening as it fell.
Madeira Wine	Turbid, pale yellow, the colour of the wine destroyed.	Muddy, gradually displaying small floating black flocci.	Pale orange, long suspended.	The muriate mixed with white wine is milky.—Not tested.
Port	Turbid, paler yellow: the precipitate in both very slowly formed.	Nearly as in the white, like clouds through the purple of the wine.	Dark dirty brown.	Pale brown, heavy.
Coffee.	A deep golden yellow.	Brownish black.	Deep orange brown.	Not tried.
Gruel.	Pale yellow suspended.	Light brown, slowly formed.	Pale orange.	Not tried.

¹ This precipitate, dried upon a filter, and heated with some caustic potash in a slender test tube, is decomposed in a few seconds, forming a sulphuret of potash, whilst the arsenic is volatilized in its metallic form, and adheres to the sides of the tube. (*Opifila*.)

II. HYDRO-SULPHURET OF POTASH.

Solvents.	Precipitates from Solutions of ARSENIC.	Precipitates from Solutions of CORROSIVE SUBLIMATE.	Precipitates from Solutions of TARTAR EMETIC.	Precipitates from Solutions of MURIATE of BARYTES.
Water	White, with the faintest tint of sulphur yellow, when a large quantity of the test was used. ¹ Pale, but bright: sulphur yellow. Bright golden yellow.	Black, mottled with yellow.	Bright orange.	Deep olive green.
Broth		Clotted heavy, black, mottled with gray. Black, clotted.	Dull orange, heavy.	L ² brown, partially suspended. Brown, greenish when the mixture was shaken.
Milk		Brownish black. Nearly black.	Reddish orange, flocculent. Deep brownish orange.	Not tried.
Tea	A beautiful yellow.	Dirty white, or slate-colour.	Beautiful bright orange.	Vide 1st Table.
Coffee	A deep golden yellow. ²	Slate colour, with violet supernatant liquor. ³	Dark brown, with a tinge of orange.	Violet, heavy.
Madeira Wine	Fawn colour.	Black dense clots. ⁴	Orange-clotted.	Dusky yellowish green.
Port do.				
Gruel	Bright queen's yellow.			

III. SOLUTION OF SULPHATE OF COPPER, with the addition of Ammonia in excess.

Solvents.	Precipitates from Solutions of ARSENIC.	Precipitates from Solutions of CORROSIVE SUBLIMATE.	Precipitates from Solutions of TARTAR EMETIC.	Precipitates from Solutions of MURIATE of BARYTES.
Water	Beautiful grass green. It completely disappeared on the addition of a few drops of strong acetic acid. ⁵ Beautiful pale green, suspended. ⁶	White, thick and heavy.	Pale, whitish blue, very little thrown down.	Copious, whitish blue.
Broth		White curdy, partly suspended, partly thrown down.	Pale, whitish blue, with a tint of green.	Opaque, glaucous.
Milk	Pale greyish green.	Blueish white, curdy.	Whitish blue.	Curdy white, with a tinge of blue.
Tea	Obscure olive; but scarcely a precipitate.	Dirty yellowish white, curdy.	Muddy; pale, blueish green.	Greyish, heavy, supernatant fluid, yellowish green.
Coffee	Dark grass green.	Dirty white.	Dirty blueish green.	Not tried.
Madeira Wine	Greyish, with a slight tint of green.	Heavy clotted white, with a tint of green.	Æmogenous blue.	Vide 1st Table.
Port do.	Clotted, heavy, dark greenish grey.	Heavy, clotted, blueish grey.	Heavy, dirty slate blue.	Dirty, violaceous grey.
Gruel	Beautiful grass green.	Pale blueish white.	Pale blueish green.	Pale, blueish green.

IV. NITRATE OF SILVER; a drop or two of Ammonia being previously added to the solutions.

Water	Copious bright sulphur yellow, falling in flocculi from the point of contact. ⁷	Dull yellowish white, clotting, changing to dirty white	Pale brown.	White, heavy; soon blackening.
Broth	White (owing to the muriate of soda.)	White, copious.	Brownish, mixed with much muriate of silver.	White, dense, curdy.
Milk	White, with a tint of yellow.	Dirty white.	Very pale, scarcely visible brown.	Not tried.
Tea	Yellowish white, which soon blackens.	Dirty white.	Dirty brown.	Not tried.
Coffee	Yellow, remaining unchanged.	White, changing to black.	Not tried.	Not tried.
Madeira Wine	Pale sulphur yellow.	Dirty white, changing to black.	White.	White 1st Table.
Port do.	White, becoming brown on exposure to the light.	Ibid.	Dirty white.	Heavy, dirty white.
Gruel	Yellowish.	Dense, dirty white clots.	Not tried.	Dense, clotted, white.

¹ This test, added to a solution of the phosphates, throws down a greenish yellow precipitate, the supernatant fluid being yellow and turbid.

² Lime water, also, added to coffee containing arsenic, throws down a yellow precipitate; although it precipitates the watery solution of arsenic white. (*Orfila*.)

³ Corrosive sublimate cannot be exhibited with an intention to commit murder, (except by a self-murderer,) in port wine, as it changes the colour of the wine to pale violet.

⁴ All the sulphurets, when dried, and heated in a tube with iron filings, afford metallic mercury, which is volatilized, and shows itself in globules upon the sides of the tube.

⁵ This test is capable of detecting arsenic in a solution containing 1/10000 of its weight. (*Orfila*.)

⁶ It has been suggested, that onions boiled in broth, or eaten so as to impregnate with their peculiar qualities the contents of the stomach, might produce the same effects on this reagent, as if arsenic were present; but although a green colour is produced, yet no precipitate falls as when arsenic is present.

⁷ A similar precipitate is formed by this test, in a solution of any of the phosphates; but the fact of the precipitate being occasioned by arsenic, is easily ascertained by testing a fresh portion of the solution with lime water. If it contain arsenic, a copious white precipitate will be thrown down; if a phosphate only, there is scarcely any change, or at the most a translucent flocculent precipitate, which remains long suspended. A new method of employing this test was suggested by Dr. Paris. It is to put upon a piece of clean white paper a broad streak of the suspected fluid; and then run lightly over it a stick of lunar caustic. This is an excellent test, when modified as I have elsewhere (*London Med. Repository*, vol. viii. p. 178.) suggested, by brushing the streak lightly over with liquid ammonia, immediately after the application of the caustic. If arsenic be present, a bright queen's yellow is instantly produced, which remains permanent for nearly an hour; but, when the lunar caustic produces a bright yellow before the ammonia is applied, we may suspect the presence of some phosphate rather than arsenic.

ARTEMISIA. *Spec. Plant. Willd.* iii. 1815.

Cl. 19. Ord. 2. Syngenesia Superflua. *Nat. ord.* Compositæ Nucamentaceæ *Linn.* Corymbiferae *Juss.*

G. 1473. Receptacle subvillous or almost naked. Seed-down none. Cal. imbricate, with roundish converging scales. Cor. without rays.

* Shrubby.

Spec. 8. *A. Abrotanum*, Southernwood. *Med. Bot.* 2d edit. 52. t. 21.

*** Herbaceous, with the stem somewhat branching, the flowers in panicles, the leaves compound.

Spec. 26. *A. santonica*, Tartarian Southernwood. *Med. Bot.* 2d edit. 61 t. 23.

42. *A. maritima*. Sea Wormwood. *Med. Bot.* 2d edit. 60. t. 24. *Smith Flora Brit.* 864.

63. *A. Absinthium*. Common Wormwood. *Med. Bot.* 2d edit. 54. t. 22. *Smith Flora Brit.* 864.

1. ARTEMISIA ABROTANUM.¹

Officinal. ABROTANUM; FOLIA. *Dub.* Southernwood leaves.

Syn. Citronelle Aurogne (*F.*) Eberaute, Stabwurz (*G.*) Abrotano (*L.*) Limbriguera (*S.*)

This is a perennial undershrub, a native of the south of Europe, Siberia, China, and Cochinchina. In England, where it is abundantly cultivated, it resists the winter, but very rarely flowers. It rises about three feet in height, with a shrubby branching stem covered with smooth brown bark. The leaves are alternate on long footstalks, irregularly doubly pinnate; the pinnæ linear, concave on the upper surface, convex below, tomentose, and of a pale green colour. The flowers are compound, of a greenish yellow colour, and produced on one-flowered peduncles in axillary spikes at the extremities of the branches. The seeds are naked and solitary.

Qualities.—Southernwood has a strong fragrant odour; and a warm, bitter, nauseous taste. Both water and alcohol extract these qualities; but the alcohol more perfectly than the water, the infusion having scarcely any bitterness. The tincture is of a beautiful green colour, the infusion of a pale olive. The latter strikes a black with sulphate of iron, and precipitates acetate of lead. A small quantity of essential oil is procured by distillation; on which, and a bitter resinous matter, the qualities of the plant appear to depend.

Medical properties and uses.—Southernwood is said to possess tonic, diaphoretic, anthelmintic, and deobstruent properties. It was formerly much used in debilities of the stomach; chlorosis; and jaundice. Externally it has been employed as a discutient and anodyne fomentation for inflammations, pains, tumours, and gangrenous ulcers. But it is very rarely used in modern practice. The dose may be from ʒj to ʒj of the leaves in substance; or of an infusion, made with ʒvj of the leaves and f̄x of water, a cupful, taken twice or thrice a day.

¹ Ab αβροτον inhumanum; vel αβρωτον cibo inutile. Vide *Alston's Mat. Med.* ii. 65.

2. ARTEMISIA SANTONICA.

Official. ARTEMISIÆ SANTONICÆ CACUMINA. *Edin.* SANTONICUM¹; CACUMINA. *Dub.* The tops of Tartarian Southernwood.
Syn. Sementine (F.) Tartarisches Beyfus (G.) Santonico (L.)

This species of artemisia is a native of Tartary and Persia: but it is cultivated in our gardens, flowering in September. The root is perennial; and the plant has the habits of indigenous field southernwood, but is erect. The stem is panicled, rising two feet in height, and rather hoary. The lower leaves are pinnate, much cut, linear, and hoary. The branches are wand-like; with alternate racemes, recurved, and having flowers all looking the same way. The flowers are solitary, and cylindrical. In the fruiting plant all the stems are erect, and lose their hoariness. The leaves on the branches are very small, linear, and undivided. The receptacle is naked.²

The qualities and medical properties of this plant are nearly the same as those of the former species of artemisia; and it may be used for the same purposes. The worm seeds (*semina Santonici*) of the former pharmacopœias, which were supposed to be the production of this plant, are now properly rejected; as their place can be well supplied with anthelmintics of more certainty.

3. ARTEMISIA MARITIMA.³

Official. ABSINTHIUM MARITIMUM; CACUMINA. *Dub.* The tops of Sea Wormwood.

This is an indigenous, perennial plant, growing near the sea shores, and in salt marshes, flowering in August. The root is fibrous, and somewhat woody. The stems rise two or three feet in height, are panicled, erect, leafy, furrowed, and hoary. The inferior leaves are pinnate, with three cleft pinnæ; the upper ones variously divided; the highest simple, and the whole entire in the margin, downy on both sides. The flowers are ovate, of a brownish-yellow colour, in nodding racemes. The calyx is woolly on the outside, with a scaly margin; the receptacle is naked, and the ray florets are very few.

Qualities. — The odour is slightly fragrant; and the taste bitter and weakly aromatic. Like the first-described species, its activity seems to depend on a bitter resin and essential oil.

Medical properties and uses. — These are in every respect the same, in a diminished degree, as those of the next species. It is scarcely ever used.

4. ARTEMISIA ABSINTHIUM.⁴

Official. ABSINTHIUM. *Lond.* ARTEMISIÆ ABSINTHII FOLIA, SUMMITATES. *Edin.* ABSINTHIUM VULGARE; FOLIA, CACUMINA. The leaves and flowering tops of Wormwood.

Syn. Absinthe commun (F.) Wormuth (G.) Assenzio (I) Artemisio axenjo (S.)

¹ *Σαντονικη* Dioscoridis.

³ *Σειφιον* Dioscoridis.

² Willdenow, iii. 1827.

⁴ *Αψιθιον* Dioscoridis.

Common wormwood is an indigenous perennial plant, growing in dry waste places, and flowering in August. The greater part, however, of that which is used for medicinal purposes is cultivated in the physical gardens.* The root is somewhat woody, and branched. The stems rise nearly erect to the height of two or three feet; are branching, angled, and furrowed, with the summits paniced. The lower leaves are bipinnate; the upper pinnatifid or digitated; with oblong obtuse very entire segments. The racemes are erect, and the flowers pedicelated, nodding, hemispherical, and of a brownish-yellow colour. The florets of the disk are numerous, but those of the ray few: and the receptacle is covered with white silky hairs shorter than the calyx.

Qualities.—The odour of common wormwood is strong, and although fragrant, yet to many persons it is very disagreeable; the taste is intensely bitter, slightly pungent, and nauseous. These qualities are given out both to water and alcohol: and a dark-green essential oil, on which the odour depends, is obtained by distillation with water. The watery infusion of the plant has a pale olive colour: sulphate of iron, and of zinc, slowly deepen it to a black; and superacetate of lead throws down a yellowish-green flocculent precipitate. The active parts of the plant seem to be extractive, essential oil, and a small portion of resin. Kunsmüller† found in the residue of twelve ounces of the plant after infusion, besides other things, fifty-nine grains of carbonate of lime.

Medical properties and uses.—Common wormwood is the only species of *artemisia* which deserves to be retained in the list of *materia medica*. It is tonic, antispasmodic, and anthelmintic; and, when externally applied, is discutient and antiseptic. It has been used with advantage in intermittents, gout, scurvy, and dropsy; and although modern practitioners will scarcely rely on its efficacy in these complaints, yet, it is undoubtedly of some value as a stomachic in dyspepsia and hypochondriacal affections. When it is desirable to free the remedy from its narcotic property, it should be given in decoction, as the boiling dissipates the essential oil on which this depends. The dose in substance is $\mathfrak{zj}$ to $\mathfrak{zjij}$; and of the infusion, made by macerating $\mathfrak{zvj}$ of the plant in $\mathfrak{f}\mathfrak{z}\mathfrak{xij}$ of water, $\mathfrak{f}\mathfrak{zj}$ to $\mathfrak{f}\mathfrak{zxij}$, three or four times a day.‡

ARUM. *Spec. Plant. Willd.* iv. 477. *Botanog. ed. var.*
Cl. 21. Ord. 7. Monoecia Polyandria. Nat. ord. Piperitæ Linn.
Aroideæ Juss.

* A good deal is cultivated at Mitcham, in Surry, chiefly for the seed, which is sold to the rectifiers of British spirits at about 30s. per cwt. *Stevenson's Survey*, p. 378.

† *Ann. de Chim.* vi. p. 35.

‡ Purl is an infusion of wormwood in ale.

G. 1705. *Spath* one-leaved, cowed. *Spadix* naked above, female below, stameneous in the middle.

* *Stemless with compound leaves.*

Sp. 17. *A. maculatum*. Arum, or Cuckow-pint. *Med. Bot.* 2d edit.

728. t. 249. *Eng. Bot.* 1298. *Smith Flora Britan.* iii. 1024.

Officinal. ARUM; RADIX RECENS. *Dub.* The recent root of Arum.

Syn. Gouet (*F.*) Aronswurzel (*G.*) Aro (*L.*)

This is a perennial indigenous plant, growing under hedges and on the sides of banks in many parts of Britain¹; flowering in May, and ripening its berries in August. The root is tuberos, about the size of the first joint of the thumb, with many radical fibres issuing from every side. The leaves, which seldom exceed four in number, are radical, supported on grooved sheathing petioles about nine inches long: they are triangular and barbed, five inches in length, and two in breadth at the base, smooth, glistening, of a deep green colour above, and often sparsely spotted with dark brown or black blotches. The flower-stem is a simple, erect scape, six inches high, and obscurely furrowed. The spathe is erect, bellied, pointed above, of a pale green colour, sometimes spotted, withering, and covering the fruit till it is nearly ripe, when it drops. The spadix is enclosed in the sheath, is club-shaped, obtuse, of a purple colour above, and whitish below; collared towards the middle with many sterile filaments; a little lower with numerous sessile anthers; and at the base with many roundish germens, crowned with sessile, simple stigmas. The berries are succulent, of a bright scarlet colour when fully ripe, and contain one or two hard seeds.

For medical use the roots of arum should be dug up in autumn, after the leaves are completely decayed. They may be preserved fresh for nearly a year if buried in sand in a cool cellar.

Qualities.—The arum root is white, and inodorous. When chewed the taste is at first sweetish and soft, but it soon excites a burning, pricking sensation on the tongue and in the mouth, which continues many hours, and is attended with great thirst. Butter, milk, and oily fluids allay these unpleasant sensations. The sliced root applied to the skin, reddens, and excoriates or vesicates it. The acrimonious matter, however, can be washed off from the bruised root by water; is completely dissipated by drying; and abstracted by water and alcohol by distillation, although the fluid receive no sensible impregnation; so that it may be regarded as a vegetable principle sui generis. The recent expressed juice reddens vegetable blues; and has been found to contain malate of lime.² The dried root is chiefly fe-

¹ We have found it in great abundance in the lanes near Ewell in Surry.

² *Ann. de Chimie.* xxxv. 153.

cula, perfectly inert, and saponaceous; and is used in France as a cosmetic, under the name of Cypress powder.

Med. properties and uses.—Arum root in its recent state is stimulant, diaphoretic, and expectorant. It has been employed in cachetic, chlorotic, and rheumatic cases; and in humoral asthma. Bergius says, he found it a never-failing remedy for cephalæa sympathica, which resisted all the other means he employed. But the difficulty of procuring arum root always in a state to be depended on, prevents it from becoming a remedy of general utility.

The dose of arum, in substance, may be from grs. x. to ʒj, three or four times a day, combined with any thing which can sheath its acrimony, as mucilage, milk, thick barley-water; or triturated with gum and water, so as to form an emulsion.

ASARUM. *Spec. Plant. Willd.* ii. 858.

Cl. 11. Ord. 1. Dodecandria Monogynia. Nat. ord. Sarmentaceæ Linn. Aristolochiæ Juss.

G. 925. Calyx three or four-cleft, placed on the germen. Corolla none. Capsule coriaceous, crowned.

Spec. 1. *A. Europæum*¹. Asarabacca. *Med. Bot.* 2d edit. t. 66. Eng. Bot. t. 1083. *Smith. Flora Brit.* 509.

Officinal. ASARI FOLIA. *Lond. Edin.* ASARUM; FOLIA. *Dub.* Asarabacca leaves.

Syn. Asaret; Cabaret (F.) Haselwurtzel (G.) Asaro (I.) Asaro de Europa (S.) Asāroon (Arab.) Tuckir (Hind.)

This is a perennial plant, a native of several parts of England, particularly Lancashire and Westmoreland: growing in woods and shady places: and flowering in May. The root is creeping, fleshy, and fibrous. The stem short, round, simple, pubescent, generally bearing two leaves only, and one flower. The leaves are opposite, on footstalks three inches long, of a kidney shape, entire, somewhat hairy, and of a deep shining green colour. The flower is on a short terminal peduncle, of an herbaceous colour on the outside, and dusky purple within; and is in some degree hid under the leaves: the calyx is bell-shaped, and three-cleft, with the points of the segments, which are erect, turned inwards: there is no corolla: the filaments are produced beyond the anthers into a hook or little horn; and the style is cylindrical with a six-parted stigma. The seeds are few, contained in a six celled, inferior, coriaceous capsule, egg-shaped, and crowned with the persistent calyx.

As a great deal of the acrimony of asarabacca is lost with keeping, the leaves should be used in as recent a state as possible; and dried without the application of much heat.²

¹ Derived from *Aragæ* Dioscoridis, or more probably from the Arabic *Asāroon*, which signifies astringency.

² The roots, which are not ordered in the British pharmacopœias, contain the same acid principle as arum; and are violently emetic and cathartic. Their odour, which is not unlike that of valerian, is said to prove fatal to moles. *St. Hilaire, Expos. des Fam. Nat.* vi. 174.

Qualities. — The recent leaves are nearly inodorous; their taste slightly aromatic, bitter, acrid, and nauseous. The decoction is inert, but the watery infusion which has the colour of brandy, possesses the sensible qualities of the leaves. Sulphate of iron changes the colour to a deep olive, throwing down a grayish precipitate.

Medical properties and uses. — The leaves of *Asarabacca* are emetic, cathartic, and diuretic; but in modern practice they are never used except as an errhine; and, perhaps, as Dr. Cullen has remarked, they form the most useful species of this genus of local stimulants. A proper dose snuffed up the nose for a few successive evenings at bed-time, occasions a copious discharge from the nostrils, which continues to flow for several days. They have been found particularly beneficial in cephalæa, obstinate tooth-achs, chronic ophthalmia, and lethargic affections. The dose of the powdered leaves is grs. iij to grs. v. which should be repeated every night until the full effect is produced, avoiding exposure to cold during its use.

Official preparation. *Pulvis Asari compositus*. E. D.

ASSAFŒTIDÆ GUMMI RESINA. Vide *Ferula Assa-fœtida*.

ASPIDIUM. *Flora Britannica*, Smith, 1118.

Cl. 24. Ord. 1. Cryptogamia Filices. Nat. ord. Filices Linn.

G. 429. (Smith.) *Fructification* in roundish points, scattered, not marginal. *Involucre* umbilicated, open almost on every side.

** *Fronde* nearly bipinnate.

Species 4. A. *Filix mas*. Male Fern root. *Med. Bot.* 1st edit. t. 49.

(*Polypodium Filix mas*.) *Eng. Bot.* 1458.

Official. FILICIS RADIX. Lond. ASPIDIUM FILICIS MARIS RADIX.

Edin. FILIX MAS; RADIX. Dub. Root of the Male Fern.

Syn. Fougere (F.) Johanniswurtzel (G.) Felie Maschia (I.) Polypodio helecho masculino (S.)

This is a common indigenous, perennial plant, growing in woods and shady places, and flowering in June and July. The root consists of many matted fibres, forming a turfy or cespitose head, of a blackish colour and scaly. The leaves or fronds grow in circular tufts, from a foot to four feet in height, with the stipe and mid-rib chaffy. They are of a bright green colour, lanceolate and pinnate. The pinnæ are at first alternate, increasing in size from the base towards the middle, then decreasing towards the summit of the leaf; each being deeply subdivided into linear obtuse parallel lobes, crenate on the edges. The fructification is like small dots on the back of each lobe, placed in two rows near the base, and distant from the edges; composed of a kidney-shaped shield or involucre, and a pale brown capsule, with a saffron-coloured elastic ring.

— *Charact. Dioscoridis.*

Qualities.—The dried root is nearly inodorous; the taste at first sweetish, then slightly bitter, subastringent; and mucilaginous when chewed. The internal part of the root, which yields a reddish powder, is the portion that is medicinally used.

Medical properties and uses.—This root is astringent, and has been celebrated both by the ancients and the moderns as a powerful anthelmintic. It appears to have been used as such by Theophrastus, Dioscorides, and Galen; but although recommended by Hoffman, yet it was neglected by the moderns, until the publication of Madame Noufer's specific for the tape worm, by the French government, again brought it into notice. According to her plan of administering it, from one to three drachms of the powdered root was directed to be taken in a large cupful of water, in the morning while the patient was in bed: and two hours afterwards a strong cathartic of calomel and gamboge, proportioned to the age and strength of the patient, was given; and, if necessary, the further operation was promoted by a dose of purging salts; nothing but broth being taken till the worm came away. If this, however, did not happen on the same day, the process was ordered to be repeated on the next.

Notwithstanding the celebrity of this remedy, there is every reason for ascribing more efficacy to the cathartic than the fern root; and it may now be rejected altogether from the materia medica, oil of turpentine being a more certain remedy for expelling tænia.

ASTRAGALUS. *Spec. Plant. Willd.* iii. 1256.

Cl. 17. Ord. 4. Diadelphia Decandria. Nat. ord. Papilionaceæ or Leguminosæ Linn.

G. 1379. Legume generally two-celled, gibbous.

Species.—*A. verus*. True Astragalus. Olivier *Voy. dans l'Empire Ottoman*, v. 342. pl. 44.

Officinal. TRAGACANTHA. Lond. ASTRAGALI TRAGACANTHÆ GUMMI. Edin. Tragacanth.

Syn. Gommi Astraganti (F). Traganth (G). Draganta (L). Sumégh ulkassael (Arab.) Xurivsh (H.)

This shrub is a native of the north of Persia, flowering in July and August. It rises 2 or 3 feet only in height, on a stem about an inch in thickness; with many branches closely crowded together, and covered with imbricated scales and spines, formed from the petioles of the former year. The leaves, which scarcely exceed half an inch in length, are composed of 6, 7, or 8 pairs of opposite, villous, stiff, pointed leaflets; and the midrib is terminated with a sharp yellowish point. The flowers are small, yellow, and proceed from the axillæ of the leaves, with cottony bractes. The calyx is five-toothed, and shorter than the corolla, which is papilionaceous.*

* Before Olivier discovered that the species of *Astragalus* above described yields the Tragacanth of commerce, this gum was supposed to be yielded by the *A. Tragacantha* of

The gum exudes in summer, more or less copiously according to the heat of the weather, in tortuous filaments, which are allowed to dry on the plant before being collected. A large portion of the tragacanth collected in Persia is sent to India, Bagdad, Bussorah, and Russia. But what we receive is sent to Aleppo, whence it is exported, packed in cases.

Qualities.—Good gum tragacanth is inodorous; impressing a very slightly bitter taste as it dissolves in the mouth. It has a whitish colour, is semitransparent, and in very thin, wrinkled, vermiform pieces: brittle but not easily pulverized, except in frosty weather, or in a warmed mortar. It swells and softens in water, but does not form a homogeneous fluid mucilage, unless triturated after digestion with a large portion of water: but when the water is acidulated with any of the mineral acids, a small portion of it is dissolved. Dr. John has named this species of Gum *Cerasin*, from its being exuded pure from the Cherry tree. Its mucilage differs from that of acacia gum in being precipitated by the superacetate of lead and oxymuriate of tin; and not by silicated potass², or the oxysulphate of iron.

Medical properties and uses.—Gum tragacanth is demulcent; and may answer the purposes of the acacia gum; being even better adapted for allaying tickling cough, and sheathing the fauces in catarrhal affections, owing to its greater viscosity. It is chiefly, however, employed for pharmaceutical purposes. The dose is grs. x. to 5j or more.

Official preparations — *Mucilago Astragali Tragacanthæ*. E. D.
Pulvis Tragacanthæ comp. L.

ATROPA. *Spec. Plant. Willd.* i. 1016.

Cl. 5. Ord. 1. Pentandria Monogynia. Nat. ord. Luridæ Linn. Solonaceæ Juss.

G. 381. Cor. bell-shaped. Stam. distant. Berry globular, 2 celled.

Species 2. A. *Belladonna*. Deadly Nightshade, or Dwale. *Med. Bot.* 2d ed. 230. t. 82. *Eng. Bot.* 592. *Smith. Flor. Brit.* 253.

Official. *BELLADONNÆ FOLIA*, Lond. Dub. *ATROPÆ BELLADONNÆ FOLIA*. *Edin.* Deadly Nightshade leaves.

Syn. Belladone (F.) Tölkraut (G.) Belladonna (I.)

Belladonna is an indigenous perennial, found in many parts of Great Britain, particularly in shady places where the soil is calcareous, flowering in June, and ripening its berries in September. The root is thick, fleshy, and creeping; sending up several erect, purple-coloured, herbaceous annual stems, about

Linnaeus, on the authority of Tournefort; or the *A. gummiifera*, on that of M. de la Billardière. Perhaps all these species yield it, although the *A. vera* be that from which it is more generally procured. The Kuttirah gum from India has been found not to answer the purposes of the ordinary Tragacanth.

² Bostöck, *Nicholson's Journ.* lviii. 30.

three feet in height, branching, leafy, round, and somewhat fleshy. The leaves are lateral, in pairs of unequal size, decurrent, on short petioles, egg-shaped, pointed, entire; of a dusky green colour above, and paler below; soft and fatty to the touch. The flowers are supported on one-flowered, solitary, axillary peduncles; large, drooping, and having a faint narcotic odour: the calyx is green, persistent, and deeply divided into five ovate segments; the corolla bell-shaped, of a lurid hue externally, and within dusky or brownish violet, with a yellow variegated base, inclosing five filaments shorter than the corolla, nodding, and bearing large anthers; with a pyramidal germ, supporting a long simple style and two-lobed stigma. The ripe berry is large, seated within the calyx, roundish, with a longitudinal furrow on each side, shining, smooth, and of a deep purple colour; containing many seeds, and a sweetish, violet-coloured juice.

Qualities.—The leaves of belladonna are inodorous; the taste is slightly nauseous, sweetish, and subacid. It does not lose its active properties by drying. Vauquelin found that the leaves contain a substance, resembling animal albumen, salts with a base of potash, and a bitter principle in which their narcotic quality resides. Every part of the plant is poisonous; and children and the ignorant have often suffered from eating the berries, the beautiful appearance and sweet taste of which render them very alluring. The symptoms which they induce are those of intoxication, accompanied with fits of laughter and violent gestures; great thirst, difficulty of deglutition, nausea, dilatation of the pupil, with the eyelids drawn down; redness and tumefaction of the face, stupor or delirium, a low and feeble pulse, paralysis of the intestines, convulsions and death. Dissections show that the stomach and intestines have been inflamed; and after death the body swells, blood flows from the nose, mouth, and ears; and the most rapid decomposition ensues. The best mode of averting these fatal effects is by exhibiting emetics of sulphate of zinc, or of copper, and assisting their operation by irritating the fauces; then evacuating the bowels by active purgatives and glysters; and following these by large doses of vinegar and other vegetable acids. The recovery is always slow.

Medical properties and uses.—The deleterious effects we have enumerated demonstrate that belladonna is a very powerful narcotic. It is besides diaphoretic, and diuretic. When injudiciously or incautiously given, or when it is taken for a considerable length of time even in small doses, it is apt to induce a dryness and stricture of the pharynx and adjoining parts of the oesophagus, sickness, vertigo, and dimness of sight; symptoms

sufficiently indicative of the necessity of suspending its use for some time, and giving it in smaller doses when it is resumed. The internal administration of belladonna appears to have been suggested by the advantages resulting from its external application. Cullen, De Haen, Juncker, and others, found it very serviceable in scirrhus and cancerous affections; and it has also been given with advantage in obstinate intermittents, chronic rheumatism, gout, paralysis, amaurosis, pertussis, and in other spasmodic diseases in which we can speak of its efficacy from our own experience. Hufeland asserts its efficacy in allaying convulsions arising from scrophulous irritation; and its beneficial effects in neuralgia facialis have been well ascertained.¹ Its effects seem to depend altogether on its narcotic powers; but they have not been found sufficiently constant and permanent to insure its general use. Externally, used either as a fomentation, or the dried leaves powdered and sprinkled over the parts, it is of singular efficacy in diminishing the pain of cancerous and ill-conditioned sores: and as the infusion, when dropped into the eye, produces a great dilatation of the pupil, it was proposed by professor Reimar, and has been used in this country², as a mean for assisting the extraction of the cataract. "Its operation appears to be limited to the radiated fibres of the iris."³ By continued use it loses its effect: but regains it after the application has been, for a short time suspended.

Belladonna may be given in substance, beginning with one grain of the dry leaves powdered, and gradually increasing the dose to 12 or 14 grains; or of an infusion made with one scruple of the dried leaves in ten fluid ounces of boiling water, two ounces may be given daily, and cautiously increased.

Official preparations. *Extract. Belladonnæ. L. Succus spissatus Atropæ Belladonnæ, E.*

AURANTII BACCÆ. Vide *Citrus Aurantium*.

AVENA. *Spec. Plant. Willd. i. 443.*

Cl. 3. Ord. 2. Triandria Digynia Nat. ord. Gramina Linn.

G. 142. Calyx two-valved, many-flowered; with a twisted awn on the back.

Species 13. *A. sativa.* Common Oat.

Off. AVENÆ SEMINA. *Lond. Edin.* The seeds of the Oat, called Grits.

Syn. Gruau d'aveine. (F.) Habergriize (G.) Avena (L.) Avena (S.)

The oat was found by Anson growing wild upon the island of Juan Fernandez, on the coast of Chili; but the place whence it was first brought to Europe has never been satisfactorily ascertained. The root is annual and fibrous, pushing up a culm

¹ Observations on the use of Belladonna, &c. by John Bailey, 8vo. 1817.

² Med. and Phys. Journal, No. xxxii.

³ Adams's Practical Observations on Ktrotropium, &c. 8vo. p. 44.

or straw, which rises above two feet in height. The inflorescence is a loose panicle, with the subdivisions on long pendulous peduncles. The glumes of the calyx are two, marked with lines, pointed, unequal, and larger than the flower. There are usually two flowers and seeds in each calyx; they are alternate, conical; the smaller one is awnless: the larger puts forth a strong, two-coloured, bent awn from the middle of the back; both seeds are fertile.

There are many varieties of this species of grain cultivated in the north of Europe. In this country that which is called *the potatoe oat* is considered the best; its pickle is short and plump, with a thin, clean, bright, pale straw-coloured cuticle.

Oats, when freed from their cuticle only, are named grits; in which state, and ground into meal, they are dietetically and medicinally used. In both states they yield their fecula to water by coction; and form a nutritious amylaceous gruel. The nutrient qualities of oats are well known. In many places the meal forms the chief support of the poor: and for infants who are unfortunately deprived of their natural and proper nourishment, the breast milk, no better substitute can be adopted than thin grit gruel mixed with good cow's milk. The gruel should not be kept longer than forty-eight hours, as it becomes aced after that period.¹

Qualities. Oats are inodorous; and taste very slightly, but not unpleasantly bitter. They have not been chemically examined; but the greater part of their substance appears to consist of fecula or starch.

Medical properties and uses. — Gruels, or decoctions of grits or of oatmeal, are excellent demulcents, and therefore very frequently prescribed in inflammatory diseases, diarrhoea, cholera, dysentery, calculus, and febrile affections. They may be sweetened, acidified, or used plain. They are also used locally in glysters; and the meal boiled with water into a thick paste forms an excellent suppurative poultice.

BARYTA. Barytes.

Syn. Baryte (*F.*) Baryterde, Schwererde (*G.*) Barite (*L.*)

This mineral substance does not exist, as far as we know, in an uncombined state; and its native combinations hitherto discovered are very few. It is found

A. Combined with carbonic acid:

Sp. 1. Carbonate of barytes, or *Witherite*.²

¹ The following is the simplest mode of making gruel: Put three ounces of grits which have been washed, into four pints of water, and boil slowly until the water be reduced one half; then strain through a searce to separate the undissolved part of the grits from the gruel. ² So named by Werner after Dr. Withering who discovered it.

B. ——— with sulphuric acid :

2. *Sulphate of barytes, or Heavy spar.*

Barytes is obtained by decomposing these fossils. It is not a simple substance, but a compound of a peculiar metallic base named *barium* by Sir H. Davy¹, and oxygen, in unknown proportions.

1. CARBONATE OF BARYTES.

Officinal. CARBONAS BARYTÆ. *Edin.* Carbonate of Barytes.

Syn. Carbonate de Baryte, (F.) Kohlensaure Baryterde, (G.) Ossicarbonato di Barite (I.)

This fossil is found native in Sweden, Scotland, and Cumberland; but in greatest abundance at Anglesark, in Lancashire. It usually occurs massive in veins, which traverse the independent coal formation: and sometimes, although rarely, it is found crystallized.

Qualities.—Carbonate of barytes is inodorous and insipid; but is nevertheless poisonous. Its colour is white, or yellowish gray; it is translucent, with a shining, somewhat resinous lustre; and breaks in one direction with a fracture intermediate between radiated and foliated; and in another uneven: the fragments wedge-shaped. Its specific gravity is 4.331. When heated it becomes opaque; is fused into a white enamel by the blow-pipe; and dissolves with effervescence in diluted nitric acid. According to Berzelius, it consists of 78.4 of barytes and 21.6 of carbonic acid in 100 parts.

Use.—It is only used for preparing the muriate.

Officinal preparation. *Murias Barytæ.* E.

2. SULPHATE OF BARYTES.

Officinal. SULPHAS BARYTÆ. *Edin.* Sulphate of Barytes.

Syn. Sulfate de Baryte (F.) Schwefelsaures Baryterde (G.) Ossisolfato di Barite (I.)

This combination of barytes, which was formerly named *Ponderous spar*, is found native in many parts of the world.

Qualities.—Sulphate of barytes is inodorous and insipid. Its colour is white with shades of yellow, red, blue, or brown. It occurs transparent, semitransparent, or only translucent; and is hard, brittle, and heavy, its specific gravity being from 4.3 to 4.5. The varieties of form of its crystals are numerous; but the primitive form is a rectangular prism, the bases of which are rhombs with angles of $101^{\circ} 30'$ and $78^{\circ} 30'$.² It breaks with a straight foliated fracture; the fragments are nearly rhomboidal, and have a shining, pearly, almost vitreous lustre. It is fused by the blow-pipe, and converted into the sulphuret; and is soluble in sulphuric acid only, from which it is precipitated by water. The results of experiments to ascertain its

¹ Mr. Murray proposes *barytum* instead of *barium*. *Syst. of Chem.* ii. 205.

² Haüy, *Thomson's Chemistry*, iv. 369.

constituents have been very discordant: according to Berzelius, they are, 66 of barytes, and 34 of acid.

Use.—This barytic salt is introduced into the list of materia medica, merely as a substitute for preparing the muriate of barytes, when the carbonate cannot be procured.

BITUMEN.

Syn. Bitume (F.) Erdharz (G.) Bitume (I.) Bitumen (S.)

In the limited signification of this term, it is meant to imply those mineral inflammable bodies, which resemble, in a certain degree, oily and resinous substances. They have been divided into two classes: the first containing bitumens which possess nearly the same properties as the essential oils; the second, those which possess properties peculiar to themselves¹; and a third class may be formed of those substances in which bitumen predominates with other components.

A. Bituminous oils:

fluid. Sp. 1. Petroleum. Var. a. Naphtha.
b. Petroleum.
solid. { 2. Maltha, or Sea wax.
3. Mineral tallow.

B. Proper bitumens:

solid. 1. Asphaltum.
semifluid. 2. Mineral tar.
solid. 3. Mineral caoutchouc.

C. Bituminous compounds:

1. *with resinous matter.* Sp. 1. Resinasphaltum.
2. *with charcoal.* 2. Pit-coal. Var. a. Brown coal.
b. Black coal. c. Glance coal.

According to Hatchett, the elements of bitumens are carbon, hydrogen, sometimes azote, and probably some oxygen; the action of which on the other principles forms the concrete bitumens.²

Official. PETROLEUM. Lond. BITUMEN PETROLEUM. Edin. PETROLEUM BARBADENSE. Dub. Petroleum. Barbadoes Tar.

Syn. Petrole (F.) Steinshl (G.) Petrolia (I.) Nift (Arab.) Miti tel (H.)

Although these names are intended to designate the same substance, yet they are by no means to be regarded as synonymous of the same species of bitumen. The first species of the bituminous oil is properly named by the London college, the second variety of that species being the real petroleum of the shops; but the Dublin college has incorrectly given the second species of the proper bitumens as the synonyme of Bitumen Petroleum.

Petroleum is found in many parts of the world in various states of purity. When free from foreign ingredients, and

¹ Thomson's Chemistry, 4th edit. vol. ii. p. 502.

² Linn. Trans. iv. 129.

before it has been long exposed to the action of the air, it is named *naphtha*; of which the purest kind that is brought to Europe comes from Monte Ciaro, near Piacenza in Italy. "This hill consists of horizontal beds of argillite, in which pits are sunk till the water comes in; after which the naphtha oozes out of the sides and floats on the surface of the water, whence it is skimmed off every week."¹ The petroleum of the shops, however, which is much less pure, is procured from Monte Festino, not far from Modena. In the Birman empire there are 520 wells in one district, which yield annually more than 400,000 hogsheads of petroleum.

Qualities.—Naphtha is of a pale yellowish colour, thin, fluid, light, transparent, odoriferous, unctuous to the touch, and very inflammable. By long exposure to the air, and other circumstances, it passes into the second variety. Petroleum is thicker than naphtha, unctuous to the feel, semitransparent, and of a reddish or blackish brown colour. It has a strong, penetrating, not disagreeable, odour, and a bitter, pungent, acrid taste; is not quite so inflammable as naphtha, and has a much greater specific gravity. When distilled with water, it comes over nearly as clear and fluid as naphtha.

Both these varieties of bitumen combine with fat, resins, essential oil, and camphor: with alkalies they form soapy compounds; and sulphuric and nitric acids change them into solid resins.

Medical properties and uses.—Petroleum is a stimulating antispasmodic and sudorific; and as such has been given in asthma and coughs unattended with inflammation; but it is chiefly used for external purposes, as a stimulant in diseases of the hip-joint, rheumatic, and other chronic pains, chilblains, and to paralytic limbs, applied by friction.² It is, however, scarcely ever employed in either way; and on this account is not often to be procured in the shops. The dose of petroleum may be from $\text{m}\bar{x}$ to $\text{f}\bar{3}\text{ss}$ in any convenient vehicle.

BOLETUS. *Spec. Plant. Willd.*

Cl. 24. Ord. 13. Cryptogamia Fungi. Nat. ord. Fungi Linn. Juss.

G.—Fungus horizontal, porous beneath.

* Parasitic, stemless.

Spec. 3. B. ignarius. Agaric of the oak. *Sowerb. Fung. t. 34.*

Officinal. BOLETUS IGNARIUS. AGARICUS. *Edin.* Agaric.

Syn. Agaric de chêne (*F.*) Feuerschwamm (*G.*) Esca o fungo preparata (*L.*) Agarico (*S.*) Garikoon (*Arab. and Tam.*)

This species of fungus is a parasitical plant; and is found

¹ *Mem. Sci.* 1736, p. 57, quoted by Aikin, *Dict. of Chem.* art. Bitumen.

² In the West Indies the Barbadoes tar is used both as an internal remedy and an external application in the same cases. Of the Burma Petroleum Dr. Fleming remarks, that in chronic rheumatism he had "found much greater benefit from it, than from the more costly Cajeput oil." *Asiatic Researches.*

in Britain, growing upon the decayed trunks of the ash and the oak. The pileus or hat is scaly and convex, but depressed in the centre. When young it is of a light brown colour above, and soft like velvet; white underneath, and covered with a slimy matter: but when mature it changes to dark brown, approaching to black. It is from six to ten inches in diameter; and although generally stemless, yet, it is sometimes supported on a footstalk about an inch in length.¹

The boletus which grows upon the oak is said to be the most valuable. It should be gathered in August or September, and be kept in a dry room. "The way of preparing it is to take off with a knife the white and hard part, till you find a substance so soft as to yield under the finger like shammy leather."² This must be divided into different pieces, and beaten with a hammer till they become so soft as to be torn with the finger.

Qualities.—Prepared agaric is inodorous, and has a slightly astringent taste. According to Bouillon la Grange, by whom it has been chemically examined, it contains resin, extractive, something similar to animal gelatin, and different salts.

Medical properties and uses.—Agaric has been much celebrated as a styptic, when externally applied to bleeding arteries and veins. It was introduced by Brossard, a French surgeon, in 1750, and was for some years used both on the continent and in this country: but if it really possess styptic powers greater than those of lint or sponge, which does not appear to be the case, the improved practice of surgery renders all such applications useless.

BONPLANDIA. *Plantæ Equinoctiales.* Tom. ii. p. 59.

Cl. 5. Ord. 1. Pentandria Monogynia. *Nat. ord.* Quassiæ Juss.

Gen. Char. Calyx Monophyllous, campanulate, 5 toothed. Corolla 5 petals, cohering near the base, funnel-shaped.

Spec. 1. B. *trifoliata*. Three leaved Bonplandia. *Humboldt*, l. c. tab. 97.

Officinal. CUSPARIÆ CORTEX. *Lond.* BONPLANDIÆ TRIFOLIATÆ CORTEX. *Edin.* ANGUSTURA; CORTEX. *Dub.* Cusparia bark, Bonplandia bark, or Angustura bark.

Syn. Angusture (P.) Angusturinde (G.) Angustura (L.)

Although the London College has designated the tree which yields this bark, by the name of Cusparia *febrifuga*, as originally given to it by Humboldt, yet, we have preferred the name imposed by Willdenow, and since adopted by Humboldt.

The Bonplandia *trifoliata*, is a native of South America, growing abundantly in the woods near Carony and Alta Gracia. It is an elegant evergreen, rising to the height of from 60 to 80 feet, having a cylindrical trunk, covered with a grey co-

¹ Withering, *Bot. Arrange.* ii. 767.

² *Phil. Trans.* xlix. Part I. 29.

loured bark, and branching towards the summit. The branches are alternate, the upper ones spreading nearly horizontally. The *leaves*, which are ranged alternately on the branches, are about two feet long, independent of the petiole, and composed of three oblong ovate leaflets, pointed at each extremity, and attached at their bases to a single channelled petiole, from 10 to 12 inches in length. The *leaflets* are glandular, and when fresh, exhale an agreeable, aromatic odour. The *inflorescence* is a terminal raceme, composed of alternate peduncles, bearing from three to six flowers each: the calyx is inferior, persistent, five toothed and tomentose; the corolla is funnel-shaped, and composed of five petals, so united below as to appear as one tube, with a five cleft spreading tube. The *nectary* consists of fine glandular bodies. The *stamens*, which are shorter than the petals, have white filaments supporting oblong yellow anthers; the *pistil* is formed of five oval hairy ovaries, from the centre of which a single style rises, supporting five fleshy green stigmata. The *fruit* consists of five oval, bivalve capsules, each enclosing a single seed. The first parcels of cusparia bark were imported from Dominica in 1778; and the tree yielding it was supposed to be a native of Africa; but importations from Cadiz and the Havannah, and the travels of Humboldt and Bonpland, led to the knowledge of the real place of its growth.¹ It is brought to this country packed in casks; but the original package, Mr. Brande informs us, is curiously formed of the large leaves of a species of palm, surrounded by a kind of net-work made of sticks. It is in pieces of different lengths, some nearly flat, and others in partial quills of all sizes intermixed.

Qualities. — The odour of this bark is not strong, but peculiar; the taste bitter, slightly aromatic, and permanent, leaving a sense of heat and pungency in the throat. The pieces are covered with a whitish wrinkled thin epidermis; the inner surface is smooth, of a brownish yellow colour, and the intermediate substance mottled fawn colour, and of a compact texture. It breaks with a close, short, resinous fracture; is easily pulverized, and affords a powder which, when triturated with lime or calcined magnesia, gives a smell of ammonia. — The active matter is taken up by cold and hot water in infusion; and is not injured even by coction, but the addition of alcohol precipitates part of the extractive. The alcoholic tincture reddens litmus paper, and becomes milky on the addition of water. The watery infusion precipitates the infusion of

¹ See Brande's *Experiments and Observations on the Angustura Bark.*

galls and of yellow cinchona, but not gelatine.¹ I found that it precipitates sulphate of iron, tartarized antimony, sulphate of copper, acetate and superacetate of lead, muriate of mercury, and pure potash yellow; which confirms Vauquelin's analysis. Nitrate of silver also precipitates it yellow, but assumes a violet colour after some time. Ammonia deepens the colour, but is not precipitated. Sulphuric acid gives the infusion a brown colour, and gradually a lemon yellow precipitate is deposited; whilst nitric acid deepens the colour to a blood red, and after some time affords a lemon yellow precipitate. The muriatic acid does not affect it. Sulphuric ether takes up one part from ten of the powder, and when evaporated on water leaves a greenish yellow, very acrid resin, and renders the water milky: the addition of nitro-muriatic acid changes this milky appearance to red, slowly producing a lemon yellow-coloured precipitate, and giving the resin on the side of the glass a brown pink colour. By distillation with water the bark yields a small portion of a white essential oil. These experiments ascertain the substances which are incompatible in prescriptions with infusion, or tincture of cusparia bark; and show that it contains *cinchonin*, *resin*, a peculiar variety of *extractive*, *carbonate of ammonia*, and *essential oil*.²

Medical properties and uses.—Cusparia bark is stimulant and tonic. It was introduced in the West Indies with very high pretensions; and, although it is not superior or even equal to cinchona bark in fevers, yet it is a remedy possessed of very considerable powers. It does not oppress the stomach, but gives to it a degree of warmth; expels flatus, keeps the bowels open, and increases the appetite for food. It is particularly efficacious in bilious diarrhoea and dysentery, after due evacuations; and also proves useful in dyspepsia, hysteria, leucorrhoea, and most of the diseases in which the use of a general tonic is indicated. Mr. Brande published several cases which came under his own observation, and some from the communications of others, in which its usefulness as a remedy for intermittents appears to be confirmed; but this is disputed, particularly by Alibert, who gave it a fair trial in the hospital of St. Louis. My own experience does not enable me to give

¹ Vauquelin. *Annales de Chimie*, lix. 130.

² A species of bark in some respects resembling the Cusparia has lately been introduced upon the Continent, possessing the most deleterious quality. Planché has examined it and named it *Angustura ferruginea*. It is readily distinguished from the true bark by its greater thickness and weight, and the epidermis being of a brownish olive hue and warty. It impresses also the most nauseous and permanent bitter, when chewed. For particulars regarding it, vide *Orfila's Traité des Poisons*, tom. ii, p. 331, and *The Lond. Med. Repository*.

an opinion on the subject. Its employment is contra-indicated in directly inflammatory complaints, in hectic fever, and colliquative diarrhœa.

It may be exhibited in substance, in watery infusion, in tincture, and in the form of watery extract. The powdered bark is given in doses of from grs. v. to grs. xx, beyond which it is apt to induce nausea. It may be combined with neutral salts, magnesia, and testaceous medicines; or with powdered cinnamon, which covers its nauseous taste better than any other thing. Of the aqueous extract grs. x. is a full dose. In large doses all the forms are apt to excite nausea.

Official preparations. *Infusum Cuspariæ*. L. *Tinctura Bonplandiæ trifoliatæ*, E. *Tinctura Angusturæ*, D.

BOSWELLIA. Roxburgh.

Cl. x. ord. 1. Decandria Monogynia. Linn.

Gen. Char. Cal. beneath, 5-toothed. *Cor.* 5 petals. *Nect.* a crenulated, fleshy cup, surrounding the lower part of the germ, with stamens inserted on its outside. *Capsule* 3-sided, 3-valved, 3-celled. *Seeds* solitary, membranous, winged.

Species. — *B. Serrata*. *Asiatic Researches*, 8vo. vol. ix. p. 377.

Official. OLIBANUM.¹ Lond. JUNIPERI LYCIE GUMMI-RESINA.

Edin. OLIBANUM; GUMMI-RESINA. *Dub.* Olibanum.

Syn. *Encens* (F.) *Weirauch* (G.) *Olibano* (I.) *Koondir Zuckir* (Hind.) *Cundur* (Arab.) *Labuniya* (Syr.)

Olibanum was supposed, on the authority of Linnæus, to be the production of the *Juniperus Lycia*:² but, this opinion appears to be erroneous; for, Mr. Colebrooke has observed, "this species of juniper is a native of the south of France;" and the French botanists deny that it yields the resinous gum in question.³ On this account, therefore, and influenced by other proofs brought forward by Mr. Colebrooke, we have been induced to regard olibanum as the production of the *Boswellia serrata* of Roxburgh, although it is still referred to the *Juniperus Lycia* in the Pharmacopœias.⁴

The *Boswellia serrata* is a native of the mountains of India; and is vulgarly known under the name of *Sálaï*. It is a large tree, with the foliage crowded at the extremities of the branches. The leaves are impari-pinnate; consisting of ten pairs of leaflets, sessile, each an inch, or an inch and a half in length, obliquely ovate, oblong, obtuse, serrate, and villous; supported by round, downy petioles. The flowers, which are produced in axillary racemes, shorter than the leaves, are numerous, small, and of

¹ Quasi Oleum Libani. Colebrooke, *Asiatic Researches*, 8vo. vol. ix. p. 382.

² *Asclepias* Dioscoridis.

³ *Asiatic Researches*, vol. ix. p. 377.

⁴ Although so much used in the early ages as incense in sacrifices, and latterly, in the ceremonies of the Greek and Roman churches, yet, both ancient and modern writers have differed regarding the plant yielding it.

a pale pink colour; accompanied with minute bractæas. The calyx is monophyllous, five-toothed, and downy; the corolla composed of five oblong, spreading, exteriorly downy petals; and the nectary a fleshy, crenulate, coloured cup, adhering to the calyx. The stamens are ten, alternately shorter, supporting oblong anthers: the pistillum consisting of an ovate germen, a cylindrical style, and trilobate stigma. The capsule is smooth, three-sided, trilocular, three-celled, and three valved: each cell containing one perfect seed only, which is broad, cordate, and winged.

Olibanum is imported in chests and casks from the Levant; and is also sold at the East India Company's sales; but the Indian olibanum is not much esteemed.

Qualities.—Olibanum is a translucent, whitish yellow, brittle substance, generally covered with whitish powder, produced by the friction of the pieces against each other. Its odour when burnt is fragrant; its taste is acrid, bitterish, and somewhat aromatic. When heated, although it melts with difficulty, yet it burns brilliantly, and leaves a whitish ash, composed of phosphate, carbonate, and sulphate of lime, with muriate and carbonate of potash. When distilled alone, it affords a volatile oil; but, when in conjunction with water or alcohol no oil comes over. Alcohol dissolves three-fourths of it, forming a transparent solution; and when triturated with water, a milky solution is produced, from which the resinous matter is deposited after some time; and three-eighths only remain dissolved. Ether takes up rather more than one-half, and when evaporated on water, leaves a very pure transparent resin; while the part undissolved by it becomes white and opaque, and is almost entirely soluble in water, forming a milky solution. Hence olibanum appears to consist of resin, gum, and a volatile oil. This opinion has been lately confirmed by Braconnot, who has analysed olibanum, and found in 100 parts of it, 8 of volatile oil, 56 of resin, 30 of gum, and 5.2 of a matter resembling gum, but insoluble in water and alcohol. The oil resembled the oil of lemons in odour and colour.

Medical properties and uses.—Olibanum is stimulant and diaphoretic. It was formerly much used in affections of the chest, and externally as a vulnerary; but it is now employed only as a perfume in sick rooms.

BUBON.¹ *Spec. Plant. Willd.* i. 1439.

Cl. 5. *Ord.* 2. Pentandria Digynia. *Nat. ord.* Umbellatæ.

G. 546. *Fruit* ovate, striated, villose.

¹ *Βουβωνιον* Dioscoridis.

Species 2. B. Galbanum. Lovage-leaved Bubon. *Med. Bot. 2d. edit.* 98. t. 40.

Officinal. GALBANI GUMMI RESINA. *Lond. Dub.* BUBONIS GALBANI GUMMI RESINA. *Edin.* Galbanum Gum-resin.

Syn. Galbanum (F.) Mutterharz (G.) Galbano (I.) Galbáne (S.) Bārzud (A.) Bireejā (H.)

This species of bubon is a perennial plant, a native of Africa about the Cape of Good Hope, and of Syria, flowering in June and July. It rises 8 or 10 feet in height, with the stem ligneous at the base, and there furnished with a purplish bark; but the upper part is jointed, branching, leafy, and covered with a glaucous exudation, which can be easily wiped off. The lower leaves are nearly tripinnate, on vaginant footstalks; the uppermost are almost simple, tri-lobed, thickish, irregularly serrated, and of a greyish colour. The flowers are in terminal umbels, the principal umbel being large, and plano-convex. The involucre is composed of twelve narrow, lancet-shaped, membranous, whitish leaflets, bent downwards; but the involucrels of only six leaflets. The flowers are all fertile; the petals yellow, with inflected tips: the stamens are longer than the petals, supporting yellow anthers; and the styles two, short and tapering. Each flower is succeeded by two oblong-channelled seeds, having a thin membranous border.

When the stem of the growing plant is broken, or wounded by a knife, a cream-coloured juice flows out; and in this manner the gum-resin is procured, by making an incision, or cutting the stem across a few inches above the root; when it soon concretes, and is fit to be gathered. A small quantity exudes spontaneously from the joints of the stem. The gum-resin is brought to this country from the Levant, in cases or chests, containing from one to three hundred weight each. The best is in ductile masses, composed of distinct whitish tears agglutinated together by a pale brown or yellowish substance. It is generally much mixed with stalks, seeds, and other impurities. The separate tears are considered to be the best part of the mass. When the colour is dark brown or blackish, it must be rejected as bad.

Qualities. — Galbanum has a strong peculiar odour, slightly resembling that of turpentine; and a bitterish, warm, acrid taste. Its specific gravity is 1.212.* When triturated with water, about one-fourth of its weight is dissolved, forming a milky solution; but after standing for a little time, four parts are again deposited, and what remains undissolved by the trituration is, exclusive of the impurities, almost completely soluble in alcohol. Wine and vinegar act on it nearly in the same manner

* Brisson.

as water. Alcohol takes up one-fifth of its weight; and a yellow tincture is produced, which has the sensible qualities of the galbanum, and becomes milky on the addition of water; but there is no precipitate. Proof spirit acts slowly on it, and does not dissolve the whole, the impurities excepted. Sulphuric æther dissolves a considerable portion of galbanum, forming a bright golden-coloured tincture, which, when evaporated alone, or floating on the surface of water, leaves a yellow tenacious resin, that retains in perfection the sensible qualities of the galbanum. The part insoluble in æther is nearly wholly soluble in water. Oxymuriatic acid added to the solutions of galbanum, throws down an insoluble matter which appears to be oxidized extractive. By distillation the gum-resin "yields half its weight of volatile oil, which has at first a blue colour."¹ From our experiments, galbanum appears to consist of resin, volatile oil, gum, and extractive.

Medical properties and uses. — Galbanum is antispasmodic, expectorant, and deobstruent; and may be placed between ammonia and assafoetida. It has been found useful in hysteria, particularly when attendant on difficult menstruation; and in chlorosis. Externally it is applied as a resolvent and a stimulating suppurative to indolent tumours.

The dose is from grs. x. to ʒj, in pills; or triturated with water so as to form an emulsion. It is generally combined with other gum-resins.

Official preparations. — *Pilule Galbani comp. L. Tinctura Galbani. D. Emplastrum Galbani. D. Emplast. Galbani compositum. L.*

CALAMINA. Calamine. See *Zincum*.

CALUMBÆ RADIX. *Lond. COLOMBÆ RADIX. Edin. COLOMBO; RADIX. Dub.* Calumba Root.

Syn. Colombe (F.) Kolumbowurzel (G.) Colomba (I.) Kalumb (Mozambique) Columbo vayr (Tam.)

The plant which yields this root has not yet been described; but Willdenow supposes it to be a species of *Bryonia*. The root was formerly erroneously supposed to be named from the principal town in the island of Ceylon, which was regarded as its place of export. It is, however, now known to be a staple article of export with the Portuguese, at Mozambique, whence an entire root was taken to Madras by Mons. Fortin, in 1805, and a plant raised from it there by Dr. Anderson. "From a drawing in the possession of the Linnæan Society, the plant appears to be of the natural order of *Menispermæ*; but the genus cannot be determined, in consequence of the female flowers not having been as yet seen."² The following

¹ *Thomson's Chemistry*, 4th edit. v. 142.

² *Powell's Translation of the London Pharm.* p. 22.

is the character of the male plant, as drawn up by Dr. Berry. The root is perennial, ramose, (or rather fascicled,) the tubers being fusiform. The stems are annual, withering at the end of seven months, voluble, simple, round, hairy, about the thickness of a pen; bearing alternate, five lobed, five nerved leaves; with entire acuminate lobes; and supported on round hairy petioles, shorter than the leaves. The male flowers are in axillary, solitary, compound racemes, hairy and shorter than the leaves: bearing partial, alternate peduncles with sessile flowers; and lanceolate, ciliated, deciduous bracteas. The calyx is hexaphyllous, three of the leaflets being exterior, and three interior, equal, oblong, obtuse, and glabrous. The corolla consists of six minute petals, each petal being oblong, wedge-shaped, concave, fleshy and obtuse. The stamens are six, a little longer than the corolla, the anthers four-lobed and four-celled, no pistillum. The plant is never cultivated, but grows naturally in great abundance in the forests of Oibo and Mozambique. The roots are dug up in March, but it is the best of the offsets only that are taken. The root is fusiform and fasciculated, each offset being a sessile tuber.

The dried root is brought to this country packed in bags, and sometimes in cases. It is in transverse sections, generally about one-third of an inch in thickness, and one or two inches in diameter. The bark is thick, and easily detached; internally bright yellow, and covered with a wrinkled olive-brown cuticle. The interior part of the root, which is much shrunk in the centre, is of a pale brownish colour, and has a spongy texture, with darker converging rays, which are the remains of sap-vessels. The pieces are frequently much perforated, evidently by worms, and not, as has been supposed, by stringing to facilitate its drying. Those pieces which have the brightest colour, and are solid and heavy, are the best.

Qualities. — Calumba root, as we receive it, has a very slight aromatic odour, and a bitter taste. It breaks with a starchy fracture, and is easily pulverized. Water at 212° takes up one-third of its weight; and the infusion has all the sensible qualities of the root. These are also extracted by alcohol. The infusion is not altered by solutions of sulphate of iron, nitrate of silver, muriate of mercury, and tartarized antimony; but a copious precipitate is produced by the infusion of galls, and by acetate and superacetate of lead. Hence calumba root appears to contain cinchonin. M. Planche has analyzed calumba root, and found it to contain a large proportion of a peculiar animal substance, a yellow bitter resinous matter, and one-third of its weight of starch. By repeated distillation he also obtained a volatile oil; and from the residue malate of lime and sulphate of lime.

Medical properties and uses.—Calumba root is a powerful antiseptic and tonic.¹ It is frequently employed with much advantage in diarrhoeas arising from a redundant secretion of bile, bilious remittent fever, and cholera, in which it generally checks the vomiting. It also allays the nausea and vomiting which accompany pregnancy; and according to Percival it is equally serviceable in stopping the severe diarrhoea and vomiting which sometimes attend dentition.² Denman found it more useful than the cinchona in the low stage of puerperal fever.³ As a tonic, unaccompanied with astringency and little stimulus, it has been recommended in phthisis and hectic fever, to allay irritability, and strengthen the digestive organs; and in dyspepsia. It may be given combined with aromatics, orange peel, opiates, and alkaline, or neutral salts, as circumstances require. We have found the powder, in combination with rhubarb and sulphate of potass, exceedingly serviceable in mesenteric fever.

The dose of the powdered root is from grs. xv. to ʒss, repeated three or four times a day.

Official preparations.—*Infusum Calumbæ*. L. E. *Tinctura Calumbæ*. L. E. D.

CALX. Edin. Lime.

Syn. Chaux (F.) Kalk (G.) Calce (I.) Calviva (S.) Chunāmbū (Tam.) Chunna (H.) Ahūck (A.)

This earth is very rarely found in an uncombined state⁴; but very abundantly in combination with other substances. It occurs both in the organic and inorganic kingdoms of nature; forming a part of the bodies of animals and of vegetables; existing in the water of most rivers, and of the ocean; and as a principal constituent of many fossils, soils, and mountains. The following species only of the fossils in which it is found in combination with carbonic acid require to be noticed.

Nearly pure in:

Sp. 1. *Chalk.*

2. *Limestone.* Subsp. 1. *Compact limestone.*

Var. a. Common. *b.* Roe-stone.

3. *Foliated limestone.* *Var. a.* Granular foliated, or statuary marble. *b.* Calcareous spar.

4. *Fibrous limestone.* *Var. a.* Common fibrous, or satin spar. *b.* Calcsinter, or Stalactite.

5. *Pea-stone.*

By exposing any of these carbonates to a strong heat the

¹ The Africans of Mozambique esteem it as a remedy for venereal affections; and the Chinese employ it as an aphrodisiac.

² *Medical and Experimental Essays*, vol. ii.

³ *Introduction to the Practice of Midwifery*, ii. 524.

⁴ Monnet affirms that it exists in the mountains of Upper Auvergne, mixed however, with a little oxide of iron. *Monnet's Mineralogy*, 515.

carbonic acid is driven off, and lime, or quicklime, as it is commonly called, is obtained; the properties of which shall be noticed under the title *Calx*, among the preparations. It is not, however, perfectly pure, but contains generally portions of silice, argil, or magnesia. To obtain pure lime, let white marble be dissolved in dilute muriatic acid, leaving an excess of marble undissolved. A solution of pure ammonia being added to the solution of marble will indicate by a precipitate the presence of argil and magnesia, which are to be separated by filtration; and the lime itself precipitated in the form of carbonate by a solution of pure sub-carbonate of potash. This precipitate, after it is washed with water and dried, and exposed to a very violent heat in a platinum crucible, is pure lime.¹

Until the introduction of the galvanic battery as a chemical agent, lime was regarded as a simple substance; but it has since been found to be a compound of a peculiar metallic base, named *calcium* by Sir H. Davy, and oxygen, in unknown proportions.² We have here to notice the calcareous fossils only which are medicinally used.

1. CHALK. *Friable carbonate of lime.*

Officinal. CRETA. *Lond. Dub.* CARBONAS CALCIS. *a.* MOLLIER, *Creta alba.* *Edin.* Chalk.

Syn. Craie (F.) Kreide (G.) Gesso (I.) Greda (S.) Khutree muttee (H.) Kilo (A.)

This mineral is found in the north of France, Poland, some of the Danish islands, and in great abundance in the south of England, within a range which commences at Flamborough Head, in Yorkshire, and is continued, with irregular interruptions, through the midland counties to Surrey, Sussex, Hampshire, and into Dorsetshire. It generally occurs massive in beds; and contains numerous relics of marine animals, and occasionally those of the hard parts of land animals.

Qualities.—Chalk is inodorous and insipid; but adheres slightly to the tongue. Its colour is either white, or yellowish, or grayish white. It feels meagre and rough; is not very hard, but is pulverulent; breaks with an earthy fracture; stains the fingers, and marks. Its specific gravity is from 2.3 to 2.6. It effervesces with acids; and generally contains, besides lime and carbonic acid, a small portion of argil. The average proportion of lime is 53 per cent.

Medical properties and uses.—Chalk is antacid; but it must undergo levigation and washing, before it can be internally administered. In powder it is externally advantageously employed as an absorbent in burns and excoriations.

Officinal preparations. *Creta preparata.* L. E. D.

2. LIMESTONE. *Hard carbonate of lime.*

¹ Chenivix, *Memoirs of the Irish Academy*, 1802.

² *Phil. Trans.* 1808.

Officinal. LAPIS CALCAREUS. *Lond.* CARBONAS CALCIS. *b. DURIER, Marmor album. Edin.* Limestone. White Marble.

Syn. Pierre à chaux; chaux carbonatée (*F.*) Kalkstein (*G.*) Marino; ossi-carbonato di calce (*I.*) Chunambo kullo (*Tam.*)

Although all the varieties of limestone before enumerated may be regarded as officinal, in as much as they all yield pure lime when burnt, yet the two varieties particularly designated are *var. a* of the first subspecies, *common compact limestone*, and *a* of the second subspecies, *granular foliated limestone*, or *white Carrara marble*. The first is found abundantly in Britain, in extensive strata connected with floetz and coal formations: the second is brought from Carrara and Paros, and belongs exclusively to the primitive and transitive mountains.

Qualities. — *Common limestone* is inodorous and insipid. Its usual colour is some shade of gray; and sometimes it is variegated with veins, stripes, and clouds of yellow, flesh red, and greenish gray. It is hard and brittle; the fracture splintery; the fragments sharp-edged, and scarcely translucent. Its specific gravity is from 2.6 to 2.7. *White marble* differs from limestone in its granular texture, white colour, foliated fracture, and its internal pearly vitreous lustre. Its specific gravity is from 2.7 to 2.84. Both varieties dissolve in acids with effervescence; and contain about 55 per cent. of lime.

Use. — Limestone is chiefly used for obtaining pure lime.

CANCER. *Syst. Nat. Gmelin.* 2963.

Ord. 7. Insecta, Aptera.

G. 270. Feet eight, (sometimes six or ten,) two of them with claws.

Palpi six, nearly equal. *Eyes* two, distant, moveable, in many of the species standing on elongated peduncles. *Mandibule* horny, thick. *Lip* triple. *Tail* jointed and unarmed.

Sp. 27. *C. pagurus.* Black-clawed Crab. *Brit. Zoology*, iv. 4. t. 3.

Sp. 63. *C. ostacus.* The Crawfish. *Brit. Zoology*, iv. 9. t. 15. f. 27.

I. CANCER PAGURUS.

Officinal. CHELÆ CANCRORUM. *Edin.* CANCER; CALCULI OCULI DICTI¹; CHELÆ. *Dub.* Crab's Claws.

Syn. Bras de Crevisse (*F.*) Klaua an Krabbe (*G.*) Forbici de Granchi (*I.*) Pierna de Cangrejo (*S.*)

The black-clawed crab frequents the rocky coasts of the North Sea, and the British isles; and is considered delicious food. The thorax is obtusely scalloped; the body smooth; and the front five-toothed. The hind feet are subulate; but the fore furnished with large claws tipped with black. It annually casts its shell between Christmas and Easter.

Mr. Hatchet found that the crustaceous covering of crabs and lobsters consists of carbonate of lime, phosphate of lime, and a cartilaginous matter, possessing the properties of coagu-

¹ This is an error of the Dublin College, as these calculi are never procured, at least for medical use, from the crab, but always from the crawfish.

lated albumen. The first of these constituents predominates; and it is on it that the medical properties of the claws depend. They are now deservedly rejected by every judicious practitioner, chalk answering much better every purpose for which they can be prescribed.

2. CANCER ASTACUS.

Official. LAPILLI CANCRORUM. *Edin.* Crab Stones.

Syn. Krabsangen (G.)

The crawfish frequents rivers, forming its holes in their clayey banks. It is small, in some degree resembling the lobster in shape. The snout is projecting, and serrated on the sides: the thorax is smooth; as is also the back, which has two small spines on each side. The large claws are beset with small tubercles: the two first pairs of legs are clawed; the two next subulated; and the tail has five joints, with the fins rounded.

The concretions, called eyes, are found in the stomach, one on each side, before the fish casts its shell in July, at which time the inner coat of the stomach also is renewed. They are said to be destined for assisting in the formation of the new shell. At Astracan, where the greatest number of these concretions are procured, the crawfish are bruised with mallets, and allowed to putrify in heaps; after which their remains are washed, and the stones picked out.

Qualities.—They are whitish, or reddish, hard and stony, of very different sizes, weighing from one grain to twelve grains each; round and convex on one side, and a little concave on the other: the texture laminated; inodorous and insipid. Their constituents are the same as those of the crab's claws. They effervesce in acids; but instead of dissolving altogether they become soft, transparent, and retain their original form; by which means the real stones are easily distinguished from counterfeited imitations.

Medical properties and uses.—These concretions are absorbent, and slightly antacid: and when prepared by trituration and levigation, are employed in dyspepsia, and other diseases attended with acidity of the primæ viæ; but as chalk answers better in these cases, they may well be dispensed with.

The dose is ʒj or ʒij, suspended in a proper fluid.

Official preparations. *Cancrorum Lapilli preparati.* E.

CANELLA. *Spec. Plant. Willd.* ii. 857.

Cl. 11. *Ord.* 1. Dodecandria Monogynia. *Nat. ord.* Oleraceæ *Linn.*
Meliaceæ Juss.

G. 942. *Cal.* three-lobed. *Pet.* five. *Anth.* 16, adhering to a pitcher-shaped nectary. *Berry* one-celled, with two or four seeds. *Species* 1. *C. alba.*¹ White or Laurel-leaved Canella. *Med. Bot.* 2d edit. 694. t. 237. *Trans. Linn. Soc.* vol. i. 96. t. 8.

¹ This plant has been often confounded with the *Wintera aromatica*, an error authorised in some degree by Linnæus, who combined the two genera of *Winterana* and *Canella* under

Official. CANELLÆ CORTEX. *Lond.* CANELLÆ ALBÆ CORTEX.
Edin. CANELLA ALBA. *Dub.* Canella Bark.

Syn. Cannelle blanche (*F.*) Weisser Zimmet (*G.*) Cannella bianca (*I.*)

This tree is a native of the West India islands, growing in the inland woods. It rises very straight, from ten to fifty feet in height. The branches are erect, not spreading, and only at the top of the tree; furnished with petiolated leaves, irregularly alternate, oblong, obtuse, entire, nerveless, of a dark green colour, thick and shining like those of the laurel, and emitting a similar odour. The flowers, which exhale a powerful aromatic perfume, are small and of a violet colour, seldom opening, and grow in clusters upon divided footstalks at the summits of the branches. The calyx is of one piece, small, persistent, and deeply tripartite; 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, antheriferous, and deciduous. The anthers are 21 in number, distinct, fixed longitudinally to the outside of the nectary, and discharge a yellow pollen. The germen is superior, ovate; the style cylindrical, with two rough, convex, blunt stigmas: the fruit an oblong, one-celled, glossy black berry.

The inner bark of the branches is freed from the cuticle, and dried in the shade. It is brought to this country packed in casks and cases, in long pieces, some rolled in quills, and others flat; the quilled sort is considerably thicker than cinnamon, and the flat nearly one-fourth of an inch in thickness.

Qualities.—The quilled pieces of canella are of a whitish yellow colour on both sides, and break with a starchy fracture; the flat pieces, which appear to be the bark of the larger branches or of the stem, are yellow on the outside, and pale brown within. The odour of both kinds when fresh broken is aromatic, something like a mixture of cloves and cinnamon: and the taste slightly bitter, extremely warm, and pungent. Although boiling water takes up nearly one-fourth of the weight of the bark, yet the infusion possesses but little of its warmth and pungency; the bitter chiefly predominating. Alcohol extracts all its qualities in perfection: the tincture is bright yellow, and becomes milky on the addition of water. 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. By distillation with water, Canella alba affords a thick, heavy

the name of *Laurus Winterana*; but afterwards made this a distinct genus under the title *Winterania*, a name by which it was known till Professor Murray corrected the error and made a distinct genus of Canella. Vide *Syst. Veg.* 14th edit. 443. Sir Hans Sloane stated the error of confounding this bark with the Cortex Wipteranus, in his description of the tree in the *Phil. Trans.* xvii. 465.

yellow, very pungent, gratefully odorous essential oil; on which and a little bitter resinous matter its virtues seem to depend.

Medical properties and uses.—This bark is stimulant, and slightly tonic. It is a useful adjunct to bitters in some cases of dyspepsia and atonic gout; but it is employed chiefly on account of its flavour, and to correct the griping quality of the resinous cathartics. It is said to prove useful in scurvy.¹

The dose of the powdered bark is from grs. x. to ʒiss.

CAPSICUM. *Spec. Plant. Willd.* i. 1050.

Cl. 5. *Ord.* 1. Pentandria Monogynia. *Nat. ord.* Luridæ Linn.
Solanææ Juss.

G. 334. Corolla wheel-shaped. Berry without juice.

Sp. 1. *C. annum.* Annual Capsicum. *Med. Bot.* 2d edit. 226. t. 80.

Official. CAPSICI BACCÆ. *Lond.* CAPSICI ANNUI FRUCTUS.

Edin. Dub. Berries of the Capsicum, or Cayenne Pepper.

Syn. Poivre d'Inde (*F.*) Spanisdier oderturkircher pfiffer (*G.*) Pepperone (*I.*) Pimienton (*S.*) L'ul Mirch (*H.*) Brähn Maricha (*San.*)

This is an annual plant, a native of both the Indies; and frequently cultivated for ornament in our gardens. It flowers in June or July. The stem is herbaceous, roundish, smooth, crooked, branching, and rising two or three feet in height. The leaves are ovate, smooth, entire, placed on long footstalks in an irregular order. The flowers are peduncled, axillary, solitary, and white: the calyx is persistent, tubular, and divided at the edge into five short segments; the corolla wheel-shaped, five cleft, the segments pointed and plaited: the filaments are short, tapering, with oblong anthers; and the germen is ovate, supporting a slender style, which is longer than the filaments, and terminated by a blunt stigma. The fruit is a long conical, pendulous podlike berry, of a shining orange, scarlet, or sometimes yellow colour, two-celled, and containing a dry spongy pulp with several flat kidney-shaped seeds.

There are many varieties of this species of capsicum; and they, perhaps, all enter into the composition of Cayenne pepper; but, certainly, the best, which is brought home from the West Indies, ready prepared, is made from the *Capsicum baccatum* (Bird pepper). The difference, however, consists chiefly in the degree of pungency. These peppers, which are generally used instead of the berries, are often mixed with muriate of soda; and sometimes with a less innocent substance, the red oxide of lead. This fraud may be discovered by boiling some of the suspected pepper in vinegar, and after filtering the decoction, adding to it a solution of sulphate of soda. If the pepper contained oxide of lead, a white precipitate will be produced, which

¹ This bark and the fruit of the capsicum were formerly common ingredients in the food and drink of the Caribs, the ancient natives of the Antilles; and at present enter the meagre pot of the negroes. *Linn. Trans.* l. c.

after being dried, and exposed to heat, mixed with a little charcoal, will afford a globule of lead.

Qualities. — Capsicum berries have an aromatic odour, which is somewhat impaired by drying; and an aromatic, extremely pungent, acrimonious taste, setting the mouth, as it were, on fire, and the impression remaining long on the palate. These sensible qualities are imparted to water, and still more perfectly to alcohol and æther. Half a drachm of the powder infused in fʒjss of boiling water, lost grs. xij. The infusion was precipitated by infusion of galls, and alcohol dissolved the precipitate. It was also precipitated by nitrate of silver, oxymuriate of mercury, acetate of lead, the sulphates of iron, zinc, and copper, and the alkaline subcarbonates: but was not altered by the mineral acids, the solution of potass, nor silicized potash; and the colour was not changed by the above-named sulphates. The ethereal tincture, when evaporated on the surface of water, left an orange-coloured resin, in which the pungency of the capsicum was concentrated. These experiments point out the substances which are incompatible in formula with infusions of capsicum; and lead to the conclusion that it contains chiefly cinchonin, a resin in which the acrimony resides, and vegetable mucus.

Medical properties and uses. — The fruit of the capsicum, or Cayenne pepper, is a powerful stimulant, unaccompanied with any narcotic property. It has been successfully given in atonic gout; in dyspepsia, when accompanied with much flatulence; in tympanitis, and paralysis. In dropsies, and other cachectic complaints when chalybeates are indicated, a small portion of powdered capsicum is recommended as an excellent addition by Dr. Wright; and Bergius says he used it with success in obstinate intermittents.¹ It has also been found beneficial in lethargic affections: but the diseases that capsicum has been found most useful in, are cynanche maligna, and scarlatina maligna, in which it is given both internally, and used as a gargle. Its sensible effects are heat in the stomach, and a general glow over the body, without much affecting the pulse; and as a gargle it cleans, without impeding the healing of the ulcers of the fauces. Cataplasms of capsicum operate as powerful rubefacients without blistering the skin, and are used in the West Indies to relieve the coma and delirium which almost constantly attend tropical fevers. The diluted juice of the fruit is said to be a sovereign remedy in ophthalmia from relaxation.

Capsicum may be given in the form of pills, in doses from grs. vj to grs. x; or fʒj to fʒij of a tincture made with ʒiv of capsicum and fʒviiij of alcohol. The gargle usually employed is made by kneading into a paste ʒj of Cayenne pepper and ʒj of common

¹ *Mat. Med. e Regno Veg.* i. 144.

salt; then adding f̄vj of boiling water; and to the solution, strained when cold, f̄ziv. of vinegar. But a simple infusion in the proportion of gr. j. of the pepper to f̄j of boiling water answers equally well.

CARBO LIGNI. *Lond. Edin. Dub.* Charcoal.

Syn. Charbon de bois purifié (*F.*) Reine Kohle, (*G.*) Carbone di legna, (*I.*) Carbon de lena, (*S.*) Koyla, (*H.*) Zughal, (*A.*) Arang, (*Malay.*)

Charcoal is prepared for the common purposes of fuel, by piling up billets of wood into conical heaps, which are covered with earth and sods, and then burned, with as little exposure to the action of the air as possible: but for the preparation of the finer charcoal, fit for medicinal use, the following process is employed. The wood to be charred is put, in the form of chips or of sawdust, into a large cast-iron cylinder fixed in masonry over a grate. This cylinder terminates at one end in a curved pipe, and the other end is furnished with a door, which is accurately closed after the wood is introduced, and a fire lighted in the grate: the water, empyreumatic acid, and volatile parts of the wood are driven off through the curved tube by the heat, which is increased until the contents of the cylinder become red-hot. The fire is then withdrawn, the cylinder is allowed to cool; and a black shining, pure charcoal is thus obtained.¹ For internal use, however, it is perhaps necessary to have it still purer; and to effect this the process of *M. Lowitz* is to be preferred. The charcoal is to be reduced to fine powder, and put into a crucible (so as to fill it), on which a pierced cover must be luted. This vessel is then to be heated red-hot, and kept so, as long as a blue flame appears to issue from the hole in the cover; and when this stops it is to be taken from the fire, cooled in a dry place, and the charcoal instantly put into well-stopped bottles for use.²

In whatever manner charcoal is prepared, the purest contains generally about one-fiftieth of its weight of earths, salts, or metallic matters; its other constituents are, according to *Dobriener*³, 68.4 of carbon, with 1.5 of hydrogen, and a minute portion of oxygen.

Qualities. — Pure charcoal is inodorous and insipid; black, shining, and brittle. When newly prepared it absorbs air and moisture from the atmosphere, so as to increase its weight from 10 to 18 per cent. It is insoluble in water; brittle and easily pulverized, and when excluded from air is not affected by the highest degrees of heat. It corrects the foetid odour of putrifying animal and vegetable substances; and destroys the odour, taste, and colour of others, particularly of mucilages and oil,

¹ This process was invented by *Bishop Watson*, for the use of the gunpowder manufacturers who require a very pure charcoal. *Aikin's Chem. Dict. art. Carbon.*

² *Crell's Chemical Journal*, ii. 270.

³ *Schweitzer's Journal*, xvi. p. 92.

and matters in which extractive abounds. Thus common vinegar boiled in charcoal powder becomes colourless; water which has become fœtid at sea is purified by filtering it through charcoal; that intended for long voyages may be preserved perfectly pure by thoroughly charring the insides of the casks; and the empyreumatic odour and tastes of oils, as well as their adventitious colour, and the colour of the varieties of ardent spirits, of litmus, indigo, and other colouring matters dissolved or suspended in water are destroyed by running them through newly-prepared charcoal powder. It also deoxidizes most of the acids.

Medical properties and uses.—Charcoal is evidently an antiseptic; and as such has been given internally to correct the putrid eructations of some kinds of dyspepsia. But, in order that it may produce this effect, it should either be newly prepared, or such as has been preserved in very well-stopped bottles. It is probable that it operates both by correcting the fœtor, and absorbing the gas generated in the stomach, as well as checking the decomposition of the undigested aliment. Dr. Calignò, an Italian physician, proposed to employ it instead of cinchona in intermittents; but this suggestion has not been supported by British practitioners. It has been applied advantageously mixed up in powder with boiled bread, or linseed meal and water, as a poultice to foul ulcers and gangrenous sores; and it is, undoubtedly, the best tooth-powder known.

The dose of charcoal may be from grs. x to ʒj, combined with rhubarb.

CARDAMINE. *Spec. Plant. Willd.* iii. 481.

Cl. 15. *Ord.* 2. *Tetradynamia Siliquosa. Nat. ord.* Siliquosæ.

G. 1237. *Pods* opening elastically, with revolute valves. *Stigma* entire. *Calyx* somewhat gaping.

*** *With pinnate leaves.*

Sp. 19. *C. pratensis*.^a Cuckow Flower. *Med. Bot.* 2d edit. 396.

t. 133. *Smith's Flora Britan.* ii. 699.

Officinal. CARDAMINES FLORES. *Lond. Edin.* CARDAMINE; FLOS.

Dub. The flowers and leaves of Cuckow Flower.

Syn. Cresson de Pres, (F.) Weissenkresse, (G.)

Cuckow flower is a perennial, indigenous, herbaceous plant, which grows in moist meadows, and flowers in April and May. The root is tuberous, and somewhat toothed. The stem rises about nine inches in height, is erect, smooth, stiffish, somewhat angular, and a little branched at the top: the leaves are dark green, pinnated; the radical ones petiolate and spreading; those of the stem almost sessile; the leaflets are four pair or more, opposite, with a terminal one; on the lower leaves they are roundish, and irregularly dentated; but become more entire, linear, pointed, and concave, the nearer they are to the top of the stem. The flowers terminate the stem in a corymb, and stand upon smooth na-

^a Vide *London Med. Repos.* vol. iii. p. 7.

² *Σινυμπιον τριγων* Dioscoridis.

ked peduncles. The calyx is yellowish green, composed of four concave, oblong, nearly obtuse, deciduous scales, alternately larger, and protuberant at the base: the corolla is cruciform, the petals large, of a very pale purple colour, or white, ovate, veined, and slightly emarginate; with a yellowish green base. The filaments are six, four long, standing above the corolla, and two short almost hid, supporting small, oblong, yellow anthers; and invested at the base with four nectareous glands. The germen is the length of the stamens, slender and round, with a sessile stigma: it becomes a bivalved compressed pod, an inch in length, which, when the seeds are ripe, opens elastically, and rolls back in a spiral form. The seeds are many and round.

Qualities. — Every part of the plant is inodorous; but the flowers and leaves are slightly bitter and pungent, having in an inferior degree the taste of water-cresses. The leaves are often added to spring salads.

Medical properties and uses. — Cardamine flowers are said to be diuretic, and antispasmodic. Their efficacy in spasmodic diseases was first mentioned by Dale¹, on the authority of a MS. of Doctor Tancred Robinson; and they were afterwards, in the year 1767, strongly recommended by Sir George Baker², who had successively used them in the cure of chorea, spasmodic asthma, and some other convulsive affections. Dr. Odier of Geneva³ mentions a case of *incubus* which was cured by their use, although it had resisted several other antispasmodic medicines. They sometimes produce diaphoresis, but have otherwise little sensible operation. They are seldom used. The leaves have been regarded as possessing antiscorbutic qualities, but they have very little efficacy. The dose of the dried flowers powdered is from one drachm to three drachms, given twice or thrice a day.

CARUM. *Spec. Plant. Willd.* i. 1470.

Cl. 5. Ord. 2. Pentandria Digynia. *Nat. ord.* Umbellatæ.

G. 561. Fruit ovate-oblong, striated. Involucre one-leaved. Petals keeled, inflex emarginated.

Sp. 1. C. Carvi.⁴ Common Carraway. *Med. Bot.* 2d ed. 102.

t. 41. *Eng. Bot. Smith's Flora Britan.* 330.

Official. CARUI SEMINA. *London.* *Edin.* CARUON; SEMINA. *Dub.*

Carraway seeds.

Syn. Carvi (F.) Kümmelsamen, (G.) Carvi, (L.) Alcaronea, (S.)

Carraway is an indigenous, biennial, umbelliferous plant, growing wild in meadows and pastures; but cultivated in several parts, particularly in Essex, for the sake of its seed. The

¹ *Pharmacol.* 204.

² *Med. Trans.* i. 442.

³ *Manuel de Médecine Pratique, &c.* Let. 16.

⁴ *Κάρριος σπυρίδις* Dioscoridis. Careum, non Carum, Latine dici deberet. *Conf. Plin.* l. xix. sect. 49. *Gärtner.*

flowers expand in May and June, and the seeds ripen in August. The root is fusiform; the stem smooth, channelled, branching and seldom exceeding three feet in height; with smooth, doubly pinnate, incised leaves, the pinnulæ or segments of which are narrow, linear, pointed, and of a deep green colour. The flowers are in numerous terminal erect umbels, generally of ten rays, furnished with an involucre consisting of narrow leaflets, solitary, or two or three together, often altogether deficient; and without any partial involucre. The petals of the flowers are five, nearly equal, keel inward, obtuse, inflected, white, or of a pale blush colour; the filaments slender, rather longer than the petals, and bearing small roundish anthers; and the germen inferior, supporting very short capillary styles with simple stigmas. The seeds are two, oblong, bent, about one-fourth of an inch in length, of a brown colour, with five moderately elevated, longitudinal, straw-coloured ridges, the interstices being also obscurely furrowed. Caraway plants do not perfect their seeds until the second year. They are cut down in July, and the seed thrashed out on a cloth. The seeds are used by the London confectioners and bakers, as well as for medicinal purposes.

Qualities. — Caraway seeds have a pleasant aromatic odour, and a sweetish, warm, pungent taste; depending on an essential oil which is almost completely extracted by rectified spirit, and in an inferior degree by water. By distillation with water the whole is elevated, and an insipid extract remains.

Medical properties and uses. — These seeds are carminative and stomachic. They are used in flatulent colic and hysteria; and to give warmth to purgatives and other active remedies.

The dose in substance is from grs. x. to ʒij.

Officinal preparations. *Oleum Carui*. L. D. *Aqua Carui*. L. *Spiritus Carui*. L. E. D.

CASSIA. *Spec. Plant. Willd.* ii. 513.

Cl. 10. *Ord.* 1. Decandria Monogynia. *Nat. ord.* Lomentaceæ
Linn. Leguminosæ *Juss.*

G. 813. *Cal.* five-leaved. *Petals* five. *Anthers* three superior, barren; the three lower ones beaked. *Lomentum*.

* *Sennas*.

Sp. 18. *C. Fistula*. Purging Cassia. *Med. Bot.* 2d ed. 445. t. 160.

Sp. 24. *C. Senna*. Senna. *Med. Bot.* 2d ed. 442. t. 159.

1. CASSIA FISTULA.¹

Officinal. CASSIÆ PULPA. *Lond.* CASSIÆ FISTULÆ FRUCTUS.

Edin. CASSIA FISTULARIS; FRUCTUS PULPA. *Dub.* Cassia pulp.
Syn. Casse (F.) Rohnkassie (G.) Polpa di Cassia (I.) Fistularis (S.) Ameltás (H.)
Suvernaca (San.)

This tree is a native of both the East and West Indies, and of Egypt. It rises to the height of forty or fifty feet, with a

¹ Chairaxambar of the Egyptians. *Prosper Alpinus, de Plantis Ægypti*, cap. ii.

large trunk, covered with a soft cineritious bark, and much branched at the top. The leaves are composed of six pairs of ovate, pointed, undulated pinnæ, of a pale green colour, with many transverse nerves, and peduncled: the stipules scarcely apparent. The flowers, which appear in June, are of a golden colour, placed upon long pendent terminal spikes.¹ The leaves of the calyx are crenated, blunt, and greenish; the petals unequal, spreading, and waved. The three undermost filaments are long and incurved; the others exhibit large anthers, three of which are rostrated, or like the open beak of a bird, at the extremity. The fruit is a long woody dark-brown pod, about the thickness of the human thumb, and nearly two feet in length, cylindrical, with two longitudinal furrows on one side, and one on the other; and divided into numerous transverse cells, each containing one smooth, oval, yellowish, shining seed, with red lines dividing it longitudinally, imbedded in a soft black pulp.²

The pods are said to undergo a kind of fermentation, to prepare them for keeping. Those which are brought to this country come principally from the West Indies, packed in casks and cases. The heaviest pods, and those in which the seeds do not rattle on being shaken, are the best, and contain the greatest quantity of pulp, which is the part used.

Qualities.—The pulp has a slight, rather sickly odour, and a sweet mucilaginous taste. It is viscid; almost entirely soluble in water, and partially so in alcohol and sulphuric ether. The watery infusion, which shows a tendency to gelatinize, has, when filtered, a deep brown colour; and yields a precipitate with alcohol, and the solution of the superacetate of lead. The alcoholic and ethereal tinctures are not affected by the addition of water; although, when they are evaporated, a thin pellicle of resin remains. No alteration is produced on the alcoholic and watery infusions by infusion of galls, nitrate of silver, sulphate of iron, nor the nitric nor sulphuric acids; but oxymuriatic acid throws down a yellow-coloured precipitate which is insoluble in ether. Hence there is reason for concluding with Vauquelin, that this pulp contains sugar, gelatin, gluten, mucus, a small portion of resin, extractive, and some colouring matter.

Medical properties and uses.—Cassia pulp is gently laxative; but although it is adapted for children and very delicate women, yet it is apt to induce nausea, flatulence, and griping, when taken in doses sufficient for stronger habits. To assist its operation, and prevent the griping, it is usually conjoined with

¹ Alpinus says, "Sunt etiam hi valde odorati, præsertimque oriente sole." *Ibid.* l. c.

² Gærtner de Fruct. i. 313. t. 147.

some neutral salt and an aromatic; but it is now rarely prescribed in any case. The dose is ʒiij to ʒj or more.

Official preparations. *Pulpa Cassiæ fistularis expressa*. E. *Confectio Cassiæ*. L. E. D. *Confectio Sennæ*. L. E. D.

2. CASSIA SENNA.

Official. SENNÆ FOLIA. Lond. FOLIA CASSIÆ SENNÆ. Edin. SENNA; FOLIA. Dub. Senna leaves.

Syn. Séné (F.) Sennablätter (G.) Senna (I.) Sena (G.) Sená (Arab.) Sená Mecci (H.)

This species of cassia, which yields the senna of commerce, is an annual plant, a native of Upper Egypt. The best grows in the valley of Basabras, or of Nubia¹; flowering in July and August. It rises with an erect branching stem about two feet in height. At the base of the leaves, which are pinnate, and placed in alternate order, are two narrow pointed stipules: the leaflets, of which each leaf has five or six pair, are sessile, oblique at the base, oval, pointed, scarcely an inch in length, and one-fourth of an inch broad, and of a yellowish green colour. The flowers are yellow, in loose axillary spikes: the calyx is deciduous, consisting of five narrow obtuse concave leaflets: the petals are roundish, concave, entire; the three lower ones larger than the two upper: the undermost filaments also are longer than the others, and furnished with large rostrated curved anthers; and the germen is long and flat, with a short incurved style terminated by an obtuse stigma. The fruit is an ovate, reniform, membranous, leafy, compressed legume, torose where the seeds are, and marked with capillary, transverse, parallel striæ: bivalve, with six or nine cells, divided by very thin transverse partitions, and each containing one oblong heart-shaped seed.²

The best senna, named in Nubia *guebelly*, or *sena mekki*, grows wild, and yields two crops of leaves, the abundance of which depends on the periodical rains. The first crop is collected after the first rains about the middle of September; the second in the following March. The plants are cut when the flowers begin to fall, and exposed on the rocks to dry in the sun. The leaves are then picked, packed up in bales, and sent to Boulac, the great entrepôt of senna, where they are mixed with two other species of cassia; one the *C. senna* of Forskal with obtuse leaves; the other probably the *C. angustifolia* of Willdenow, the leaves of which are longer, narrower, and sharper pointed than those of the proper senna, and come from Mocha; but the leaf with which senna is chiefly adulterated is that of the *Cynanchum Oleaefolium*, known in Egypt by the name of Argel or Arguel. The proportions, according to Dr. Calloden are 500 parts lance-leaved senna, 200 of obovate

¹ C. Nectoux. Vide *Phil. Mag.* xv. 55.

² Gartner de Fruct. ii. 312, t. 146.

senna, and 200 of argel. The two first are equally good, but the last is truly an adulteration. It can be readily distinguished by attending to the following rules. 1. The leaf of argel is an inch or 14 lines long, while that of senna never exceeds nine lines. 2. The leaf of argel has a straight side; and the lateral nerves not seen on the under disk, while those of senna are conspicuous. 3. The leaf of argel is regular at its base, the two sides terminating at the same point on the petiole: but the senna leaflet is oblique, one of the sides being larger, and produced lower on the petiole than the other.¹ There is also reason for thinking that it is further adulterated with the leaves of *Colutea arborescens*, bladder-senna, and of box: but these are easily distinguished from senna leaves. The senna after being thus mixed, is repacked in bales at Alexandria, whence it is exported to Europe.²

Qualities.—The odour of senna leaves is faint, rather disagreeable and sickly; the taste slightly bitter, aromatic, sweetish, and nauseous. Boiling water extracts about one-third of the weight of the leaves employed: the infusion has a deep reddish brown colour, with the odour and taste of the leaves. This infusion, when exposed to the atmosphere, deposits a lemon-yellow-coloured insoluble matter; and a precipitate is produced by the strong mineral acids, oxalic acid, the carbonates of the alkalies, and several other substances. (See *Infusum Sennæ*, among the Preparations.) Alcohol and sulphuric ether digested on the powdered leaves acquire a deep olive-green colour. When the ethereal tincture is poured on the surface of pure water, a dark olive pellicle remains after the evaporation of the ether, which is almost insipid, and has all the properties of resin; and a golden yellow colour is communicated to the water.³ The alcoholic tincture is rendered only slightly milky by the addition of water, and scarcely any precipitate is produced; but a copious one is thrown down by oxymuriatic acid. The active principle of senna appears to be a very oxidizable extractive resin, and a peculiar volatile matter; and it contains also mucus, and some saline ingredients. According to Bouillon Lagrange, the residue of the watery infusion evaporated to dryness, and burnt, yields potass, sulphate of potass, carbonate of lime, magnesia, and silica.

¹ *Hist. Nat. et Méd. des Casses*, &c. Par L. T. Fred. Calloden, de Genève, M. D. 4to. Planches. Montpellier, 1816.

² Nectoux says, The palthier, or senna-manager, of Alexandria acknowledged that the product of the two crops varies from 700 quintals to 1100 or more, one-third of which is argel, the obtuse pointed cassia, and the sale is 1400 or 1500 quintals (more probably from 15 to 1600). *Phil. Mag.* l. c.

³ This colour may be produced by some extractive being taken up by the ether, closely united to the resin.

Medical properties and uses. — Senna is purgative, generally operating under four hours after it is taken; and is well adapted for all cases in which the bowels require to be certainly, yet moderately evacuated. In many habits it is apt to occasion griping, and therefore requires the addition of some aromatic, as caraway or cardamom seeds, or ginger; and its operation to be assisted by drinking plentifully of weak broths or gruel. The griping seems to be occasioned by the resinous matter, as the infusion made with cold water does not gripe, although it purges. Senna may be given in substance powdered; but the more usual form is that of infusion. Decoction is a bad form, as the activity of the medicine is much impaired by the boiling: owing, according to Gren, to the total dissipation of the nauseous and volatile principles; but, in our opinion, to the oxidization of the extractive, which also accounts for the severe gripings induced by the decoction. The dose of the powder of the leaves is from ℥j to 3j; but it is seldom given alone.

Official preparations. *Confectio Sennæ.* L. E. D. *Extractum Cassiæ Sennæ.* E. *Infusum Sennæ.* L. D. *Infusum Tamarindicum Senna.* E. D. *Pulvis Sennæ compositus.* L. *Tinctura Sennæ.* L. E. D. *Syrupus Sennæ.* D.

CASTOR. *Syst. Nat. Gmelin.* 124.

Cl. 1. *Ord.* 4. Mammalia, Glires.

G. 23. *Fore-teeth* in the upper jaw truncated, hollowed with a transverse angle; in the lower transverse at the point. *Grinders* in both jaws four. *Tail* long, depressed, scaly. *Clavicles* perfect. *Species* 1. *C. Fiber.* The Castor Beaver. *Jonst. Quadr.* p. 147. t. 68.

Official. CASTOREUM.¹ *Lond. Edin.* CASTOREUM ROSSICUM et CANADENSE. *Dub.* Castor; Russian and Canadian.

Syn. Castoreum (F.) Kastoreunt (G.) Castoro (I.) Castoreo (S.) Ash buthegan (A.) Gooná beyduster (Pers.)

The beaver is an amphibious quadruped, found in the northern parts of Europe, Asia, and America, inhabiting the wooded banks of uninhabited rivers and lakes; in which situations it is gregarious, and constructs its habitation with greater skill than any other animal except man. The body is thick, under three feet in length, and covered with short iron-brown and chesnut-coloured hair: the feet are five-toed and webbed; the eyes small, and the ears short and hairy. The tail is about half the length of the body, flat, horizontal, scaly, with that part only of it that is next to the body covered with hairs. Between the anus and the external genitals are four follicles of an oblong shape, smaller above and larger below; the two upper are filled with a fatty substance, whilst the two larger contain each about two ounces of an oily viscid strong-smelling substance, inclosed in membranous cells, which is the officinal castor.

¹ Κάστος; Dioscoridis. The ancients erroneously believed that the castor follicles were the testicles of the Beaver.

When the beaver is taken, the follicles are cut off entire, and dried either by exposure to the sun, or in smoke. The castor is at first fluid, but gradually becomes solid and viscid, occasionally perfectly dry and pulverulent. The best comes from Russia; but of late years it has been very scarce, and all that is now found in the shops is the produce of Canada. The cods of the Russian castor are large, dry, roundish, heavy, and solid, appearing, when cut, of a reddish liver colour; those of the Canadian are smaller, hard, oblong, thin, and corrugated on the outside. In each beaver there is a large and small bag; and the castor in the larger bag is always the best. The goodness of the castor is determined by its sensible qualities; that which is quite black, insipid, inodorous, and oily, being unfit for use. Castor is said to be sometimes counterfeited by a mixture of some gummy and resinous substances, with a little real castor, artificially interspersed with membranes, and stuffed into the scrotum of the goat.¹ The fraud is easily detected by comparing the smell and taste with those of real castor; and by the deficiency of the sebaceous follicles which are always attached to the real cods.

Qualities.—The odour of castor is strong, heavy, and aromatic; the taste bitter, sub-acrid, and nauseous. It feels slightly unctuous, and is of a red-brown colour. Its odorous principle is dissipated by coction with water; but when it is simply infused in boiling water, its sensible qualities are in a small degree imparted to the infusion, which has a yellow colour, and shows the presence of an alkali, by changing to green the vegetable blues. Alcohol and sulphuric ether dissolve the resinous part of the castor, which remains after the evaporation of the menstrua, and retains all the odour and taste of the drug. According to the analysis of Bouillon Lagrange, castor contains the carbonates of potash, lime, and ammonia, iron, resin, a mucilaginous extractive matter, and a volatile oil. Canadian castor contains benzoic acid, both free and combined.²

Medical properties and uses.—Castor is antispasmodic, and emmenagogue. It is given, with seeming advantage, in low nervous fevers, hysteria, epilepsy, and spasmodic affections; and from the idea of its action being particularly determined to the uterine system, it is supposed to prove useful in amenorrhœa and chlorosis. It may be exhibited either in powder, or in the form of tincture; but owing to the scarcity and the high price of good castor, it is seldom ordered; and the materia medica certainly contains many better antispasmodics.

The dose of powdered castor is grs. x. to ℥j, given as a bolus.

Official preparation. *Tinctura Castorei.* L. E. D.

¹ Duncan's *New Edinburgh Dispensatory*, 5th edit. 220.

² Laugier. *Ann. de Mus. d'Hist. Nat.* t. 9. p. 323.

CENTAURIA. *Spec. Plant. Willd.* iii. 2277.

Cl. 19. Ord. 3. Syngenesia Frustranea. Nat. ord. Compositæ Capitatæ Linn. Cinarocephalæ Juss.

G. 1548. Receptacle bristly. Seed-down simple. Corolla of the ray funnel-shaped, longer, irregular.

* * * * * Calciatræ; with the spines of the calyx compound.

Spec. 89. *C. benedicta*. Blessed Thistle. *Med. Bot.* 2d edit. 34. t. 14.

Officinal. CENTAURIÆ BENEDICTÆ HERBA: *Edin.* CARDUUS BENEDICTUS, FOLIA. *Dub.* The herbaceous part, or the leaves of Blessed Thistle.

Syn. Chardon benit (*F.*) Kardo benediktenkract (*G.*) Curdo santo (*I.*) Curdo benlito (*S.*)

This is an annual plant, a native of Spain and the Grecian islands, flowering in June and September; and cultivated in the gardens of this country, where it thrives as well as in its native soil.¹ The root is whitish, cylindrical, and branched, the stem erect, roundish, channelled, and rough, about two feet in height, and branched towards the top. The lower leaves are peduncled, but the upper sessile, and in some degree decurrent; the whole are long, elliptical, rough, runcinate, and barbed with sharp points; of a bright green colour above, whitish underneath, and reticulated. The flowers are surrounded by an involucre of ten leaves, the five exterior of which are larger: the calyx is oval and woolly, and each scale terminated by pinnate spinous points: the florets are of a yellow colour, those of the ray small, trifid, and sterile. The seeds have a paleaceous receptacle, are brown, pyriform, a little curved, deeply striated, and crowned with a double pappus, the outer one calyculate, the inner spinous.²

This plant is in greatest perfection when in flower, at which time it should be cut, quickly dried, and preserved in a dry airy place.

Qualities.—The odour is weak, yet unpleasant; the taste intensely bitter, but not very permanent. Its virtues are extracted both by water and alcohol. The watery infusion has a pale greenish-yellow colour, which is changed to a deep olive by sulphate of iron, and an orange-brown by the pure alkalis, although the carbonates do not affect it. Nitrate of silver and superacetate of lead occasion copious precipitates, and are therefore incompatible with this infusion.

Medical properties and uses.—*Carduus benedictus* is emetic, diaphoretic, or tonic, according to the form and strength of the preparation in which it is administered. The decoction and strong infusion provoke vomiting; the less strong warm infusion determines powerfully to the surface, occasioning a copious flow of sweat; and the light infusion, made with six drachms of

¹ It was described as being cultivated in England by Gerarde in 1597.

² *Gortner de Fruct.* ii. 385. t. 162.

the leaves and one pint of cold water, is an elegant and efficacious bitter in loss of appetite, and the dyspepsia which is occasioned by irregularities. It was formerly supposed to possess such extraordinary medicinal powers as to deserve the appellation *benedictus*; but it is seldom used in modern practice. The dose of the powdered herb is grs. xv. to 3j; that of the infusion fʒij given every three hours.

CENTAURII CACUMINA. Vide *Chironia Centaurium*.

CEPHAELIS. *Spec. Plant. Willd.* i. 977.

Cl. 5. *Ord.* 1. Pentandria Monogynia. *Nat. Ord.* Aggregatæ *Linn.* G. 357. Flowers in an involucred head. Corolla tubular. Stigma two-parted. Berry two-seeded. Receptacle chaffy.

Species nova. Cephaelis vel Callicocca *Ipecacuanha*.¹ *Ipecacuan* *Linn. Soc. Trans.* vi. p. 137. t. 2.

Official. **IPECACUANHÆ RADIX.** *Lond. Edin. Dub.* The root of *Ipecacuan*.

Syn. *Ipecacuanha* (F.) *Bruchwuzel*, (G.) *Ipecacunna*, (I.) *Ipecacuanha*, (S.)

This plant is a perennial, found growing in shadowy moist situations in the forests of the provinces of Pernambuco, Bahia Rio Janeiro, Paulensia, Mariannia, and other provinces of the Brasils; flowering in December, January, February, and March; and ripening its berries in May. The root is simple, or somewhat branched, and furnished here and there with short radicles; it is roundish, three or four inches in length, and two or three lines in thickness; bent in different directions, externally brown, and annulated with prominent, unequal roughish rings. The stem is procumbent at the base, rising from five to nine inches in height, round, the thickness of a hen's quill; smooth, brown, leafless, and knotted in the lower part, but leafy towards the apex: after the first year it throws out runners, from which, about six inches apart, new erect stems arise. The inferior leaves are caducous, so that not more than eight generally remain at the summit of each stem when it flowers: they are almost sessile, opposite, spreading, ovate, pointed at both ends, three or four inches long, and less than two broad; of a deep green colour on the upper surface, and of a whitish green, downy, and veined on the under. At the base of each pair of leaves are sessile, fimbriated, short, withering stipules embracing the stem. The flowers are aggregated in a solitary head, on a round, downy footstalk, terminating the stem, and encompassed by a four-leaved involucre. The florets are sessile, from 15 to 24 in number, interspersed with little bractes: the calyx, is very small, five-toothed, superior, and persistent; the corolla monopetalous, the expansion shorter than the tube, and divided into five ovate, acute, recurved segments: the filaments are

¹ As Willdenow, following Swartz, has united the genus *Callicocca* with that of *Cephaelis*, we have referred the *Ipecacuanha* to this genus.

short, capillary, inserted into the upper part of the tube, and bearing long erect anthers: the germen inferior, supporting a filiform style, with two obtuse stigmas the length of the anthers; becoming a soft one-celled berry, of a reddish-purple colour changing to black, and containing two oval seeds.

According to Decandolle, the term *ipecacuanha* in South America implies generally *vomiting root*; and therefore it is applied to the roots of very different species of plants. The plant, however, which we have described from professor Brotero's description published in the sixth volume of the Linnean Transactions, and the *Psycotria emetica* which Mutis says yields the Peruvian gray ipecacuan are the plants that yield the varieties of the root brought to this country.¹ We have found very little of the white ipecacuan in any of the specimens of the ipecacuan of the shops which we have examined. Both the gray and the brown varieties of the root are brought to this country packed in bales from Rio Janeiro. Both are in short, wrinkled, variously bent and contorted pieces which break with a resinous fracture. The gray is about the thickness of a small quill, full of knots and deep circular fissures, that nearly reach down to a white woody fibre that runs through the heart of each piece; the external part is compact, brittle, and looks smooth: the brown is smaller, more wrinkled, of a blackish brown colour on the outside, and white within: the white is woody, and has no wrinkles.

In choosing *ipecacuanha*, the larger roots, which are compact, and break with a resinous fracture, having a whitish gray somewhat semitransparent appearance in the inside of the cortical part, with a pale straw-coloured medullary fibre, are to be preferred.

It is impossible to ascertain at what period the effects of this root were first known in America, where the Indians used it as an emetic before their connexion with Europeans: but although Piso described its uses fully in his Natural History of Brazil so early as 1618, and brought the root to Europe, yet it was scarcely used by Europeans before the year 1700. It was carried to France by a French physician of the name of Le Gras in 1672; but it did not attract general notice until it was a third time introduced by a French merchant of the name of Grenier, who brought 150 lbs of it from Spain in 1686, with which trials were made at the Hotel Dieu. Helvetius first made known its use

¹ The title of ipecacuan is generally given to the roots of the following plants, besides those mentioned above, in South America: *Viola parviflora*, *V. Ipecacuanha*, *V. Calceolaria*, *Cynanchum Ipecacuanha*, *C. tomentosum*, and *Asclepias cierrassavica*; and sometimes to *Euphorbia Ipecacuanha*, *Dorstenia brasiliensis*, and *D. arifolia*. In St. Domingo several species of *Ruellia*, which provoke vomiting, are named false Ipecacuan. *Nouveau Dictionnaire d'Histoire Naturelle*, art. *Ipecacuanha*.

in dysentery, and was rewarded by Louis XIV. with 1000*l.* sterling for the discovery.

Qualities. — The entire root is inodorous, but the powder has a faint disagreeable odour. The taste is bitter, subacid, and extremely nauseous. Various analyses of ipecacuanha have been made in order to detect its emetic principle, but the most satisfactory is that of M. M. Majendie and Pelletier.¹ After digesting the powdered root in ether, the remainder was treated with highly rectified alcohol, until it ceased to become coloured even when aided by heat. These tinctures after being allowed to cool, and to deposit some flakes of wax which were separated by filtration, were then evaporated to dryness, and the residue re-dissolved in water; and acetate of lead being added to the watery infusion, a precipitate formed, which when edulcorated and diffused through water was exposed to a current of sulphuretted hydrogen gas, to separate the lead; after which the liquid being filtered and evaporated to dryness afforded a substance of a peculiar nature, on which it was experimentally demonstrated that the emetic properties of the root depend. *Emetin*,² the name given to this substance, when thus obtained, is in the form of brownish red scales, which are nearly inodorous, and have a slightly bitter, acrid, but not nauseous taste. When exposed to a heat stronger than that of boiling water, it is decomposed, furnishing water, carbonic acid, some oil, and acetic acid, charcoal being left. It is soluble in water in all proportions without undergoing any alteration, and deliquesces in a moist atmosphere. It is also soluble in alcohol, but not in ether. To detail the action of other chemical agents on this body is here unnecessary; the results are sufficient to characterize it as a substance *sui generis*.

The medicinal value of ipecacuanha depends, undoubtedly, on the quantity of emetin it contains; and this varies in the three varieties of the root found in the shops. M. M. Majendie and Pelletier obtained 16 parts of it in 100 of the cortical part of brown ipecacuanha, the root of the *Psycotria emetica* of Mutis,³ 14 in 100 of the grey ipecacuanha, the root of the *Calli-cocca ipecacuanha*⁴ and 5 only in 100 of the white ipecacuanha, the root of the *Viola emetica*.⁵ The woody pith even of the brown

¹ Vide *Ann. de Chim. et de Phys.* iv. 172. and *Lon. Med. Repository*, viii. p. 252.

² The name is derived from *emere vomo*.

³ The components procured from 100 parts of brown ipecacuanha were as follows; of fatty and oily matter 2; emetic matter (emetin) 16; wax 6; gum 10; starch 42, and ligneous matter 20; the remaining 4 parts being regarded as loss.

⁴ 100 parts of the grey variety yielded, of fatty matter 2; emetin 14; gum 16; starch 18; woody matter 48; with merely a trace of wax, and 2 of loss.

⁵ From 100 parts of the white ipecacuanha, were obtained of emetin 5; gum 35 vegeto-animal matter 1; and woody matter 57; besides 3 of loss.

variety contains very little emetin, and hence it should be separated in reducing the root to the form of powder.

Experiments made with emetin on animals, prove that it is emetic and purgative, in doses of half a grain, and exerts a specific action on the lungs and mucous membrane of the intestinal canal, and has also marked narcotic properties: that it may be employed instead of ipecacuanha in every case in which this medicine is useful, the dose being more easily regulated, and the effects more certain. When taken in an over-dose, its action can be instantly paralysed by decoction of galls. These experiments are at variance with those of Dr. Irvine, which led him to conclude that the watery solution of ipecacuan is more emetic than the alcoholic, the reverse being found to be the case.

The powder is apt to become inert by keeping; and therefore it should be preserved in small phials, well corked, and not exposed to the light. Long-continued boiling also renders it inert.

Medical properties and uses.— Ipecacuanha, when administered in large doses is emetic; in smaller ones diaphoretic and expectorant; and in still smaller doses it acts as a stomachic, stimulating and giving energy to the digestive organs. As an emetic, it is mild, safe, and certain in its operation; but it is a mistake, that when given in larger doses than are necessary it does not operate more violently, but only in a shorter space of time. It does not act so quickly as many other emetic substances; but it evacuates completely the contents of the stomach, and does not so much weaken it as antimonial emetics. It is given at the commencement of continued fevers, the progress of which is sometimes cut short by its operation; and it is also frequently found to stop the paroxysm of an intermittent, when given immediately before the accession of the cold stage. At the commencement of inflammation of the pharynx, larynx, and trachea, when the inflammation does not run very high; in cynanche tonsillaris; and every case in which it is necessary to evacuate the stomach, ipecacuan has been found useful. As an emetic, however, it is contra-indicated when there is any reason for suspecting inflammation of the encephalon, passive hæmorrhagy, or hernia; and in the advanced stage of typhus fevers, when the pulse is feeble, and the strength much diminished; but in these instances all emetics are hurtful. In doses sufficient to excite nausea without producing vomiting, ipecacuan is given with excellent effects in dysentery¹, and obstinate diarrhœa: in which cases its efficacy seems to arise in a great degree from the nausea, which is kept up by the repetition of the small doses diminishing the arterial excitement,

¹ Piso, Helvetius, Cleghorn, Pringle.

and determining to the surface; and partly also, as Cullen supposed, from its producing a steady determination of the peristaltic motion of the intestines downwards.¹ Perhaps also to these first-mentioned effects of the nausea, may be attributed much of the benefit which results from the use of ipecacuan in spasmodic asthma, dyspnoea, pertussis and epilepsy. In the first of these diseases its emetic power is taken advantage of to relieve the paroxysm, after which it is given in repeated small doses to prevent its return.² In nauseating doses also, owing to the nausea lessening the force of the circulation, it has been employed with the best success in uterine and pulmonary hæmorrhages. As a sudorific, it is used in acute rheumatism, arthritic affections, dropsy, and other diseases in which sweating is necessary. It is generally given in these cases in combination with opium and neutral salts, according to the mode introduced by *Dover*; (see *Pulvis Ipecacuanhæ compositus*.) But we have found it in combination with opium alone in a larger proportion, more efficacious, particularly in rheumatism. Its expectorant powers have been found exceedingly useful in catarrhal affections, pneumonia after bleeding, and in the early stage of phthisis, in which its diaphoretic effect is also beneficial.

The emetic operation of ipecacuan is quickened by combining it with tartarized antimony: and, on the contrary, it is counteracted by opium, and vegetable acids. Opium, however, is rendered less narcotic when combined with ipecacuan, although its power of allaying pain is not diminished, while the sudorific effect of the ipecacuan is much augmented by the combination. We do not, however, agree in opinion with those who think it is to be relied upon as an antidote against the deleterious effects of opium; its emetic effect being too slow, and checked by the opium.

Ipecacuan is exhibited in substance, and in aqueous and vinous infusions: and on the continent a syrup of it is used for children.³ The dose of the powder, to produce full vomiting, is from grs. xv. to ʒfs; and of the aqueous infusion, which is made by macerating for an hour ʒij of the powdered root in fʒvj of boiling water, and filtering, fʒj or fʒjfs may be given every half-hour till it excites vomiting. The emetic effect is continued, and rendered easier to the patient, by drinking, in the intervals of vomiting, large draughts of tepid

¹ *Materia Med.* ii. 477.

² *Akenside*.

³ The following is the mode of preparing the syrup. Take oz. vj of ipecacuan in fine powder, and pour over it lbs. vj. of cold water, and after twenty-four hours decant it off; then add lbs. vj more of water; and again lbs vj more a third time, proceeding always as at first. Mix the decanted liquors, and filter; and then with a moderate heat dissolve in them lbs. xij of refined sugar. One ounce is equivalent to twelve grains of the powder. *Annales de Chimie*, xlvi. 33.

water. For producing the other effects of ipecacuan, it is given in doses of one, two, or three grains, generally in the form of pills; and repeated every four or five hours: but although its sudorific effect, when begun, is aided and kept up by the use of warm fluids, yet these must not be drunk soon after the dose has been taken.

Official preparations. *Pulvis Ipecacuanhæ compositus*. L. D. *Vinum Ipecacuanhæ*. L. E. D.

CERA. Wax.

Syn. Cire (F.) Wachs (G.) Cera (I.) Cera (S.) Shuma (Arab.) Mom (H.) Medhúchhishta (San.)

Bees, as the experiments of Huber have proved¹, produce the wax of which the delicate partitions of the cells of their combs are constructed, from honey, sugar, and the sweet secreted juice found in the nectaries of plants; but they do not collect it ready formed from the anthers of flowers, as has been generally supposed. It is, nevertheless, also produced as a secretion by many plants, forming the silvery powder or bloom, which often covers their leaves and fruit; and is found in great abundance combined with resin, covering the trunk of the wax-palm (*Ceroxylon*) of South America², and very pure, encrusting the seeds of the *Myrica cerifera*, or wax-tree of Louisiana and other parts of North America.³ Hence wax, in the extended meaning of the term, may be regarded both as an animal and a vegetable product. But it is the former species only of it, or bees' wax, which is officinal, and demands our present consideration. It is admitted into the list of materia medica under two forms:—1st. As it is procured originally from the combs, combined with colouring matter, or unbleached; and 2d, Deprived of colour, and purified or bleached.

I. UNBLEACHED WAX.

Officinal. CERA FLAVA. *Lond. Edin. Dub.* Yellow Wax.

Syn. Cire jaune (F.) Wachs (G.) Cera gialla (I.) Cera qualda (S.) Munjie Moolakhos (Tam.)

Yellow wax is prepared immediately from the honeycomb. The honey is obtained by dripping and pressing the comb, which is then soaked for some days in clear water, to extract all the remaining honey; and afterwards melted in a clean vessel with boiling water, and pressed through cloth bags. It is then re-melted and cast into round cakes, in which form it is brought to market.⁴

¹ *Nicholson's Journal*, ii. 182.

² This palm is found in the Quindin mountains only, rising 180 feet in height, and having leaves 20 feet long. The waxy secretion covers the trunk to the thickness of about two inches; and consists of two-thirds of resin and one of wax. *Humboldt Plantæ Equinociales*, &c. fasc. i.

³ The *pe la* of the Chinese is an animal wax; and the *white lac* of India appears also to be a variety of wax.

⁴ Large quantities of wax are imported from the Baltic, the Levant, and the Barbary coast.

Qualities.— Good and recent yellow wax has a slight odour of honey, is insipid, and of a bright pale yellow hue. It is brittle, yet soft; somewhat unctuous to the touch, but without adhering to the fingers, or to the teeth when it is chewed; acquires tenacity when heated; melts at 142° , and burns entirely away. Its specific gravity varies from 0.9600 to 0.9650.

Wax in this form is often adulterated with earth, pease meal, or resin and tallow. Earth, or pea's meal, may be suspected, when the cake is very brittle, and the colour inclines more to gray than bright pale yellow: they may be separated by remelting and straining the wax. The presence of resin may be suspected when the fracture appears smooth and shining, instead of being granulated; and it may be detected by putting small pieces of the wax in cold alcohol, which will readily dissolve the resinous part, without sensibly acting on the real wax. Tallow is discovered by the greater softness and unctuousity of the cake, and its disagreeable suffocating smell when melted.

Medical properties and uses.— Yellow wax is scarcely ever ordered for internal use, although its colouring matter does not affect its medical properties. It is chiefly employed in the composition of external applications.

Off. prepar. *Cera flava purificata*. D. *Emplastrum Cerae*. L. E.

2. BLEACHED WAX.

Official. *CERA ALBA*. Lond. Edin. Dub. White Wax.

Syn. Cire blanche (F.) Cera bianca (I.) Cera blanca (S.) Vultay Moolakhoo (Tam.)

When yellow wax is exposed, with an extended surface, to the action of light and air, and sprinkled with water, the yellow colour and peculiar odour are lost, and it becomes white. This process is thus performed:— The yellow wax is melted with a very little water in a copper vessel, and then run off, through a plug-hole in the bottom, into another vessel, which is covered with a cloth to retain the heat until the water and the impurities settle. The clarified melted wax is next suffered to flow into a vessel, the bottom of which is full of small holes, through which it runs in small streams upon a cylinder kept constantly revolving over, and partly dipping in, cold water, into which the wax falls drawn out into thin shreds or ribbands, and is instantly cooled. These are spread upon cloths stretched on frames exposed to the light and air, and occasionally watered and turned; so that after some days the colour nearly disappears. After being thus half-bleached, the wax remains heaped up in a solid mass for a month, when the whole process is again repeated. It is, lastly, generally melted and cast into thin discs about five inches in diameter, in which form it is found in the shops.

White wax is sometimes adulterated with white oxide of lead, in order to increase its weight; and with white tallow. The

former is detected by melting the wax in water, when the oxide falls to the bottom of the vessel; and white wax is known to contain tallow when it is of a dull opaque white, and wants the translucency which distinguishes pure wax.

Qualities. — Pure white wax is perfectly insipid, inodorous, and somewhat translucent. It is harder, less unctuous to the touch, heavier, and less fusible than yellow wax; its specific gravity being from 0.8203 to 0.9662; and its melting point 155°. It melts into a colourless transparent fluid, which concretes again as it cools, resuming its former appearance. Wax is perfectly insoluble in water, and nearly so in cold alcohol and ether, although these latter fluids take up about one-twentieth of their weight at a boiling temperature, which is again deposited as the fluids cool. It dissolves in the fixed oils, forming the base of cerates and ointments; and unites in some degree when boiled with alkalis, forming soaps. The acids at an ordinary temperature scarcely affect it; but when the sulphuric is boiled on it, a thick blackish mass is produced. The products of its decomposition by heat, in close vessels, show that, like the fixed oils, it is a triple compound of carbon, hydrogen, and oxygen, in unknown proportions.

Medical properties and uses. — Wax is regarded as a demulcent; and is sometimes exhibited in obstinate cases of diarrhœa and dysentery, with the view of sheathing the bowels; but its place may be better supplied by simple mucilages and gelatinous solutions. It is generally exhibited diffused in mucilaginous fluids by means of soap, in the proportion of one-third part of the wax, with which it is first melted, and then rubbed in a mortar with the fluid, which is gradually added: but Poerner's method, which is, first to melt the wax with olive oil, and then mix the oily compound while hot with the mucilaginous fluid, by triturating with the yolk of an egg, is a preferable one. The dose is a cupful of the emulsion, containing about ʒj of wax, given every four or five hours.

CERVUS. *Syst. Nat. Gmelin.* 175.

Cl. 1. Ord. 5. Mammalia Pecora.

G. 29. Horns solid; when tender covered with a velvety coat, and growing at the apex; shed annually; forked. Fore-teeth 8 in the lower jaw. Tearing-teeth none (sometimes solitary in the upper jaw.)

Sp. 1. C. *Elaphus*.¹ The Stag, or Hart. *Johnst. Quadr.* 82. t. 32, 35.

Officinal. CORNUA. *Lon.* CERVI ELAPHI CORNU. *Edin.* CORNU CERVINUM. *Dub.* Harts' Horns.

Syn. Corne de Cerf. *F.* Hirschhorn (*G.*) Corno di Cervo (*I.*) Cuerno de Ciervo (*S.*)

The stag, of which there are three known varieties, is a native of almost every part of Europe, and of the northern parts of

¹ *Elaphus*. *Aristot. Hist. Animal.* ii. c. 7. 18.

America and Asia. In Britain its numbers have been much reduced by the progress of civilization; but it is still found wild in the highlands of Scotland; the moors bordering on Devonshire and Cornwall; and on the Kerry mountains in Ireland. It is a very beautiful animal, about three feet and a half in height, of a rust-brown colour on the upper part of the body, and whitish below. The horns are annually shed, about the end of February and March; but are soon reproduced in a soft, tender state, full of blood-vessels, and covered with a velvety skin, which is lost as they increase in size; and at length, about the month of July, they become hard, compact, and bony. They have no horns till they are above a year old, and these do not branch till the third year; after which the branches increase in number every year, so that the age of the animal may in some degree be determined by them.²

These horns differ from those of most other animals, and approach nearer to the nature of bone, containing only less of the phosphate of lime in their composition, and yielding a much larger proportion of gelatine. It is for the sake of the gelatine that their shavings are medicinally used. These are often adulterated with shavings of mutton bones, which, however, are easily detected by their greater degree of brittleness.

Qualities. — Hartshorn shavings when good are inodorous and insipid, pliant, of an ivory-yellow colour; and contain 27 parts of gelatine in 100 parts.² Four ounces of them boiled in two pints of water until one pint be dissipated, and the remainder strained, afford, when the decoction cools, a clear, transparent, colourless, insipid, inodorous jelly, which is a compound of gelatine and water.

Medical properties and uses. — The gelatine yielded by stags' horns is considered as a demulcent; but its nutrient properties are more useful than its medicinal virtues. It forms, when united with orange-juice, sugar, and a little wine, a good article of diet for the sick and convalescent; and, when mixed with an equal portion of cows' milk, it is very useful in the irritations of infants arising from acidities in the primæ viæ.

Official preparations. *Cornu ustum.* L.D. *Liquor vol. Cornu cervini.* D. *Oleum Cornu cervini rectif.* D.

CEREVISIÆ FERMENTUM. *Lond. Edin. Yeast.*

Syn. Leveure (F.) Gûsch (G.) Fermento di cervesia (I.) Espuma de cerveza (S.)

This substance is the scum or frothy matter which collects on the surface of beer while fermenting. It has been chemically examined by Westrumb, who obtained from it a variety

¹ The castrated fawn never gets horns at any period of its life.

² *Annales de Chimie*, xxxiv. 71.

of ingredients¹; but its essential constituent, or fermenting principle, is supposed to be gluten, or something very analogous to that vegetable principle. Its medical properties may perhaps be attributed to its containing the bitter of the hop, some ready-formed alcohol, and carbonic acid.

Qualities. — Yeast has a vinous, sour odour; a bitter taste; and reddens the vegetable blues. When it is filtered, a matter remains on the filter which possesses properties similar to those of vegetable gluten; and by this separation the yeast loses the property of exciting fermentation, but recovers it again when the gluten is added. The addition of yeast to any vegetable substance containing saccharine matter excites fermentation in it, and carbonic acid gas is evolved.

Medical properties and uses. — Yeast is tonic and antiseptic. Some years ago it was given with seeming advantage in typhoid fevers attended with symptoms of putridity; but the facts brought forward in support of its efficacy require further confirmation.² As an external application, however, to foul and sphacelating ulcers, when united with farinaceous matters in the form of cataplasm or poultice, it is productive of the best effects. It corrects the fœtor of the discharge, assists sloughing, and promotes the formation of a benign and healthy pus.

The dose of yeast is a table spoonful or two, (about fʒss) repeated every second or third hour. It is generally combined with porter, or wine, and sugar.

Official preparation. *Cataplasma Fermenti*. L.

CETACEUM. Vide *Physeter macrocephalus*.

CHIRONEA. *Spec. Plant. Willd.* i. 1065.

Cl. 5. Ord. 1. Pentandria Monogynia. Nat. ord. Rotaceæ Linn. Gentianæ Juss.

G. 349. Cor. wheel-shaped. Pistil declined. Stam. seated on the tube of the corolla. Anthers spiral at the end. Pericarp two-celled. Species 9. C. *Centaureum*.³ Common Centaury. *Med. Bot.* 2d. ed. 275. t. 96. *Smith. Flor. Brit.* 257. *Eng. Bot.* t. 417.

Official. CENTAURI CACUMINA. *Lond.* CHIRONEÆ CENTAURI SUMMITATES. *Edin.* CENTAURIUM MINUS; CACUMINA FLORENTIA. *Dub.* The flowering tops of Common Centaury.

Syn. Petite Centauree (F.) Tausendgüldenkraut (G.) Centaurea (L.) Gentiana Centaurea (S.)

This is an indigenous annual plant, growing in dry gravelly pastures, and flowering in July and August. The root is small, woody, and branching: the stalk, which rises about a foot in height, is erect, smooth, and quadrangular; divided above into

¹ From 15,142 parts of yeast he obtained the following substances: potash 13, carbonic acid 15, acetic acid 10, malic acid 45, lime 69, alcohol 240, extractive 120, mucilage 240, saccharine matter 315, gluten 480, and water 13,595 parts; besides some traces of phosphoric acid and of silica. *Crel's Annals*, 1796, and *Thomson's Chem.* 4th edit. v. 306.

² It was suggested as a remedy in these complaints by the Rev. Mr. Cartwright.

³ Named, according to Pliny, *κένταυρον* from Chiron the Centaur. l. 2.5 c. 6.

a dichotomous panicle, and branched at the base. The leaves are opposite, sessile, elliptical, three-nerved and smooth: the flowers terminal, sessile, and erect, expanding only in the sunshine: the calyx is half the length of the tube of the corolla, five-cleft, with the segments subulate and erect; the corolla is pink, or rose-coloured, divided at the limb into five elliptical equal segments, spreading, and somewhat concave. The filaments are bent down, and furnished with oblong, yellow, three-times twisted anthers; the germen is oblong, bearing a simple style, with a clubbed stigma.

Qualities.—Common centaury is almost inodorous; but the petals, leaves, and stalk have an intensely bitter taste. Both water and alcohol in sufficient quantity extract the whole of its active principles, leaving the insoluble part perfectly insipid. It appears to contain a bitter resin and mucus.

Medical properties and uses.—Common centaury is tonic and antiseptic. Before the discovery of cinchona it was much used for the cure of fevers, and was one of the ingredients of the celebrated Portland powder.* It is a useful bitter and tonic; and may well supply the place of some of the more expensive remedies of this description in dyspeptic complaints. The dose of the powder is from ʒss to ʒj; and of an infusion, made by macerating ʒvj of the dried tops in Oss of boiling water, and straining, fʒjss to fʒij, three or four times a day.

CINCHONA.² *Spec. Plant. Willd. i. 957.*

Cl. 5. Ord. 1. Pentandria Monogynia. Nat. ord. Contortæ. Linn. Rubiaceæ Juss.

G. 346. Corolla funnel-shaped. Capsule inferior, two-celled, bipartite with a parallel partition. Seed winged.

* *Flowers downy, with the stamens included.*

Species 1. C. Lancifolia, Mutis. Papel Periodici de Santa Fz. 1792. Rhode. Monog. Cinchonæ Generis Tentamen, p. 513. Zea, Annales de Historia Natural, tom. ii. p. 207.³ Flora. Peruv. tom. ii. p. 50.

¹ It is amusing to observe the fate of the various specifics for gout, which have each held for a time its sway over the public opinion; and it is not at all wonderful, that the *eau medicinale*, which has been performing such wonders, is, in its turn, sinking into the same state of neglect as its predecessors. The following were the ingredients of the Portland powder: equal quantities by weight of the roots of birthwort (*Aristolochia rotunda*) and of gentian; the tops and leaves of germander (*Chamaedrys*), ground pine (*Chamaepitys*), and lesser centaury (*Chironia Centaurium*), powdered and mixed together. Regarding its effects, Heberden says, "Dum fama ejus vigeret, in tot aegris, qui eo usi sunt, podagra vel mitior facta est, vel rarius repetit, ut vix possit dubitari hos effectus isti medicamento esse tribuendos. Quod autem ulla mala ex illo orta sint, præter fastidium, quod modus nimis attulit, mihi quidem nec certum unquam visum est, nec verisimile." *Comment. de Morborum Hist. 50.*

² Named after the Countess del Cinchon, wife of a viceroy of Peru, whom an Indian of Loxa cured of an intermittent, by its means, in 1638.

³ Zea adds the following synonymes: *Quinquina*. Condarn. A. A. Paris, 1738. *C. officinalis*. Linn. Syst. Veg. ed. 10. p. 929. *Spec. Plant. p. 244. Gen. Plant. ed. 7. p. 91. C. officinalis*. Vhal. Act. Soc. Nat. Haum. 1. fasc. p. 17. t. 1. *C. nitida*. Flora Peruv. et Chil. ii. p. 30. t. 191: and Ruiz. *Quinologia*, 56. *C. lanceolata*.

- t. 191. *Humboldt. Plantæ æquinociales*, p. 33. t. 10: *Lambert's Description of the Genus Cinchona*, plate 1.
Species 2. C. Oblongifolia, Mutis. *Per. de Santa Fé. Zea*. l. c. ii. 211. *C. Magnifolia*, *C. lutescens*. *Flor. Peruv.* ii. 53. t. 196. *Quinologia*, art. vi. 71.
Species 3. C. Cordifolia, Mutis, *Per. de Santa Fé. Zea*. l. c. ii. 214. *C. purpurea*. *Flor. Peruv.* 32. t. 193. *C. ovata*, Ruiz. *Quinologia. C. micrantha*. *Flor. Peruv.* 52. t. 194. *Lambert*, p. 21. plate 2.²

This important genus is not yet altogether freed from the ambiguity which has so long involved it; and although much has been effected by the industry of the Spanish botanists whom their Government sent out to make enquiries concerning it, yet many species remain undescribed², from which it is very probable the bark gatherers collect some part of the large cargoes which are annually sent to Europe.³ The three kinds medicinally used have been distinguished and named as above by Mutis, a celebrated botanist, who has resided in the neighbourhood of Santa Fé de Bogota since 1783, as director of the exportation of bark; and his observations have been fully detailed by his pupil Zea; whilst the travels of Humboldt and Bonpland have afforded them an opportunity of ascertaining accurately, and describing, the species first delineated by Condamine, and named by Linnæus *officinalis*, under which term no less than four distinct species were confounded by that distinguished naturalist in the different editions of his System. Under this trivial name also the British pharmacopœias placed as varieties the three barks known in the shops; and this error is still retained by the Dublin college; but in the last editions of their Pharmacopœias the London and the Edinburgh colleges have adopted the trivial name of Mutis; under which we shall describe them.

1. CINCHONA LANCIFOLIA. Mutis.

Officinal. CINCHONÆ LANCIFOLIE CORTEX. Lond. Edin. CORTEX PERUVIANUS. Dub. Lance-leaved Cinchona. The yellow Bark of the shops.⁴

Syn. Quinquina orange (F.) Gelbe Chinarinde (G.) China (L.) Quina Naranjada (S.)

Flora Peruv. 51. *C. glabra*, Ruiz. *Quinol.* art. 4. 64. *C. rosea*. *Flora Peruv.* 54. *C. fusca*, Ruiz. *Quinol.* art. 8. 77.

¹ Besides these synonymes, Zea adds, *C. officinalis*, Linn. *Suppl.* p. 144. s. v. *edit. Peersoon*, p. 222. *C. pubescens*, Act. Haum. 1 fasc. p. 17. t. 2.

² In a large collection of dried specimens of the genus Cinchona in my possession, which were collected in 1805, both near Loxa and Santa Fé, I find many species which are not mentioned in the works of any of the Spanish botanists.

³ Humboldt informs us that the quantity of cinchona bark annually exported from America is 12,000 or 14,000 quintals. The kingdom of Santa Fé furnishes 2000 of these, which are sent from Cartagena: 110 are furnished by Loxa; and the provinces of Huamanga, Cuenca, and Jean de Bracamorris, with the thick forests of Guacabamba and Ayavaca, furnish the rest, which is shipped from Lima, Guayaquil, Payta, and other ports on the South Sea. *Plantæ Equinoc.* p. 34.

⁴ In stating this as the species which yields the true yellow bark, we have followed the authority of Mutis and Zea. The Edinburgh College, Dr. Duncan in the *Edinburgh*

This tree is found on the Andes of Peru, near Ayavaca, growing at heights from 6250 to 8300 feet, where the mean temperature varies between 59 and 62 degrees, on a bottom of micaceous schist in the woods of Caxanuma, Uritucinga, Vilonaco, and Monge.¹ It is a lofty, handsome tree, always in leaf; and exudes, wherever it is wounded, a yellow astringent juice. The trunk is about eighteen feet in height and fifteen inches in diameter, erect, with a cracked ash-coloured bark: the branches are round, in opposite pairs, erect, brachiately; with the younger ones obscurely quadrangular at the nodes. The leaves are of a lively green, shining, oval, lanceolate, about three inches long, with a little pit in the axillas of the nerves on the under surface, which is filled with an astringent aqueous fluid, and having the orifice shut with hairs; and they stand on foot-stalks one-sixth of their length, flat above, and convex below. The stipules are two, acute, silky, contiguous, and caducous. The flowers, which are odorous, of a whitish rose colour, and furnished with little bractees, appear in terminal, brachiately, leafy, trichotomous panicles, supported on round peduncles and pedicels, that are powdered and silky. The calyx is of a globular bell shape, five-toothed, powdered and silky like the peduncles, with the teeth acute, very short, contiguous, and violaceous. The corolla is somewhat salver-shaped, longer than the calyx, with the tube obscurely pentagonous, silky, more frequently of a rose colour; the limb wheel-shaped, with oval segments, much shorter than the tube, white and woolly above. The germen is globular, changing to an ovate, woody, longitudinally striated capsule, crowned with the calycinal teeth, two-celled, many-seeded, oppositely twice-furrowed, and opening from the base to the apex with two valves.

This tree affords the original cinchona of Peru, which is now very rare, 110 quintals only being cut, instead of 4000 which was the quantity in 1779, and reserved for the use of the Spanish government.² Zea says it is the *lancifolia* of Mutis, under which we have placed it; and there is also a great affinity between it and the *scrobiculata* of Humboldt, according to that celebrated traveller. The bark of the *lancifolia* is the yellow bark of the shops, the Quina Naranjada of the Spaniards. It is known in commerce by the name of Calisaya³; and is pre-

Dispensatory, and Dr Powell in his Translation of the *London Pharmacopæia*, however, regard it as that which yields the pale bark. At the same time, from the quantity and low price of the yellow bark in England, I am inclined to think it is the produce of some yet undescribed species.

¹ As the *Condaminea* of Humboldt is evidently a variety, if not the same species meant by Mutis, we have availed ourselves of his accurate description.

² Estan raro, que apenas corresponde á uno par mil de las otras especies juntas. *Ann. de Hist. Nat.* tom. ii. p. 210.

³ The name *Calisaya* is the generic name by which the Peruvian Indians distinguish the superior barks. *MS. of Dr. Davol.*

ferred in South America to the pale Cinchona. It is brought to this country in chests containing about 90 to 100 pounds each; and consists of pieces about eight or ten inches in length, some quilled, but the greater part flat.² The quilled pieces are less rolled and thicker than the quilled pale bark; and the epidermis, which is of a tawny greyish brown colour, and covered with flat and stringy lichens, more rough and chopped, easily separating, and often as thick as the bark itself, which is about one-eighth of an inch; while the interior is of a yellow colour, passing to orange. The flat pieces are generally without any epidermis, and considerably thicker than the quilled: both are mixed in the same chest.

Qualities.—Yellow bark has nearly the same odour in decoction as the pale; the taste is more bitter, but less austere, and it does not afford any astringent feeling to the tongue when chewed. The internal colour is golden cinnamon, or subdued orange-yellow, becoming when moistened a lively orange. The fracture is woody and fibrous, presenting, when examined by a lens, the appearance of parallel longitudinal needle-like fibres, with a dry agglomerated powder in the interstices of a yellow colour. It is easily reduced to fine powder, and the powder preserves the colour of the bark, but is brighter. The sediment which the infusion lets fall in cooling is of a brighter colour than the dry powder. The filtered aqueous infusion has a pale golden hue, with a shade of red; is clearer, and seemingly less mucilaginous than the former: it has all the bitterness of the bark; reddens litmus paper, and precipitates solution of galls; but the precipitate does not fall so instantaneously as in the infusion of the former species. With solution of isinglass a pinkish yellow precipitate is produced: superacetate of lead throws down a precipitate; and that with tartarized antimony is more copious than the pale bark affords, and in yellowish white flakes. A solution of sulphate of iron changes its colour to a blueish green, and after many hours gives a precipitate of the same hue. The ethereal tincture has a golden colour, affords resin when evaporated, and is affected by the same re-agents as that of the pale cinchona; but the water on which it is evaporated is less highly coloured. The alcoholic tincture appears to be in every respect the same as that afforded by the pale bark. It seems to agree in most of its properties with the first species examined by Vauquelin; which he states was brought to Spain in 1788, and, owing to its having been used for the royal family, got the name of royal cinchona. Mutis and Zea regard this as the only species of cinchona

² These are distinguished in commerce by the terms *Calisaya with coat*, and *Calisaya without coat*.

which is directly febrifuge: and assert that it never fails to cut short an ague when administered at its accession.*

2. CINCHONA OBLONGIFOLIA. *Mutis.*

Officinal. CINCHONÆ OBLONGIFOLIÆ CORTEX. *Lond. Edin.* CORTEX PERUVIANUS. *Dub.* Oblong-leaved Cinchona Bark. Red Bark. *Syn.* Quinquina rouge, (F.) Rothe Chinarinde, (G.) China. (L.) Quina Roxa, (S.)

The tree yielding this bark is found on the Andes, growing in the woods on the banks of the mountain streams, in great abundance, at Chinchao, Cuchero, and Chacahnassi; flowering in June and July. It rises to a very considerable height on a single, erect, round stem, which is covered with smooth, brownish ash-coloured bark. The older branches are round, smooth, and of a rusty colour; the younger are obtusely four-cornered, leafy, and of a diluted reddish colour. The leaves are opposite, large, the full-sized ones being one or two feet in length, of an oblong oval shape, and supported on short semi-round purple petioles. They are entire, pale, on the upper surface, shining, on the under veined with veins that turn to a purplish colour; and at the base of each are numerous bundles of white bristles: the stipules are supra-axillary, interfoliaceous, opposite, contiguous, united at the base, and of an obovate figure. The flowers appear in large, erect, much compounded terminal panicles, somewhat branched, on long brachiated many-flowered peduncles, the calyx is small, five-toothed, and of a purple colour; the corolla white and odorous, with the limb spreading, and hairy within: and the filaments are inserted into the tube of the corolla, and support oblong anthers bifid at the base. The capsules are large, oblong, obscurely striated, slightly curved, and crowned with the calyx.†

This tree is named in the vernacular Spanish *Cascarilla de flor de Azahar*, from the flowers resembling in odour those of the orange; and its bark is the *Quina roxa* and *colorada* of commerce. The bark is brought to this country in chests, which contain from 100 to 150lbs. each. It consists of various sized pieces, covered with a thin and rough entire reddish brown epidermis. The greater number of the pieces are flat, but some are partially quilled, as if taken from half the circumference of the branches to which they belonged. Under the epidermis there is an intermediate layer, which is dark coloured, compact, brittle, and seemingly resinous; and within it the internal part is woody, fibrous, and of a rust-red colour. The fracture, examined by a lens, consists of close longitudinal parallel needle-form fibrillæ of a pale red colour, with a deep red

* *Annales de Historia Natural.* ii. 609.

† *Flora Peruv.* iii. 53. t. 195.

agglomerated powder in the interstices. The powder is of a deeper colour than the internal part of the bark.

Qualities. — Red cinchona bark has a weak peculiar odour; and its taste is much less bitter, but more austere and nauseous, than the barks of the other species. The aqueous infusion has a pale ruby colour, a slight degree of bitterness, and a decided astringency. It lets fall a sediment of a brighter hue than that of the dry powder. It reddens litmus paper¹, is slowly precipitated by the solution of galls, the supernatant liquor being perfectly colourless; and a very light, flocculent, ruby-coloured precipitate is produced by the solution of isinglass: it is not altered by tartarized antimony, nor by the surperacetate of lead; and the sulphate of iron makes it assume a dirty yellow olive colour only, little being precipitated. The ethereal tincture is of the same colour, and exhibits the same appearances as that of the two former species, when treated in a similar manner. The alcoholic is of a very deep brownish red colour; when diluted with water a red flocculent matter falls down; and it precipitates the solutions of sulphate of iron, and of tartarized antimony, the former of a black colour, and the latter red. It comes nearest to the second species examined by Vauquelin, which he calls *Santa Fé Cinchona*; and differs from his *Cinchona magnifolia* in reddening litmus paper, and precipitating tannin.

This bark was introduced by Don Sebastian Josef Lopez Ruiz, in 1778; and is considered by Zea and Mutis as the least directly febrifuge of the three kinds we have described: but it possesses powerful astringent and antiseptic properties; consequently its use is contra-indicated in inflammatory and bilious affections.

3. CINCHONA CORDIFOLIA. Mutis.

Officinal. CINCHONÆ CORDIFOLIÆ CORTEX. Lond. Edin.² CORTEX PERUVIANUS. Dub. Heart-leaved Cinchona. The common pale bark of the shops.

Syn. Quinquina jaune (F.) Chinarinde, Rieherrinde (G.) China (I.) Quina amarilla (S.)

The tree which affords this bark is found on the mountains of Quito and of Santa Fé, growing along their skirts, and on the plains; flowering from May to September. It is a spreading tree, rising on a single, erect, round stem of no great thickness; and covered with a smooth bark externally of a brownish gray colour. The younger branches are quadrangular, smooth, leafy, sulcated and tomentose: the leaves, which are

¹ Fearon found in it a portion of citric acid, some muriate of ammonia, and muriate of lime. See Thomson's *Chem.* v. 216.

² The Edinburgh College, Dr. Duncan and Dr. Powel, regard this as the species yielding yellow bark.

about nine inches in length, are opposite, petiolate, spreading, of an oblong oval, cordate or egg-shape, entire, shining on the upper surface, ribbed and pubescent on the under: with the petioles flat on one side and roundish on the other, about a thumb's breadth in length, and of a purple colour. The flowers appear in large, terminal, leafy panicles, supported on long compressed tetragonous peduncles. The calyx is five-toothed, downy, and of a dull purple colour: the corolla internally tomentose; the tube of a diluted red colour; the limb shaggy, white above and purplish below; and the segments spreading, with reflected tips. The filaments are short, supporting linear anthers, bifid at the base. The germen is tomentose, and changes to an oblong, narrow capsule about one inch and a half in length, marked with ten striæ, of a reddish brown colour, and crowned with the calyx.

The bark yielded by this tree is named *Quina amarilla*¹, and *Cascarilla fina* by the Spaniards. Two other varieties of it, probably produced by distinct species, are also known in commerce by the names of *lagartado* (lizard-like) and *negrillo* (blackish), from the colour of their epidermis. It has always been known in this country by the vague name of Peruvian or Official bark. It is decorticated in the dry season, from September to November, which is the period at which all the kinds are barked, and the bark is carefully dried in the sun. The trees generally die after the operation.

The bark arrives in Europe packed in chests made of slips of wood roughly fastened together, and covered with skins; each of which contains about 200lbs. weight, well packed, but generally containing a quantity of dust and other heterogeneous matter. It consists of pieces eight or ten inches in length, some of them scarcely one-tenth of an inch in thickness; singly and doubly quilled, or rolled inward, the quills generally being scarcely larger than a swan's quill²; and others of a coarser texture, thicker and nearly flat. Both kinds have a chopped, grayish or cineritious epidermis, often covered with flat, sometimes stringy lichens; and are internally of a pallid yellow or cinnamon hue. This colour is brightened when the bark is moistened, approximating to pale orange. They are evidently the bark of the same tree; the quilled sort being

¹ Yellow or pale bark; the adjective signifying both yellow and pale, or wan. The name appears to be used in contradistinction to *naranjada*, orange colour, which is applied to the first official species.

² The great desire of our bark merchants to procure quill bark has induced the bark gatherers often to produce this effect by heat, which always diminishes the virtue of the bark. MS. of Don Felix Devoti of Lima, in my possession.

that of the smaller branches, and the flat that of the larger and of the trunk. But the chests probably contain similar barks obtained from different species.

Qualities. — Good bark of this description has scarcely any odour when in substance; but during decoction the odour is sensible, and agreeably aromatic. The taste is bitter, but not unpleasant, slightly acidulous and austere, resembling in some degree that of a dried rose. It is light, and breaks with a close fracture, with the internal fibres somewhat drawn out. The powder of the quilled kind is paler than the bark; of a uniform pale cinnamon hue: but the flat kind yields a deeper coloured and browner powder. The best specimen of this bark which could be procured by me, and subjected to experiment, gave the following results: Water at 212° extracted all its active principles; affording an infusion, when filtered, of a pale yellow or straw colour, which had the odour and taste of the bark. The infusion reddened litmus paper; was instantly and copiously precipitated by solution of galls; and in a smaller degree, and more slowly, in yellowish flocculent flakes, by solution of isinglass. A solution of tartar emetic was rendered turbid, and slowly precipitated by it; but this effect was quickly and copiously produced by superacetate of lead. Sulphate of iron changed its colour to bright olive green, but was scarcely precipitated. Decoction affords a more saturated tincture, with a colour resembling the cold infusion of the *C. lancifolia*; and a yellowish precipitate is deposited. The powder macerated in sulphuric ether afforded a golden yellow tincture, which reddened litmus paper, and left a pellicle of bitter resin when evaporated on the surface of water, to which it gave the colour of the tincture. This coloured water had the flavour of the watery infusion, but differed from it, in not precipitating the solution of galls and tartar emetic; and in throwing down a copious precipitate from the solution of sulphate of iron. With alcohol the powder afforded a tincture of a deep orange hue, which precipitated sulphate of iron, tartarized antimony, and tannin; became turbid when added to water, and let fall a light reddish precipitate. From the effects of these re-agents on the aqueous infusion of this bark, it appears to be the same as the 3d and 15th species examined by Vauquelin; which he names *superior gray cinchona*, and *common cinchona of Peru*.¹

According to Mutis and Zea, it is indirectly febrifuge only; but when genuine both the varieties of it are excellent remedies.

The most complete examinations of *Cinchona*, with the view of discovering on what principle its febrifuge properties depend,

¹ *Annales de Chimie*, lix, 116.

have been made by Vauquelin and Fabroni. The former divides all the different species into three sections according to their chemical properties.¹ The first comprises those which precipitate tannin, but not animal gelatine; the second, those which precipitate gelatine, but not tannin; and the third, those which precipitate at the same time tannin, gelatine, and tartar emetic. He conjectured that on the principles producing these effects, particularly that which precipitates infusion of galls, the febrifuge properties of the barks depend, and that they are more or less febrifuge, in proportion to the quantity of these principles that are present. He asserts that the principle which precipitates tannin is of a brown colour and bitter taste; is less soluble in water than in alcohol; and it also precipitates tartarized antimony, but not glue.² It has some analogies with the resinous bodies, although it furnishes ammonia on distillation: whilst the principle which in some cinchonas precipitates glue has a bitter and astringent taste; is more soluble in water than the principle, which in other kinds precipitates tan; and that it is also soluble in alcohol, and does not precipitate tartar emetic.³ Fabroni conceives, that he is authorised in concluding from his experiments, that "the febrifuge virtue does not belong essentially and individually to the astringent, the bitter, or any other soluble principle, as the quantity of these increases by long boiling, while the virtues of the decoction decrease. Neither does the febrifuge virtue reside in that principle which destroys the emetic property of tartarized antimony, or precipitates iron, since the decoction contains more of it than the infusion, while its virtues are evidently less."⁴ Hence we may conclude from these doubts, and many others that have been raised, that much is yet to be done before the principle of cinchonas effective in the cure of fevers be ascertained.⁵ We may, however, venture to state the

¹ He examined 17 different kinds, but was not able to ascertain the names of the trees from which they were obtained.

² The effect of this principle was first noticed by Dr. Maton; and soon after by Seguin, who immediately concluded that it was gelatine; but this opinion was proved to be erroneous by Dr. Duncan, jun. who found that it was a principle sui generis, and named it *cinchonin*. Vide *Nicholson's Journal*, vii. 226.

³ *Annales de Chimie*, l. c.

⁴ *Edinburgh Medical and Surgical Review*, ii. 338.

⁵ In consequence of a chemical theory of the mode in which cinchona acts on the living body, Fabroni made some curious experiments to ascertain the relative affinity of different cinchonas to oxygen. In imitating his experiments with the three officinal species, I found that when half a drachm of each of these barks in powder was separately mixed with half a fluid ounce of strong nitric acid, in similar vessels, the temperature of the atmosphere at the time being 70°, and that of the acid 71°, in the space of four minutes, the heat produced rose the mercury in the thermometer as follows:

Common pale bark,	— to 120°.
— yellow bark,	— 128°.
— red bark,	— 119°.

The mixture, in each vessel, was gradually swollen as the heat increased, and nitrous fumes were given out, showing the evident decomposition of the acid.

following as the known active constituents of cinchonas: *cinchonin*, *resin*, *extractive*, *gluten* or *ferment*, *volatile oil*,¹ and *tannin*. I separated the *resin* in a pure state by evaporating the ethereal tincture on the surface of cold water; and the *gluten* Fabroni found was separable by water, occasioning the spontaneous fermentation of the decoction and infusion in summer, and decomposable by fermentation. They also contain several salts having lime for their basis, one of which, peculiar to yellow bark, Descamps, an apothecary at Lyons, discovered, and erroneously ascribed to it the febrifuge property of the bark. Vauquelin found it to consist of lime, and a peculiar hitherto unknown acid, which he denominated *kinic*, and therefore termed the salt a kinate of lime.² M. M. Alibert and Cabal demonstrated the presence of iron in cinchona, by incinerating the bark, dissolving the ashes in nitric acid and adding prussiate of potash, which precipitated prussiate of iron.

As cinchona bark occasionally varies in its powers, and is often adulterated with other inferior barks even by those who gather it; arising either from ignorance, or from a fraudulent desire of more quickly completing their contracts; it is of importance to be able to distinguish good bark, and the best varieties from those of an inferior description. Mutis informs us, that the old trees furnish the best bark; and that the bark taken from the trunk and thicker branches, is superior to that from the younger branches. The following directions for choosing bark are those generally attended to in South America³: The essential characteristics are *colour*, *taste*, and *smell*; the secondary or accidental ones are *exterior coat*, *fracture*, *weight*, *thickness*, and *quill*. The best bark of the first class is of an orange yellow colour; and the goodness decreases as the colour varies from this to a very pale yellow. When of a dark colour between red and yellow it is always to be rejected; as this colour designates either that it is of a bad species, or that it has not been well preserved from the air and moisture. This dark colour, however, must not be confounded with a red colour in the inside, which constitutes a distinct species. The *taste* of bark should be bitter, but not nauseous nor very astringent, with a slight agreeable acidity just perceptible to the palate; and when chewed it should not appear in threads, nor of much length. The *odour* of any of the barks is not very strong; but when

¹ Dr. Irwin first obtained a small portion of this oil.

² *Annales de Chimie*, lix. l. c. The name of the acid is derived from *kina*, *kina*, an old appellation of the bark. Dr. Duncan proposes to call it *cinchonic acid*, as the present name would lead to the supposition that it is procured from kino.

³ Extracted from a MS. of *Don Felix Devoti*, a respectable physician at Lima, who has practised upwards of twenty-five years in South America.

they have been well cured and preserved, it is always perceptible; and the stronger it is, provided it be pleasant, the better may the bark be considered. The appearance of the *coat* or epidermis has led to many mistakes. It is merely accidental; depending on the variation in height of the ground, and the exposure of the branches to the sun and air. Seven distinct appearances of the epidermis are remarked: 1. Negrillo, dark silver coat; 2. Crespillo, short curled; 3. Pardo-oscuro, dark open leopard gray; 4. Pardo-clara, light open gray; 5. Lagartado, fine dark silver, lizard-like; 6. Blanquissimo, very pale; and 7. Ceniciento, ash-coloured. The three first are the best, and belong to bark produced on the highest mountains: the others rank in the order of their arrangement; the epidermis being always cracked and rough in proportion as the trees have been exposed to a scorching sun. With regard to *fracture*, some of the worst barks break even and clean as if cut with a knife, and some of the best have always a more or less splintery fracture.¹ The fibres of the fracture being sharp and short indicate the bark to have been gathered from mature branches; the long and thread-like from immature branches. The best barks are generally observed to be the heaviest. In point of *thickness*, very thin bark is inert, owing to the branches from which it was taken having been too young; and very thick bark, particularly if it breaks like common wood, argues that the tree must have been sickly: yet bark exceeding a line in thickness may be good; for although it is disapproved of at Cadiz, under the name of quinnon, yet excellent effects have resulted from much thicker bark in England. The moderately thick and firm bark is always preferred at Lima. The moderate *quill* of bark certainly denotes it to be of the best kind, and that it has been taken from branches of a proper age, and well dried; but the bark collectors often produce this effect by fire, when there is a want of sun, as is frequently the case in some parts of the mountains. The fraud is known by the colour being much darker; and, when the bark is split, the inside exhibiting stripes of a whitish sickly hue. It should be preserved in cases, well secured from the air and humidity.

Medical properties and uses. — Cinchona bark is a powerful and permanent tonic, possessing also antispasmodic and antiseptic powers; and is undoubtedly superior to all other remedies in counteracting febrile action, and restoring strength and vigour to morbidly weakened habits.

The stories which are related regarding the discovery of its

¹ The idea of a resinous fracture being the characteristic of good bark originated when the virtue of bark was supposed to depend on the resin it contained.

febrifuge effects appear to be founded on fiction, and are unworthy of notice; but it is probable that the Peruvians were acquainted with its powers before the conquest of their country by the Spaniards, and from them the knowledge of it must have been acquired by their conquerors. It was nevertheless little known by Europeans, until the countess of Cinchon, wife of a viceroy of Peru, was cured by it at Lima of a tertian ague, in 1638; after which, its fame beginning to spread, it was taken to Italy in 1649, and, through the means of cardinal De Lugo and the Jesuits, was distributed over the continent.¹ It was in repute in England in 1658; but owing to its high price², and some prejudices formed against it, it was very little used, till Talbot, an Englishman again brought it into vogue by the many cures he performed with it in France, under the name of the *English remedy*. His secret of preparing and exhibiting it was purchased by Louis XIV. and made public. Hence the origin of some of the names by which it has been known: as *Cortex* and *Pulvis Comitissæ*; *Cortex* and *Pulvis de Lugo*; *Jesuit's bark*; also, on account of its effects, *Palos de calentura*, or fever wood; and, from the place whence it was first brought, *Peruvian bark*.

It was introduced into practice for the cure of intermittent fever, and still retains the reputation it acquired as a remedy for that disease; although, owing to peculiar idiosyncrasies and other accidental causes, it has occasionally failed in this country in agues, which were afterwards removed by other remedies, particularly arsenic. Some of these failures may perhaps have arisen from the kind of the bark employed: for notwithstanding the generally received opinion, that all the kinds of bark may be indifferently used, one for another, yet there is some reason for the assertions of the Spanish and American physicians, that they vary in other respects besides their degree of activity. By them the yellow bark, *calisaya*, *quina naranjada*³, is considered as directly febrifuge, and the best adapted for the cure of ague; the pale bark, *quina amarilla*, as only indirectly so, and better fitted for slow fevers and chronic debilities: while the red, *colorada*, *quina roxa*, is only fit to be used in cases

¹ Morton gives the above account on the authority of Bollus, a Genoese merchant, who had lived long in Peru, "autor fide dignus." *De Febribus Intermit.* c. vii.

² It was sold at first by the Jesuits for its weight in silver; and Condamine relates that, in 1690, several thousand pounds of it lay at Piura and Payta for want of a purchaser. *Mémoires Acad. Roy.* 1738.

³ According to Condamine, this was the bark first introduced into Europe. He says it yields by incision a yellow odorous resin; and that the Jesuits of La Paz (whence the best bark of this species is still obtained), used to gather it with care, and send it to Rome, where it was specific in agues. But the Loxa bark coming to Europe soon after, the three kinds were confounded together.

of gangrene¹, as its use is apt to be followed with disgusting nausea, severe vomiting, and insupportable colic. The differences of opinion with regard to the best time of giving it are now nearly settled. Boerhaave² and others recommended that the fever should be allowed to run on for some time before it was administered; but it is now generally agreed that the bark cannot be given too early after the stomach and bowels are cleared by an emetic and cathartic. Dr. Cullen recommended the exhibition of it in a large dose or doses immediately before the accessions³; but Morton's method of giving it directly after the hot stage of the paroxysm ceases, and repeating it in increased doses during the intermission, until the cold stage again returns, is now generally adopted. It may be safely given however, during the paroxysm, as practised by Dr. Clarke of Newcastle, but many stomachs are apt to nauseate it at that time.

In remittent fevers, cinchona is found equally efficacious, the excitement, however, particularly in the remittents of warm climates, requiring to be previously subdued by blood-letting, and the bowels to be kept open. It renders the remissions distinct, and by degrees checks altogether the febrile action. In other affections, depending on a similar state of habit, as hemiplegia, periodical pains, spasms, chorea, hysteria, epilepsy, passive hæmorrhagy, and in habitual frequently returning coughs, it is also found useful: but it does not prevent the continuance of those paroxysms of ague which form one of the constitutional symptoms of stricture of the urethra, and some other local affections; and which can be removed only by removing the strictures and other sources of irritation.

In the low stage of continued fevers of the typhoid type, particularly when these are attended with symptoms of putridity, as in jail-fever, cynanche maligna, scarlatina maligna, confluent small-pox, and in putrid measles, the bark must be regarded as one of the most valuable remedies. The administration of it in pure typhus has been of late years judiciously delayed until the increased excitement is presumed to be subdued, and symptoms of great debility make their appearance, or until the morbid heat be carried off, and the skin opened. Several eminent modern physicians, however, recommend it to be given early in the disease, and persevered in; but from our own experience we are inclined to consider the former the safer practice, and believe that the best effects will be produced from

¹ Zee, *Annales de Hist. Nat.* l. c. Rushworth discovered the efficacy of the red bark in gangrene.

² *Aphorismi*, &c. 767.

³ *Mat. Med.* ii. 97.

⁴ Clarke of Newcastle. *Hebden*.

the cinchona, when its use, in pure typhus, is not begun till the skin becomes moist, the tongue is in part cleaned, and the urine deposits a critical sediment.

Cinchona was first conjectured to be useful in gout by Sydenham, and in some cases its efficacy is sufficiently evident. In rheumatism also, Dr. Haygarth has lately strongly recommended it to be given, after the manner of Morton, Hulse, and Fothergill, from the commencement of the disease; the stomach and bowels being previously emptied by means of antimonial preparations. In my own practice I have found it useful only after the liberal exhibition of calomel, tartarized antimony, and opium, when the pains have in some degree abated, or assumed an intermittent character, and the pulse has become softer. Its efficacy in this disease is much increased by the addition of spirit of turpentine.

In phthisis, bark is found beneficial when the accompanying hectic puts on more of the intermittent form than usual; when the debility is considerable, and blood is mixed in the sputa: and in several cases of pneumonia, when, after repeated large bleedings and evacuations, the pulse continued hard and thrilling, and the blood buffy, although the expectoration was free and the skin open, we have seen bark produce the happiest effects.

In various cutaneous diseases, as lichen agrius, and lividus; in purpura¹; in impetigo erysipelatodes and scabida; in erysipelas, and extensive ulcerations both from common inflammation and venereal affections²; in the termination of all acute diseases after the urgent symptoms are subdued; and in dyspepsia, chronic debility, and nervous affections, cinchona is found to possess great efficacy.

As a local remedy, bark is sometimes used in the form of gargle in malignant sore throat and aphthous affections; and as a wash to fetid gangrenous sores: but in these cases the red bark is to be preferred. Powerful effects also are said to have been produced upon the system by frictions with the extract, softened by saliva or oil, upon the thighs and other parts of the body. It may be efficaciously administered per anum, when it cannot be taken into the stomach: but Denman says he found no advantage from its use as a clyster in the low state of puerperal fever, in which it has been highly extolled.

Cinchona bark is administered in a variety of forms. (See *Preparations and Compositions*.) In substance it is reduced to the state of an impalpable powder; and although it loses some of its activity during the process of pulverization, yet, when it can be retained on the stomach, this is the best form of

¹ Willan.

² Pearson.

the remedy.¹ If it excite nausea or vomiting, or operate as a cathartic, or occasion costiveness, these inconveniences may in some degree be obviated by combining it with aromatics, opium, or a cathartic, as circumstances direct; or some of the lighter preparations, in which its active principles are supposed to be extracted, and free from the grosser parts, may be employed. It may be advantageously combined also with oxide of iron. The powder is given mixed in wine or water; or, when the taste is an objection, in milk, or syrup, or a solution of extract of liquorice, all of which effectually cover the taste, provided the dose be taken directly after it is mixed.²

The dose of the powder is from grs. v. to ʒij or more. In intermittents the full dose is sometimes given at first; but in other diseases grs. v. x. or xv. are sufficient to commence with, the dose being repeated every two, three, or four hours, and gradually increased, until one or two ounces, in some cases, be taken in twenty-four hours.

Official preparations. *Infusum Cinchonæ*. L. E. D. *Decoctum Cinchonæ*. L. E. D. *Extractum Cinchonæ*. L. E. *Extractum Cinchonæ resinosum*. L. D. *Tinctura Cinchonæ*. L. E. D. *Tinctura Cinchonæ composita*. L. E. D.

CINNAMOMI CORTEX. Vide *Laurus Cinnamomum*.

CINNAMOMI OLEUM. Vide *Laurus Cinnamomum*.

CITRUS. *Spec. Plant. Willd.* iii. 1426.

Cl. 18. *Ord.* 3. Polyadelphia Icosandria. *Nat. ord.* Pomaceæ *Linn.* Aurantiæ *Juss.*

G. 1391. *Calyx* five-cleft. *Petals* five, oblong. *Anthers* twenty, the filaments united into different parcels. *Berry* nine-celled.

Sp. 1. *C. medica*. The Lemon-tree. *Med. Bot.* 2d edit. 528. t. 189.

Sp. 4. *C. Aurantium*. The Orange-tree. *Med. Bot.* 523. t. 188.

1. CITRUS MEDICA.³ Var. β *C. Limon*.

Official. LIMONES. LIMONUM CORTEX.—OLEUM. *Lond.* CITRI MEDICÆ CORTEX; OLEUM VOLATILE; SUCCUS. *Edin.* LIMON; FRUCTUS SUCCUS; EPIDERMIS, EJUSQUE OLEUM ESSENTIALE.

Dub. Lemons: their rind, and its essential oil.

Syn. Citronier (*F.*) Citrone (*G.*) Limone (*I.*) Citri (*S.*) Lémón (*Arab.*) Lému (*H.*) Jambéra (*Sans.*)

The lemon-tree is a native of Assyria and Persia, whence it was brought into Europe; first to Greece, and afterwards to Italy.⁴ It is now cultivated in Spain, Portugal, and France,

¹ Fabroni says, "Cinchona loses its solubility, and consequently its activity, by long exposure to the air, and by pulverization long protracted with the view of rendering it as fine as possible. From $\frac{1}{100}$ to $\frac{1}{1000}$ are obtained from bruised cinchona, which in fine powder yields only $\frac{1}{100}$ or $\frac{2}{100}$ to water.

² Mutis conceiving that fermentation is the best method for extracting the active part of cinchona, has proposed to make a beer of it, by fermenting one part of the bark in powder with eight parts of honey or sugar, and 80 or 100 of water. And Alibert having persuaded a brewer to make some beer with cinchona, administered it to convalescents weakened by protracted intermittents, with the best effects.

³ Μηλίη μνήικη Dioscoridis.

⁴ Venit in Italiam post Virgilii et Plinii tempora, ante Palladii. *Willd.* *S. P.* iii. 1426.

and is not uncommon in our green-houses.¹ It is a beautiful ever-green, of small growth, sending off numerous branches covered with a grayish bark. The leaves are alternate, of a shining pale green colour, ovate, acuminate, about four inches long, and two inches broad, slightly indented at the edges, and supported on naked linear footstalks. The flowers, which appear the greater part of the summer, are odoriferous, large, and placed on simple and branched peduncles, arising from the smaller branches. The calyx is saucer-shaped, with the teeth pointed; the petals are oblong, concave, white, with a purplish tinge on the outside: the filaments, united at their base into four parcels, support yellow vertically placed anthers; and the germen is superior, roundish, and having a simple style with a globular stigma. The fruit is an ovate berry, pointed at each end, rough, punctured, externally of a pale yellow colour, and internally divided into seven, nine, or eleven cells, containing four seeds in each, and filled with vesicles distended with an extremely acid juice. The rind is double: the exterior part thin, yellow, and chiefly made up of a great number of glands filled with a very fragrant oil; the interior is thicker, whiter, and coriaceous.²

Lemons are brought to England from Spain and Portugal packed in chests, and each lemon separately rolled in paper. The Spanish lemons are most esteemed.

Qualities. — Lemon juice is sharp, but very gratefully acid. It consists principally of the citric acid, mucilage, extractive matter, a small proportion of sugar and water. Before Scheele's process was known, many different unsuccessful plans were adopted for separating the citric acid; which is now obtained in a crystallized form, and admitted into the London and Dublin pharmacopœias.³ The simple juice, although well depurated of its extractive matter, yet soon spoils; and therefore the crystallized acid dissolved in water is generally used in its stead. The rind is warm, aromatic, and slightly bitter, qualities depending on the essential oil it contains, which is given out to water, wine, and alcohol. The essential oil obtained by distillation is extremely light, nearly colourless, and fragrant; and has the same taste as the rind, only in a greater degree. It is very perishable, yet does not readily rise with alcohol or with proof spirit.

Medical properties and uses. — Lemon juice is refrigerant and antiseptic. It is given diluted with water and sweetened, forming the beverage called lemonade, to quench thirst, and abate

¹ It was first cultivated in Britain in the Oxford garden, about the year 1648.

² *Gärtner de Fructibus*, vol. ii. p. 189.

³ For an account of this acid, vide *Acidum citricum* among the Preparations.

heat in febrile and inflammatory diseases. Given alone to the extent of a table spoonful for a dose, it allays hysterical palpitations of the heart; and in combination with carbonate of potash (fʒss of the juice to ʒj of the salt), taken in a state of effervescence, is used with great success to stop vomiting, and determine to the surface. A still more useful and pleasant effervescing draught is made by putting a table-spoonful of lemon juice, mixed with a small quantity of sugar, into a tumbler, and pouring over it half a pint of aerated soda water. On account of its antiseptic powers, lemon juice is successfully used in scurvy; and for this purpose, large quantities of it, in a concentrated state, are distributed in the navy; but the continued use of it is said to be hurtful to the general health of the men, and to hasten the progress of phthisis where it makes its appearance. The citric acid is likely to supersede its employment in the navy. Dr. Wright observes, that its powers are increased by saturating it with muriate of soda, and recommends such a mixture in remittent fever, dysentery, colic, putrid sore throat, and as being almost specific in diabetes and lenteria. It is given also united with camphor, infusion of cinchona, and wine, in the same cases; and mixed with ardent spirits and water with sugar, it forms *punch*, which is a useful cordial in low fevers.

Lemon peel is added to stomachic tinctures and infusions; and is particularly applicable in dyspepsia, arising from irregularities in diet, and the inordinate use of ardent spirits.

The *essential oil* is chiefly used as a perfume, to cover the smell of sulphur in ointments compounded with it.

Official preparations. Of the juice — *Syrupus Limonis*. L. E. D. Of the rind. *Aqua Citri medicæ*. E.

2. CITRUS AURANTIUM.¹

Official, AURANTII BACCÆ, CITRI AURANTII CORTEX. Lond.

CORTEX SUCCUS. Edin. FRUCTUS SUCCUS, CORTEX EXTERIOR, FRUCTUS IMMATURUS, ET FLORUM AQUA STILLATITIA. Dub.

The fruit and outer rind of the Seville orange.

Syn. Oranges (F.) Pomeranzin (G.) Arancio (I.) Naranja (S.) Narenj (H.) Nāgaranga (San.)

The orange-tree is a native of India and Persia, but is now abundantly propagated in the south of Europe and the West India islands, and is also found in our green-houses. In its general appearance it resembles the lemon-tree, but the leaves, which are not so large as those of the lemon, and more pointed, are entire, smooth, and furnished with wings or appendages on the footstalk, by which it is particularly distinguished. The flowers, like those of the lemon, appear all the summer, are large, white, odorous, and arise from the smaller branches

¹ Aurantia forte a corticis colore, qui colore auri relucet, ut aurea mala vere nominari possunt: sive ab Aurantia oppido dicta, veteribus ignota, insitione ad nos devenerunt. Bauhin. Pin. p. 436.

upon simple and branched pedicels. The parts of the flower resemble closely those of the lemon. The fruit is a globular berry, rough, and of a deep reddish yellow or orange colour; internally divided into nine cells filled with a vesicular pulp, and each containing from two to four seeds. The rind, like that of the lemon, is double: the exterior thin and glandular; the interior thick, whitish, and fungous. The China or sweet orange (*Citrus sinensis*) is a variety of the same species as the Seville orange, and is medicinally employed for allaying thirst in febrile diseases. Both are imported chiefly from Spain, in chests, and packed in the same manner as lemons.

Qualities. — The juice of the Seville orange is a grateful acid liquor with a slight degree of bitterness. It consists of nearly the same principles as the juice of the lemon; with a smaller portion, however, of citric acid. The exterior rind has a very grateful aromatic odour, and a warm, bitter taste, depending on the essential oil contained in its glands. Both the bitter and aromatic parts are extracted by water and alcohol; and the essential oil can be obtained by distillation. The unripe fruit, named in common Curaçoa oranges, have the aromatic flavour of the rind with a greater degree of bitterness, and retain both when dried. They vary in size from that of a small pea to that of an acorn. The distilled water has the grateful perfume of the flowers.

Medical properties and uses. — The juice of the Seville orange is employed in the same diseases, and with the same intentions, as lemon juice, but it is not so generally used. The rind is a useful stomachic, carminative, and tonic; and is a common addition to bitter infusions in dyspepsia. In gout it is joined with magnesia and alkalies; and when the cinchona does not sit easily upon the stomach, it is a most useful adjunct to that remedy in whatever form administered. It has also been given alone in intermittents with seeming advantage. The oil is only used as a perfume.

The dried unripe fruit (*Aurantium curassaventium*) is employed as an internal remedy in the same cases as the rind of the ripe orange. It is, however, more commonly used as a mechanical irritant in issues, for which purpose the smaller fruit is selected, and generally made round and smooth in the turning lathe. It is preferred for this purpose on account of its odour only; for the heat and moisture of the part in which the orange is lodged swells it as much as the common pea; and, therefore, it requires to be renewed once in twenty-four hours.

The usual dose of the dried rind, and of the Curaçoa orange, is from grs. xv. to ʒj, three or four times a day.

Murray's App. Med. v. iii. p. 259.

Official preparations. Of the juice—*Succus Cochleariae comp.* E. Of the rind—*Infusum Aurantii compositum*. L. *Tinctura Aurantii*. L. D. *Syrupus Aurantii*. L. D. *Confectio Aurantii*. L. E. D. *Aqua Citri Aurantii*. E.

COCCUS.¹ *Syst. Nat. Gmelin.* 2220.

Cl. 5. Ord. 2. Insecta Hemiptera.²

G. 229. Rostrum or Snout seated on the breast. *Antennae* filiform. Abdomen bristled behind. *Wings* two, erect in the males; females apterous.

Species 22. C. Cacti. Cochineal Insect. *Reaum. Ins. iv. t. 7. fig. 11, 12.* *Phil. Trans. lii. 661. pl. 21.*

Official. Coccus. Lond. COCCUS CACTI. Edin. COCCINELLA. Dub. Cochineal.

Syn. Cochenille (F.) Cochenille (G.) Coccinilia (L.) Cochinilla (S.) Cochineel, poc-chiie (Tam.)

This coccus is found in its wild state in Mexico, Georgia, South Carolina, and some of the West India islands, feeding on several species of cactus, particularly the common Indian fig or prickly pear plant (*Cactus opuntia*)³; but in Mexico and some of the adjoining Spanish settlements⁴, where the insect is as it were domesticated and reared with great care, it feeds only on the cochineal Indian fig (*Cactus coccinifer*), which is cultivated for this purpose; and on it the insect attains to a greater size than in the wild state. It is a small insect, very seldom exceeding a barley grain in magnitude; with the head, except in the males, scarcely distinct from the body, which is depressed, downy, and transversely rugose. The abdomen is of a purplish colour, and the legs are six in number, short and black. The males, which are few in proportion to the females, there being one only to 150 or 200 females, are winged, slender and active, with the body of a red colour; the head is small, but distinct, furnished with jointed feelers, and two long diverging white hairs about five times the length of the body, which proceed from the tail; and with wings which lie flat when the insect rests or walks, but are erected when it flies. The females have no wings, and are sluggish; scarcely ever moving from the part of the plant where they fix themselves. The back is hemispherical and crossed by numerous wrinkles; on the breast is an awl-shaped papilla, through which a fine thread is spun to form a web, with which the insect envelops itself as soon as it is fully impregnated; when it becomes torpid, and imme-

¹ *κoccus βαφικη*, Dioscoridis, is the Kermes or Coccus *Ilicis*, Linn. which was known, as a dye, by the Phœnicians, before the time of Moses; and was the *tola* of the Jews. *Beckman Hist. of Inventions*, translation, vol. ii. p. 185.

² Cl. vii. *Ryngota*. Spec. 21, *Fabricii*.

³ These plants have neither stem nor leaves, in the common acceptation of these words, but consist of roundish or oval compressed joints that grow out of each other.

⁴ "Oaxaca, Kascala, Chulula, Neuva Galicia, Chiapa, in New Spain; and Ham-batio, Loja, and Tucuman, produce the greatest quantity." *Ulloa*, quoted by *Bancroft*.

diately after laying its eggs dies, and is a mere useless husk.

The wild cochineal is collected six times in the year, just before the females begin to lay their eggs; a few being left on the plants to furnish a future supply. But the domesticated insect is collected thrice only in the same space of time, the domestication diminishing the number of broods to three in the year, owing to their propagation being suspended during the rainy seasons, whilst the downy covering of the wild species allow them to withstand the inclemency of these seasons. At the third gathering, branches of the plant, to which a certain number of females is left adhering, are broken off and preserved with great care under cover during the rainy season; and after this is over they are distributed over the out-door plantations of the cactus, where they soon multiply, and in the space of two months the first crop is fit to be gathered. The insects are detached from the plant by means of a blunt knife, then put into bags and dipped in boiling water to kill them; after which they are dried in the sun: and although they lose two-thirds of their weight in this process, yet about 600,000 lbs.¹ are brought annually to Europe.

Cochineal was introduced into Europe about the year 1523. The domesticated kind, which is not only much larger but yields a richer colour, and is consequently most esteemed, is known, in the language of the Spanish merchants, by the name *grana fina*; the wild is one half the size only of the other, covered with white down or powder², and is denominated *grana silvestra*; but as we receive them, both the kinds are often mixed together. They are imported in bags, each containing about two hundred-weight, and have the appearance of small dry shrivelled rugose berries, or seeds, of a deep brown-purple or mulberry colour, with a white matter between the wrinkles. In this state they suffer no change from length of keeping. Dr. Bancroft directs that cochineal to be chosen as the best, which "is large, plump, dry, and of a silver white colour on the surface."³

Qualities. — Cochineal has a faint heavy odour, and a bitter austere taste. It is easily pulverized, affording a powder of a purplish red hue; the colouring matter of which is taken up by water, alcohol, and solutions of the pure alkalies. The

¹ Each pound is said to contain 70,000 insects. The monopoly of cochineal is still in the hands of the Spaniards; but attempts are making to propagate it in the East Indies, if the death of Mr. Anderson have not terminated them. Of the whole quantity brought to Europe, about 150,000 lbs. may be considered as the present annual consumption of Great Britain, (1812), which at 30s. per lb. cost 225,000l. sterling.

² This downy matter is spun by the insect, with the view, it is said, of defending it against cold and rain.

³ *Philosophy of Permanent Colours*, 2d edit. 1. p. 434.

watery infusion is of a violet crimson, the alcoholic of a deep crimson, and the alkaline of a deep purple hue. The colour of the watery infusion is brightened by the acids, supertartrate of potass, and alum, and at the same time partly precipitated. It is also precipitated by sulphate of iron of a brownish violet colour, the liquid remaining pale yellowish brown; and by sulphate of zinc and acetate of lead of a purple violet, the liquid being perfectly colourless. Hence cochineal is incompatible as a colouring matter with these metallic salts.

Medical properties and uses.—Cochineal has lately been recommended as an antispasmodic and anodyne in whooping cough. I have had no experience of its effects; and believe it to be better fitted for giving a fine colour to tinctures, and similar preparations.

COCHLEARIA. * *Spec. Plant. Willd.* iii. 448.

Cl. 15. *Ord.* 1. *Tetradynamia Siliculosa. Nat. ord. Siliquosæ Linn. Cruciferae Juss.*

G. 1228. *Silicle* emarginate, turgid, rugged; with gibbous, obtuse valves.

Species 8. *C. Armoracia.* Broad Horse-radish. *Med. Bot.* 2d edit. 400. *Smith's Flora Brit.* 2. 690.

Official. ARMORACIÆ RADIX. *Lond.* COCHLEARIÆ ARMORACIÆ RADIX. *Edin.* RAPHANUS RUSTICANUS; RADIX. *Dub.* Horse-radish Root.

Syn. Cran; Raifort (*F.*) Murrettich (*G.*) Rafano rusticano (*I.*) Marvisco (*S.*) Morungy vayr (*Tam.*)

This plant is a perennial, growing wild in many parts of England in moist situations; and in waste ground, flowering in June: but it is generally cultivated for culinary and medicinal purposes. The root is long, tapering, and white; sending up many leaves, and a round, erect, branched stem, which rises about two feet in height. The radical leaves are petiolate, very large, lance-shaped, and waved; crenate, and sometimes pinnatifid. Those of the stem are sessile, much smaller, lanceolate, sometimes divided at the edges, at other times entire. The flowers are in terminal clusters, numerous, and of a white colour. The leaves of the calyx are ovate, concave, spreading, and deciduous; the petals white, obovate, twice the length of the calyx, and inserted by narrow claws. The germen is heart-shaped, bearing a simple permanent style, crowned with an obtuse stigma; and changing into an elliptical bilocular pod, containing four seeds in each cell, which frequently prove abortive.

As the acrimony, on which its virtues depend, is lost in some degree by drying, it should be preserved in sand in a cool place.

* Named from a fancied resemblance of the leaf to an old-fashioned spoon.

Qualities. — Horse-radish has a pungent odour, and a very hot, biting, acrid taste, with some degree of sweetness. When kept until it is quite dry, it loses more than two-thirds of its weight; and in time the whole of its pungency is dissipated. Both water and alcohol extract its active principles. The infusion reddens litmus paper, and precipitates solutions of superacetate of lead and of nitrate of silver. Coction destroys its acrimony, which depends on a volatile oil that can be obtained separate when the mashed root is distilled with water. This oil is of a pale yellow colour, heavy, volatile at 60°, with an extremely pungent odour, and a sweetish, strong, acrid taste, exciting inflammation in the tongue and lips to which it is applied. Einhoff, who lately examined this root, says, the distilled watery liquid yields traces of sulphur.*

Medical properties and uses. — This root is stimulant, diaphoretic, and diuretic; and externally rubefacient. It is used with advantage in paralytic affections and chronic rheumatism, both internally and externally; and in dropsy, particularly when it follows intermittent fever, in which it was successfully employed by Sydenham. It has also been found efficacious in some cutaneous affections; and as a local remedy, a syrup made with an infusion of it, as recommended by Cullen², removes hoarseness arising from relaxation. Horse-radish may be given in substance in doses of ʒss or more, scraped, or in small pieces swallowed whole.

Officinal preparations. *Infusum Armoraciac compositum*. L. *Spiritus Armoraciac compositus*. L. D.

COCOS. *Spec. Plant. Willd.* iv. 400.

Cl. 21. Ord. 6. Monœcia Hexandria. *Nat. ord.* Palmæ.

G. 1680. *Spathe* general, one-celled. *Spadix* branched.

Male flowers. Calyx three-leaved. *Corolla* tripetalous.

Female —. Calyx two-leaved. *Corolla* six-petalled.

Style none. *Stigma* hollowed. *Drupe* fibrous.

Species 3. *C. butyracea*. The Mackaw Tree. *Piso, Hist. Nat. lib.* iv. p. 125. (Pindova.)

Officinal. COCI BUTYRACEÆ OLEUM FIXUM. *Edin.* Palm Oil.

Syn. Huile de Cocobier du Bresil (F.) Olio di Cocco del Brasile (I.)

This species of palm is a native of Brasil, and is found in abundance near the mines of Ybaquenses. It is a lofty tree with a rough bark, and the foliage forming a very dense shade. The fruit, which is collected throughout the year, is an obovate, one-celled, smooth, succulent drupe, of a yellow colour, with a point at the upper end, and at the base the hard per-

* *Annales de Chimie*, lxx. 185.

² The syrup is made by infusing one drachm of scraped horse-radish in two ounces of boiling water, in a covered vessel, and adding double its weight of sugar. Of this syrup a tea-spoonful is to be swallowed leisurely, and repeated at intervals.

sistent calyx. The nut has a cartilaginous skin and a fibrous pulp; and contains a cartilaginous hard kernel, having nearly the same taste as that of the common cocoa nut.

This kernel yields the oil. It is first coarsely pounded, or ground in a mill, then macerated in hot water, until it parts with its oil, which, collecting on the surface of the water, as it concretes, cools. It is afterwards purified by washing in hot water.

Qualities.—Palm oil has an agreeable odour resembling that of violets or the Florentine iris, and a slightly sweetish taste. It is of the consistence of butter, and has a light lemon-yellow colour. It becomes rancid by long keeping, loses its pleasant odour, and its yellow colour fades to a dirty white. It is said to be sometimes imitated with hog's lard coloured with turmeric, and scented with Florentine Iris root.

Medical properties and uses.—This vegetable butter is emollient; and as such is sometimes used externally in frictions.

COLCHICUM. *Spec. Plant Willd. ii. 272.*

Cl. 6. Ord. 3. Hexandria Trigynia. Nat. ord. Spathaceæ Linn. Junci Juss.

G. 707. Spathe. Corolla six-parted, with a rooted tube. Capsules three, connected, inflated.

Species 1. C. autumnale. Meadow Saffron. Med. Bot. 2d ed. 759. t. 259. Smith Flor. Brit. 400. English Botany, 133.

Official. COLCHICI RADIX. Lond. COLCHICI AUTUMNALIS RADIX. Edin. COLCHICUM; RADIX, PRIMO VERE, FOLIIS JAM APPARENTIBUS. The root of Meadow Saffron.

Syn. Colchique (F.) Zeitlozen, Weissen saffron (G.) Colchico Autumnale (L.) Zafferan (S.)

This is an indigenous perennial plant, generally found growing in moist rich meadow grounds, and flowering in September. The bulb is double, solid, large, egg-shaped, and covered with a brown membranous coat. The leaves, which appear in spring, are radical, spear-shaped, broad at the base, and somewhat waved. They wither away entirely before the end of summer, and are succeeded by the flower, which appears in autumn without any leaves. There is no calyx. The corolla, which is of a pale lilac colour mottled with deeper lilac, springs directly from the bulb, and consists of a tube about five inches long, two-thirds of which are sunk in the ground, and a limb divided into six lanceolate keeled segments. The filaments are the colour of the corolla, half the length of the segments, subulate, united to the upper part of the tube, and supporting yellow erect anthers. The fruit is a three-lobed, three-celled capsule, on a strong short peduncle.

The bulb, which is the part medicinally used, begins to de-

¹ All the Colleges have erred in using the word *radix* instead of *bulbus*.

cay after the flower is perfectly expanded, and the new bulb is perfected in the following May, at which time it is generally taken up; but the bulb is in its greatest perfection when the flower appears in autumn, and it should then be raised. It yields, when mature, on being cut transversely, a milky-looking acrid juice, which excoriates the fingers. It is used in infusions, either in wine (*vinum colchici*), or in spirit (*tinctura colchici*). A deposit forms in the wine, which Sir E. Home^{*} ascertained, is extremely acrid, exciting nausea and griping, and the removal of which does not alter the virtue of the medicine in gout. Hence the bottle in which the medicine is kept should never be shaken when it is to be administered.

Qualities. — The recent bulb of this plant has scarcely any odour; but when it is dug up at a proper season of the year, the taste is bitter, hot, and extremely acrid, occasioning a burning sensation in the stomach, even when taken in a small quantity. At other seasons, however, and in some soils and situations, it possesses very little acrimony; and hence the contradictory opinions which authors have given of it. Its acrimony resides in a milky juice, and depends on an essential oil which is dissipated by drying. Vinegar and wine are the best menstrua for extracting its active qualities.

Medical properties and uses. — Meadow saffron possesses diuretic, purgative, and narcotic properties: and on the continent, where it was recommended to notice by Baron Stoerck, it is a favourite remedy in dropsy, particularly hydrothorax, and in humoral asthma. But as it does not differ in its mode of action from squill, and is more uncertain in its operation, it has not been much used in that complaint in this country. In gout, however, its efficacy has been fully ascertained; and, in allaying the pain, it may be almost said to possess a specific property. It operates on the bowels chiefly, and the nervous system.

The dose in substance is from gr. ss to grs. iij of the recent bulb made into a pill: and of the saturated vinous infusion, from ℥ xxx. to ℥ lx. may be taken whenever the patient is in pain.

Officinal preparations. *Acetum Colchici*. L. *Oxymel colchici*. D. *Syrupus Colchici autumnalis*. E.

CONIUM.^{*} *Spec. Plant. Willd.* i. 1395.

Cl. 5. Ord. 2. Pentandria Digynia. Nat. ord. Umbellatæ.

G. 533. *Partial involucre* halved, three-leaved. Fruit nearly globular, five-streaked, notched on each side.

Species 1. *Conium maculatum*. Common Hemlock. *Med. Bot.* 2d edit. 104. t. 42. *Smith Flora Britan.* i. 303.

Officinal. CONII FOLIA. Lond. CONII MACULATI FOLIA. Edin.

CICUTA. Dub. The leaves and seed of Hemlock.

Syn. Cigue ordinaire (F.) Schierling (G.) Cicuta Maggiore (I.) Conio manchado (S.)

^{*} *Phil. Trans.* 1817. part ii.

^{*} *Karstov, Dioscoridis.*

Hemlock is a biennial, umbelliferous, indigenous plant, growing under hedges, by road sides, and among rubbish, flowering in June and July. The root, which is fusiform, branching, whitish and fleshy, exudes, when cut, a milky juice. The stem rises erect about four or five feet in height, is branching and leafy, round, hollow, striated, smooth, shining, and maculated with brownish purple. The lower leaves are very large, above a foot in length; on large sheathing petioles, supradecomposed, and shining; the upper ones are bipinnate; the whole stand upon channelled footstalks, proceeding from the joints of the stem, are incised, smooth, of a deep-green colour on the upper surface, but paler underneath. The rays of the umbels are ten or twelve, those of the umbellules fifteen or sixteen. The involucre consists of from three to seven, short, turned down, lancet-shaped leaflets, with white edges spread at the base: the involucre of three or four leaflets on one side only, and spreading. The flowers are very small; the petals white, the outer ones rather larger than the inner, cordate, inflected: the stamens the length of the petals, supporting white orbicular anthers: the styles two, filiform, diverging, and crowned with round stigmas. The fruit is ovate, striated, smooth, and brownish when ripe.

Hemlock is distinguished from other umbelliferous plants, with which it may be confounded, by its *large and spotted stem*¹, the dark and *shining colour of its lower leaves*, and their *disagreeable smell*, when fresh and bruised, resembling in some degree the urine of a cat.²

For medical use, the leaves should be gathered about the end of June when the plant is in flower; the small leaflets picked off, and the footstalks thrown away. The picked leaflets are then to be properly dried (vide *Powders*, Part III.); and as exposure to the air and light destroys the fine green colour of the plant, and injures its active qualities, the dried leaflets must be preserved in boxes completely filled, by gently pressing down the leaves, then covered with a closely fitted lid, wrapped in paper and sealed; or, if powdered, the powder may be preserved good, in closely stopped opaque phials for many years.

Qualities.—The odour of properly dried hemlock leaves is strong, heavy, and narcotic, but not so disagreeable as that of the fresh leaves: the taste is slightly bitter and nauseous. They are easily pulverized; and the powder should retain the beautiful green colour of the leaves. The acrimony only of the fresh

¹ The *Cherophyllum bulbosum*, Bulbous-rooted cow parsley has a spotted stem, but the joints are swelled, and the seeds rough.

² In Ray's Synopsis, *Conium maculatum* is named *Cicuta*; a name still retained by the Dublin College; and owing to which the water hemlock, *Cicuta virosa*, has sometimes been confounded with it; and improperly used.

leaves is lost in drying; but the narcotic principle remains uninjured if the operation be well performed. The virtues of Conium are extracted by alcohol and sulphuric ether. To the ether it communicates a very deep green colour; and when the tincture is evaporated on the surface of water, a rich dark green resin remains, in which the narcotic principle of the plant appears to reside; it contains the odour and taste in perfection; and half a grain produces headach, and slight vertigo.

Medical properties and uses. — Hemlock is a powerful narcotic, and is used as such internally, and as an external application. Stoerck, whose publications first brought it into general notice, rated its powers too high, and the multitude of discordant diseases which he enumerated as yielding to it, led many sober men to doubt its efficacy altogether. Hemlock is, nevertheless, a useful narcotic; and if it has not succeeded in curing cancer in the hands of British practitioners, it has been advantageously used as a palliative in both scirrhus and open cancer, abating the pain, and allaying the morbid irritability of the system. It has also been found serviceable in chronic rheumatism, in scrophulous, syphilitic, and other ill-conditioned ulcers, and glandular tumours: in pertussis, and the protracted cough which often remains after pneumonic inflammation. An over-dose of it induces sickness, vertigo, delirium, dilatation of the pupils, great anxiety, stupor, and convulsions. The best antidote is vinegar, after the stomach has been evacuated, and the cerebral excitement reduced by bleeding and purging.

The powder of the dried leaves, if well preserved, is the best form of this remedy. Hufeland recommends the fresh expressed juice from $\mathfrak{m}xij$ to $\mathfrak{m}lx$ for a dose. The dose of the powder is $\text{grs } iij$, gradually increasing it every day, till a slight vertigo forbids its further increase.

Official preparation. *Extractum Conii*. L. E. D.

CONVOLVULUS. *Spec. Plant. Willd.* i. 844.

Cl. 5. Ord. 1. Pentandria Monogynia. *Nat. ord.* Campanaceæ Linn.

Convolvuli Juss.

G. 323. Corolla bell-shaped, plaited. Stig. two. Capsule two-celled, each cell containing two seeds.

* Stem twining.

Sp. 4. C. *Scammonia*. Scammony. *Med. Bot.* 2d edit. 243. t. 86.

Sp. 61. C. *Jalapa*. Jalap. *Med. Bot.* 2d edit. 246. t. 87.

I. CONVULVULUS SCAMMONIA.¹

Official. SCAMMONIÆ GUMMI RESINA. *Lond. Edin.* SCAMMONIUM; GUMMI RESINA. *Dub.* Scammony.

Syn. Scammonée (F.) Scammonium von Aleppo (G.) Scammonia (L.) Escammonia (S.) Sukmunya (H. and Arab.)

¹ Σκαμμωνία, Dioscoridis.

This plant is a native of Syria and Cochinchina. It grows in abundance on the mountains between Aleppo and Latachea, and there the greater part of the scammony of commerce is obtained.¹ The root, which is perennial, is tapering, from three to four feet in length, and from three to four inches in diameter, covered with a light gray bark, and contains a milky juice. It sends up many slender, twining stems, which extend from fifteen to twenty feet in length, adorned with arrow-shaped, smooth, bright green leaves upon long footstalks. The flowers are in pairs upon the pedicels, consisting of a double calyx of four emarginated leaflets in each row; and a funnel-shaped, pale yellow, plaited corolla. The capsule is three or four celled, containing small pyramidal seeds.

Scammony is obtained from the root of this plant²; and is collected in the beginning of June, in the following manner: The ground is cleared away from the root, the top of which is then cut off in a sloping direction, about two inches below the place whence the stalks spring; and the milky juice which flows from it is collected in a shell fixed at the most depending part. Each root yields a few drachms only, which are drained off in about twelve hours. "This juice from the several roots is put together, often into the leg of an old boot, for want of some more proper vessel, where in a little time it grows hard, and is the genuine scammony." "The Jews," Dr. Russell says, "buy the scammony while it is soft, and mix it with the expressed juice of the stalks and leaves, with wheat-flour, ashes, fine sand, or whatever else can answer their purpose." It is imported from Aleppo in what are called drums, which weigh from 75 to 125 lbs. each; and from Smyrna in cakes like wax, packed in chests. The former is light and friable, and is considered the best; that from Smyrna is more compact and ponderous, less friable, and fuller of impurities.

Qualities. — Good Scammony is light, friable, and externally like a honey-comb. It has a peculiar, rather heavy odour, not unlike that of old ewe milk cheese; and a bitterish, slightly acrid taste. The colour is blackish or blueish gray, changing to dirty white when the surface of the mass is rubbed with the wet finger. The fracture is irregular but smooth, faintly shining, and the sharp edges of the shivers are of a lighter gray colour, and translucent. It is pulverulent; and the powder has a light gray colour. Its specific gravity is 1.235.³ When it is of a dark colour, heavy and splintery, it should be rejected. When triturated with water, nearly one-fourth of it

¹ Russell's Nat. Hist. of Aleppo, ii. 246.
any medicinal quality. Russel, l. c.

² No other part of the plant possesses

³ Brisson.

is dissolved, and the solution appears slightly mucilaginous, opaque, and of a greenish gray colour. This solution is not affected by alcohol, solutions of superacetate and acetate of lead, or sulphate of iron, nor precipitated by the acids; but with sulphuric acid it gives out the odour of vinegar. Solution of ammonia does not alter it, but that of potash occasions a yellowish precipitate, which is quickly re-dissolved on the addition of an acid. Ether takes up two parts in ten of scammony, and when evaporated, leaves a brownish semi-transparent resin. Alcohol dissolves two-thirds of its weight; but proof spirit is its best menstruum, taking up the whole except the impurities. Aleppo Scammony contains, according to Bouillon La Grange and Vogel, 0.60 of resin, 0.02 of extractive, 0.03 of gum, and 0.35 of waste. Smyrna scammony contains scarcely one half the quantity of resin; but more gum and extractive.

Medical properties and uses.—Scammony is a drastic cathartic, operating, in general, quickly and powerfully. The ancients were acquainted with its purgative qualities; and also employed it as an external application for removing hard tumors, itch, scurf, and fixed pains; but for the latter purposes it is now never used. It is a good purgative, in the torpid state of the intestines, in leucophlegmatic, hypochondriacal, and maniacal subjects; in worm cases, and the slimy state of the bowels to which children are subject; and as a hydragogue cathartic in dropsy. Scammony has been regarded by some as a cathartic of so irritating a nature as to require to be corrected by exposing it to the fumes of sulphur, defæcating it with lemon juice and other acids, and uniting it with demulcent mucilages: but, except in an inflamed or very irritable state of the bowels, it is a safe and efficacious purgative. It is however apt to gripe, on which account it is generally united with an aromatic, or a drop of some essential oil.

The dose of scammony is from grs. v. to grs. xvj, in powder, or as a bolus, or in the form of mixture, triturated with almonds, gum, or extract of liquorice, and water.

Official preparations. *Confectio Scammoniacæ*. L.D. *Pulvis Scammoniacæ comp.* L.E.

2. CONVULVULUS JALAPA.

Official. JALAPÆ RADIX. Lond. CONVULVULI JALAPÆ RADIX.

Edin. JALAPA; RADIX. *Dub.* Jalap root.

Syn. Jalap (F.) Jalappenharz (G.) Scialappa (I.) Jalapa (S.)

This species of convulvulus is a native of South America, taking its name from Xalappa, a city of Mexico.¹ It grows

¹ It was cultivated in England by Mr. Miller in 1668; and a few years ago two specimens were in vigorous growth in Kew gardens, slips of the original plant, introduced there by Mons. Thouin in 1778.

in a dry sandy soil, and flowers in August and September. The root is perennial, of an irregular egg-shape, and a dark almost black colour on the outside, ponderous, large¹, and when fresh, abounding with a milky juice. It sends up many triangular, tuberculated, twining, twisted stems, which extend upwards of ten feet, with smooth petiolated leaves, of a bright green colour, varying in shape, some being cordate, others angular, and a few oblong and pointed. The flowers are on short axillary peduncles that send off two pedicels, each bearing a large, bell-shaped, entire, plaited flower, of a reddish colour externally, and a dark purple within; with a calyx composed of five oval, concave, pale green leaves, somewhat indented at their points. The anthers are of a yellow colour, large, on slender short filaments; the style is shorter than the filaments, and the germen oval. The seeds are bristled.

The root of this plant, which is the jalap of the shops, was first brought to Europe about the year 1609 or 1610.² The best comes from Vera Cruz in transverse slices, and also in egg-shaped, pointed, entire tubers, covered with a very thin, wrinkled, brown cuticle. That which is sliced is more liable to be adulterated, which is said to be sometimes done with slices of briony root; but the fraud is easily discovered by the spongy texture and whiter colour of the latter.

Qualities. — Good jalap root has a sweetish heavy odour when broken, and a sweetish slightly pungent taste. It is heavy, compact, and hard, with a shining resinous fracture, which shows the internal part of a yellowish gray colour, interspersed with deep brown concentric circles. It is pulverulent, affording a powder of a pale brownish yellow colour. Both water and alcohol separately extract a part, and when mixed the whole of the active constituents of jalap. Ether dissolves three parts of ten submitted to its action; and affords, when evaporated over water, a transparent insipid resin and some extractive. Hence jalap appears to contain resin, starch, extractive, and ligneous matter.

Medical properties and uses. — Jalap is a stimulant cathartic, acting briskly on the bowels; and although occasionally griping severely, yet safe and efficacious. It is used in the same cases as scammony, whenever it is required effectually to evacuate the intestines: and as a hydragogue purgative it is supposed to possess singular efficacy. It has been asserted that it proves hurtful in hypochondriasis, bilious ha-

¹ A root of jalap, which was carried by Michaux, junior, in 1803, from the botanic garden of Charlestown to Paris, and planted there in the garden of the Museum of Natural History, where it now grows, weighed 47 pounds and three quarters. *Mémoires de l'Institut.* tom. vi. 387.

² *Bauhin. Prodromus*, 135.

bits, and fevers, except of the intermitten kind; but Doctor Hamilton used it in all these instances, in typhus, and the exanthemata with the best effects.¹ The watery extract purges moderately without griping, and is therefore well adapted for children; but the alcoholic scarcely at all purges, although it occasions the most violent tormina and gripings. It is frequently triturated with hard sugar, which renders its powder finer, and increases its activity; and with other cathartics, by which the action of both is reciprocally improved. In dropsical affections, the supertartrate of potash is a useful addition; and in the cachexia and worms, calomel, the operation of which it greatly quickens.

The dose is from grs. x. to ʒfs in powder, pills, or bolus; with a drop or two of essential oil to prevent griping.

Official preparations. *Pulv. Jalapæ comp.* E. *Extractum Jalapæ.* L. E. D. *Tinctura Jalapæ.* L. E. D.

CONTRAJERVÆ RADIX. Vide *Dorstenia Contrajerva*.

COPAIFERA. *Spec. Plant. Willd.* ii. 630.

Cl. 10. Ord. 1. Decandria Monogynia. Nat. Ord. *Dumosæ Linn.*
Leguminosæ Juss.

G. 880. *Calyx* none. *Petals* four. *Legume* ovate. *Seed* one, with an ovate arillus.

Species 1. *C. officinalis*. Copaiva tree. *Med. Bot.* 2d ed. 609. t. 216.

Officinal. COPAIVA. *Lond.* COPAIFERÆ OFFICINALIS RESINA.

Edin. BALSAMUM COPAIBÆ. *Dub.* Copaiba Balsam.

Syn. Beaume de Copahu, (F) Kopaiva balsam, (G.) Balsamo del Coppaiiba, (I.) Copayva, (S.)

The copaiva tree is a native of South America and the Spanish West India Islands. It grows in great plenty in the woods of Tolu, near Carthagena, and in those of Quito and Brasil. It is a lofty handsome tree, branching at the top, with a brownish ash-coloured bark. The leaves are large and pinnate, consisting of four pair of ovate-pointed, alternate, ferruginous leaflets with a terminal one, two or three inches long, entire, shining, veined, narrower on one side than on the other, and placed on short petioles. The flowers are in terminal racemes, which are stiff, spreading, the length of the pinnæ, and loosely divided into eight alternate common peduncles, with the flowers, which are white, sitting closely on them. The petals are oblong, acute, concave, spreading: the filaments slender, incurved, bearing oblong incumbent anthers; and the germen roundish, compressed, and on a short pedicel. The fruit is an oval, two-valved pod, containing a single egg-shaped seed enveloped with a berried arillus.

The copaiba balsam of the shops is procured by wounding,

¹ *Observations, &c. on Purgative Medicines, 8vo. passim.*

or boring these trees to the pith, near the base of the trunk, when it flows abundantly¹, in the form of a clear colourless liquid, which is thickened, and acquires a yellowish colour by age. The operation is performed two or three times in the same year; and from the older trees the best balsam is obtained. It is brought to this country from the Brazils in small casks, each of which contains from one cwt. to one cwt. and a half of the balsam.

Qualities.—Genuine good copaiba balsam has a peculiar but agreeable odour, and a bitterish hot nauseous taste. It is clear and transparent, its consistence is that of oil, the colour a pale golden yellow, and its specific gravity 0.950;² but when it is exposed with an extended surface to the action of the air, it gradually thickens, until at length it becomes solid, dry, and brittle like resin. It is insoluble in water, but is completely soluble in alcohol and ether. Sulphuric acid converts it into a brown bituminous-like mixture, which gives out a strong odour of sulphur. Nitric acid in the ordinary heat of the air partially dissolves it, and renders it brown; but at an increased temperature the action is violent, the acid is decomposed, and nitrous fumes are copiously emitted. The muriatic and acetic acids scarcely affect it. The pure alkalies form with it white saponaceous compounds, which are soluble in water, forming opaque milky mixtures. It is soluble also in the expressed oils. In destructive distillation it yields some empyreumatic brownish red oil, an acidulous water, carbonic acid gas, and olefiant gas, but does not yield benzoic acid. Hence it approaches nearer in its nature to turpentine than to the balsams.

Medical properties and uses.—Copaiba balsam is stimulant, diuretic, and gently purgative. It has been recommended in pulmonary complaints; but where the excitement is morbidly increased, or there is any degree of the inflammatory diathesis present, the heating and irritating quality of copaiba renders it injurious. From its power of stimulating the urethra it is more successfully used in gleet. It is equally efficacious in fluor albus, and in that state of the uterus sometimes occurring on the final cessation of the menstrual discharge, which is accompanied with a sanious discharge, great bearing down, and many of the symptoms of incipient cancer. It certainly affords considerable relief in hæmorrhoidal affections; perhaps from its exciting the steady peristaltic motion of the intestines, at the

¹ "Tanta quantitate distillat, ut spatium trium horarum ad lb. xij effundat." *Piso. Nat. Hist.* 56.

² The adulterated balsam, which Lewis mentions, as being thick, white, and opaque, with a quantity of turbid watery liquor at the bottom, is not now to be found.

same time that the determination of the blood to the hæmorrhoidal vessels is lessened, by the stimulant effect of the remedy on the kidneys. In too large doses it excites inflammation of the kidneys; and its use should always be avoided when ulceration of these organs is suspected.

The dose of copaiba is from $\mathfrak{m} \times$ to $\mathfrak{m} \text{ xxx}$ twice or thrice a day, either dropped on sugar, or mixed with soft or distilled water, by means of mucilage or the yolk of egg.

CORIANDRUM. *Spec. Plant. Willd.* i. 1448.

Cl. 5. *Ord.* 2. Pentandria Digynia. *Nat. Ord.* Umbellatæ.

G. 552. *Corolla* radiate. *Petals* inflex-emarginate. *Involucre* universal one-leafed. The partial ones halved.

Species 1. *C. sativum*.¹ Common Coriander. *Med. Bot.* 2d ed. 137. *t.* 53. *Smith Flor. Brit.* 320. *Eng. Bot.* 67.

Official. CORIANDRI SEMINA. *Lond.* CORIANDRI SATIVI SEMINA. *Edin.* CORIANDRUM. *Dub.* Coriander Seed.

Syn. Coriandre (F.) Koriander saamen (G.) Coriandro, (I.) Semilla de Culantro, (S.) D'hanya, (H.) D'amyaca, (San.)

This plant is an annual, a native of Italy; but is now found wild in some parts of this country², owing to the abundant cultivation of it for medicinal purposes. It flowers in June, and ripens its seed in August. The stem is erect, about two feet in height, branching, divaricated, round, smooth, and obscurely striated. The leaves are compound; the lower ones pinnated, with gashed, wedge-shaped, somewhat roundish leaflets, and the upper thrice-ternate, with linear-pointed segments. Both the umbels and umbellules are many-rayed; with an involucre of one linear leaf, and involucels of three lanceolate narrow leaves all on one side. The flowers are of a white or reddish colour. The calyx consists of five leaves: the petals are five also, oblong, and inflected at the tips, but those of the flowers of the circumference have the outermost petals larger, and not inflected. The fruit is globular, obscurely ribbed, and divisible into two concave hemispherical seeds; and this form of the fruit distinguishes Coriander from all the other species of Umbellatæ. The whole plant, when green, has an abominably fœtid odour if bruised; which extends even to the fruit.³

Qualities. — The dried seeds have a grateful aromatic odour, and a moderately warm, pungent taste; qualities which depend on an essential oil, that can be obtained separate by the distillation of the seeds with water. Their active principles are completely extracted by alcohol; but only partially by water.

¹ *Korigavrov*, Dioscoridis.

² About Ipswich, and some parts of Essex. *Smith.*

³ Hence Alston imagined that the name of the plant comes from *κορις*, a bug. *Mat. Med.* ii. 349.

Medical properties and uses.—These seeds are carminative and stomachic. They are sometimes used in flatulencies; but principally to cover the unpleasant taste, and correct the griping quality of some cathartics. The dose is ʒj to ʒj, bruised.

CROCUS. Spec. Plant. Willd. i. 194.

Cl. 3. Ord. 1. Triandria Monogynia. Nat. ord. Ensatæ Linn. Irides Juss.

G. 92. Corolla six-parted, equal. Stigma convoluted.

*Species 1. C. sativus.*¹ Common Saffron. *Med. Bot. 2d edit. 763. t. 259. Smith Flora Brit. i. 39. Eng. Bot. t. 343.*

Official. CROCI STIGMATA. Lond. CROCI SATIVI STIGMATA.

Edin. CROCUS. Dub. The Stigmas of the Saffron.

Syn. Saffron (F.) Safran (G.) Zafferano (I.) Azafran (S.)

Common saffron is a perennial, bulbous plant, found wild in some parts of this country, which affords reason for supposing it to be indigenous; but it is probable, that it was originally brought from Asia. It is cultivated for medicinal use, in great abundance, in Cambridgeshire and Essex. Formerly, it was chiefly grown at Saffron Waldon, but it is now confined to Stapleford. It flowers in September. The bulb is solid, and depressed. The flower, which appears before the leaves, is sessile on the bulb, of a violet or lilac colour, and raised on a long, slender white tube. The leaves are linear, a little revolute, of a deep rich green colour, with a white nerve in the centre; and inclosed with the tube of the flower in a membranous sheath. The corolla is parted into six nearly elliptical segments: the stamens are shorter than the corolla, and erect: and the style, which is the length of the corolla, hangs out at one side between the segments. The stigma is deeply three-parted, of a deep orange colour, and odorous; with the segments linear involute at the margin, and crenate at the apex.

For the preparation of the saffron, the flowers are gathered early in the morning, just as they are about to blow. They are then spread upon a table, and the stigmas, with a proportion of the style, carefully picked out of the flower, which is thrown away as useless. The stigmas are then dried upon a portable kiln, of a peculiar construction, over which a hair cloth is stretched, and over it several sheets of white paper are laid; upon which the wet saffron is spread between two and three inches thick. It is now covered with other sheets of paper; and over them is laid a coarse blanket five or six times doubled, which is pressed down with a board, and a large weight, after the fire is lighted. The first heat is strong, to make the saffron sweat; and after an hour, when it is found formed into a

¹ *Κεραος*, Dioscoridis. Its English name is derived from the Arabic, Sapharan. *Celsus*. See *Alston's Lectures*, ii. 119.

cake, it is turned, and the same degree of heat continued for another hour. The fire is then reduced to a moderate heat, which is kept up for twenty-four hours, during which time the cake is turned every half-hour so as to dry it thoroughly. It is then fit for the market.

In the shops is found saffron from Sicily, France, and Spain, besides the English. The Spanish is generally spoiled with oil, in which it is dipped with the intention of preserving it; the Sicilian and French are better; but the English, as being fresher, more genuine, and better cured, is always preferred. It is sometimes adulterated with fibres of smoked beef, the petals of the safflower (*Carthamus tinctorius*), and of officinal marigold (*Calendula officinalis*): or saffron, from which tincture or infusion has been drawn, is mixed with a little good saffron, and again pressed into a cake. These frauds are detected by infusing the suspected saffron in hot water; when the expanded stigmas will be easily distinguished from the petals of the other flowers; and the deficiency of colour and odour, or an unpleasant odour arising when the saffron is thrown upon red-hot coals, will indicate the presence of the other fraudulent ingredients. It should be chosen fresh, in close, tough, compact cakes, moderately moist; and possessing, in an obvious degree, all the undermentioned sensible qualities: the not staining the fingers, the making them oily: a musty flavour, and a whitish yellow, or blackish colour, indicate that it is bad, or too old.

Qualities.—Good saffron has a sweetish, penetrating, diffusive odour; a warm, pungent, bitterish taste; and a rich deep orange red colour. It yields its colour, and active ingredients to water, alcohol, proof spirit, wine, vinegar; and in a smaller degree to ether. By distillation with water it affords a small quantity of a heavy, golden yellow-coloured essential oil. The watery infusion which has the deep orange colour of the saffron, is rendered of a very deep purple by strong sulphuric acid, the mixture emitting the smell of vinegar, and yielding a copious black precipitate when diluted with water: the oxymuriatic acid produces a copious yellow precipitate, the liquid retaining only a pale lemon colour. Hence saffron seems to contain chiefly extractive, which, according to Hermbstadt, is nearly pure, and in the proportion of ten parts in sixteen of the vegetable; the remainder being chiefly ligneous fibre. I

¹ This extractive, when pure, is named polychroite, by Bouillon, Lagrange, and Vogel, on account of the different colours it is capable of assuming. Chlorine and light destroy its colour in the watery infusion; sulphuric acid changes it to indigo, which gradually becomes lilac; and nitric acid gives it a green hue. Vide *Ann. de Chim.* lxxx. p. 186.

have found that it contains resin also; for sulphuric ether digested on saffron is coloured, and when evaporated on the surface of water, a pellicle of resin is left, whilst the coloured extractive, which is taken up with the resin, is dissolved in, and colours, the water.²

Medical properties and uses.—Saffron is regarded as a stimulant and antispasmodic; but from the experiments of Dr. Alexander³, its powers appear to be inconsiderable. It was known to the ancients, who considered it as a remedy of great activity; in moderate doses exhilarating the spirits, easing pain, and producing sleep; but occasioning headachs, coma, delirium, convulsive laughter, and even fatal effects, when given in large doses. In modern practice, however, it is scarcely ever given except as a cordial adjunct to more active remedies. The dose in substance is from grs. x. to ʒss; but it has been given in much larger doses without any sensible effect being produced.

Official preparations. *Syrupus Croci*. L. *Tinctura Croci sativi*. E.

CROTON. *Spec. Plant. Willd.* iv. 531.

Cl. 21. Ord. 8. Monœcia Monadelphica. Nat. Ord. Tricoccæ Linn.

Euphorbiæ Juss.

G. 1718. Male. Calyx cylindrical, five-toothed. Corolla five-petalled. Stamens 10—15.

Female. Calyx many-leaved. Corolla none. Styles three bifid. Capsule three-celled. Seed one.

Species 43. *C. Eluteria*.³ Eleutheria. *Med. Bot.* 2d edit. 633. t. 223.

Official. CASCARILLÆ CORTEX.⁴ Lond. Dub. CROTON ELEUTHERIÆ CORTEX. Edin. Cascarilla Bark.

This tree is a native of the Bahama Islands, and has been also found in Jamaica by Dr. Wright. It is a small tree, seldom exceeding twenty feet in height, and branching thickly towards the top. The more tender branches, when broken, ooze out a thick balsamic liquor. The leaves are alternate on short petioles, ovate or cordate, lanceolate, and elongated towards the apex which is blunt; entire, and on the upper surface of a bright green colour. The flowers are in axillary and terminal racemes. The petals are whitish, oblong, obtuse, and spreading. The male flower has ten subulate filaments, supporting erect com-

¹ Chemists assert, that extractive is insoluble in ether; but I find that when resin also is present in any vegetable matter, ether is capable of taking up some extractive combined with the resin which it dissolves; and when the ethereal tincture is evaporated on the surface of water, these principles are separated, the resin remaining in the form of a pellicle on its surface, whilst the extractive is dissolved, colours the water, and forms, with the solution of muriate of tin, a brown flaky precipitate. Hence ether is a good test of these vegetable principles.

² *Experimental Essays*, p. 88.

³ It is the *Clusia Eluteria* of Linnæus.

⁴ The London College erroneously refers this bark to the *Cascarilla* of Linnæus, the bark of which, however, has none of the sensible qualities of Cascarilla.

pressed anthers: the female produces a roundish germen crowned with three bifid spreading styles, with obtuse stigmas. The capsule is superior, trilocular, containing a solitary shining seed.

Cascarilla bark is imported chiefly from Eleutheria, one of the Bahama Islands, packed in chests and bales. It consists of pieces about six or eight inches long, scarcely one-tenth of an inch thick, quilled, and covered with a thin whitish epidermis.

Qualities.—Cascarilla bark has a pleasant spicy odour, and a bitter, warm, aromatic taste. The colour of the inside of the pieces is a reddish cinnamon hue, and their fracture close and short, of a dark reddish brown or purple colour. It is very inflammable, and is easily distinguished from all other barks by emitting, when burnt and extinguished, a fragrant smell resembling that of musk, but more agreeable. Its active constituents are partially extracted by alcohol and water, and completely by proof spirit. Ether takes up one and a half in ten parts; and, when evaporated on the surface of water, leaves a thick pellicle of bitter resin; and dissolved in the water, a small portion of almost colourless pungent extractive. According to Tromsdorff, who analysed it, 4696 parts yielded the following products:—Mucilage and bitter principle 864, resin 688, volatile oil 72, water 48, and woody fibre 3024 parts.¹ The ethereal tincture shows extractive also to be present, of a greenish yellow colour, very fragrant and pungent.

Medical properties and uses.—This bark is a valuable carminative and tonic. It was introduced into practice as such in 1690 by professor Stisser; and was afterwards much used in Germany, particularly by the Stahleans, as a substitute for cinchona bark; in the cure of intermittent and remittent fevers: but although they over-rated its virtues, yet, it is an excellent adjunct to the bark in these diseases; rendering it, by its aromatic qualities, more agreeable to the stomach, and increasing its powers. It is successfully employed in dyspepsia, asthma, and flatulent colic; the latter stage of dysentery, and diarrhoea, particularly when occurring after measles; and in the gangrenous thrush peculiar to children.² The dose of the powdered bark is from grs. xij to 3fs, three or four times a day.

Official preparations. *Infusum Cascarillæ*. L. *Tinctura Cascarillæ*. L. D. *Extractum Cascarillæ*. D.

CUCUMIS. *Spec. Plant. Willd.* iv. 611.

Cl. 21. Ord. 8. Monœcia Monodelphia. *Nat. ord.* Cucurbitaceæ. G. 1741. Male. Calyx 5-toothed. Corolla 5-parted. Filaments 3.

¹ *Annales de Chimie*, xxii. 219. and *Thomson's Chemistry*, 4th ed. v. 220.

² *Underwood, Diseases of Children*, 4th ed. i. 79.

Female. Calyx 5-toothed. Corolla 5-parted. Pistil three-cleft. Seeds of the gourd argute.

*Sp. 1. C. Colocynthis.*¹ Bitter Cucumber. *Med. Bot. 2d ed. 189. t. 71.*

Official. COLOCYNTHIDIS PULPA. Lond. CUCUMERIS COLOCYNTHIDIS PULPA. Edin. COLOCYNTHIS; FRUCTUS MEDULLA. Dub.

The Pulp of Coloquintida, or Bitter Cucumber.

Syn. Coloquinte (F.) Koloquinthen (G.) Coloquintida (L.) Pepinero Coloquintida (S.) Hunzál (Arab.) Indráini (H.) Indraváruui (San.)

This plant is an annual, a native of Turkey, flowering from May till August, and much resembling the cucumber in its herbage. The root is branching, and strikes deep into the ground. The stems are trailing, beset with rough hairs: the leaves on long petioles, of a triangular form, variously sinuated, obtuse, of a fine green colour on the upper surface, and whitish and rough beneath. The flowers are solitary, axillary, and of a yellow colour. The calyx of the male flowers is bell-shaped: the corolla the same shape with the limb, divided into five pointed segments: and the anthers, which stand on three short filaments, are long, erect, and adhere together on the outer side. The female flower is like the male, but the filaments have no anthers. The fruit is a round berry or pepo, the size of a small orange, yellow, and smooth on the outside when ripe; trilobular, each cell containing many ovate compressed whitish seeds, enveloped by a white spongy pulp.

When the fruit is ripe and yellow, it is peeled and dried in a stove; and in this state it is brought to this country. When it is larger than a St. Michael's orange, and has black, acute pointed seeds, it is not good.

Qualities.—Dried coloquintida is inodorous; but has an extremely bitter nauseous taste, the pulp feeling mucilaginous when chewed. Independent of the seeds, it is altogether composed of a very light, easily torn, white, cellular matter. Ether, alcohol, and water extract its virtues. The infusion in boiling water has a golden yellow colour, gelatinises as it cools, and resembles, except in colour and taste, mucilage of quince seed. This mucilage is soluble in cold water. Alcohol and all the acids coagulate the solution, which is precipitated by solutions of acetate and superacetate of lead and nitrate of silver. Sulphate of iron strikes with it a deep olive colour. Its colour is rendered also greenish by solution of potash, which precipitates it; but the mucilage is dissolved by solution of ammonia. Ether digested on the pulp deposits, when evaporated on the surface of water, a white opaque bitter resin, and some extractive; from which the water acquires the bitter taste of the fruit, and precipitates solutions of potash, nitrate of silver, and

¹ Κελευκυνθίς, Dioscoridis.

acetate of lead. From these experiments colocynth pulp appears to consist chiefly of mucus, resin, the bitter principle, and some gallic acid.

Medical properties and uses.—The pulp of this fruit is a very powerful drastic cathartic. It was employed by the ancients in dropsical, lethargic, and melancholic affections; but always with caution, on account of its violent effects. When given alone, even in moderate doses, it purges vehemently, producing violent gripings, bloody dejections, and not unfrequently convulsions and inflammation of the bowels. The watery decoction, or the infusion, is much less violent in its operation, and has been recommended in worm cases. It is scarcely ever given alone in any form, but is generally united with other purgatives to quicken their operation. The dose is from grs. iv. to grs. x. triturated with almonds, or gum, or some farinaceous matter.

Officinal preparations. *Extractum Colocynthis.* L. *Extractum Colocynthis compositum.* L. D. *Pilule Aloes cum Colocynthis.* D.

CUMINUM. *Spec. Plant. Willd.* i. 1440.

Cl. 5. *Ord.* 2. Pentandria Digynia. *Nat. ord.* Umbellatæ.

G. 547. Fruit ovate, striated. *Partial umbels* 4. *Involucre* 4-cleft.

Sp. 1. *C. Cyminum.** *Cumin.* *Med. Bot.* 2d edit. 143. t. 56.

Officinal. **CUMINI SEMINA.** *Lond.* Cumin Seed.

Syn. Cumiu (F.) Ramischer Kumel (G.) Semenza di Comino (I.) Semilla de Comino (S.) Kimoon (Arab.) Iirâ (H.) Iiraca (San.)

This plant is an annual, a native of Egypt, but cultivated in great abundance in Sicily and Malta: whence the seeds are brought to this country. It flowers in June. It rises eight or ten inches in height, on a slender, round, often procumbent branching stem. The leaves are of a deep green colour, narrow, linear, and pointed: the flowers purple, in numerous four-rayed umbels; with umbellets having seldom more than four flowers. Both the involucre and involucels consist of three or four subulate unequal leaflets. The corolla is composed of five unequal petals, inflected, and notched at the apex: the filaments support simple anthers; and the germen is inferior, large, ovate, with two minute styles terminated by simple stigmas. The fruit consists of two oblong striated seeds united by their flat sides; of a pale brown colour, bristly on their convex surface.

Qualities.—Cumin seeds have a strong peculiar heavy odour, and a warm bitterish disagreeable taste. Water extracts little more than their odour; but alcohol takes up both odour and taste, and yields, when evaporated, an extract containing the sensible qualities of the seeds. In distillation with water, a large proportion of yellow pungent volatile oil comes over, which has the strong ungrateful odour of the seeds.

* Куминъ, Dioscoridis.

Medical properties and uses. — Cumin seeds are carminative and stomachic: but they are chiefly employed as an external stimulant in discussing indolent tumours.

Official preparation: *Emplastrum Cumini*. L.

CUPRUM. *Edin. Dub.* Copper.

Syn. Cuivre (F.) Kupfer (G.) Rame (I.) Cobre (S.) Nehass (Arab.) Tamba (H.) Tamra (San.)

Copper is a metal of a yellowish or brownish red colour, found very abundantly in many countries in both hemispheres of the globe. It is procured

A. In its metallic state:

i. Crystallized. Sp. 1. *Native copper.*

ii. Sulphuretted. 2. *Vitreous copper.*

a. and combined with iron. 3. *Purple copper.*

4. *Gray copper.*

5. *Copper pyrites.*

6. *Black copper.*

b. ————— with iron

and arsenic.

7. *White copper.*

B. United with oxygen:

iii. Oxidized.

8. *Ruby copper.*

9. *Tile-red copper.*

c. and combined with carbonic acid.

10. *Azure copper, or Mountain blue.*

11. *Malachite.*

12. *Emerald copper.*

d. ————— with arsenic acid.

13. *Octohedral arseniate of copper.*

14. *Hexahedral arseniate of copper.*

15. *Prismatic arseniate of copper.*

16. *Trihedral arseniate of copper.*

17. *Martial arseniate of copper.*

e. ————— with phosphoric acid.

18. *Phosphate of copper.*

f. ————— with muriatic acid.

19. *Sandy copper.*²

The sulphurets are the most abundant ores, and those from which copper is usually extracted. In Britain these are obtained chiefly in Cornwall.¹ The ore is first roasted to volatilize the sulphur, which is collected in chambers connected by flues with the kilns. It is then smelted, in contact with the fuel, in a large reverberatory furnace, to separate the iron; which being less fusible than the copper remains in the scoria, while the melted copper is drawn off through a plughole into earthen moulds. The copper, however, in this state is still

¹ Vide *Aikin's Chemical Dictionary*, art. *Copper*.

² The Parys mine in the isle of Anglesea is now nearly exhausted.

very impure; and therefore it is remelted and granulated; and lastly refined, by being again melted with the addition of a little charcoal, which brings it to a state fit to bear the hammer, and to answer the various purposes of art.

Pure copper has a yellowish red colour; is sonorous, ductile, malleable, tenacious; has a styptic disagreeable taste, and emits an unpleasant odour when rubbed. The specific gravity, when it is pure, and has been only fused, is 8.895. It has a granulated texture, and breaks with a hackly fracture; melts at a temperature equal to 27° of Wedgwood; is volatilized by a greater heat; and is oxidized, when heated in contact with atmospherical air, even at a temperature below that of ignition. When exposed to humidity and to air at the same time, it is tarnished, and a green crust is formed on its surface, which is a carbonate of copper.

Although copper in its metallic state was used as a remedy by the ancients, yet it is completely discarded from modern practice: and, notwithstanding so much has been said of its deleterious effects, there is every reason for believing that clean copper, when taken into the stomach, exerts no action whatever on the system. Two cases, of halfpence being swallowed by children, have come under my observation, in one of which the copper coin remained six months in the intestines, and in the other two months. Both were evacuated without having in the smallest degree injured the health, although the impressions were nearly effaced, and the metal much corroded. But poisoning from the use of copper utensils in cookery, arises either from the formation of the green carbonate, mentioned above, owing to the vessels not being well cleaned, and the food being allowed to stand for some time in the pan exposed to the air, after it is taken from the fire; or from the formation of verdigris, when vinegar used in making pickles, and other acid liquors, intended for internal use, are boiled in brass or copper vessels. The salts of copper thus formed are poisons, exciting inflammation of the stomach; and many fatal accidents have arisen from the practices which produce them, and from the equally dangerous mode of giving a fine green colour to vegetables by boiling halfpence with them; on which account copper utensils should be altogether banished from the kitchen, and also from the laboratory, where they are sometimes employed in making decoctions. The salts of copper may be detected in any suspected liquor, by placing in it a piece of clean polished iron, on which the copper is precipitated in a metallic state, or by dropping into it a solution of ammonia, which produces a beautiful blue colour, if any salt of copper be present. In cases of poisoning by any of the salts of copper, sugar is the best antidote.

The oxides of copper unite with acids, and form salts, which act very powerfully on the animal system; but of these the *subacetate* and the *sulphate* only are admitted into the list of materia medica.

1. SUBACETATE OF COPPER.

Official. *ÆRUGO.* *Lond. Dub. SUBACETAS CUPRI, Edin.* Verdegris, or Subacetate of Copper.

Syn. Vert de gris (F.) Grunspan (G.) Verdegriese (I.) Cardenillo (S.) Zurjar (Arab.) Pitrai (H.) Pitalata (San.)

This salt is principally manufactured in the south of France, at Montpellier, and Grenoble.* In the former place, the *marc* of the grape, that is, the cake which remains in the wine-press after the juice is expressed, composed of the husks and stalks, is moistened with water, or with wine if poor, and disposed so as to excite in it the acetous fermentation. When this takes place it is spread in jars between well-hammered plates of copper, heated over a pan of burning charcoal; a layer of fermented marc being placed between each plate of copper. The jars, each of which contains about 40 lbs. of copper, besides marc, are then loosely stopped with straw, and left at rest for ten, fifteen, or twenty days, at the end of which time the marc begins to whiten; and the copper is found to be covered with a green crust, interspersed with distinct silky green crystals. The plates are then moistened with water, and set up in racks, face to face, in a cellar: this is repeated once in seven days for six or eight times, until a thick coat of verdegris is formed, which is scraped off; and the copper plates again subjected to the same process till they are completely corroded. When the plates are first used the verdegris is apt to be black, unless their surfaces be previously rubbed with a solution of verdegris, which is suffered to dry before they are used.

Verdegris in this rough state is sold by the makers, who are generally women belonging to the wine-farms about Montpellier, to commissioners, by whom it is further prepared. After being well beaten in wooden mortars, it is pressed down in bags of white leather, a foot in depth and ten inches wide, in which it is dried in the sun; and thus a loaf of verdegris is formed, which cannot be pierced with a knife.

In this process the copper is oxidized, and the oxide combined with a small portion of acetic acid, forming a subacetate, which is mixed with vegetable extractive matter and the stalks and husks of grapes. The Grenoble verdegris is a purer subacetate, being prepared by simply disposing plates of copper in a proper situation, and repeatedly moistening them with distilled vinegar till the surface is oxidized and changed into verdegris.

* Vide Chaptal's Account of the Manufacture, *Phil. Mag.* vol. iv. 71.

The subacetate of copper is imported into this country in the leather sacks, or bags, in which it is dried, each containing from fourteen to thirty pounds weight. But it is, also, now prepared in Great Britain.

Qualities. — Good subacetate of copper is inodorous. It seems at first nearly insipid, although exceedingly styptic; but leaves a strong metallic taste in the mouth. The mass is dry, not deliquescent, of a hard, pulverulent, foliaceous texture, and a beautiful blueish green colour. Distilled water at 60° dissolves 0.56 parts, while 0.44 remain in the state of a fine green powder, long suspended in the solution: that part which is dissolved is a superacetate of copper, the filtered solution reddening litmus paper; whilst the insoluble powder is a subacetate mixed with the impurities. When boiling water is used, the insoluble part is of a brown colour. Sulphuretted hydrogen gas decomposes the solution, precipitating a black sulphuret of copper. A small cylinder of phosphorus put into the solution is rapidly covered with a coat of metallic copper. According to Proust, verdegris consists of 43 parts of acetate of copper, 27 black oxide of copper, and 30 of water in intimate combination.

Besides the stalks and husks of grapes, verdegris is often adulterated with sand, and other earths. These are discovered by dissolving it in diluted sulphuric acid, which takes up the whole of the subacetate, and leaves the impurities. Or by boiling it in 12 or 13 times its weight of distilled vinegar, allowing the undissolved part to settle, and ascertaining its amount. The addition of muriate of barytes will detect any admixture of the sulphate or the tartrate.

Medical properties and uses. — Verdegris is tonic, and emetic. It has been used in epilepsy; and extolled as an emetic, in cases which require that the stomach should be quickly evacuated, without weakening it, as in incipient phthisis: but its internal exhibition is always dangerous, and to be avoided. It is, however, a useful detergent and escharotic application to foul ulcers, the callous edges of sores, and to consume fungus; but is seldom used, although milder than the sulphate. It is also used as a collyrium in chronic ophthalmia.

The dose of verdegris to produce its tonic effect is under gr. ss.; and to operate as an emetic, from gr. j. to gr. ij. In overdoses it quickly proves fatal, acting both locally, and on the nervous system; and, on dissection, the coats of the stomach appear much thickened, and of a green colour. We formerly suggested the idea that fine filings of iron might precipitate the copper in its metallic state, and operate as an antidote: but this is now rendered unnecessary, as the experiments of Duval

and others have proved that sugar is the antidote of cuprous poisons.¹

Off. preparation. *Ærugo preparata*. D. *Ung. Subacetatis Cupri*. E.

2. SULPHATE OF COPPER.

Official. CUPRI SULPHAS. Lond. Edin. Dub. Sulphate of Copper.

Syn. Sulphate de cuivre, (F.) Schwefelsaures Kupfer, (G.) Vitriuolo blo, (I.) Caparosa (S.) Zungbar (Arab.) Tuteyi, (H.) Tut'ha (San.)

A considerable part of this salt, which is the blue vitriol of commerce, is obtained by evaporation from the water of some copper mines. Its origin is derived from the natural sulphurets of copper, which suffering a chemical change from exposure to a moist atmosphere, are converted into the sulphate, and washed down by the rain and other water of the mines. It is also obtained by roasting copper pyrites, and exposing them to the action of air and moisture; in which case, as well as in the former, the compound is oxidized by attracting the oxygen of the surrounding atmosphere, at the same time that it changes the sulphur into sulphuric acid; so that by the gradual combination of these the sulphate is produced, and is then extracted by solution, and crystallized.

Qualities. — Sulphate of copper is inodorous, and has a very harsh, acrid, styptic taste. It is in semitransparent crystals, which undergo a slight degree of efflorescence when exposed to the air: their form is that of a rhomboidal prism; and their colour a deep rich blue. Its specific gravity is 2.1943: and, according to Chenevix, it consists of 42.6 parts of hydrate² of copper, 33.0 of acid, and 25.4 of water of crystallization.

Sulphate of copper is soluble in four parts of water at 60°, and less than two at 212°. The solution reddens litmus paper, showing an excess of acid. It is decomposed by the alkalies and alkaline carbonates, the sub-borate of soda, the acetate and superacetate of lead, and acetate of iron: and is precipitated by all the astringent vegetable infusions and tinctures, which are therefore incompatible in prescriptions with this salt.

Medical properties and uses. — Sulphate of copper is emetic, astringent, and tonic, when taken internally. With a view to its emetic effect it has been given in the early stage of phthisis, and where laudanum has been taken as a poison³; and, as an astringent and tonic, in alvine hæmorrhagies, intermittent fever, epilepsy, and some other spasmodic affections: but as the list of materia medica contains equally powerful and less

¹ Vide *Traité des Poisons*, &c. par P. M. Orfila, tome. i. p. 289.

² From this water at the Parys mine, a large supply of copper is obtained, by decomposing the sulphate, by throwing into the water old iron hoops.

³ The hydrate consists of copper 25.6, oxygen 6.4, and water (which is intimately combined with the oxide) 10.6 parts. This water, as well as the water of crystallization, is expelled when the sulphate is decomposed by heat.

⁴ See *Medico-Chirurgical Transactions*, vol. i.

injurious remedies, its internal exhibition ought to be altogether discontinued. Externally it is employed as an escharotic to consume fungus; and in solution as a stimulant to foul obstinate ulcers. Pledgets dipped in a weak solution of it are also, sometimes, used as a styptic in epistaxis, and other external hæmorrhagies, and a still weaker solution is a useful collyrium in some kinds of ophthalmia. It forms the base of a very unchemical preparation, Bate's *aqua camphorata*, which Mr. Ware recommends, diluted with sixteen parts of water, in the purulent ophthalmia of infants.

As an emetic the dose is from grs. ij. to xv., in fʒij of water; but as a tonic it should be given in the form of pill, beginning with gr. ʒ, and gradually increasing the dose to grs. ij.

Official preparation. *Solutio Cupri Sulphatis composita*. E.

CURCUMA. Roscoe, *Linn Trans.* viii. 354.

Cl. 1. Ord. 1. Monandria Monogynia. Nat. ord. Scitamineæ Linn. Drymyrrhizæ Juss.

Gen. Char. Anther double, two-spurred. Filament petal-like, three-lobed, bearing the anther in the middle.

Sp. 1. C. Zedoaria.¹ Zedoary. Amomum Zedoaria. Willd. Spec. Plant. i. 7.

Official. ZEDOARIA RADIX. Dub. Zedoary root.

Syn. Zedoire (F.) Zedoar wurzel (G.) Zedoaria (L.) Judwar (Arab.) Nirbisi (H. and San.) Banhaldi (Beng.)

This plant is a perennial, a native of the East Indies, growing in sandy open places in Ceylon and Malabar, where it is named *Acua* by the Brahmins; and flowering in April and May. The root is tuberous, oblong, and about the thickness of a finger; the leaves are palmated, broad, lanceolate, subsessile on their sheath; sericeous underneath; colour an uniform green²; and the scape, which rises from among them is naked, and terminated by a lax cylindrical truncated lateral spike of flowers.

The best zedoary root comes from Ceylon, in firm, short wrinkled pieces, of an ash colour externally. It should be heavy, and not worm-eaten.

Qualities.—The odour of zedoary root is fragrant, and somewhat like that of camphor, the taste biting, aromatic, and bitterish, with some degree of acrimony. The pieces break with a short close fracture, are pulverulent, and internally of a brownish red colour. Its active principles are partially extracted by water, and more completely by alcohol. In distillation with water, a heavy, greenish blue essential oil is obtained, which deposits camphor. It seems to contain, independent of its aromatic and bitter principles, a large proportion of fecula.

¹ The excellent reasons given by Mr. Roscoe for separating this plant from the genus *Amomum*, induce me to prefer his authority to that of Willdenow in this instance.

² Roxburgh; vide *Asiatic Researches*, 8vo. vol. xi. p. 165.

Medical properties and uses.—This root is tonic and carminative. It was much employed by Avicenna, and the Arabians, in vomitings, colics, lientery, difficult menstruation, and as an antidote for venomous bites. It is certainly an agreeable stomachic, and useful in flatulent colic, but it is scarcely ever used by modern practitioners. The dose of the powdered root may be from grs. viij to ʒss, two or three times a day.

CUSPARIA. Vide *Bonplandia Trifoliata*.

CYDONIÆ SEMINA. Vide *Pyrus Cydonia*.

DAPHNE.¹ *Spec. Plant. Willd.* ii. 415.

Cl. 8. Ord. 1. Octandria Monogynia. *Nat. ord.* Vepreculæ Linn. Thymelææ Juss.

G. 773. Cal. none. Cor. four-cleft, corollaceous, withering, inclosing the stamens. *Drupe* one-seeded.

* *Flowers lateral.*

Species 1. *D. Mezereum*. Common Mezereon. *Med. Bot.* iv. 716. t. 68. *Smith Flor. Brit.* 420.

Officinal. MEZEREI CORTEX. *Lond.* DAPHNES MEZEREI CORTEX.

Edin. RADICIS CORTEX. *Dub.*² The bark of the root.

Syn. Laureole gentile (F.) Kellerkals (G.) Mezereo (L.)

Mezereon grows wild in England and the north of Europe; but for medical use, and as an ornamental shrub, it is cultivated in gardens. Its flowers expand in March, before the leaves. It is a hardy plant, seldom exceeding four feet in height, with a strong woody branching stem, covered with a smooth pale olive-brown cuticle, and a tough fibrous inner bark. The root is of a fibrous texture, pale-coloured, with a smooth, olive-coloured bark: the leaves, which are protruded from the extremities of the branches, are tender, pale green, deciduous, lanceolate, sessile, entire, and smooth: the flowers are of a pale rose colour, odorous, surrounding the branches in clusters below where the leaves are sent off; they are sessile, two- three- and four-clustered, with deciduous bractæ at the base of each cluster; monopetalous, tubular, and the lip divided into four oval spreading segments. The stamens are alternately shorter; the four higher ones displaying their yellow anthers at the mouth of the tube: the germen is oval, supporting a flat stigma, on a very short style; and the fruit a red, pulpy drupe, containing one round seed. There is a variety of the mezereon with white flowers, and yellow fruit; but the medicinal effects of both are the same.

For medical use the roots are dug up in the autumn, after the leaves have fallen. The cuticle of the dried root is corrugated, and the inner bark has a white cotton-like appearance.

¹ Δαφνι, Theophrastus, Dioscorides.

² The Dublin College, in its Pharmacopœia has quoted *Eng. Bot.* 119. erroneously the plate referred to being that of *Daphne Laureola*, Spurge Laurel.

Qualities.—The inner bark of every part of this plant, when fresh is very acrid, capable of producing inflammation, vesication, and a discharge of serum when applied to the skin; and when chewed excites a considerable heat of the mouth and fauces, which continues for many hours afterwards. The fruit is equally acrid, acting as a corrosive poison, if eaten. The bark retains its acrimony when dried. It yields its virtues to water and vinegar. By digesting the bark in alcohol, then evaporating the liquid to separate the resin, and diluting the residual fluid with water; filtering and adding acetate of lead, Vauquelin obtained a copious yellow precipitate, which, when freed from the lead, by means of sulphuretted hydrogen gas, he found to be a vegetable principle, *sui generis*. He has given it the name of *Daphnin*.¹

Medical properties and uses.—It operates as a stimulating diaphoretic, increasing the general arterial action, and determining powerfully to the surface; but is apt to disorder the *primæ viæ*, and occasion vomiting and purging. It was long externally employed as a stimulus to ill-conditioned ulcers; and the recent bark macerated in vinegar, and applied to the skin, is recommended in France for producing and keeping up a serous discharge in chronic local affections. To form the issue, the bark must be renewed every night and morning; and afterwards once in twenty-four hours, to keep open the drain. Dr. Withering employed it successfully as a local stimulant in a case of difficulty of swallowing, occasioned by paralysis. Although the case was of three years' standing, the patient recovered the power of swallowing in about a month, by very frequently chewing thin slices of the root. For this purpose it should be sliced longitudinally, as the acrimony resides in the bark only, the woody fibre being nearly inert. Internally a decoction of this bark has been used against chronic rheumatism, scrofulous swellings, lepra, and some other cutaneous diseases; and till lately, it was considered as an anti-venereal remedy of great efficacy. The dose in substance is gr. j, to grs. x.

Officinal preparation. *Decoctum Daphnes Mezerei*. E.

DATURA. *Spec. Plant. Willd.* i. 1007.

Cl. 5. Ord. 1. Pentandria Monogynia. *Nat. Ord.* Solanaceæ Linn. Solaneæ Juss.

G. 377. Corolla funnel-shaped, plaited. Calyx tubular, angled, deciduous. Capsule with four valves.

Species 2. D. *Stramonium*. Thorn Apple, *Med. Bot.* 2d. edit. 197. t. 74. *Smith. Flor. Brit.* 253.

Officinal. DATURÆ STRAMONII HERBA. *Edin.* STRAMONIUM;

¹ *Ann. de Chim.* lxxxiv. p. 174.

HERBA. *Dub.* The herbaceous part of the Thorn Apple plant.

Syn. Pomme Epineuse (F.) Stechapfel (G.) Stramonio (I.)

This annual plant is a native of America, but is now naturalised to this country, and found growing on dunghills and by road-sides¹, from the fruit ejected from gardens; flowering in July and August. It rises about two feet in height, with a round stem, branching, and dichotomous above; spreading and leafy. The leaves, which spring from the forks of the stem on long round petioles, are large, of a dark green colour on the upper surface, and pale beneath, irregularly ovate-triangular in figure, sinuated, and unequal at the base. The flowers are large, axillary and solitary, on short erect peduncles. The calyx is about two inches in length, tubular, pentangular, and five-toothed: the corolla longer, of a white colour, funnel-shaped, and plaited; with the filaments, which support oblong flat anthers, adhering to the tube; and the style filiform, terminated with a thick club-shaped stigma. When the corolla and its included parts drop, the calyx also separates, except the base, which remains, and, becoming reflex, enlarges with the receptacle as a support to the fruit. The fruit is a large, fleshy, ovate-roundish, four-cornered capsule, beset with sharp awl-shaped spines; four-celled at the base, two-celled at the apex, and containing a great number of reniform compressed seeds. Both the leaves, capsule, and seeds are medicinally used.²

Qualities.—The whole herb has a narcotic, foetid odour, producing head-ach, and a bitterish nauseous taste; and gives to the saliva a deep green tinge when chewed. According to Wendenberg³, it contains gum (*mucus*?) and resin, a volatile matter (which I find to be carbonate of ammonia), and a narcotic principle. Its virtues are extracted both by water and alcohol. The watery infusion is transparent, with a very pale yellow hue, which is dissipated by acids, but very much deepened by the alkalies. It throws down whitish precipitates with acetate and superacetate of lead, and a black with nitrate of silver. Solution of sulphate of iron strikes a deep olive colour, and muriate of mercury renders it milky; but neither is precipitated till after a very considerable time.

Medical properties and uses.—Thorn apple is narcotic and stimulant. Baron Stoeck first recommended it as an internal remedy, in cases of mania and epilepsy; but, as Cullen remarks, he was less violent in his commendations of it than of

¹ Very common about London.

² According to Dr. W. Ainslie, this species of *Datura* is not found in India; but the *D. fastuosa* Dkétora (*Hind.*) *Dustura* (*Sans.*) is well known and medicinally used. *Mat. Med. of Hindostan.* 4to. p. 42.

³ *Dissertatio Medica de Stramonii Usu*, &c. Upsal. 4to.

the other narcotic plants which he introduced.² It was afterwards tried by other continental physicians with unequal success; particularly by Greding, who made the greatest number of trials of it. But the most decided experiments in its favour have been made by Dr. Barton of America, who regards it as a remedy of great efficacy. He found that when the dose of the dried herb was gradually increased to thirty grains, it dilated the pupil, and produced paralysis of the eye-lids; effects which were removed by a blister. Cataplasms of the bruised fresh leaves have been successfully used as an application to inflammatory tumours, and for discussing masses of indurated milk in the breasts of nurses: and an ointment made with the powdered leaves allays the pain of hæmorrhoids. Smoking the plant in the manner of tobacco, affords relief in the paroxysm of spasmodic asthma; a practice introduced into England from Ceylon. The inspissated expressed juice of the leaves has been usually given; and the extract has been lately found almost specific in severe chronic pains. The root is given by the native practitioners in the Carnatic, in violent head-achs. Hufeland recommends the form of tincture. The dose of the extract at first should not exceed grs. ss, twice a day; increasing the quantity gradually, until grs. xii. be taken in twenty-four hours.

Several instances of the fatal effects of stramonium, when eaten by mistake, are recorded by authors.³ It produces delirium, stupor, convulsions, furious madness, paralysis, cold sweats, and death. As these effects depend on the narcotic principle, the best antidote is vinegar, after the stomach has been emptied.

DAUCUS. *Spec. Plant. Willd.* i. 1389.

Cl. 5. Ord. 2. Pentandria Digynia. Nat. Ord. Umbellatæ.

G. 53. Cor. somewhat rayed. Flor. of the disk abortive. Fruit hispid with hair.

Species 1. D. Carota.³ Common Carrot. *Med. Bot.* 2d edit. 130. t. 50. *Smith Flora Brit.* 300.

Officinal. DAUCI (*hortensis*) RADIX. — (*agrestis*) SEMINA. Lond.

DAUCI CAROTÆ RADIX. Edin. DAUCUS SYLVESTRIS; SEMINA.

Dub. The root of the cultivated Carrot, and the seed of Wild Carrot.

Syn. Carotte (F.) Karotte; Mohrrübe (G.) Carota (L.) Zanahoria (S.) Istifleen (Arab.) Gajer (H.) Garjara (San.)

The carrot is a biennial indigenous plant. In its wild state it is found abundantly in pastures and on hills⁴; flowering in

¹ *Materia Medica*, ii. 281.

² It is said to be sometimes used by the Turks, instead of opium, or as a substitute for wine; and the Chinese infuse the seeds in beer. *Spratt's Hist. of the Roy. Soc.* 162.

³ *Scaphulias agrestis*, Dioscoridis.

⁴ We have seen it in great abundance on the range of chalk hills which overlook Rye-gate in Surry.

June and July. It is cultivated for culinary purposes and feeding cattle. The root is spindle-shaped, fleshy, and of a yellow colour; throwing up a round furrowed stem, which rises about two feet in height, and sends off long, erect, naked, floriferous branches. The leaves are large, petiolated, thrice-pinnate, cleft, and hairy. The flowers are in many-rayed compound umbels, flat on the top, and spreading, but after the flowering season they become condensed in a concave form. The involucre consists of several narrow trifid leaves; the involucrel is more commonly simple. The marginal flowers are white or yellow; the central, which are abortive, often of a dark blood colour. The seeds are in pairs, egg-shaped, convex, rough and bristled on one side, and flat on the other. These appearances are changed by cultivation, which also increases the size and the nutritious matter of the root.¹

Qualities. — The sensible qualities of the root of the cultivated carrot are well known. It contains chiefly mucilage and sugar. The seeds of the wild variety have an aromatic odour, and a warm pungent taste; qualities depending on an essential oil, which may be separated by distillation with water.

Medical properties and uses. — The root of the garden carrot is emollient and antiseptic: and is successfully used when boiled and beaten to a pulp, as a poultice to correct the discharge of foetid and ill-conditioned sores; and to allay the pain of carcinomatous and phagedenic ulcers. The seeds are carminative and diuretic; and hence useful in flatulent cases; but they possess no efficacy in gravel for which they have been extolled.²

The dose of the bruised seed is from ʒj to ʒj, or more.

DELPHINIUM. *Spec. Plant. Willd.* ii. 1226.

Cl. 13. Ord. 3. Polyandria Trigynia. *Nat. ord.* Multisiliquæ *Linna.*
Ranunculaceæ Juss.

G. 1061. Cal. none. Pet. five. Nect. bifid, horned behind. Pods 3 or 1.

*** Three-capsuled.

Spec. 13. D. *Staphisagria*.³ Staves Acre. *Med. Bot.* 2d edit. 471.
t. 168.

Officinal. STAPHISAGRIÆ SEMINA. *Lond. Dub.* DELPHINII STAPHISAGRIÆ SEMINA. *Edin.* Staves Acre seeds.

Syn. Staphisagre, (F.) Stephanskraut laus kerner, (G.) Staphisagria, (L.) Piojenta, (S.)

This species of larkspur is a biennial plant, a native of the south of Europe, flowering from June to August. It is a handsome plant, from one to two feet in height, with a downy, erect, purplish, simple stem; and palmated leaves, the lobes of which are five or seven in number, of a pale green colour, oblong, ovate,

¹ Carrots are seldom sufficiently boiled; but when well boiled, they are very digestible and nutritious.

² The red central flowers of the umbels have been extolled in epilepsy.

³ *Staphisagria*, Dioscoridis.

and sometimes acutely indented. The flowers are of a blue or purplish colour, in an open terminal spike, and supported on long flower-stalks; the uppermost petal projected backwards so as to form a hollow spur, which encloses two spurs of the superior leaflets of the nectary. The filaments are about twenty and short, bearing large yellow anthers; the germens three, close together, tapering, downy, and crowned with short filiform styles, having simple stigmas. The seeds are rough, brown, triangular, and contained in straight oblong capsules. They are usually imported from Italy; for although the plant is occasionally reared in our gardens¹, yet it is difficult to preserve it through the winter, so as to enable it to perfect its seed.

Qualities.—Staves acre seeds have very little odour, but that little is disagreeable, their taste is bitter, acrid, and hot. They are yellowish within, and covered with a rough blackish cuticle. Their virtues are partially extracted by water, and completely by alcohol.

Medical properties and uses.—These seeds are emetic and cathartic; but their operation is so violent that they are never internally administered. Owing to their stimulating powerfully the salivary gland, when chewed, they have been used as a masticatory in toothach; but they are chiefly employed in powder, mixed with hair powder for destroying pediculi of the head.

DIANTHUS.² *Spec. Plant. Willd.* ii. 671.

Cl. 10. *Ord.* 2. Decandria Digynia. *Nat. Ord.* Caryophyllei Linn. Caryophyllæ Juss.

G. 893. *Calyx* cylindrical, one-leaved; with four scales at the base, *Petals* five, with claws. *Capsule* cylindrical, one-celled.

** *Flowers* solitary, many on the same stem.

Species 9. *D. Caryophyllus.* Clove Pink, or Gillyflower.

Med. Bot. 2d ed. 579. *t.* 205. *Smith Flor. Brit.* 461. *Eng. Bot.* 214.

Officinal. DIANTHI CARYOPHYLLI FLORES. *Edin.* CARYO-

PHYLLUM RUBRUM; FLORES. *Dub.* Flowers of the Clove Pink.

Syn. Giroflée musquée, (F.) Gewürzhafte riechende Gartennelke (G.) Garofano, (I.) Clavel, (S.)

This is a perennial plant, a native of Italy, but found growing wild on ruined walls, as those of Rochester, Deal, and other old castles in England, flowering in July.³ It is cultivated in gardens, for medicinal use; in which case the flowers become full, and improve their native odour. The root is firm, and fibrous. The stems, which rise from among tufts of channelled linear glaucous leaves, that are finely toothed a little above the base, but entire and smooth towards the apex, are erect,

¹ It was first cultivated in England by Gerard in 1596.

² From *Διὸς ἄνθος*, The flower of Jove; yet it was unknown to the ancients.

³ Ray and Hudson suppose it to be an outcast of gardens, and not an indigenous plant of England.

branched, and panicled, bearing many solitary flowers. The whole herb is glaucous. The calyx is striated, tubular, five-cleft, of a pale green colour, with four rhomboid, pointed scales at its base, about one-fourth of its length: the petals vary in colour from a pale flesh red to the deepest carnation; are unequally crenated, smooth at the orifice, with long narrow whitish claws. The stamens are often short and abortive; the styles long, recurved, and downy on the upper side.

The varieties of this species of *Dianthus* produced by horticulturists are very numerous. For medicinal use those should be chosen which have the richest colour, and most spicy odour. The petals must be picked when the flower is fully blown.

Qualities — The odour of the petals is fragrant and aromatic, resembling that of the clove spice, the taste slightly bitter, and subastringent. Both water and alcohol extract their sensible qualities; and they yield an essential oil by distillation with water. The infusion strikes a black colour with sulphate of iron; acids redden its colour; and alkalies change it to green.

Medical properties and uses. — Notwithstanding the testimony of our forefathers in favour of the efficacy of these flowers in nervous affections, modern practitioners value them merely for their sensible qualities; and employ them only to give a pleasant flavour and fine colour to a syrup, which is a pleasant vehicle for the exhibition of more active medicines.

Official preparation. *Syrupus Dianthi Caryophylli*. E. D.

DIGITALIS. *Spec. Plant. Willd.* iii. 283.

Cl. 14. Ord. 2. Didynamia Angiospermia. Nat. Ord. Luridæ Linn. Scrophulariæ Juss.

G. 1155. Cal. five-parted. Corolla bell-shaped, five-cleft, bell-shaped. Capsule ovate, 2-celled.

Spec. 1. D. *purpurea*. Purple Foxglove.¹ *Med. Bot.* 2d edit. 218. t. 76. *Smith Flora Brit.* 665. *Eng. Bot.* 1297. *Withering's Account of Foxglove.*

Official. **DIGITALIS FOLIA.** *Lond. Dub.* **DIGITALIS PURPUREÆ FOLIA.** *Edin.* Foxglove leaves.

Syn. Grande Digitalis (F.) Fingerhut (G.) Digitale Porporina (I.) Dedalera purpurea (S.)

Foxglove is an indigenous biennial plant, found growing generally on the sides of hills, or where the soil is dry, sandy or gravelly; flowering from the middle of June to nearly the middle of August. The root is knotty and fibrous, sending up an erect stem about four feet in height; round, downy, and leafy. The lower leaves are in tufts, large, about eight inches in length, and three in breadth, ovate and pointed, with bordered fleshy peduncles: the upper or stem leaves are alternate, sparse, and lanceolate; and both kinds have bluntly serrated,

¹ It was named *Digitalis* by Fuchsius, the first author who notices its medical properties, from the German name Fingerhut, a finger stole.

nearly crenate, edges, and wrinkled velvety surfaces; with the upper surface of a beautiful deep green colour, and the under paler and more downy. The flowers, which are numerous, are attached on footstalks to one side of the upper part of the stem, so as to allow them to hang down, and form a very elegant terminal spike. At the base of each footstalk is a sessile pointed floral leaf. The uppermost segment of the calyx is narrower than the other four; the corolla is monopetalous, of an oblong bell-shape, and about the size of the little finger of an ordinary glove; bellying on the lower side, with a short tubular base. The upper lip is slightly cloven, and more reflected than the under, which is larger. The corolla is guarded by long hairs at the mouth; its general colour is a bright pinkish purple, with the tube white, and the bellying part sprinkled on the inside with dark purple spots on a white ground, which give to the outside a speckled appearance. The filaments are white, curved, bearing large oval yellow anthers; the germen is pointed, supporting a simple style with the apex cloven. The seed-vessel, which is a pyramidal capsule with a double partition produced by the inflected margins of the valves¹, contains many small ferrugineous, punctated seeds.

The leaves are the parts of the plant medicinally used. They should be gathered when the plant is in flower, and those only which are fresh selected. "The leaf-stalks and midrib should be rejected, and the remaining part should be dried either in the sun-shine, or on a tin-pan or pewter dish before the fire, or the plant be hung up, each leaf separate, in a warm kitchen." Practitioners ought annually to obtain a supply of the recent leaves, in the month of July, and dry them themselves; as in the herb-shops they are often so ill dried as to appear black, in which state they are useless. The powder should be kept in closely stopped opaque phials.

Qualities. — Recent foxglove leaves are inodorous; but in the dried state they have a slight narcotic odour, and a bitter nauseous taste. Both water and alcohol extract their virtues. The watery infusion has a pale olive green colour, with the unpleasant odour and taste of the plant. It does not precipitate solutions of galls, tartarized antimony, nor sulphate of iron which only deepens its colour; but produces a yellowish precipitate with muriate of mercury, and a blackish violet very copious one with nitrate of silver. The dry powder, which should have a beautiful green colour, moistened and triturated with lime or calcined magnesia, and a glass rod dipped in muriatic acid held over it, exhibits copious white fumes, proving the presence of ammonia. The presence of ammonia is also appa-

¹ *Gartner de Fructibus*, &c. i. 247. t. 53. f. 6.

rent in the tincture; which is rendered milky by water.¹ Ten grains of the powder macerated in f 3fs of sulphuric ether lost three grains of its weight, and yielded all its colour to the ether; and the ethereal tincture, on being evaporated on water, left a pellicle of dark-green unctuous resinous matter, whilst some yellowish extractive was dissolved in the water, and precipitated afterwards by oxymuriatic acid. From this imperfect analysis, foxglove appears to contain ammonia, extractive, and a pea-green resinous matter in which its narcotic power resides.

Medical properties and uses.—Digitalis is directly sedative, and diuretic. It weakens the force of all the vital functions; and by a proper exhibition of it, the frequency of the pulse may be diminished any number of pulsations, and regulated at the pleasure of the practitioner; whilst at the same time it admits, to a certain extent, of the employment of such medicines as increase the firmness of the arterial action, and give tone to the habit. When given to the full extent of which the system can admit, the pulse intermits, and vertigo, indistinct vision, and nausea with vomiting, or purging, occur; and if after these indications the quantity be still increased, or if any considerable portion of the recent herb be inconsiderately swallowed, it produces delirium, hiccough, cold sweats, convulsions, syncope, and death. It is supposed, notwithstanding its sedative effects are acknowledged, to increase the action of the absorbent system; but although the discharge of urine is very considerably increased during its use, and the load of water with which the body is oppressed in dropsies be thrown off, yet, it is not easy to conceive how a direct sedative can operate as a stimulant; and therefore the *modus operandi* of foxglove, in producing its diuretic effect, may be regarded as still unexplained.²

As a *sedative* foxglove was early used in some acute diseases, but its powers were not understood. It is now efficaciously employed in inflammatory diseases; in active hæmorrhages, particularly from the uterine vessels, when the pulse is sharp, throbbing, and frequent; in mania; in scrofula; and in most cases of increased vascular action, or in which it is essential to lessen the usual impetus of the blood, as in aneurism.

¹ Destouches, a French chemist, who analysed Foxglove, obtained also much carbonate of ammonia by distilling the aqueous extract. He obtained besides sulphate of potash and of lime, phosphate of lime, carbonates of lime, and of potash, and acetate of ammonia.

² This term implies, as I understand it, any substance which diminishes the action of the heart and arteries, without first increasing it.

³ Dr. Baillon observed a curious effect of posture in ascertaining the real effects of digitalis on the pulse. When by gradually increased doses he took it to the extent of grs. vj. in the day, the pulse fell to 40 from 110. But when it was actually at 40, the erect posture would raise it to 100; when sitting it was 72, and when lying down 40. He observed the same effect in several patients to whom he gave it. — *Edin. Med. and Surgical Journal*, iii. 271.

Its beneficial effects in phthisis pulmonalis were known so early as 1710; and passing experience confirms the justness of the praises bestowed on it by a writer of that period.¹ Dr. Ferriar found its utility in this complaint much increased by combining it with myrrh and sulphate of iron.² Its use has also been extended to venereal ulcerations, chronic rheumatism, hooping-cough, and some spasmodic affections: and as an external application Hufeland recommends it to be used in the form of fomentation for dispelling glandular swellings.

As a *diuretic* the use of foxglove was introduced by Dr. Withering in 1775.³ He found that its beneficial effects in dropsies were more certainly obtained in those constitutions in which there is a laxity of fibre, pale countenance, feeble intermitting pulse, and cold skin; and where the swelling easily pits. But in florid habits, with great strength, tense fibre, and a hot dry skin, its sedative effect is perceived, but no diuresis follows. "If the belly in ascites be tense, hard, and circumscribed; or the limbs in anasarca be solid and resisting, we have but little hope."⁴ Experience has confirmed these judicious observations; and it is found that where this favourable state does not exist, it may be produced by bleeding, and the free use of neutral salts, calomel, and squill, all of which lower the system. The diuretic effect is checked when much nausea is present; and Withering says purging also checks it; but I have not found this to be the case. The kinds of dropsy in which its effects are most useful, are ascites, anasarca, hydrothorax, and that species of dropsy which succeeds parturition, where the legs and thighs swell, become pale and semi-transparent, with pain in both groins. It has also been found of the greatest service when conjoined with nitrous acid, in the dropsy which occurs in broken-down constitutions, that have been long harassed by mercury.⁵ Digitalis will not cure a dropsy attended with palsy, unsound viscera, or other complications of disease; but by allaying the urgency of the symptoms it gains time for other medicines to act. No benefit has hitherto been obtained from its use in hydatids, and hydrocephalus.

Foxglove is administered in substance, or in decoction, or the watery infusion, or in tincture (see *Preparations*). When given in substance, it is frequently combined with aromatics, soap, or ammoniacum; and most advantageously with calomel and opium, when it is required only to produce its diuretic ef-

¹ Salmon. See *The Edin. Med. and Surg. Journal*, v. 303.

² *Essay on the Medical Properties of Digitalis*.

³ He was induced to try it from finding it the active ingredient in a family receipt for the cure of dropsy, regarding which his opinion was asked.

⁴ *Withering's Account*, &c. 189.

⁵ Carmichael on Diseases which have been confounded with Syphilis, 4to. p. 53-6.

fects. It is always proper to begin with a dose not exceeding gr. j. of the powdered leaves given in a pill, twice a day; and gradually to increase it till its effects are apparent either on the kidneys, the stomach, the pulse, or the bowels. The medicine must then be discontinued; but in dropsy it may be repeated again after an interval, if the whole of the water be not evacuated. During its use diluents are useful and necessary; and immediately it is discontinued the strength should be recruited by generous food, steel, and cordial tonics. The deleterious effects of an overdose are to be counteracted by cordials, as brandy, mint tea, and opium; and when these are not sufficient, by blisters.

Official preparations. *Decoctum Digitalis*. D. *Infusum Digitalis*. L. E. *Tinctura Digitalis*. L. E. D.

DOLICHOS. *Spec. Plant. Willd.* iii. 1037.

Cl. 17. *Ord.* 4. *Diadelphia Decandria*. *Nat. Ord.* *Papilionaceæ* *Linn.* *Leguminosæ* *Juss.*

G. 1349. At the base of the standard, two oblong parallel scales, compressing the wings underneath.

* *Twining.*

Sp. 16. *D. pruriens*. Cowhage. *Med. Bot.* 2d. ed. 422. t. 153. *Chamberlaine's Practical Treatise on the Efficacy of Stizolobium or Cowhage.*

Off. * **DOLICHI PUBES.** **DOLICHI PRURIENTIS PUBES.** *Edin.*

DOLICHES SETÆ LEGUMINUM. *Dub.* The hairs of the *Dolichos* pod.

Syn. *Kiwách* (H.) *Capicach'hu* (San.)

This is a perennial climbing plant, a native of America, and the East and West Indies. In Bengal, where it is named *Cad-juct*, it flowers in the cool months from September to March. The root is fibrous; the stem herbaceous, cylindrical, voluble, climbing, and branching; with ternate leaves, on footstalks from six to fourteen inches long, given off alternately at the distance of a foot from each other. The central leaflet is rhomboidal, the two lateral ones oblique, and all of them smooth on the upper surface, and hairy beneath. The flowers are papilionaceous, of a blood colour, peduncled, in pendulous solitary spikes, which hang from the axillæ of the leaves. The fruit is a coriaceous pod about four or five inches long, curved like the letter *f*, thickly covered with bristly short brown hairs; and containing three or five oval, compressed seeds.

The pods we receive are brought from the West Indies. If incautiously touched, the spiculæ with which they are beset separate easily, and, sticking in the fingers, occasion the most intolerable itching.

Medical properties and uses. — The spiculæ of *dolichos* pods operate as a mechanical anthelmintic. They have been found particularly useful in expelling the round worm, *lumbricus teres*, the spiculæ irritating, and aiding its expulsion, and wounding

M

it, without affecting the intestines. The best mode of preparing the remedy, is to dip the pods in syrup or molasses, and then, with a knife, to scrape off the hairs along with the syrup. When the mixture attains the thickness of honey, it is sufficiently impregnated with the hairs, and is fit for use.

The dose of this mixture, for a child of three or four years old, is a tea-spoonful, given in the morning for three days, and then followed by a brisk cathartic.

DORSTENIA. *Spec. Plant. Willd.* i. 682.

Cl. 4. *Ord.* 1. Tetrandria Monogynia. *Nat. Ord.* Scabridæ Linn. Urticæ Juss.

G. 244. *Receptacle* common, one-leafed, fleshy, in which solitary seeds are nestled (or placed in sockets without attachment.)

Spec. 5. *D. Contrajerva.* *Contrayerva.* *Med. Bot.* 2d edit. 705. 240.

Officinal. CONTRAJERVÆ RADIX. *Lond.* DORSTENIÆ CONTRAJERVÆ RADIX. *Edin.* Contrajerva Root.

Syn. Contrajerva (*E.*) Giftwurz (*G.*) Contrajerva (*L.*) Contrahierba (*S.*)

This is a perennial plant, a native of Peru, Mexico, and some of the West India islands. The root is fusiform, knotty, and branching, compact, furnished with many rough fibres; externally of a brown colour, and internally whitish. It sends up several leaves, which are about four inches in length and the same in breadth; of an irregular shape, but in general deeply lacinated into five or seven obtuse parts; and placed on long radical footstalks, winged towards the leaves. The fructification, which is remarkable, and on radical stalks or scapes which rise about four inches high, is a fleshy receptacle, shaped like an animal placenta, about an inch long, and three-fourths of an inch broad, placed vertically: and containing on its upper surface very small, scarcely conspicuous flowers, situated closely together, immersed in the receptacle, and occupying the whole of its disc. The capsule possesses an elastic power when ripe, by which the seeds are thrown out with considerable force.

Monardus is the first author who mentions this root, which, he says, is called Contrajerva¹ by the Spanish Indians, on account of its alexipharmic qualities. Dr. Houston², however, asserted that the officinal contrajerva was the roots of two other species of Dorstenia, the *D. Houstonia* and *D. Drakena* of Willdenow; but the British Colleges follow the authority of Linnæus. It is brought to this country from the West Indies, packed in bales; in pieces of about two inches long.

Qualities. — Contrajerva root has a peculiar, but not unpleasant odour, and a bitterish, warm taste, leaving a pretty lasting impression on the tongue. It preserves its qualities when

¹ The Spanish, for the English word *antidote* is *contrahierba*.

² *Phil. Trans.* No. 421. p. 195.

dried; and in the state of powder. Both water and alcohol, assisted by heat, extract its virtues. The watery decoction is of a dark brownish red colour, and exceedingly mucilaginous. — The alcoholic tincture reddens litmus paper, is not altered by a solution of sulphate of iron, but is precipitated by water.

Medical properties and uses. — This root is a stimulant sudorific and tonic. Huxham and Pringle first pointed it out as a remedy well suited to fevers of a typhoid type, and it is often employed in malignant eruptive diseases, dysentery, and in some kinds of diarrhoea. It is also useful in atonic gout, chronic rheumatism, and the fever attending dentition in weak infants.

The dose of the powdered root is from grs. v. to ʒj; but it is seldom used alone.

Official preparation. *Pulv. Contrajervæ compositus*. L.

DRYOBALANOPS. *Asiatick Researches*, vol. xii. p. 539. Cl. 13. Ord. 1. Polyandria Monogynia. Nat. Ord. Guttiferæ Juss. *G. nora*. Calyx one-leafed, permanent; enlarged into a gibbous cup, with five ligulate long scarioso wings. Corolla five petalled. Capsule superior, one celled, three valved, seed solitary. Embryo inverse, without perisperm.

Species. D. *Camphora*. *Asiatick Res.* vol. xii. p. 539. Plate 4.

Official. CAMPHORA. Lond. Edin. CAMPHORA; RESINA. Dub. Camphor.

Syn. Camphire (F.) Der Kampfer (G.) Canfora (I.) Alcanfor (S.) Cafoor (Arab.) Carpoorum (Tam.) Carphura (San.)

That the Camphor brought to Europe, from the islands of Sumatra and Borneo, is not the product of the *Laurus Camphora*, was remarked by Kœmpfer¹; but no accurate description has yet been given of the tree which yields it. Mr. H. T. Colebrooke has, however, lately been enabled to determine the genus to which it belongs, and to which we have referred it, from the examination of some seeds in a very perfect state, sent from Tapanooly to Calcutta.

The Dryobalanops *Camphora* is a native of forests on the north-western coast of Sumatra: and especially in the vicinity of Tapanooly. It is stated by Mr. Prince to be found in abundance from the back of Ayer Bongey, as far north as Bacougan, a distance of 250 miles. It grows to a great height, and the trunk, which is arboreous and covered with a brownish bark, often measures six or seven feet in diameter. The leaves are opposite below and alternate above, elliptical, obtusely acuminate, or rather beaked, parallel veined, entire, smooth; 3.7 inches long, 1.2 broad, and supported on short petioles; with subulate, caducous stipules in pairs. The perianth is a

¹ "Camphoram naturalem et crystallinam perquam pretiosam ac rarum impertitus arbor in Sumatra et Borneo insulis. Sed hæc arbor ex Daphneo sanguine non est." *Amen. Exot.* p. 773.

one-leafed, five-parted, persistent capsule, which is superior, ovate, woody, fibrous, longitudinally furrowed, embraced at the base by the calycine hemispherical cup, and surrounded by its enlarged leaflets, which are converted into remote, foliaceous, spatulate, rigid, reflex wings: one-celled and three-valved. The seed is solitary, conforming to the cavity of the capsule; and has a strong terebinthinate fragrance.

The Camphor forms in the heart of the tree, occupying portions of a foot and a foot and a half long, at certain distances: but the younger trees yield oil only, which has nearly the same properties as the camphor, and would ultimately be converted into the concrete substance. The natives, in searching for the camphor, make a deep incision in the trunk, about 14 or 18 feet from the ground, with a *billing* or Malay axe; and when it is discovered they fell the tree, and cut it into junks of a fathom long, which are again split. The camphor is found in a concrete state, and resembles whitish flakes in perpendicular layers, occupying a space the thickness of a man's arm. A middling sized tree will yield nearly eleven pounds, and a large tree double that quantity.

For the *qualities and medical properties* of Camphor. See *Laurus Camphora*.

ELETTARIA. *Maton, Trans. of the Linnean Society, vol. x. part. 2d.*

Cl. 1. Ord. 1. Monandria Monogynia. *Nat. ord. Scitamineæ Linn. Spec. E. Cardamomum.* The Cardamom Elettaria. *Van Rhee, (Elettari.) Hort. Malabar. vol. ix. t. 4, 5. Linnean Trans. vol. x. part 2d. Roxburgh. Ind. p. 3. N. 226. Asiatick Res. v. xi. p. 355.*

Official. CARDAMOMI SEMINA. *Lond.* AMOMI REPENTIS SEMINA. *Edin.* CARDAMOMUM MINUS; SEMINA. *Dub.* Lesser Cardamom Seeds.

Syn. Petit Cardamome (*F.*) Kleine Kardamomen (*G.*) Amomo minore (*L.*) Kukulah, Hal (*Arab.*) Purbi and Guzrate Cláchi (*H.*) Elá (*San.*)

The plant which produces these seeds is a native of India, growing on the mountains above Cochin and Calicut; in shady places on the declivities, and in the valleys. The cultivated plant does not flower till it is four years old. It rises twelve feet in height. The root is oblong, jointed, tortuous, of a whitish colour, and sending off numerous fibres. The stems which emerge from the root are simple stripes, like a reed, round, smooth, and the thickness of the human thumb. The leaves are alternate and sheathing, about four spans in length; broad, green, and striated with parallel veins; and have a strong sub-acrid, aromatic taste and odour. The midrib of the leaf on the upper surface is pale green; on the under a much deeper green.

* The camphor thus found, is called by the natives *Se Tantong*.

The flowers are in racemes which are sent off from the root, and creep along the ground: and are furnished with oblong leaflets like capsules. The calyx is monophyllous, inferior, small, and divided into three obtuse teeth at the margin: the corolla is monopetalous, tubular, and four-cleft; the three outer segments being long, narrow, and of a straw colour, and the central one large, broad, concave, and irregularly oval. The filament is broad, slightly grooved, supporting a large, double, emarginate, crestless anther, having a deep fissure between its lobes, to receive the style, which is slender, and bearing a funnel-shaped ciliated stigma. The capsule is berried, and trilocular.

The ripe fruit is gathered in November; and the capsules, which are dried over a gentle and slow fire, as they dry change from green to a whitish straw colour, and become thinner in the bark: whilst the permanent calyx and foot-stalk is detached by rubbing them between the hands.*

Three species of this genus are known; but that which is above described yields the officinal cardamoms. They are brought to this country in the Bengal ships in cases, each containing about 120lbs. weight. For the purpose of preserving them, they are kept in the capsules, which are small, triangular, striated, and of a pale, clear, straw colour.

Qualities.—Cardamom seeds have an agreeable aromatic odour, and warm spicy taste. They are easily separated from the capsule; and are of a brown colour, angular, corrugated, and pulverulent. Water, alcohol, and ether extract their virtues; the two latter most completely. The watery infusion has a turbid appearance; and lets fall a flocculent precipitate, on the addition of alcohol, the acids, solutions of sulphate of iron, muriate of mercury, and acetate of lead: but the sulphate of iron does not alter its colour. The alcoholic tincture is rendered milky by water. The ethereal has a yellowish green hue, and, when evaporated on the surface of water, leaves neither resin nor extractive, but a considerable portion of essential oil, which has the flavour and taste of the seeds in perfection. Cardamoms therefore seem to be entirely composed of fecula, mucus, and essential oil.

Medical properties and uses.—Cardamom seeds are carminative and stomachic. They are less stimulating than pepper, and are, therefore, used, united with rhubarb and magnesia, in the flatulent colic of children; and as a grateful addition to bitters in dyspepsia, and gouty affections of the stomach: but

* In gathering the fruit, the fruit panicles are plucked up by the roots; the pods then stripped through the fingers, and sorted into three classes: 1. Valli Kai, or head fruit; 2. Nadu Kai, middle fruit; 3. Poulo Kai, abortive fruit. *Ann. Trans.* x. p. 229.

they are principally employed to give warmth to other remedies.

The dose in powder is from grs. vj. to ʒj.

Official preparations. *Extractum Colocynthis compositum*. L. D. *Tinctura Cardamomi*. L. E. D. *Tinctura Cardamomi composita*. L. D.

ERYNGIUM. *Spec. Plant. Willd.* i. 1356.

Cl. 5. Ord. 2. Pentandria Digynia. *Nat. Ord.* Umbellatæ.

G. 518. *Flowers* capitate. *Receptacle* paleaceous.

Spec. 6. *E. maritimum*. Sea Eryngo, or Holly. *Med. Bot.* 2d ed. 120. t. 46. *Smith Flora. Brit.* 289. *Eng. Bot.* 718.

Official. ERYNGIUM; RADIX. *Dub.* Eryngo Root.

Syn. Panicaut commun (F.) Eringio (L.) Eryngo (S.)

The sea holly is an indigenous perennial plant, growing abundantly on the sea shores, and flowering in July and August. The root is long, and creeping; sending up an erect, branching, round, obscurely furrowed, and leafy stem, nearly eighteen inches in height. The lower leaves are reniform, plaited, lobed, and petiolate; those of the stem are sessile; and the whole are smooth, rigid, toothed with sharp spines like those of the holly; and of a pale glaucous colour, with the nerves and spines white. The flower heads are terminal, conical, and supplied with paleæ; with an involucre of many, spreading, pointed leaves. The paleæ, which separate the florets, are tricuspid, longer than the florets, and spinous. The teeth of the calyx are erect, and spinous; the corolla consists of five oblong blue petals, with inflected points. The filaments are longer than the corolla, the styles are filiform with simple stigmas; and the germs inferior and beset with hairs, becoming two oblong connected seeds.

The root should be dug up for use, when the seed is ripe in autumn. It is white internally, and covered with a brown cuticle.

Qualities.—The root of eryngo has scarcely any odour; and only a soft sweetish, slightly aromatic taste. Its virtues are extracted by water.

Medical properties and uses.—It is supposed to be diuretic and aperient: and has been recommended in gonorrhœa, jaundice, and visceral obstructions; but it is an inert useless substance; and might with propriety be altogether rejected from the list of materia medica.

EUGENIA.¹ *Spec. Plant. Willd.* ii. 959.

Cl. 12. Ord. 1. Icosandria Monogynia. *Nat. Ord.* Hesperidiæ Linn. Myrti *Juss.*

G. 972. *Calyx* four-parted, superior. *Petals* four. *Berry* one-celled, one-seeded.

¹ This genus was named after Prince Eugene of Savoy.

Sp. 24. *E. caryophyllata*. The Clove-tree. *Med. Bot.* 2d edit. 538. t. 193. *Journal de Physique*, tome xiv. 47. t. 1.

Officinal. CARYOPHYLLI. CARYOPHYLLI OLEUM. *Lond.* CARYOPHYLLUS AROMATICUS. *Floris germen, et ejus Oleum volatile. Edin.* CARYOPHYLLUS AROMATICA; CALYX, OLEUM ESSENTIALE. *Dub.* Cloves, and Oil of Cloves.

Syn. Cloves. Clousele Girofles (F.) Gewürz-nelken (G.) Garofano (I.) Clavo de especia (S.) Keranful (Arab.) Laung (H.) Lavanga (San.) The oil.—Huile de Girofle (F.) Nelkenöl (G.) Olio di Garofano (I.) Azeyte de Clavos (S.)

The clove-tree is a native of the Moluccas, where it was originally abundantly found, particularly at Machian; but the narrow policy of the Dutch led them to destroy almost all the trees except those which they cultivated on the islands of Amboyna, Honimoa, Oma, and Noussalant, so as to give them a monopoly of the trade, which they have held since 1638. The French however obtained some plants which they carried to the Isle of France, in 1770, and thence, in 1774, to Cayenne. In 1789 it was also introduced into the island of Dominica by William Urban Buée, esq.; and at all these places it is now cultivated. It is a handsome tall tree, rising upon a stem of very hard wood, covered with a grayish smooth bark; and about four or five feet in height before it branches. The leaves are oblong, lanceolate, and pointed at both ends; firm, with many parallel nerves, on each side of the midrib, entire, sinuated, and supported on brown petioles about half the length of the leaf. The colour of the leaves is dull green, and when bruised their odour is strong, and aromatic. Its flowers are in terminal bunches, or corymbose panicles, which generally consist of 9, 15, or 21 flowers. The calyx is oblong, woody, and divided at the brim into four small, toothed segments. The corolla consists of four, roundish, notched, small petals; inclosing many slender filaments inserted into the calyx, bearing simple anthers. The germen is oblong with a simple style: the fruit an inferior, coriaceous, bilocular berry.

Although the unopened flowers of this tree, and even the leaves, particularly their petioles, are extremely aromatic and odorous, yet the flowers are inodorous when they are fully blown; and the real fruit is not aromatic.* The cloves are the unexpanded flowers, which are first obtained when the tree is six years old. At Amboyna they are collected from October to December, when they begin to redden. They require to be dried quickly; on which account they are first immersed in boiling water, then exposed to smoke and a heat of 120° Fahr till they begin to assume a brown hue; and afterwards the drying is finished in the sun. In the West Indies, those cloves

* *Journal de Physique*, l. c.

which are dried altogether in the sun are considered the best.

Cloves are imported into this country from the Dutch settlements; the best in chests, and an inferior kind in bags. The oil is brought in bottles; but a considerable quantity is drawn in this country. The best variety of the Amboyna cloves is smaller and blacker than the other varieties, very scarce, and as a mark of pre-eminence is named the Royal clove. The Dutch sometimes mix among the best cloves, those from which the oil has been drawn; and the fraud is not easily discovered, as the used cloves regain part of their flavour by this mixture. The oil is also much adulterated: when it has a hot, fiery taste, and a great depth of colour, it may be suspected.

Qualities.—Good cloves have a strong, fragrant, aromatic odour, and a hot, acrid, aromatic taste, which is very permanent. In form they resemble a small nail, scarcely exceeding half an inch in length; with a roundish conical head, and directly under it four sharp, spreading points, concave above. Their colour is deep reddish brown; the conical part of the head being lighter, and yellowish; and this part is very easily separated. To the touch they feel somewhat greasy. Water extracts their odour, but little of their taste: alcohol takes up both; and when evaporated, the extract is pungent and fiery, without any odour. Ether extracts completely their sensible qualities; and when the tincture is evaporated on water, a considerable portion of a very pungent hot unctuous resin, and some extractive remain.

Cloves yield by distillation in water one-sixth of their weight of a heavy, nearly colourless oil, which becomes yellow by age. It has the flavour of the cloves, but is comparatively milder. The Dutch oil is deeper, and of a reddish colour; and is extremely pungent and fiery: owing, it is supposed, to its containing in solution some of the resin of the cloves extracted by alcohol.

Medical properties and uses.—Cloves are stimulant in a greater degree than any of the other aromatics. They are sometimes given alone in dyspepsia, attended with a very languid state of the circulation, and a sense of coldness in the stomach; and in atonic gout: but they are chiefly used as corrigents to other medicines. The oil is used as a corrigent to griping extracts; and sometimes as a local application in tooth-ach. The dose of powdered cloves may be from grs. v. to grs. x; that of the oil, ℥ ij. to ℥ vi. triturated with sugar.

Official preparations. *Infusum Caryophyllorum. L.*

EUPHORBIA.¹ *Spec. Plant. Willd.* ii. 881.

Cl. 11. *Ord.* 3. Dodecandria Trigynia. *Nat. Ord.* Tricoccæ *Linn.*
Euphorbiæ Juss.

G. 959. Corolla four, or five-petalled, fixed to the calyx. Calyx one-leafed, ventricose. Capsule tricoccous.

Species 7. *E. Officinarium.* Official Euphorbium Plant. *Amœnit. Acad.* v. iii. p. 102. *Jackson's Morocco*, p. 81. fig. ? *Bruce's Abyssinia*, v. v. p. 41. fig. ?

Officinal. EUPHORBIE GUMMI-RESINA. *Lond.* Euphorbium.

Syn. Euphorbe (*F.*) Euphorbium (*G.*) Euforbio (*L.*) Euphorbio (*S.*) Saynd ka-dood (*H.*) Ukciil Nefsch (*Arab.*)

This is a perennial, succulent, shrubby plant, a native of Africa, where it grows in great abundance. The plant described and figured by Bruce under the name of *Koll-Quall*, and that which Jackson, in his Account of Morocco, says, the Arabs and Shellahs call *Dergmuse*, appear to be the same, or varieties of the *E. Officinarium*. When arrived at maturity, it has a simple, erect, round stem, about five feet high; angled or furrowed with 18 or more longitudinal fissures. From the summit branches are thrown out in every direction, going off first horizontally, and then ascending, so as to give to the whole plant the appearance of the skeleton of a large goblet supported on a stalk or foot. The branches are about an inch in diameter, more distinctly angled than the stem, scolloped, and furnished with prickles every where double. It has no leaves, but instead of them tubercles adjoining to each pair of prickles. The flowers are sessile, on the extremities of the branches, of a crimson colour. The calyx is of one piece, persistent, with a 4 or 5 toothed lip: the petals are 4, turbinated, gibbous, thick, truncated, unequal in situation, and fixed by claws to the margin of the calyx. The filaments are more than 12, thread-like, longer than the corolla, coming forth at different times, and carrying each two globular anthers; the germen is trigonous, with a simple, short style crowned with three semibifid obtuse stigmas. The capsule is tricoccous, pedicellated, elastic: with round solitary seeds.

The succus proprius of all the species of euphorbia is white, and concretes by exposure to the air into a solid substance. The euphorbium brought to this country is said to be the product of some other species, besides the plant we have described; for instance, *E. antiquorum* and *E. canariensis* of Willdenow. Mr. Jackson says that in the lower regions of Mount Atlas the inhabitants collect the concreted gum resin, which they call

¹ Antonius Musa and Euphorbus were brothers; the former was physician to Augustus Caesar, the latter to Juba, king of Libya. Caesar raised a statue to Musa; Juba named this plant after Euphorbus. "Ubi Jam Musæ statua? Perit! evanuit! Euphorbii autem perdurat, perennat, nec unquam destrui potest." *Crit. Bot.* 86.

furbiune, in September. It is obtained by making slight incisions in the branches of the plant with a knife, from which a milk-like juice exudes, and forms into tears of an oblong or roundish form. The quantity yielded is so considerable that the plants are cut once only in four years; the supply then obtained being sufficient for that space of time for all Europe.—The recent juice is so corrosive as to erode the skin wherever it touches; and the people who gather the gum are obliged to tie a cloth over their mouth and nostrils, to protect them from the acrid dust of the withered branches, which induces the most violent sneezing.¹

Euphorbium is imported in serons, each of which contains from 100 to 150 lbs. weight. It is in small hollow somewhat forked pieces, which appear as if the euphorbium had concreted round the pedicels of the flowers; and it is often mixed with the tricoccous seeds, and other impurities.

Qualities.—It is inodorous; and, when first chewed, has little taste, but it soon gives a very acrid burning impression to the tongue, palate and throat, which is very permanent and almost insupportable. Water when triturated with it is rendered milky, but actually dissolves 1-7th part only of the quantity employed: alcohol dissolves 1-4th part, and affords a clear straw-coloured tincture, which is rendered milky by the addition of water: ether takes up six parts in ten, forming an opaline infusion. When the ethereal tincture is evaporated on water, it leaves on the side of the glass a pellicle of transparent resin, and on the water a cake of opaque adhesive whitish matter, which I found to consist of wax and resin, resembling an officinal plaster; while the water is rendered milky. The acrimony resides in the resinous matter. The analysis of Bracconot² makes 100 parts of euphorbium to contain 37.0 of resin, 19.0 wax, 20.5 malate of lime, which was mistaken for gum, 2.0 malate of potass, 5.0 water, 13.5 woody matter, and 3.0 loss. He regards the resin as peculiar, from its being insoluble in alkalies, but soluble in the sulphuric and nitric acids.

Medical properties and uses.—Euphorbium possesses powerful cathartic, emetic, errhine, and rubefacient properties. It has been given as a hydragogue in dropsies; but owing to the violence of its effects its internal use is now exploded: neither as an errhine can it be used alone, for it occasions so much inflammation as to produce hæmorrhage from the nostrils,

¹ Bruce says, "When the tree (Kol-Quall) grows old, the branches wither, and, in place of milk, the inside appears to be full of powder, which is so pungent, that the small dust which I drew upon striking a withered branch seemed to threaten to make me sneeze to death, and the touching of the milk with my fingers excoriated them as if scalded with boiling water."—*Appendix*, 4to. p. 43.

² *Annales de Chimie*, lxxviii. 44.

C. Acidified :

- | | |
|----------------------------|--|
| iv. with carbonic acid. | 14. <i>Carbonate of iron.</i> |
| v. phosphoric acid. | 15. <i>Phosphate of iron.</i> |
| | 16. <i>Blue iron earth.</i> |
| vi. arsenic acid. | 17. <i>Phosphate of iron and manganese.</i> |
| | 18. <i>Arsenate of iron.</i> |
| vii. sulphuric acid. | 19. <i>Arsenate of iron and copper.</i> |
| viii. Composition unknown. | 20. <i>Sulphate.</i> |
| | 21. <i>Green iron earth.</i> Var. <i>a.</i> Friable. |
| | <i>b.</i> Coherent. |

Metallic iron can be extracted from all of these ores, but the oxides are those more commonly wrought; and, in this country, the argillaceous iron stone and the red hæmatite are the kinds in general use. The process varies in different places, but the principles on which it is conducted are every where the same. The ore is first roasted by placing it, after it is broken into small pieces, in alternate strata with small coal, either in a kiln, or built up in a pyramidal form on the ground, and setting fire to the lowest stratum of coal. This part of the process expels any sulphur, water, or carbonic acid, with which the ore may be combined; and it is then smelted with coke in a conical furnace of the strongest masonry; the heat being raised to a very high degree by passing a blast of condensed air through the furnace, and to facilitate the separation of the melted metal, lime is used, as a flux. The scoria are drawn out through an opening towards the bottom of the furnace; and the melted metal, which is collected in a cavity at the bottom, is run off into moulds. In this state it is called pig, or cast-iron: and requires to be again fused and submitted to the action of the hammer, or passed between rollers, before it is sufficiently pure either for the majority of the purposes of art or of medicine.

Pure forged or bar iron is of a blueish white or grey colour, of a fibrous texture, and very brilliant in the fracture; it emits a peculiar odour when rubbed, and has a styptic taste. Its specific gravity varies from 7.6 to 7.8. It is attracted by the magnet, and becomes magnetic; properties which distinguish it from all other metals. It is very malleable, but less so than gold, silver, or copper; and is more ductile, tenacious, and elastic, than any other metal. Iron can be ignited by percussion, and melts at 158° of Wedgwood. Its surface is soon tarnished and oxidized when exposed to the air; and the oxidizement is much hastened by the presence of water, which it decomposes. Percussion at a high temperature separates from its surface oxidized scales; the sparks produced by its collision with flint are oxidized; and in the state of wire, when made red hot at one extremity, and introduced into a bottle of pure oxygen gas, it burns with great splendour, and is oxidized in

globules. According to Proust, completely oxidized iron consists of 48 parts of oxygen and 52 of iron.

Iron is of all the metals the least injurious to the animal system, being in no respect poisonous. It was medicinally used by the ancients; for Dioscorides, we know, employed it quenched in wine as a remedy for dysentery; and its use was by no means unfrequent as an external application for the cure of malignant ulcers. The effects of iron, however, as an internal remedy, were very little understood until more modern times. It acts as a powerful tonic, increasing the general excitement, promoting the digestive powers and healthy secretions, giving a more florid hue to the blood, and augmenting in a great degree the energy of the muscular fibres. It answers the intentions for which it is prescribed more effectually, when it is given in small doses, minutely divided as it is found in *chalybeate springs*, and its use long continued. The diseases in which it is used are those which are dependent on, or attended with, a weak, languid, leucophlegmatic habit of body, as chlorosis, hysteria, dyspepsia, fluor albus, gleet, passive hæmorrhagies, palsy, scrofula, rickets, and the last stage of phthisical affections; it is also beneficial in convalescence from almost all acute diseases, and has been lately recommended as a specific in cancer. The use of iron is contra-indicated whenever the inflammatory diathesis prevails, or there is any particular fulness of the vessels; or an increased secretion of bile, particularly in sanguineous habits. In these states of the system it occasions heat, thirst, headach, laborious respiration, and many other unpleasant symptoms; but when given in a proper state of the body few medicines are capable of producing more beneficial effects.

For the purposes of medicine soft malleable iron undergoes various preparations (see *Preparations and Compositions*): but at present we have to notice it only as it is mentioned in the lists of materia medica of the British pharmacopœias.

1. METALLIC IRON.

Officinal. FERRI RAMENTA ET FILA. *Lond.* FILA ET LIMATURA.

Edin. FERRI SCOBS. *Dub.* Iron filings and wire.

Syn. Limailles de Fer (*F.*) Gopulvertes Eissen, (*G.*) Limatura di Ferro, (*I.*) Limadura de hierro, (*S.*) Cerumboo podie, (*Tam.*)

These filings are obtained from the workers in iron; but as they are often mixed with copper filings and other impurities, it is necessary, in order to purify them, to draw them upwards through a sieve, or piece of coarse gauze, with a magnet.

Medical properties and uses.—Metallic iron exerts no action on the living system, unless it meets with acid in the stomach, in which case it becomes tonic. Iron filings, therefore, are not

adapted for all the cases in which chalybeate remedies prove useful; and are chiefly suited to those cases of dyspepsia, hysteria, chlorosis, and general debility, which are accompanied with acidity in the first passages. When iron is oxidized by the assistance of watery fluids, hydrogen gas is evolved; hence, when the filings are rendered active in the stomach, foetid eructations are produced, and the fæces are coloured black; which, therefore, are evident symptoms of the medicine having taken effect. As an anthelmintic iron filings may operate mechanically, and dislodge worms; but even in worm cases the oxidizement of it in the stomach renders it more useful.

Iron wire is used for pharmaceutical preparations, on account of the purity of the iron from which it is made; as the softest and purest iron only can be drawn.

The filings are given in the form of powder combined with some aromatic, or made into an electuary with honey, or in pills in combination with myrrh, ammoniacum, or some bitter extract. The dose may be from grs. v. to 3fs.

Official preparations. *Ferri Limatura Purificata*. E. *Oxidum Ferri Nigrum purificatum*. E. D. *Ferri Acetas*. D. *Subcarbonas Ferri præparatus*. E. D. *Carbonas Ferri præcipitatus*. E. D. *Ferri Sulphas*. L. E. D. *Ferrum tartarizatum*. L. E. *Tinctura Acetatis Ferri*. D. *Liquor Ferri alkalini*. L. *Vinum Ferri*. L. D. *Murias Ammoniacæ et Ferri*. E. *Sulphuretum Ferri*. E. *Rubrum Ferri Oxidum*. E.

2. OXIDIZED IRON.

Official. FERRUM; SQUAMÆ OXIDI. Dub. The Scales, of the Oxide of Iron.

Syn. *Bluettes de Fer* (F.) *Eisenoxyd* (G.) *Scaglio di ferro* (I.) *Escamas de hierro* (S.)

These scales are detached by the hammer of the smith from the surface of iron heated to redness in the forge, and hammered on the anvil.

Qualities.—They are inodorous and insipid, attracted by the magnet, brittle, and reducible by trituration to a powder which is of a black colour. This oxide is soluble in acids, without producing hydrogen gas; and appears to be the metal in the first degree of oxidizement, consisting, according to Lavoisier and Proust, of 27 parts of oxygen, and 73 of iron.

Medical properties and uses.—These scales are used in the same cases and in the same manner as the filings, and are preferable; for, as they do not produce hydrogen gas when dissolving in the stomach, their use is unaccompanied by the distension and flatulence which the filings often occasion.

FERULA. Spec. Plant. Willd. i. 1411.

Cl. 5. Ord. 2. Pentandria Digynia. Nat. Ord. Umbellatæ.

G. 539. Fruit oval, compressed, plane, three streaks on each side.

Species 11. *F. Assafœtida*.¹ *Assafœtida*. *Kœmpfer. Amœnitates Exoticæ*, 535. t. 536.

Officinal. ASSAFŒTIDÆ GUMMI-RESINA. *Lond. Edin. ASSAFŒTIDA. Dub.* *Assafœtida.*

Syn. *Assafœtida* (F.) *Stinkender Asand* (G.) *Assafetida* (L.) *Asafetida* (S.) *Hilteet* (Arab.) *Hing* (H.) *Hinga* (San.)

This species of *ferula* is a native of the south of Persia, chiefly growing on the mountains in the provinces of Chorasaaan and Laar, where it is named *hingisch*. The root is perennial, tapering, and ponderous; when fully grown, the size of a man's leg, covered with a blackish coloured bark, and near the top beset with strong rigid fibres. The internal substance is fleshy, white, and abounds with a thick, very fetid milky juice. The stem is round, smooth, and striated; rising erect to the height of nine feet, and is about seven inches in circumference at the base; surrounded with six or seven radical leaves, nearly two feet long, bipinnate, with alternate pinnules, smooth, sinuated, lobed, or lanceolate; of a deep green colour, and fetid odour. The flowers are in plano-convex, terminal, compound umbels: the seeds oval, flat, foliaceous, of a reddish brown colour, rough, with three longitudinal lines; and have a porraceous odour, and a sharp bitter taste.

When the root is four years old it is fit to yield the *assafœtida*, which is procured in the following manner. At the season when the stem and leaves begin to decay, they are twisted off from the root, which is then exposed by digging away the earth that surrounds it. It is left in this state screened from the sun for forty days; then the top is cut off transversely; and after forty-eight hours the juice which has exuded is scraped off, and another transverse section is made. This operation is repeated three successive times, and then the root is allowed to remain untouched for eight or ten days, before another section is made. The root perishes after it is exhausted of the juice. The juice collected from a number of roots is put together and dried in the sun.

Assafœtida is brought to this country packed in cases, mats, and casks; that in the cases proving generally the best. It is in irregular masses, adhering to each other, externally of a brownish yellow colour, and containing many little shining tears of a whitish, reddish, or violet hue. The best is clear, and of a pale reddish colour, contains many of the white tears, and has the odour very strong.

Qualities. — *Assafœtida* has a strong, very disagreeable, alliaceous, fetid odour, and a bitter subacrid taste: but these qua-

¹ The plant described and figured by Dr. Hope of Edinburgh, in the 75th volume of the *Philosophical Transactions*, as that which yields the officinal *assafœtida*, is the *Ferula Perrica* of Willdenow, and a native of the north of Persia.

lities, particularly the odour, on which much of the efficacy of the drug depends, are much injured by keeping.¹ It becomes brittle by exposure to the air; but is not easily reduced to powder. It yields all its virtues to ether and to alcohol. It is diffused by trituration in water, forming a milky opaque mixture. The ethereal tincture, when evaporated on water, leaves a thick pellicle of brown fetid resin, and gives the water a milky appearance. In distillation either with water or alcohol assafoetida yields an essential oil, on which its odour depends. The proportions of its components are gum 60, resin 30, and essential oil 10 parts in 100; but Brugnatelli affirms that the part which has been regarded as gum is extractive.²

Medical properties and uses.—This gum resin is stimulant, antispasmodic, expectorant, emmenagogue, and anthelmintic. It is more efficacious than any of the other fetid gums; producing its effects in a shorter space of time; and is therefore beneficially given as an antispasmodic in cases of hysteria, hypochondriasis, dyspepsia, flatulent colic, tympanitis, and in nervous diseases: its expectorant powers have been found useful in asthma, and hooping-cough; and it ranks high as a remedy in chlorotic affections. We are informed that in India it is a successful native specific against the Guinea³ worm. Its use is contra-indicated when the inflammatory diathesis is present; and owing to its stimulant quality, it is often combined with antimonials and nitre. It is used locally, in the form of enema in worm cases, flatulent colic, and in the convulsions attending dentition: and sometimes it is applied as a plaster for discussing tumours.

The dose is from grs. v. to ʒj, formed into pills, or diffused in water.

Official preparations. *Mistura Assafoetidae*. L. D. *Tinct. Assafoetidae*. L. E. D. *Spiritus Ammoniacæ fetidus*. L. D. *Pilulæ Assafoetidae compositæ*. E. *Pilulæ Aloes et Assafoetidae*. E.

FICUS. *Spec. Plant. Willd.* iv. 1131.

Cl. 23. Ord. 2. Polygamia Diœcia. Nat. Ord. Scabridæ Linn. Urticæ Juss.

.1931. Common receptacle turbinate, fleshy, converging, concealing the florets, either in the same or a distinct individual.

Male. Calyx three-parted. Corolla 0. Stamens three.

Female. Calyx five-parted. Corolla 0. Pistil one. Seeds covered by a permanent, closed, somewhat fleshy calyx.

* Leaves lobed.

Species 1. F. *Carica*.⁴ The Fig-tree. *Med. Bot. 2d. ed.* 714. t. 244.

¹ Kœmpfer says: "Affirmare ausim drachmam unam, recens effusam, majorem spargere foetorem quam centum libras vetustioris, quem siccum venundant aromatarii nostrates." *Aman. Exoticæ*, p. 535.

² *Compendio di, Mat. Med.* p. 41. Pavia, 1817.

³ *Edin. Med. Journ.* ii. 304.

⁴ *Συκκη* Græcorum.

Officinal. CARICÆ FRUCTUS. *Lond. Dub.* FICI CARICÆ FRUCTUS.

Edin. The preserved fruit of the Fig.

Syn. Ficus (F.) Feigen (G.) Fico (I.) Higo (S.)

The fig tree is a native of Asia, but it was introduced into Europe in the early ages. It flourishes in France, Spain, and Italy, and even sometimes ripens its fruit in England. It flowers in June and July. It seldom rises above twelve feet in height, but sends off many spreading branches; and the trunk, which exudes a milky odorous fluid when wounded, is covered with an ash-coloured bark, and seldom exceeds seven inches in diameter. The leaves, which are annual in Europe, but perennial between the tropics, are large, nearly a span in length, scabrous, and irregularly divided into three or five lobes; of a deep green colour on the upper surface, with a pale green longitudinal vein to each lobe; but on the under surface the whole is pale green, with the veins raised, reticulated, and downy: they are supported on round petioles. The fruit in its early stage serves as a common receptacle, and contains upon its inner surface both the male and female florets. It is turbinate, umbilicate at the top, in colour varied green and red, fleshy, soft, and hollow within.*

The fig tree was very much cultivated by the ancients, who brought the fruit to perfection by a process which they termed caprification. They had observed that those figs which were perforated by an insect, the *Cynips Psenes* of Linnæus, always ripened better; and, therefore, they tied a wild fig, on which this insect breeds, near the young figs, so as to cause the insects, when they issued from the wild fig, also to perforate them. The good effects arose from the crawling of the larvæ within the figs scattering the pollen, and thus forwarding the impregnation of the female florets: but the gardeners of Aleppo, ignorant of the cause of the benefit derived from the cynips, imitate the process by pricking the figs with a needle dipped in oil, in order to procure early figs. The fruit when ripe is dried in ovens to preserve it, and destroy any of the larvæ of the cynips that may remain; and then packed very closely into the small chests in which they are imported into this country.

Qualities. — Dried figs have a sweet peculiar taste. They are generally compressed; the cuticle is of a brownish colour, and crusted over with crystals of sugar; and within are numerous small yellow lenticular seeds in a sweet viscid pulp. They consist almost entirely of mucilage and sugar.

Medical properties and uses. — The dietetical use of figs is

* The first fig-trees introduced into England are still in the Archbishop's garden at Lambeth. They are supposed to have been planted by Cardinal Pole, and now bear excellent fruit.

† *Gœrtner de Fructibus*, ii. 66. t. 91.

well known.¹ When eaten freely they are apt to occasion flatulent colic and diarrhœa. They are used medicinally in demulcent decoctions, in pulmonary and other inflammatory complaints; and two ounces of them boiled in six fluid ounces of water, and strained, form a useful gargle in cynanche tonsillaris, when suppuration takes place. The figs themselves, roasted or boiled and split, form excellent cataplasms, when applied very hot to gum boils, buboes, and other phlegmons.²

FRAXINUS. *Spec. Plant. Willd.* iv. 1102.

Cl. 23. Ord. 2. Polygamia Diœcia. Nat. ord. Separiæ Linn. Jasmineæ Juss.

G. 1903. Hermaph. Calyx 0, or four-parted. Corolla 0, or four-parted. Stamens two. Pistil one. Capsule one-seeded, lanceolate. Female. Pistil one, lanceolate.

Sp. 15. F. *Ornus*.³ Flowering ash. *Med. Bot.* 2d edit. p. 589. *Sibthorp Flora Græca*, t. 4.

Official. MANNA. *Lond. Dub. Edin.* Manna.

Syn. Munne (F.) Manna (G.) Manna (I.) Mana (S.) Torenjeebeen (Arab.) Shirk-hisht (H.)

This tree is a native of the south of Europe, growing abundantly in Calabria, Apulia, Sicily, and on the loftier mountains of Greece; and is cultivated in England as an ornamental tree, flowering in May and June. It seldom exceeds twenty feet in height, is very branching, and has a smooth gray bark. The leaves are deciduous, petiolate, opposite, and pinnate, composed of two or three pair of leaflets, with a terminal one: the leaflets are opposite, about one inch and a half long, and three-fourths broad, pointed at each end, obtusely and unequally serrated, smooth, and of a deep bright green colour. The footstalks vary in length, and are channelled; the gems are villous. The flowers, which grow in close panicles at the extremities of the young shoots, are supradecom-pound, opposite, scarcely the length of the leaves, smooth, and without bractes. The segments of the calyx are ovate, pointed, and nearly equal; the petals oblong and linear, obtuse, entire, attenuated at the base, spreading, twice the length of the calyx, and of a white colour. The filaments are two, spreading, white, smooth, and bearing yellow incumbent anthers. The germen is small, oval, and smooth, with a short, straight style crowned with a notched stigma. The capsules droop, are lanceolate, notched, compressed, and bilocular at the base; with one cell generally abortive, while the other contains a cylindrical ferruginous seed.

¹ Figs were the chief part of the food of the ancient Athletes.

² The most ancient cataplasm on record was made of figs. It was used for the relief of Hezekiah, who lived 260 years before Hippocrates. "And Isaiah said, Take a lump of figs. And they took and laid it on the boil, and he recovered." 2 Kings, chap. xx. 7.

³ *Milæx* Dioscoridis.

Two other species of ash, the *rotundifolia* and *excelsior*, also produce manna. It exudes in warm dry weather spontaneously from the stem and branches; and concretes into whitish tears, which are scraped off and sold under the name of manna in the tear. The greater part of the manna, however, is obtained by longitudinal incisions about three inches in length, made on one side of the tree only in the same season, and continued from the base of the trunk, upwards as far as the branches, at the distance of an inch from each other. The manna flows at first in form of a thick juice, which gradually concretes. It is collected in baskets, and known under the name of *manna grassa*, fat manna: and is in irregular masses of a reddish or brownish colour, often full of impurities. By making the juice to concrete on straws, and chips fastened near the incisions, a finer kind of manna is procured, which is called canulated or flaky manna, *manna in canoli*. The collecting begins about the middle of June, and terminates in September.¹

Manna is brought to Great Britain packed in chests. The different sorts are in separate packages, and are known by the names of Flake manna, Sicilian manna, and Calabrian manna. The best is "in oblong pieces or flakes, moderately dry, friable, light, of a whitish or pale yellow colour, and in some degree transparent: the inferior kinds are moist, unctuous, and brown."² Manna is said to be occasionally counterfeited by a composition of honey or sugar, mixed with scammony or some other purgative³: but such frauds are now seldom attempted; and bad or counterfeit manna may be easily discovered by its colour, weight, transparency, and taste; which are different from those of real manna.

Qualities. — Manna has a slight peculiar odour, and a sweet taste, with some degree of bitterness, not very pleasant, and leaving a nauseous impression on the tongue. The finer pieces, which are often hollow, when broken and examined by the microscope, exhibit bundles of long beautiful spicular crystals: but the general texture of the pieces is granular. It is entirely soluble in water and alcohol; and the latter, when the solution has been assisted by heat, deposits on cooling five-eighths of the manna beautifully crystallized; and which may be regarded as pure manna, and an uncrystallizable mucilaginous extractive matter remains, on which probably the purgative quality of the drug depends. Fourcroy and Vauquelin suppose that the common manna of the shops contains four different ingredients. 1. Pure manna, constituting three-fourths

¹ Arcturius is the first Greek who notices manna. *Freind's Hist. of Med.* i. 271.

² Lewis.

³ *Alston's Mat. Med.* ii. 472.

of the whole. 2. A little common sugar. 3. A yellow nauseous-smelling substance, to which its purgative qualities seem owing: and 4. Mucilage.

Medical properties and uses.—Manna is a very gentle laxative. It was extravagantly commended by some of the older physicians; but is now more justly regarded as a laxative fit for children only, and persons of very weak habits. When given in a dose sufficient for an adult, it is apt to occasion flatulence and griping; and therefore it is seldom used, except as an adjunct to senna, rhubarb, or solutions of neutral salts, with the view of covering their tastes.

The dose for children is from ʒij to ʒiv ; and for adults from ʒj to ʒij .

FUCUS. *Genera Plant. Schreber.*

Cl. 24. Ord. 3. Cryptogamia Algæ. Nat. ord. Algæ.

G. 1671. *Male.* Vesicles smooth, hollow, with villose hairs within, interwoven.

Female. Vesicles smooth, filled with jelly, sprinkled with immersed grains, prominent at the tip. *Seeds* solitary.

Species 2. *F. vesiculosus.* Bladder-wrack. *Turner's Fuci*, ii. 44. *Eng. Bot.* 1066.

Officinal. FUCUS. *Lond.* QUERCUS MARINA; HERBA FRUCTIBUS PRÆSENTIBUS. *Dub.* Bladder-wrack, bearing the fruit.

This marine plant is a perennial, a native of the British shores; bearing the fructification in the spring. The root is an expanded, black, woody, callous disk. The frond is smooth and glossy, from one to four feet in length, and from half an inch to one inch and a half in breadth, of a dark olive green colour, becoming paler near the apices; every where linear, and dichotomous; and through its whole length furnished with a midrib of a blackish colour, as thick as a goose quill at the base, but gradually growing pale and thin. In the membranous part are found immersed spherical vesicles, varying in size from a pea to a hazel nut, always close to the midrib, their substance thin, and their cavity full of air. The fructification consists of compressed turgid solitary or twin receptacles at the ends of the branches; roundish, perforated, and filled with a tasteless pellucid mucus.

When the plant is dried it becomes brittle, and of a dull black colour; and sometimes is covered with a saline efflorescence. It is much used in the making of kelp.

Qualities.—The odour is slight, but peculiar; and the taste nauseous, and similar to that of soda. When burnt, it yields charcoal and soda.

Medical properties and uses.—The burnt plant is considered as deobstruent; and has been exhibited in scrophulous affections and bronchocele: and Dr. Russel found the mucus of

the vesicles an excellent resolvent when externally applied to scrophulous swellings.

Official preparation. *Pulvis Quercus marinæ*. D.

GALBANI GUMMI RESINA. Vide *Bubon*.

GALLÆ. Vide *Quercus*.

GENTIANA.* *Spec. Plant. Willd.* i. 1331.

Cl. 5. Ord. 2. Pentandria Digynia. Nat. ord. Rotacæ Linn.
Gentianæ Juss.

G. 512. Corolla one-petalled. Capsule two-valved, one-celled; with two longitudinal receptacles.

* Corollas 5 or 9-cleft, somewhat bell shaped.

Species 1. *G. lutea*. Yellow Gentian. *Med. Bot.* 2d edit. 273. t. 95.

Official. GENTIANÆ RADIX. Lond. GENTIANÆ LUTÆ RADIX.

Edin. GENTIANA; RADIX. Dub. Gentian Root.

Syn. Gentiane jaune (F.) Enzian (G.) Genziana (I.) Genciana (S.)

This species of gentian is a perennial plant, found growing on the alps of Switzerland and Austria, the Apennines, the Pyrennees, and in North America. The root is thick, long, and cylindrical. The lower leaves are petioled, large, spear-shaped, stiff, and having five large veins on the back, plaited, and of a yellowish green colour; those of the stem are concave, smooth, and egg-shaped, sessile, and almost embracing the stem, which rises three or four feet in height. The flowers are in whorls at the upper joints, large, yellow, peduncled, and beautiful: the calyx, which is a membranous deciduous spathe, bursts on the side when the flower opens: the corolla is rotated, divided into five or eight narrow spreading segments, elliptical, and speckled with many thick dots. The filaments are shorter than the corolla, and furnished with long erect anthers: the germen is conical, crowned with two sessile reflected stigmas; and becomes a conical capsule, which contains numerous small seeds.

Gentian roots are brought to this country from Germany. They are in pieces of various lengths and thickness, twisted, wrinkled on the outside, and covered with a brownish gray cuticle.

Qualities.— They have no particular odour, and the taste is intensely bitter without being nauseous. When cut transversely the pieces exhibit a yellow maculated heart, with thick bark verging to brown. The sensible qualities of gentian root are extracted by ether, alcohol, and water. The two former extract a bitter resin and an extractive matter; and the latter some part of these and a considerable quantity of mucilage also, which occasions the infusion often to become ropy. Diluted alcohol is its proper menstruum. In the bitter resin which is

* Said to have been named after Gentius, king of Illyria, who first discovered its medicinal properties 167 years before the birth of our Saviour.

deposited from the ethereal tincture, opaque, and of a pale yellow colour, the virtues of the drug seem to reside.

Medical properties and uses. — Gentian root is tonic, stomachic, and in large doses aperient. Its use as a stomachic bitter is of very ancient date; and it is still, perhaps, the most generally employed of this class of medicines. It has been found beneficial in dyspepsia, gout, hysteria, and jaundice; chlorosis, dropsy, and diarrhoea; and in all cases of general debility in which tonics are indicated. It is sometimes joined with the cinchona in intermittents; and, according as the circumstances of the cases for which it is prescribed direct, it may be combined with orange-peel, chalybeates, aromatics, squill, mineral acids, and neutral salts. On account of its antiseptic effects on dead animal matter, its infusion has been used as an application to putrid ulcers. The forms in which it is generally given are infusion and tincture.

The dose in substance is from grs. x. to ʒij.

Official preparations. *Extractum Gentianæ*. L. E. D. *Infusum Gentianæ compositum*. L. E. D. *Tinctura Gentianæ composita*. L. E. D. *Vinum Gentianæ compositum*. E.

GEOFFROYA. *Spec. Plant. Willd.* iii. 1129.

CL. 17. Ord. 4. Diadelphia Decandria. *Nat. ord.* Papilionaceæ Linn. Leguminosæ Juss.

G. 1362. *Calyx* five-parted. *Drupe* ovate. *Nucleus* compressed. *Species* 3. *G. inermis*. The Cabbage-tree. *Med. Bot.* 2d edit. 416. t. 151. *Phil. Trans.* lxvii. 512. t. 10.

Official. GEOFFROYÆ INERMIS CORTEX. *Edin.* GEOFFRCEA; CORTEX. *Dub.* Cabbage-tree bark.

Syn. *Umari* de la Jamaïque (F.) *Geoffrurinde* (G.) *Geoffrea* (L.)

This tree is a native of Jamaica, growing in the low savannahs. It is a lofty tree, branching towards the top; and covered with a smooth gray bark. The leaves are pinnate, composed of four or five pairs of lancet-shaped, pointed, smooth leaflets, in pairs on short footstalks, with a terminal one. The flowers are in clusters on large branched spikes. The calyx is bell-shaped, with five short obtuse teeth; the corolla papilionaceous, of a pale rose colour, consisting of a roundish concave *veillum* notched at the apex; two oblong, obtuse, concave, somewhat shorter *alæ*; and an obtuse divided *carina*. The filaments, nine of which are united at the base, support simple, roundish anthers; the germen is oval, with a curved tapering style, and hooked stigma. The fruit resembles a small plum, is pulpy, marked on each side with a longitudinal furrow; and contains a hard seed.

Qualities. — Cabbage-tree bark has a disagreeable, sweetish, mucilaginous taste. The pieces, as they are brought to this country, are externally gray; internally black, furrowed, and

pulverulent, affording a powder resembling that of jalap. Its soluble components seem to be chiefly mucus, resin, extractive, a saccharine matter, and the narcotic principle.

Medical properties and uses.—This bark is a powerful anthelmintic. Its properties as such were first noticed by Mr. Peter Duguid¹, and have since been fully confirmed: but we are principally indebted to Dr. Wright for an accurate knowledge both of the plant and its virtues.² It is particularly useful in expelling lumbrici; and may be given in the forms of powder, decoction, extract, and syrup; but the decoction is the form most commonly employed. (See *Preparations and Compositions.*) It operates as a cathartic; but has a narcotic effect also: and requires therefore to be given at first in small doses, “which may be gradually increased till a nausea is excited, when the dose for that patient is ascertained.”³ In overdoses it is apt to occasion sickness, vomiting, fever, and delirium; and the same effects are produced if cold water be drunk during its operation. When such symptoms occur from either cause, they are generally removed by copious draughts of warm water, a dose of castor-oil, and plentiful dilution with lemonade or infusion of tamarinds. Owing to these deleterious effects of the remedy, it has not been generally used in this country.

The dose of the powder is from ʒj to ʒfs;—and that of the extract, which is made by evaporating the decoction, grs. iij. The syrup, which is the decoction with a double portion of sugar added to it, may be taken in doses of from 2 to 4 spoonful.

Official preparation. *Decoctum Geoffroyæ inermis*. E.

GEUM. *Spec. Plant. Willd.* ii. 1113.

Cl. 12. Ord. 8. Icosandria Polygynia. Nat. ord. Senticosæ Linn. Rosaceæ Juss.

G. 1002. Calyx ten-cleft. Petals five. Seeds with a bent awn.

Species 3. *G. urbanum*.⁴ Common Avens, or Herb Bennet. *Med.*

Bot. 2d edit. 502. t. 181. *Smith Flora Brit.* 554.

Official. GEUM URBANUM; RADIX. *Dub.* The root of Avens.

Syn. Bonoitte officinale (F.) Nelkenwurzel (G.) Cariofilaia (L.)

Avens is an indigenous perennial plant, common in woods and shady places, flowering from May to August. The root is fibrous; the stem about two feet high, nearly upright, roundish, hairy, leafy, branched at the top, and of a brownish hue on one side. The leaves are of a deep green colour, on channelled footstalks; those nearest the root pinnated and lyrate, with two pairs of unequal leaflets, and a larger wedge-shaped terminal one; the upper leaves are simple, trifid, and

¹ *Physical and Literary Essays*, ii. 264.

² *Phil. Trans.* l. c.

³ *Wright*, l. c.

⁴ *Caryophyllata, Alston's Mat. Med.* vol. i. p. 402.

pointed; and all cleft, serrated, and hairy. The stem-leaves are accompanied with a pair of large, rounded, lobed, toothed stipules resembling the smaller leaflets. The flowers are terminal and solitary, on peduncles. The calyx is externally brownish, internally pale green, of one piece, divided into five large pointed segments, and five intermediate ones much smaller, and lanceolate. The petals are bright yellow, small, with claws, and spreading: the filaments awl-shaped, nearly as long as the larger segments of the calyx, yellowish, inserted into the calyx; at first bent inwards, afterwards erect, and supporting yellow anthers. The germens are hairy, collected into a pear-shape, the styles jointed in the middle, with simple stigmas. The seeds are hairy, with purple naked awns, hooked, and kneed near the apex.

The root should be dug up in March; for the odour, which is then strong, is almost lost when the flowers appear. It should be dried in the air, with a moderate heat. The large roots are to be preferred. The cultivated are supposed to be superior to the wild.

Qualities. — Avens root has a fragrant odour resembling that of cloves, and a bitterish austere taste. The pieces are of a dark brownish red colour on the outside, and internally white. Its sensible qualities are extracted both by water and alcohol; and in distillation with water it yields a small portion of heavy volatile oil. The watery infusion reddens litmus paper, and strikes a black colour with sulphate of iron.

Medical properties and uses. — The root of avens is astringent, tonic, and antiseptic. It is mentioned by Ray as a febrifuge, but has been very little used in Britain, and was altogether unnoticed, until Buckhave, in a work entitled *Observationes circa Radicem Gei urbani*, adduced numerous instances of its efficacy in intermittents. The continental practitioners recommend it in dysentery, chronic diarrhœa, and flatulent colic; and as a general tonic in all cases in which cinchona is commonly employed. The Dublin College has therefore judiciously inserted it in the list of materia medica; and, being an indigenous remedy, it deserves attention. It may be exhibited in the form of powder; or in an electuary compounded with honey and rhu-barb; or a decoction may be made with one ounce of the root and one pint of water; or a tincture with similar proportions of the root and alcohol. The dose of the powder is $\mathfrak{z}\text{ss}$ or $\mathfrak{z}\text{j}$, four times a day; of the decoction $\mathfrak{f}\mathfrak{z}\text{j}$ every hour; and of the tincture $\mathfrak{f}\mathfrak{z}\text{ss}$ properly diluted three or four times a day.

¹ Augsburg beer, which is much prized on the continent, is supposed to owe part of its excellence to the custom which prevails of putting a small bag of the root of Avens into each cask. *Nicholson's Journ.* vol. xxx, p. 80.

GLYCYRRHIZA.¹ *Spec. Plant. Willd.* iii. 1143,

Cl. 17. *Ord.* 4. Diadelphia Decandria. *Nat. ord.* Papilionaceæ *Linn.*
Leguminosæ Juss.

G. 1366. *Calyx* bilabiate; upper lip three-cleft, lower undivided.
Legume ovate, compressed.

Sp. 4. *G. glabra*. Common Liquorice. *Med. Bot.* 2d ed. 420. t. 152.

Official. GLYCYRRHIZÆ RADIX. *Lond. Dub.* GLYCYRRHIZÆ
 GLABRÆ RADIX:—EXTRACTUM. *Edin.* Liquorice root, and the
 extract.

Syn. Rglisse (*F.*) Sussholzwurzel (*G.*) Legorizia (*I.*) Regaliza (*S.*) Ussulussoos
 (*Arab.*) Iē'nima't'h (*H.*) Yastimadhuca (*San.*)

The liquorice plant is a native of the south of Europe and Syria; but the greater part of what is used in Britain is the produce of its own soil by cultivation. The London market is supplied chiefly from Mitcham in Surry.² It flowers in August. The root is perennial, running when in its proper soil, a light sandy one, very deep; it is round, the thickness from that of a goose-quill to that of the thumb, long, thin, flexible, furnished with sparse fibres; covered with a brownish cuticle, internally fibrous, of a pale yellow colour, and juicy. The stem rises four or five feet in height, is herbaceous, and striated, with few branches. The leaves are alternate, and pinnated; consisting of four or five pairs of ovate, retuse, petiolated leaflets, with a terminal one; of a pale green colour, and clammy on the under side. The flowers are papilionaceous in long axillary sparse spikes, of a blue or purplish colour. The calyx is persistent, tubular, and divided above; the corolla consists of an ovate, lanceolate, obtuse, erect, concave *vexillum*; two oblong obtuse *alæ*, and a shorter *carina*. The filaments are ten, nine of them united at the base, bearing simple roundish anthers; the germen is short, with a tapering style and blunt stigma. The legumes are ovate, flattened, smooth, acute, one-celled, containing two or three small kidney-shaped seeds.

When liquorice root is three years old, it is dug up for use in November. "The whole roots are then washed, the fibres cut off; and the smaller roots separated from the larger ones. The former, termed the offal, are dried, and ground to powder; the latter are packed up, and sold to the druggists."³

Qualities.—This root is inodorous, and the taste sweet and mucilaginous, leaving, when it is chewed without being peeled, a slight degree of bitterness in the mouth. The powder, if good, is of a brownish yellow colour, and has a rich sweet taste, more agreeable than that of the fresh root; but it is said to be

¹ The name is derived from γλυκύς sweet, and ῥίζα a root.

² Very little is now grown at Godalming, where it was formerly cultivated to some extent. Vide *Stevenson's Survey of Surry*, p. 380. It was first cultivated in England, in 1538. *Stow.* ³ The price of the best roots is about 3l. per cwt. *Stevenson*, l. c.

often sophisticated with flour, and other substances not quite so wholesome, in which case it has a fine pale yellow colour.

The medical properties of the root depend on a saccharine matter and mucus: water, by coction, extracts both of these principles; but alcohol only the saccharine matter. For the properties of the extract which is imported from Spain, see Part III. (*Preparations and compounds.*)

Medical properties and uses.—Liquorice root is a pleasant demulcent; but on account of its bulk it is rarely used in substance.¹ The decoction of it, either alone, or in combination with other mucilaginous vegetables, is often given in catarrh, and in hectic and phthisical cases. It is also administered in some cases of dyspepsia where there is a deficiency of the natural mucus of the stomach,² which is injured by the acrimony of ill-digested food, and a morbid state of its secreted fluids. The dose of the powder is from grs. x to 3j, that of the decoction a cupful frequently repeated.

Official preparation. *Extractum Glycyrrhizæ*. L. E. D.

GRANATI CORTEX. Vide *Punica*.

GRATIOLA.³ *Spec. Plant. Willd.* i. 102.

Cl. 2. Ord. 1. Diandria Monogynia. *Nat. ord.* Personatæ Linn. Juss.

G. 49. Corolla irregular, reversed. Stamens two, sterile. Capsule two-celled. Calyx seven-leaved; the two exterior leaves spreading.

Species 1. G. *officinalis*. Hedge-Hyssop. *Med. Bot.* 2d edit. 359. t. 131. *Flora Danica*, t. 363.

Official. GRATIOLÆ OFFICINALIS HERBA. *Edin.* GRATIOLA; HERBA. *Dub.* The herbaceous part of Hedge-Hyssop.

Syn. Gratiolæ (F.) Gradenkraut (G.) Graziola (I.)

This plant is a perennial, a native of the South of Europe, growing in marshy or moist pastures, and flowering in June and July. It is cultivated in Britain.³ The root is creeping, cylindrical, fleshy, and fibrous; and sends up several upright, smooth, round stems, nearly a foot in height, with sessile leaves, in some degree sheathing, and opposite, in pairs. They are lanceolate, smooth, serrated towards the point, of a bright green colour, nearly two inches long, and half an inch broad, punctured and longitudinally veined beneath. The flowers are axillary and solitary, on slender red peduncles: the calyx is divided into five elliptical segments, with two lanceolate spreading bracteal leaves; the corolla is tubular, divided at the lip into four obtuse segments, the uppermost of which is much broader than the other three, and more reflected; the tube is yellow, intermixed with reddish streaks; the limb pale purple.

¹ The ancients believed that chewing the root allayed thirst; but this opinion was founded on a mistake. *Cullen, Mat. Med.* ii. p. 407.

² The name means *Gratia Dei*—from the supposed virtues of the plant.

³ It was first cultivated in Britain by Turner, in 1568.

Two of the filaments only are furnished with anthers; and the style is tapering, erect, with a divided stigma. The capsule is oval, and contains many small seeds.

The sensible qualities of *gratiola* are strongest when it is in flower, at which time, therefore, it should be gathered for use.

Qualities.—It has scarcely any odour; but the taste is very bitter and nauseous. Boiling water extracts its sensible qualities more perfectly than alcohol. The colour of the infusion approaches to that of Madeira wine; it slightly reddens litmus paper, and strikes an olive colour with a solution of sulphate of iron without occasioning a precipitate. When sulphuric acid is added to the unstrained infusion, it emits the odour of tamarinds; and when the infusion is filtered and slowly evaporated, spicular crystals are formed, which appear to be tartaric acid.

Medical properties and uses.—*Gratiola* is cathartic, and diuretic; and in large doses emetic. It has been much recommended by the German physicians in dropsy; and has also been used in jaundice, and worm cases. Hufeland found it extremely efficacious in visceral obstructions, and scrophulous affections¹; and we are even told that in the Vienna hospital it has cured the most confirmed cases of lues venerea!²

It is given either in the form of powder, or of infusion combined with aromatics. The dose of the powder is grs. xv. to ʒss; that of the infusion, made with ʒij of the dried herb and ʒss of warm water, from fʒiv to fʒj, three times a day.

GUAIACUM.³ *Spec. Plant. Willd.* ii. 538.

Cl. 10. Ord. 1. Decandria Monogynia. Nat. ord. Gruinales Linn. Rotaceæ Juss.

G. 819. Calyx five-parted, unequal. Petals five, inserted into the calyx. Capsule angular, three or five-celled.

Species 2. G. officinale. Official Guaiacum. *Med. Bot.* 2d edit. 557. t. 200.

Official. GUAIACI RESINA ET LIGNUM. *Lond.* GUAIACI OFFICINALIS LIGNUM-RESINA. *Edin.* GUAIACUM; LIGNUM, GUMMI-RESINA. *Dub.* The wood and Resin of Guaiacum.

Syn. Guyac (F.) Guajakgummi (G.) Guajaco (I.) Guayaco (S.)

This tree is a native of Jamaica, Hispaniola, and the warmer parts of America.⁴ It rises forty feet in height, and is four or five in circumference, with many divided knotted branches. The bark of the trunk is of a dark gray colour, variegated with greenish or purplish specks, but that of the branches is ash-coloured, with fissures. The leaves are abruptly pinnate, consisting of two or three pair of smooth, shining, veined, obovate, dark green leaflets, almost sessile. The flowers are peduncled

¹ Hufeland über die Natur, &c. der Scrophula. ² Kostrewski, Dissert. de *Gratiola*, p. 64.

³ The Spanish name *Guayaco*, comes from the Indian *Hoaxacan*. *Miller's Dict.*

⁴ The tree was cultivated in this country by the Duchess of Beaufort in 1699.

in kind of umbels, which spring from the divisions of the smaller branches. The calyx consists of five, concave, oblong, blunt, spreading, unequal, deciduous leaves; the petals are five, of a rich blue colour, elliptical, concave and spreading; the stamens are erect and villous, with yellowish hooked anthers; the germen is oval, with a short style and simple stigma; and the capsule subturbinate, on a short pedicel, smooth, and of a pale ferruginous hue, pentagonous, with ribbed angles, and 5-celled; but 2 or 3 often abortive.¹ The seeds are solitary, and angled.

All the parts of this tree possess medicinal qualities; but the wood and the peculiar substance afforded by it are the only parts used: and the virtues of the wood depend altogether on the peculiar matter it contains. This is spontaneously exuded from the tree, and is called native gum: it concretes into tears, which are semipellucid and very pure; but the greater part of it is obtained by making incisions into the trunk, or, as it is termed, jaggings the tree. This operation is performed in May; and the juice, which flows copiously, is concentered by the sun. It is also obtained by sawing the wood into billets, and boring a hole longitudinally through them; so that, when one end of a billet is laid on a fire, the guaiac melting, runs through the hole from the opposite end, and is collected in a calabash. Boiling the chips or raspings in salt and water, also separates the guaiac, which as it rises to the surface may be collected by skimming.

The wood is brought to this country either in large solid pieces which weigh from four to five cwt. each, and covered with a yellowish alburnum, or already rasped. The guaiac, or gum as it is improperly termed, arrives in casks and mats; the former containing from one to four cwt. the latter generally less than one cwt each.

Qualities.—The wood of guaiacum is inodorous, but when heated it emits an aromatic odour; and the taste is bitterish, subacid, and biting. It is very hard, heavier than water, externally yellowish, and internally of a blackish brown colour mixed with green streaks. The resin, or guaiac, has a fragrant odour, with scarcely any taste, but occasions when swallowed a sensation of heat in the throat. It has a resinous aspect; is of a greenish brown colour externally, and internally presents a mixture of greenish, reddish, and brownish tints. It is somewhat translucent, breaks with a vitreous fracture, and is easily reduced to a powder, which is gray at first, but becomes green in a short time when it is exposed to the air and light; a change which appears to depend on the absorption of oxygen.² The

¹ *Gært. de Fructibus*, ii. 148. t. 113. fig. 1.

² This effect of light and air was first noticed by Doctor Wollaston, who found that the most refrangible produced this change; and subsequent experiments of Mr. Brande

specific gravity of guaiac is 1.2289. It was generally regarded as a gum resin, till Mr. Brande's experiments showed it to be a substance *sui generis*, differing from both gum and resin.

When guaiac is digested in water a little extractive only is dissolved, in the proportion of 9 parts in 100, and the infusion has a greenish brown colour and a sweetish taste. Alcohol dissolves readily 95 parts in 100, and the solution is decomposed by the mineral acids, affording precipitates which assume various tints of colour (see *Tinctura Guaiaci*). Sulphuric ether dissolves four parts in ten of guaiac, and when evaporated on water leaves a tough, pellucid pale brown pellicle, which appears to be pure guaiac: it becomes green after some time; and a small portion of extractive remains dissolved in the water. The alkaline solutions and their carbonates dissolve it readily; and the solutions are precipitated by the diluted sulphuric, the nitric, and the muriatic acids. Sulphuric acid dissolves it with scarcely any effervescence, affording a solution of a rich claret colour, which, when fresh prepared, deposits a lilac-coloured precipitate on the addition of water; and when heated separates some charcoal. Nitric acid dissolves it with a strong effervescence and a copious extrication of nitrous fumes; and when the solution is evaporated, it yields a large portion of oxalic acid: by the diluted acid it is converted into a brown resinous substance. Muriatic acid dissolves a small portion only, and affords a solution of a brown colour. I found that, during the solution of guaiac in these acids, the heat which was evolved raised the thermometer in the following proportions: in the sulphuric 44; in the nitric 120; and in the muriatic 8 degrees. Nothing comes from the distillation of guaiac in water; but Mr. Brande obtained from 100 parts of it distilled in close vessels the following products: acidulous water 5.5, thick brown oil 24.5, thin empyreumatic oil 30.0, charcoal remaining in the retort 30.5, and 9.5 of gasses, which were chiefly carbonic acid and carburetted hydrogen.¹ From these experiments it is clear that guaiac differs from resin; and we also learn that the mineral acids are incompatible in prescriptions with it.

It is sometimes adulterated with common resin and Manchin gum. The former is detected by the turpentine emitted when the suspected guaiac is thrown on hot coals; and the latter by adding to the alcoholic solution a few drops of sweet spirit of nitre, and diluting with water; the guaiac is precipitated, but the adulteration floats in white striæ.

clearly proved it to arise from oxygen. I found that the change takes place in an hour, when the powder is exposed to sunshine. It appears to be again deoxidized if exposed to the least refrangible rays only, according to Dr. Wollaston's experiments.

¹ *Philosophical Trans.* 1806: and *Phil. Mag.* xxv. 107.

Medical properties and uses. — Both the wood and the guaiac are stimulant, diaphoretic, diuretic, and purgative. The wood was introduced into Europe by the Spaniards as a remedy for lues venerea in 1508, but it had long before been used for the same purpose by the natives of St. Domingo. It obtained so much celebrity, that the exhibition of mercury was discontinued for a considerable length of time¹, and even in the eighteenth century its specific powers over this disease were maintained by Boerhaave: but frequent disappointments and more correct observations have shown that it possesses no powers of eradicating the venereal virus; and that it is useful, only after a successful mercurial course, for repairing the strength and vigour of the system; “and where a thickened state of the ligaments, or of the periosteum, remains, or where there are foul indolent ulcers²,” or in suspending the progress of some of the secondary symptoms for a short time, as ulcers of the tonsils, eruptions, and nodes. The decoction of the wood has been found more useful in cutaneous diseases, scrofulous affections of the membranes and ligaments, and in ozaena. The guaiac itself is an efficacious remedy in chronic rheumatism and arthritic affections, as well as those diseases for which the decoction of the wood is usually given; and in every respect it may be regarded as the active ingredient of the wood. Its sensible effects are a grateful sense of warmth in the stomach, dryness of the mouth, and thirst, with a copious flow of sweat, if the body be kept externally warm, or if the guaiac be united with opium and antimonials; but when the body is freely exposed, instead of producing diaphoresis, it augments considerably the secretion of urine. It may be exhibited either in substance or in tincture. The dose is from grs. x. to ʒss, in the form of pills or of bolus; or made into an emulsion with water by means of mucilage or yolk of egg. Larger doses purge.

Officinal preparations. Of the wood — *Decoctum Guaiaci comp.* E. Of the guaiac — *Mistura Guaiaci*. L. *Tinctura Guaiaci* L. E. D. *Tinctura Guaiaci ammoniata*. L. E. D.

HÆMATOXYLON.³ *Spec. Plant. Willd.* ii. 547.

Cl. 10. Ord. 1. Decandria Monogynia. Nat. ord. Lomentaceæ Linn. Leguminosæ Juss.

G. 880. *Calyx* five-parted. *Petals* five. *Capsule* lanceolate, one-celled, two-valved, with the valves boat-shaped.

Species 1. *H. campechianum*. The Logwood-tree. *Med. Bot.* 2d. ed. 455. t. 163.

¹ It was then sold for seven gold crowns a pound.

² Pearson's *Observations on the Effects of various Articles of the Materia Medica in the cure of Lues venerea*, p. 10.

³ From αἷμα blood, and ξύλον wood. *Millar's Dictionary*. The trivial name *Campechianum*, and the English term *Campechi wood* originated from *Palo Campechio*, the name imposed by the Spaniards who first discovered the wood.

Official. HÆMATOXYLI LIGNUM. *Lond. Edin. Dub.* Logwood.

Syn. Bois de Campeche (F.) Kampeesch-holz; Blauholz (G.) Campeggio (I.)

This tree is a native of South America, and attains to great perfection at Campeachy, in the bay of Honduras. It was introduced into Jamaica in 1715, and from its quick growth now grows in an abundance which much incommodes the landholders in the neighbourhood of Savannah la Mar; flowering in March and April.¹ The stem and branches are generally crooked, the former is seldom above twenty inches thick; and the tree scarcely ever rises more than twenty-four feet in height. It is covered with a dark-coloured rough bark; and has many smaller ramifications, which are close, prickly, and beset with strong spines. The leaves are abruptly pinnate, each composed of four or five pairs of sessile, obcordate, obliquely nerved leaflets. The flowers are in terminal spicular clusters: the calyx consists of brownish purple-coloured oblong obtuse segments; the petals are spreading, obtusely lanceolate, and of a reddish yellow colour. The stamens are downy, tapering, shorter than the corolla, with small oval anthers; the fruit is a double-valved pod, containing five or six small flat reniform seeds.

Logwood is brought to this country in logs, which are afterwards chipped. Those pieces which have a deeper colour are to be preferred. It is much employed as a dye-wood.

Qualities. — This wood is inodorous, but has a sweet astringent taste. It is hard, compact, heavy, and of a deep red colour, which it gives out both to water and alcohol. The recent infusions made with distilled water are yellow, but those with common water have a reddish purple colour, which is deepened by the alkalies, and changed to yellow by the acids. They form precipitates with the sulphuric, nitric, muriatic, and acetic acids; solutions of alum, sulphates of iron and of copper, acetate of lead, and tartarized antimony²; which are therefore incompatible in prescriptions with these infusions and decoctions. The colour of the precipitates varies; those with the acids are reddish brown, with alum and tartarized antimony violet, with sulphate of iron blueish black, sulphate of copper purplish blue, acetate of lead reddish black, and sulphate of magnesia, purple. According to Chevreul, logwood contains a volatile oil, tannin, two kinds of colouring matter, one of which is soluble both in water and alco-

¹ It was cultivated in this country by Mr. Miller in 1739; but is not now found in our hot-houses.

² When an infusion or decoction of logwood is kept for some time it becomes capable of producing a precipitate with gelatine; but when recent, no such effect takes place either with glue or isinglass. This was first observed by Dr. Bancroft.

hol, the other soluble in alcohol only; acetate of lime and of potash.¹

Medical properties and uses.—Logwood is supposed to be astringent: but this is a questionable opinion, for although it produces an ink with sulphate of iron, it possesses no acerbity, and does not produce a precipitate with gelatine.² It is employed in diarrhoea, and in the latter stage of dysentery; but the extract is more usually ordered. It has the advantage of giving tone to the general system, and thus obviates the lax state of the intestines. The decoction may be taken in doses of two or three fluid ounces, frequently repeated.

Official preparation. *Extractum Hamatoxyli*. L.

HELLEBORUS. *Spec. Plant. Willd.* ii. 1335.

Cl. 13. Ord. 6. Polyandria Polygynia. Nat. ord. Multisiliquæ Linn. Ranunculaceæ Juss.

G. 1089. Calyx none. Petals five or more. Nectaries bilabiate, tubular. Capsules many seeded, nearly erect.

Species 3. *H. niger*. Black Hellebore. *Med. Bot.* 2d ed. 473. t. 169.

Species 6. *H. fœtidus*. Fœtid Hellebore, or Bear's foot. *Med. Bot.* 2d ed. 477. t. 170. *Smith Flor. Brit.* 598. *Eng. Bot.* t. 613.

1. HELLEBORUS NIGER.

Official. HELLEBORI NIGRI RADIX. *Lond.* HELLEBORI NIGRI RADIX. *Edin.* —; (MELAMPEDIUM³) RADIX. *Dub.* The root of Black Hellebore.

Syn. Hellebore (F.) Schwartze Niesswurzel (G.) Ellebro negro (I.) Helleboro negro (S.) Kālī Koothie (H.) Khurbue usivud (Arab.)

Black hellebore, so named from the dark colour of the root, is a native of Austria, the Apennines, and Italy; flowering from December till March; whence it has been called Christmas rose, and has obtained a place in our gardens.⁴ The root is perennial, transverse, rough, knotted, externally black, internally whitish, and sends off many depending fibres. The leaves, which are deep green, spring directly from the root on long maculated petioles; and are composed generally of five leaflets, pedate, two being supported on one partial petiole on each side, and one terminal: the leaflets are ovato-lanceolate, smooth, shining, and coriaceous, with the upper half of each sparsely serrated. The flower-stalks are scapes, six or eight inches long, erect, round, somewhat tapering, sheathed, variegated with red, and bearing one or two flowers. The floral leaves supply the place of a calyx, are oval, and indented at the apex. The corolla consists of five large, roundish, concave, spreading petals, at first white, with a tint of red, deepened by age, but finally changing to green, after the pollen is shed, and the seed

¹ *Annales de Chimie*, lxi. 254. *Thomson's Chemistry*, v. 206.

² Vide *Baucroft. Phil. of Permanent Colours*, 2d ed. v. ii. p. 395.

³ Named from Melampus, a soothsayer, who first gave it as a purgative.

⁴ It was first cultivated in Britain by Gerard in 1596.

impregnated. The nectaries are greenish yellow, tubular, two-lipped, the upper lip longer and slightly emarginate, the lower finely notched. The filaments are numerous, and thread-like, with yellow anthers. The germens, which vary in number from four to eight, become beaked pods, containing many oval, black, shining seeds.

This plant has been supposed to be the *hellebore* of Hippocrates, but there is every reason for agreeing with Willdenow, that his fifth species, *Helleborus orientalis*, is the drug of the ancients. It was found by Bellonius and Tournefort¹ growing in plenty about Mount Olympus, and the island Anticyra, which was formerly celebrated for its production. Sometimes the roots of *Helleborus viridis*, *Adonis vernalis*, *Trollius europæus*, *Actæa spicata*, *Astrantia major*, and *Aconitum neomontanum*, are either ignorantly or fraudulently substituted for those of black hellebore. These are distinguished chiefly by their colour being paler than the roots of the hellebore.

Qualities.—The fibres of the roots, which are the parts used in medicine, are about the thickness of a straw, from four inches to a foot in length, corrugated, of a deep brown black on the outside, and internally white or yellowish. They have an unpleasant odour; and a nauseous, bitterish, acrid taste, benumbing the tongue, and leaving upon it an impression, “as when it hath been a little burnt with eating or supping any thing too hot.”² The acrimony is impaired by keeping; and appears to depend on a volatile matter, as water distilled from the root has an acrid taste. Both alcohol and water extract its medicinal properties; and, as the spirituous preparation is the most active, these appear to depend on its resinous part. By coction with water it yields a very considerable portion of gummy matter and some resin. (See the extract.)

Medical properties and uses.—Black hellebore root is a drastic cathartic, and on this property probably depends its emmenagogue and hydragogue powers. In smaller doses it is supposed to act as an alterative. It has been much celebrated in mania, melancholia, dropsy, scabies, and worms; but does not appear to possess any particular advantages over the other resinous purgatives, which act with less virulence. As an emmenagogue it is useful in plethoric habits, when preparations of iron are contra-indicated. When black hellebore is taken in too great quantity, it occasions violent vomitings, inflammation of the stomach, and death. These effects are to be obviated by evacuating the stomach, by drinking copiously of mild mucilaginous fluids, and then employing the most powerful antiphlogis-

¹ Bellonii Obs. l. iii. c. 41. Tournefort, Voyage, ii. let. 21. p. 189.

² Grew,

tic measures. It is seldom prescribed in substance; but either in the form of tincture, or of extract, or of decoction made with two drachms of the root to a pint of water.¹ The dose of the root is from grs. x. to ʒj, which purges strongly; but to produce its other effects two or three grains are sufficient. Of the decoction fʒj may be given every four hours.

Official preparations. *Tinctura Hellebori nigri*. L. E. D. *Extractum Hellebori nigri*. E. D.

2. HELLEBORUS FÆTIDUS.

Official. HELLEBORI FÆTIDI FOLIA. *London.* HELLEBORASTER; FOLIA. *Dub.* The leaves of Fœtid Hellebore.

Syn. Hellebore fœtide (F.) Stinkende Nieswurz (G.) Elleboro fetido (I.) Helleboro hediondo (S.)

This is a perennial indigenous plant, growing under hedges and in shady places, on a chalky soil, flowering in March and April. The root is small, and bent, with a great many slender dark-coloured fibres. The stem is about eighteen inches high, round, strong, naked, divided and subdivided into branches, and compressed towards the top. The leaves, which stand upon long channelled footstalks, surrounding the middle of the stem, are of a deep lurid green colour, and pedate: the leaflets long, narrow, lanceolate, obscurely serrated, generally nine in number, four united at their bases on each side, and one terminal. At each ramification of the flower-stem is a stem-clasping broad stipule, or scaly leaf, trifid at the place where the stem first branches, then bifid, and at the ultimate subdivisions entire, oval, and pointed; those on the flowering stem are of a much paler green than the proper leaves. The flowers are numerous, terminal, peduncled, and pendent: the petals are five, two of which are oval, and the other three heart-shaped; the whole concave, persistent, of a pale green colour tipped with a claret purple: the nectaries are five or eight, similar to those of the black hellebore. The stamens are numerous, and flat at the base, the length of the petals, with white anthers; the germens three or more, becoming beaked pods, containing round black seeds.

These roots were long used as domestic worm medicine, before they were introduced into the list of materia medica by the London College.²

Qualities.—The odour of the recent plant is fœtid, the taste of the leaves when chewed bitterish, biting, and so acrid as to excoriate the mouth. The stipules possess these qualities in a greater degree than the proper leaves.

Medical properties and uses.—The leaves of fetid hellebore

¹ Winttingham, *Thesaurus Med.* p. 67. ² "Probably upon the authority of Dr. Bissett." *Med. Bot.* 478.

are strongly cathartic and emetic; and in overdoses prove highly deleterious. They have been successfully, although they are now rarely, used as an anthelmintic against the lumbricus teres, for which they were strongly recommended by Dr. Bissett; and Woodville tried them with advantage upon a girl of twenty years of age, in the Middlesex Dispensary. They are given dried in the form of powder; or a decoction made by boiling ʒij of the recent leaves, or ʒss of the dried, in fʒviii of water for fifteen minutes; or a syrup made with the expressed juice of the recent leaves moistened with vinegar, which is supposed to correct the violent effects of the drug.

The dose of the powder is from grs. vj to ʒj; of the decoction from fʒj; and of the syrup a tea-spoonful at bed-time, and one or two in the morning, to children betwixt two and six years of age, on two or three successive days.

HERACLEUM. *Spec. Plant. Willd. i. 1421.*

Cl. 5. Ord. 2. Pentandria Digynia. Nat. ord. Umbellatæ.

G. 541. Fruit elliptical, emarginate, compressed, striated, margined.

Corolla difform inflex emarginate. Involucre caducous.

Species H. gummiferum. Gum-bearing Heracleum. Willd. Hortus Berolin. i. t. 53, 54.

Officinal. AMMONIACUM. Lond. Edin. Dub. Ammoniac.

Syn. Gomme Ammoniaque (F.) Ammoniak (G.) Gomma Ammoniaco (L.) Ammoniac (S.) Ushok (Arab.)

The plant which yields this gum-resin is a native of Africa, and the East Indies. It has not been scientifically described by any one who has seen it growing in its native soil¹, and the description which is about to be given, is that of a plant which Willdenow reared from seed found in the ammoniacum of the shops, and has named *Heracleum gummiferum*. The London College, on his authority, has admitted it as the ammoniacum plant; it flowers in June and July. The root is tapering, a span in length, fleshy, whitish, and twice divided at the apex. The stem rises three feet in height, is branched, erect, about an inch thick at the base, deeply furrowed, and sparsely furnished with hairs. The branches are opposite and divaricated. The radical leaves are a span in length, cordate, three-lobed, toothed, pubescent on the under surface, and supported on roundish, channelled, furrowed, petioles: the stem-leaves are opposite, somewhat cordate, three or four inches long, toothed, on petioles, the margin of the base of which is leafy, ventricose, and sheathing. The umbels are large and many-rayed, composed of many-flowered convex umbellules. The involucre is polyphyllous, with the leaflets linear, lanceolate, and deci-

¹ Mr. Jackson has seen and described the plant, of which he has also given a figure, but neither can be regarded as scientifically correct; and of course not authority to be relied on. *Account of Morocco*, p. 88.

duous; as are also the involucels, which, however, are persistent. The marginal flowers are hermaphrodite and rayed, the central hermaphrodite without the germen. The margin of the calyx is obsolete. The *marginal* flowers have a pentapetalous unequal corolla, the two outer petals being large, dilated, and somewhat cordate; and the three inner inflex cordate, and half the size only of the others. The *central* flowers are pentapetalous, equal, with inflex cordate petals. The filaments are five, capillary, with roundish anthers. There is no germen in the central flowers, but in the marginal it is oblong, inferior, and crowned with two short styles inserted into a glandular body, with capitate stigmas. The fruit is oblong, slightly emarginate, consisting of two striated seeds, convex on one side, and on the other plane.

Willdenow could not obtain any of the gum-resin, from this plant; but he has no doubt of its being the plant from which it is obtained. Mr. Jackson, in his account of Marocco, informs us, that the ammoniacum plant, which in the Arabic is named *feshook*, resembles the fennel¹, is ten feet in height, and one inch thick in the thickest part of the stem. The plant grows at El-araiche and M'Sharrah Rumellah; and neither bird nor beast is seen near the spot, but it is attacked by a horned beetle which perforates the stem with its horn, and the juice runs out at the wound. The ammoniacum is, however, procured by incisions also, and allowed to drop on the ground, where it hardens by the air and sun; on which account that from Barbary is mixed with a red earth, and is not saleable in the London market. The best ammoniacum is brought from the East Indies, packed in cases and chests. It is in large masses composed of small round fragments or tears; or in separate dry tears, which is generally considered a sign of its goodness.

Qualities.—Ammoniacum has a peculiar faint but not ungrateful smell; and a bitter nauseous sweet taste. The tears are yellow on the outside, and white within; brittle, and break with a vitreous fracture. Their specific gravity is 1.207. Ammoniacum is adhesive in the warm hand, softens by heat, but does not melt; and is partially soluble in water, alcohol, ether, solutions of alkalies, and vinegar. When triturated with water the solution is milky, but after some time it lets fall a resinous matter; which is the part of the ammoniacum that is taken up by ether and alcohol. Water or alcohol, when distilled off ammoniacum, bring over nothing from it. According to the analysis of Braconnot, it is composed of 70.0 parts of resin, 18.4 gum, 4.4 glutinous matter, and 6.0 water, in 100.0

¹ Both Dioscorides and Pliny describe ammoniacum as the juice of a species of *ferula* growing in Libya. *Dioscor.* l. iii. c. 98. *Plin.* l. xii. c. 28.

parts; 1·2 parts being lost in the analysis.¹ I find that sulphuric ether takes up six grains in ten of ammoniacum, and when evaporated, leaves a yellowish white resin², which is long of hardening, and is insipid, although it possesses the odour of the gum-resin: the taste resides in the gum, which in other respects possesses the properties of acacia gum. Water, therefore, is the proper menstruum for ammoniacum.

Medical properties and uses.—Ammoniacum is a stimulating expectorant, deobstruent, and antispasmodic; and is in large doses purgative. Externally it is discutient and resolvent. It is prescribed with advantage in asthma, chronic catarrh, and some other pulmonary affections; but, on account of its stimulating properties, its use must be avoided where any inflammatory action of the chest is going forward. As a deobstruent it is useful in visceral obstructions, hysteria, and chlorosis: and in that peculiar state of the bowels often accompanying hypochondriasis and dyspepsia, in which there is an almost constant degree of colic, particularly after taking food, and which appears to arise from a viscid mucus lodged in the intestines, a combination of ammoniacum and rhubarb is singularly efficacious. As an antispasmodic, Cullen properly considers it as the least powerful of the fetid gums. It may be combined with tartarised antimony, squills, assafoetida, and ipecacuanha, to promote its expectorant powers; and with myrrh, iron, and bitters, when its deobstruent properties are required. It is given either in substance, or diffused in water in the form of emulsion. Externally, it is applied under the form of plaster to scirrhus tumours and white swellings of the joints. (See *Preparations and Compositions*.)

The dose of ammoniacum is from grs. x. to grs. xxx.

Officinal preparations. *Mistura Ammoniaci*. L. D. *Emplastrum Ammoniaci*. L. *Emplastrum Ammoniaci cum Hydrargyro*. L.

HIRUDO.³ *Syst. Nat. Gmelin*. i. 3095.

Cl. 6. *Ord.* 1. Vermes intestina.

G. 280. Body oblong, truncated at both extremities, cartilaginous, moving by dilating the head and tail.

Sp. 2. *H. medicinalis*. The Medicinal leech. *Amœnit. Academ.* vii. 40.

Officinal. HIRUDO MEDICINALIS. *Dub.* The Leech.

Syn. Sang sue (F.) Blutlul; Ægle; Lake (G.) Sanguisuga; Mignatta (I.) Sanguijuela (S.) Khêruheen (Arab.) Jone (H.) Jelauea (Sanc.)

This species of leech is common throughout Europe, inhabiting lakes and stagnant pools. The body is about three inches long, tapering towards the head, composed of rings,

¹ *Annales de Chim.* lxxviii. 69. *Thomson's Chemistry*, v. 143.

² Nitric acid converts this resin into a yellow matter, which imparts a permanent yellow colour to silk.

³ Named from *haurio*, expressive of its well known peculiar action.—*Johnson's Treatise*, p. 40.

and capable of being very much lengthened and contracted. The colour of the back is dark olive, divided by four yellow or buff-coloured longitudinal lines, two of which are lateral, with a black line running through their centres; and the other two, which are on the upper part of the back, dividing it into three nearly equal parts, are broken with black. Within these lateral and upper lines are two others, which appear like chains of black and yellow. The belly is pale olive, thickly maculated with black or very dark blue irregular spots. The mouth is triangular, placed in the centre of a horse-shoe sucker which is under the head; and at the anal extremity is a broad circular sucker, by which it attaches itself to different bodies.

Leeches are oviparous. All the ova are discharged in one involucre, near the surface and the margins of pools, and are hatched by the heat of the sun. They do not cast the skin, as has been generally supposed; but at certain times throw off a tough slimy substance from their bodies, apparently the production of disease; and from which they get disincumbered by drawing themselves through between the moss and the matted roots of rushes.¹ During winter they remain almost torpid, hid amongst the thick network of aquatic roots which surround the pools.

Norfolk supplies a great part of the leeches which are brought to the London market; some are taken also in Suffolk, Hampshire, Kent, Essex, and Wales, but many are imported from Bourdeaux and Lisbon.² They are caught in spring and autumn by people who wade into the pools and allow them to fasten on their limbs; or more generally, the catchers beat, as they wade in, the surface of the water with poles, which sets the leeches in motion, and brings them to the surface; when they are taken with the hand and put into bags. As they come to the surface just before a thunder storm this is regarded as a good time for collecting them. They are best preserved in vessels half filled with soft water, kept in an equal and moderate temperature, (50° Fahr.) and covered over with a coarse cloth, so as to admit the air. The water should be changed once a week; and all the dead or sickly leeches removed from the general stock, for they are subject to much disease and great mortality. Leeches which have been used should not be returned to the stock till they appear to have completely regained their health and vigour, which is known by their feeling hard and firm when handled. As we are ignorant of their proper and na-

¹ I give this on the authority of Mr. Dickson of Covent Garden, who has made many curious observations on the œconomy of the leech.

² These differ from English leeches chiefly in having the belly of one uniform colour.

tural food, it is useless to attempt to feed them¹; but in winter it would perhaps be advantageous to put some moss into the vessel in which they are preserved.

Medical uses. — Leeches appear to have been first used by Themison. They are applied in cases where local blood-letting is necessary, as in ophthalmia, and particularly to places where cupping-glasses cannot be applied. In some habits, where there is a disposition to erysipelatous inflammation, their bites, which are triangular, occasion a considerable degree of irritation, and cedematous swellings follow, which are exceedingly troublesome; but in general they easily heal, and occasion no inconvenience. It is sometimes exceedingly difficult to make them bite, which they never will do when they are sick. The best mode of applying them, is to take them out of the water for some minutes before they are to be used, and to dry them well with a very soft cloth directly before they are applied. The part should also be well cleaned with soap and water, then washed with a little pure water, and made very dry. If there are any hairs on the spot, these must be close shaved. I have found this method preferable to that of wetting the part with milk and sugar, blood, or any other matter. When they, nevertheless, will not readily fix, or when it is wished to apply them very exactly on a particular spot, as, for instance, close to the angle of the eye in ophthalmia, Dr. Johnson recommends to puncture the part with a lancet; but I find that putting them into a large quill cut at both ends, and applying the end at which the head of the animal lies to the part, with the finger over the other end, is a never-failing mode of making them bite. The quill is withdrawn after they are firmly fixed. They drop off spontaneously, whenever they have gorged themselves with blood; and they may be separated at any time by sprinkling a little salt on the head. Very few leeches can draw more than half a fluid ounce of blood; and therefore it is necessary, in order to increase the quantity, to keep the orifices bleeding, by bathing them with hot water. It has been recommended to cut off the tail of the leech, so as to allow the blood to be discharged as fast as it is sucked, the leech continuing to suck notwithstanding this mutilation. After leeches drop off, the application of a little salt makes them disgorge all the blood they have sucked; and if they be immediately thrown into clean water, and this repeatedly changed for three or four times, they soon recover their health and vigour. Dr. Johnson advises the use of vinegar instead of salt, which is not apt to blis-

¹ Dr. Johnson says they live by adhering to and sucking the fluids of fish, frogs, &c.; but they take no kind of solid food. *Treatise on the Medicinal Leech*, p. 61.

ter the lips as salt does, preventing it from sucking for some considerable time.

HORDEUM *Spec. Plant. Willd. i. 472.*

Cl. 3. Ord. 2. Triandria Digynia. Nat. ord. Gramineæ.

G. 151. Calyx lateral, two-valved, one-flowered, three-fold.

Species 3. H. distichum. Common Barley. Viborg-Cereal. 35 t. 3.

Officinal. HORDEI SEMINA Lond. HORDEI DISTICHI SEMINA. Edin.

HORDEUM DISTICHUM; SEMINA. Dub. Barley.

Syn. Orge (F.) Gerstengraupen (G.) Orzo (L.) Cebada (S.) Iow (H.) Barlee Arise (Tam.)

Barley is asserted by Reidesel to be a native of Tartary, but the fact is not well ascertained.¹ It is an annual plant, and cultivated in almost every country of Europe. This species, which is the most generally cultivated in Britain, has a long flat spike or ear, with a double row of defective or male florets on each flat side, and a single row of fertile florets at each edge. The valves of the calyx, or outer chaff, are linear, and one half shorter than the corolla or inner chaff, which terminates in a straight, serrated awn or beard sixteen times its own length. When ripe the husk is coriaceous, angular, and continues close about the grain, which, when freed from it, is ovate, grooved, and angular.

Barley is used as an article of food, but less so than it was in former times; and it is now chiefly cultivated for the purpose of forming malt liquors and ardent spirits. It is formed into pearl barley by two different operations: the barley is first spread out and moistened; and then, in this state, by means of machinery is denuded of the cuticle, or shelled. It is afterwards rounded in a mill, which at the same time polishes the little granules into which it is formed.

Qualities.—Pearl barley is inodorous, and has a slightly sweetish taste. It consists of roundish granules of a pearly whiteness, composed almost entirely of starch, with some gluten, mucilage, and saccharine matter², which are dissolved in boiling water. The decoction very soon runs into the acetous fermentation. Barley is never used medicinally in substance.

Officinal preparations.—*Decoctum Hordei. L. E. D. Decoctum Hordei compositum. L. D.*

HUMULUS. *Spec. Plant. Willd. iv. 769.*

¹ Cardan asserts that it is a native of Athol in Scotland. Diodorus Siculus refers it to Egypt, where, he says, Osiris found it wild, and first cultivated it.

² Einhof, who analysed barley both in the unripe and ripe state, found that 3840 parts of barley in grain afforded 430 of a volatile matter, 720 husk, and 2690 of meal; and from the same quantity of barley meal he obtained 360 of volatile matter, 44 albumen, 200 saccharine matter, 176 mucilage, 9 phosphate of lime, with some albumen, 135 gluten, 260 husk, with some gluten and starch, and 2580 of starch; 76 parts were lost in the analysis. When this meal is macerated in alcohol it yields a yellow-coloured acrid thick oil, which is supposed to give the peculiar flavour to spirits from raw grain, and to be lost in malting. *Thomson's Chemistry, v. 254.*

Cl. 22. Ord. 5. Diæcia Pentandria. Nat. Ord. Scabridæ Linn.
Urticæ Juss.

G. 1795. Male. Calyx five-leaved. Corolla 0.

Female. Calyx. one-leaved, obliquely spreading, entire,

Corolla 0. Styles two. Seed one, within a leafy calyx.

Species 1. H. Lupulus. The Hop. Eng. Bot. t. 427. Smith's Flor.
Brit. 1077.

Offi. HUMULI STROBILI. Lond. Edin. The strobiles of the Hop.

Syn. Houblon grimpant (F.) Hopfen (G.) Luppolo (I.) Hoblon (S.)

The hop is an indigenous perennial plant growing in hedges, and flowering in July. It is very abundantly cultivated in Kent, Essex, Surry, and Suffolk; and the strobiles are picked about the end of August or the beginning of September.¹ The root sends up many long, striated, angled, rough, flexible stems, which support themselves by twining round upright bodies in a spiral direction from left to right. The leaves are opposite in pairs, petiolate, heart-shaped, serrated, entire, or lobed, and of a dark green colour on the upper disk. Both the leaves and petioles are scabrous, with minute prickles; and at the base of each leafstalk are two interfoliaceous, entire, reflected, smooth stipules. The flowers are axillary, and furnished with bractes: the males are yellowish white, in panicles and drooping: the females, which are on distinct plants, are in solitary cones or strobiles, ovate, and pendulous; composed of membranous scales of a pale greenish colour, tubular from being rolled in at the base, and two-flowered, each containing one round flattish seed, of a bay-brown colour, surrounded with a sharp rim, and compressed at the tip.

At the proper season, while the strobiles are yet scarcely ripe, the plants are cut about three feet from the ground, the poles on which they are twined pulled up, and the strobiles carefully picked off, one by one. Those that are over-ripe or defective are separated from those that are ripe enough, and both kinds are carried to the kiln as soon as possible after they are picked. The heat of the kiln requires to be regulated with great nicety; and in order to prevent them from drying too fast, many kilns have two floors, on the uppermost of which the greener hops are laid, and gradually dried before being brought to support the heat of the lower floor.² Charcoal is the fuel usually employed: other kinds of fuel injuring the flavour of the hops. The strobiles are considered sufficiently

¹ The culture of the hop plant was introduced into England from Flanders in 1524; and the strobiles were first used for preserving English beer in the latter part of the reign of Henry VIII; but the prejudice against them was very considerable, and the city of London, a hundred years afterwards, petitioned the parliament to prevent their use. There are now, however, severe penalties inflicted on brewers who use any other bitter for preserving their beer.

² This is the case at Farnham in Surry. See Stevenson's Survey, 363.

dried when they become crisp; but they acquire a degree of toughness and tenacity before they are bagged, from being laid in heaps in the store-houses. Five pounds of moist or under-ripe hops make one pound only when taken from the kiln. The best hops are brought to market in fine canvas sacks called "pockets," each of which contains about $1\frac{1}{4}$ cwt. of hops.

Qualities.—Hops have a strong, peculiar, fragrant, sub-narcotic odour, and a very bitter, aromatic, astringent taste. They have a pale greenish yellow hue, appear like thin transparent veined leaves; and although not tough, yet are difficult to pulverize. Their virtues are extracted by boiling water, or alcohol, or ether. The watery infusion has a pale straw colour, is rendered muddy by the mineral acids; alkalies deepen its colour; it strikes an olive with sulphate of iron; is precipitated by alcohol, solutions of superacetate of lead, nitrate of silver, and tartarized antimony: and when rubbed with magnesia or lime, a rod dipped in muriatic acid discovers the presence of ammonia. The ethereal tincture, when evaporated on water, leaves a pellicle of greenish intensely bitter resin, and deposits some extractive. By distillation in water, hops yield a volatile aromatic oil. From these experiments they appear to contain resin, extractive, mucilage, volatile oil, tannin, an ammoniacal salt, and what has been termed the bitter principle.

Medical properties and uses.—Hops are narcotic, tonic, diuretic; and, externally applied, anodyne and discutient. Their use as a preservative of beer has been long known, and also their narcotic powers in procuring sleep in the delirium of fever, and in mania, when used as a pillow; and owing to this effect having been lately confirmed, their efficacy as a general narcotic, when introduced into the stomach, has been investigated.¹ Dr. Maton observed that, besides allaying pain and producing sleep, the preparations of hops reduce the frequency of the pulse, and increase its firmness in a very direct manner. One drachm of the tincture and four grains of the extract given once in six hours, reduced the pulsations from 96 to 60 in twenty-four hours.² He found the extract exceedingly efficacious in allaying the pain of articular rheumatism, and our own experience has not ultimately afforded us sufficient proof of its utility as a sedative, and Dr. Bigsby's³ experiments have lessened very much the confidence practitioners were disposed to give to it; and we are rather surprised that the Edinburgh College has adopted it into their list of *Materia Medica*. An ointment compounded with the powder of the hop and lard is

¹ De Roche's. *De Humuli Lupuli Viribus medicis.*

² *Observations on the Humulus Lupulus, &c.* by A. Freake.

³ *Vide London Medical Repository.* vol. v. p. 97.

recommended by Mr. Freake as an anodyne application to cancerous sores. We have seen a fomentation of it afford much relief in painful swellings and tumours. It may be given in the form of powder, infusion, tincture, or extract. The dose of the powder is from grs. iij. to ʒj; that of the infusion, which is made with ʒfs of the hops and ʒj of boiling water, fʒjfs with fʒfs of cinnamon water, twice or thrice a day.

Official preparations — *Extractum Humuli*. L. *Tinctura Humuli*. L. E.

HYDRARGYRUM.¹ Mercury or Quicksilver.

Syn. Mercure (F.) Quicksilber (G.) Mercurio (I.) Azogue (S.) Abue (Arab.) Pára (H.) Páradá (San.)

This metal is found in Spain, Germany, and Hungary; Siberia, the Philippines, China, and Peru. The most productive mines are those of Idria, Carinthia, and the Palatinate; Almaden near Cordova in Spain², and Guanica Velica near Potosi in Peru.³ It is procured

A. In its metallic state :

- | | |
|--------------------------|--|
| i. Unalloyed | Sp. 1. <i>Native mercury</i> . |
| ii. Alloyed with silver. | 2. <i>Native amalgam</i> . |
| iii. With sulphur. | 3. <i>Cinnabar</i> . Var. a. Dark red.
b. Bright red. |
| | 4. <i>Hepatic mercurial ore</i> .
Var. a. Compact.
b. Slaty. |

B. Oxidized.

- | | |
|--|--------------------------------|
| iv. Combined with the muriatic
and a portion of sulphuric acid. | } 5. <i>Corneous mercury</i> . |
|--|--------------------------------|

Native quicksilver is found either in globules, disseminated on the surface, or collected in the crevices of other mercurial ores, and in marlite, calcareous spar, or other fossils. It has the lustre, opacity, fluidity, and other qualities of the pure metal; but owing to the small quantity which is found of it, the quicksilver of commerce is usually obtained from cinnabar. This ore is red, varying in the shades of its colour and in the degrees of its lustre. It occurs massive, disseminated, and crystallized; in the two former states always opaque, and in the latter translucent, or transparent. To obtain the metal, the ore, after being sorted, is reduced to powder, and mingled with about one-fourth of quicklime in powder. This mixture is put into large iron retorts, which are placed in a long furnace, and glass receivers adapted to each, but not luted until all the moisture it contains be driven off; the joinings of the vessels are then closely stopped with well-tempered clay, and a full red

¹ Ὑδράργυρος Græcorum.

² This is the oldest and the richest mine of Cinnabar in Europe. It was wrought by the Romans two thousand years ago: and yields about 6000 quintals of fluid mercury annually.

³ These were discovered in 1566 and 1567, by Henry Garces, a Portugeze.

heat kept up for seven or eight hours, in which time the mercury is volatilized, and condensed in the receiver. About ten ounces of mercury are usually obtained from 100lbs. of the ore.¹
Officinal. HYDRARGYRUS. *Lond. Edin.* HYDRARGYRUM. *Dub.* Quicksilver.

Syn. Mercure coulant (F.) Vide *Hydrargyrum*.

The greater part of the quicksilver which is used in this country is brought from Germany, in leathern skins, each of which contains from 60lbs. to 1 cwt. of the metal; and two or three of these are generally packed together in one cask. Sometimes, however, it is brought over in iron bottles. It is often adulterated by the admixture of lead, bismuth, zinc, or tin: and when the metal quickly loses its lustre, is covered with a film, or is less fluid and mobile than usual, leaves a stain on a delft plate, or does not readily divide into round globules, but into those with tails, it may be suspected. Lead is discovered by dissolving a portion of the suspected mercury in nitric acid, and adding to the solution water saturated with sulphuretted hydrogen gas, which gives a brown precipitate if it be present; and by this means one part of lead may be detected in 15260 of mercury. Bismuth is detected by pouring the above-mentioned nitric solution into distilled water, when the bismuth will appear as a white precipitate. Exposing the mercury to heat detects zinc; and tin is discovered by a weak nitro-muriatic solution of gold, which is precipitated purple by tin. It is purified by distillation with iron-filings; or by agitation in diluted sulphuric acid, until the acid ceases to become turbid; and then, after washing and drying the globules into which it has been divided, passing them through a pin-hole in the bottom of a funnel of writing paper.²

Qualities.—Pure mercury is inodorous, insipid, and of a bright white or silver colour. Its specific gravity is 13.568.³ It is always fluid at the ordinary temperature of the atmosphere; but becomes a solid malleable metal in a degree of cold sufficient to sink the thermometer to 39° below 0 of Fahrenheit.⁴ It boils at 656°, and is volatilized unchanged in close vessels, but is not capable of combustion.⁵ Mercury is oxidised by the air at its usual temperature, when subject to agitation; and is fully saturated with oxygen in a continued heat of 600°. It is oxydized by, and combines with, the sulphuric, nitric, and oxy-muriatic acids; and its oxides also enter into combinations with the other acids. It unites with sulphur and phosphorus; and combines with many other metals, forming what are called amalgams.

¹ *Aikin's Chemical Dictionary.*

Brunchi, of Pisa. Vide *Phil. Mag.* iv. p. 348.

⁴ Crichton. *Phil. Mag.* xiv. 49.

² This method was invented by Professor

³ Cavendish.

⁵ *Thomson's Chemistry*, i. 175. If, however, the galvanic fluid be passed through it, the beautiful luminous stars in which it is dispersed seem to prove its combustibility.

Medical properties and uses.—Mercury in its metallic state exerts no action on the animal system. It has nevertheless been administered in doses of a pound or more with the view of operating mechanically, and overcoming by its weight the obstruction of the intestines which exists in ileus: but as it cannot act by its gravity on the ascending part of the bowels, it is not easy to conceive how it should have been ever recommended; and the events of the cases in which it has been given have sufficiently proved the futility of the practice.

Mercury, however, when prepared for medicinal use, is a remedy of the most extensive application. It is a powerful and general stimulant, but its effects are certainly different from those of other articles which are ranked in the same class. It enters into the circulation, quickens the vascular action, and excites powerfully the whole of the glandular system; increasing all the secretions and excretions. It has been supposed, that it is peculiarly determined to the salivary glands; but if, as there is every reason to suppose, these glands are endowed with more irritability¹, it is easy to conceive that the same degree of stimulus, which is operating on the whole system, will produce a greater effect on them in a direct ratio according to their greater susceptibility. But although its general action is stimulant, yet the various preparations of it produce different effects, operating sometimes as stimulants, cathartics, or emmenagogues, and locally as errhines: and hence the great variety of diseases in which it has been found useful: as febrile affections, spasms, cachetic diseases, glandular obstructions, cutaneous eruptions, and membranous inflammation. (See *Preparations and Compositions.*)

But the most important effect of the preparations of mercury is their specific operation in syphilis. They were used, and their effects when accumulated in the habit were known, so early as the 13th century; and the writings of Theoderick² contain cautions against catching cold during the course; but the first notice of mercury as a remedy in lues venerea is contained in a tract by Jo. Almenar, a Spaniard, published in 1516; who recommends it after the manner of the Arabians, but condemns pushing the remedy so as to promote salivation. Physicians, however, did not venture to give mercury internally, till Paracelsus broke the fetters of ancient authority, and proved that it might be exhibited not only with safety, but with advantage. Since his time, a period of nearly 300 years,

¹ That the salivary glands and their excretories are very excitable, is evident from the flow of the saliva being much increased by affections of the mind, as the thinking of any kind of food which is particularly grateful to the taste.

² He was a friar, afterwards bishop of Cervia, and died between the years 1270 and 80. See *Fremd's History of Physic*, ii. 360.

experience has fully sanctioned its use; and, as Mr. Pearson justly observes, "not one medicine besides derived from the animal, vegetable, or mineral kingdom, has maintained its credit, with men actually employed in extensive practice during a tenth part of that period¹:" yet, it is remarkable, that in the present day its utility in syphilis has been questioned.² Many various theories of the operation of mercury have been advanced; the most satisfactory of which is that of Mr. Hunter, who supposed that the stimulant operation of the mercury induces and maintains an action which is incompatible with the morbid action produced by the venereal virus, until the poison is either destroyed, or evacuated from the body by the excretions. But whatever may be the principles on which it operates, its efficacy in this disease is certain, when it is judiciously and cautiously administered. The mode of giving it, and the morbid effects which it produces under certain circumstances, shall be mentioned when its preparations are described: it is only necessary to observe further in this place, that although men of the first medical talents have occasionally declaimed against its use³, and although much mischief may have of late years arisen from its indiscriminate employment by the temerity of the speculative, and by ignorance; yet, in the hands of judicious and cautious practitioners it will continue to rank as one of the most useful of the articles of the materia medica.

Official preparations.⁴

- I. By distillation to purify the metal.
 1. *Hydrargyrum purificatum*. L. E. D.
- II. By trituration; (*suboxidized*.)
 - a. With animal fat.
 2. *Unguentum Hydrargyri fortius*. L. *Ung. Hydrargyri*. D.
 3. ——— *Hydrargyri*. E.
 4. ——— *mitius*. L. D.
 5. *Linimentum Hydrargyri*. L.
 6. *Emplastrum Ammoniaci cum Hydrargyro*. L. D.
 - *Hydrargyri*. L. E.
 - b. With saccharine substances.
 7. *Pilula Hydrargyri*. L. E. D.
 - c. With carbonate of lime.
 8. *Hydrargyrum cum Creta*. L. D.
 - d. With carbonate of magnesia.
 9. *Hydrargyrum cum Magnesia*. D.
- III. By the action of heat and air; (*oxidized*.)
 10. *Hydrargyri Oxidum rubrum*. L. *Oxydum Hydrargyri*. D.
- IV. By the action of acids.
 - a. With sulphuric acid; (*suboxidized*.)

¹ Observations, &c. p. 97.

² Medico-Chirurg. Trans. vol. ix.

³ Saunders—Observations on the Hepatitis of India, &c.

⁴ In forming this table, we have been much assisted by the excellent table drawn up by Doctor Duncan, J. M. in The Edinburgh New Dispensatory; and we trust our alterations will render it more practically useful.

11. *Subsulphas Hydrargyri flavus*. E. *Oxydum Hydrargyri sulphuricum*. D.
 - b. With nitric acid; (suboxidized.)
 12. *Unguentum Hydrargyri nitratis*. L. E. *Unguentum Supernitratis Hydrargyri*. D.
 13. *Unguentum Nitratis Hydrargyri mitius*. E.
(oxidized.)
 14. *Hydrargyri Nitrico-oxydum*. L. *Oxydum Hydrargyri rubrum per Acidum nitricum*. E. *Oxydum Hydrargyri nitricum*. D.
 15. *Unguentum Hydrargyri nitrico-oxydi*. L. *Unguentum Oxidi Hydrargyri rubri*. E. *Unguentum Subnitratis Hydrargyri*. D.
 - c. With muriatic acid.
† sublimated; (oxidized.)
 16. *Hydrargyri Submurias*. L. *Submurias Hydrargyri mitis*. E. *Submurias Hydrargyri sublimatum*. D.
 17. *Pilulæ Hydrargyri submuriatis*. L.
(oxidized and acidified.)
 18. *Oxymurias Hydrargyri*. L. *Murias Hydrargyri corrosivus*. E. *Murias Hydrargyri corrosivum*. D.
 19. *Liquor Hydrargyri Oxymuriatis*. L.
†† precipitated; (oxidized.)
 20. *Submurias Hydrargyri præcipitatus*. E. D.
 - d. With acetous acid; (suboxidized.)
 21. *Acetis Hydrargyri*. E. *Acetas Hydrargyri*. D.
 - V. By precipitation with earths and alkalies from acid solutions.
 - a. By lime-water from the nitric solution; (suboxidized.)
 22. *Hydrargyri Oxydum cinereum*. L.
 - b. By ammonia from the nitric solution; (suboxidized.)
 23. *Oxydum Hydrargyri cinereum*. E. *Pulvis Hydrargyri cinereus*. D.
 - c. By ammonia from the muriatic solution; (oxidized.)
 24. *Submurias Hydrargyri ammoniatum*. D. *Hydrargyrus Præcipitatus albus*. L.
 25. *Unguentum Submuriatis Hydrargyri ammoniati*. D. *Ung. Hydrargyri Præcipitati albi*. L.
 - VI. Combined with sulphur.
 - a. By trituration.
 26. *Sulphuretum Hydrargyri nigrum*. E. D.
 - b. Sublimated.
 27. *Hydrargyri Sulphuretum rubrum*. L. D.
- HYOSCYAMUS.**¹ *Spec. Plant. Willd.* i. 1010.
Cl. 5. *Ord.* 1. Pentandria Monogynia. *Nat. ord.* Luridæ Linn.
Solanææ Juss.
G. 378. Corolla funnel-shaped, obtuse. Stamens inclined. Capsule covered with a lid, two-celled.
Spec. 1. *H. niger*. Common Henbane. *Med. Bot.* 2d edit. 204.
t. 76. *Smith Flor. Brit.* 598. *Eng. Bot.* 591.
Officinal. *HYOSCYAMI FOLIA ET SEMINA*. Lond. *Hyosciame*

¹ Ὑος κνυμὸς; Hog-bane.

NIGRI HERBA; SEMINA *Edin.* HYOSCYAMUS; HERBA. *Dub.*
The leaves and seeds of Henbane.

Syn. Jusquiamé (*F.*) Belsenkraut (*G.*) Giusquiamo nero (*I.*) Khorassānie Ajocan (*H.*) Sickran (*Arab.*)

Common henbane is an indigenous annual, frequent on waste grounds, and at the sides of roads, particularly on a calcareous soil, flowering in July. The root is long, tapering, compact, and fibrous; the stem erect, woody, round, and branched, rising about three feet in height. The leaves are alternate, sessile, and embracing the stem; large, the lower ones being above a foot in length; deeply sinuated, undulated, woolly, and of a sea-green colour. The flowers are in terminal, recurved, leafy simple spikes; and each is simple and erect. The calyx is permanent, pitcher-shaped, with a regular five-cleft border reticulated with veins: the corolla straw-coloured, and beautifully pencilled with a net-work of purple veins. The filaments are inserted into the tube of the corolla, tapering, downy at the base, and supporting purple anthers. The style is purplish, with a blunt round stigma. The capsule is globular, invested with the body of the calyx, bilocular, and closed with a convex smooth lid. It contains numerous small irregular brown seeds.¹

The whole of the plant is covered with soft white hairs, feels clammy and slightly adhesive, and is poisonous when eaten.

Qualities.—The odour of the recent leaves is strong, somewhat foetid and narcotic², and the taste mucilaginous, and slightly acrid: but when dry, they have scarcely either odour or taste. Its virtues are completely extracted by diluted alcohol. The watery infusion is of a very pale yellow colour, and insipid; and has the narcotic odour of the plant. It is not altered by the acids: the alkalies change the colour to a deep greenish yellow, which, on the addition of an acid, disappears, and a brownish flocculent precipitate is produced. It is copiously precipitated by solutions of superacetate of lead white; and by nitrate of silver black. Sulphate of iron strikes with it a pale olive-colour, and a dark precipitate is slowly formed. Hence henbane appears to contain resin, mucus, extractive, an ammoniacal salt, and gallic acid.

Medical properties and uses.—Henbane is narcotic. Its operation is very similar to that of opium, increasing at first the strength of the pulse, and producing some sense of heat; effects which are followed by proportional diminution of excitement, and sleep. In some habits it occasions diaphoresis, or diuresis,

¹ The seeds abound with oil, and may be eaten with impunity. The roots resemble parsnips, and have occasionally been eaten for them, and fatal effects produced.

² In the recent state the odour of the leaves occasions stupor and delirium.

and sometimes a pustular eruption; at other times it purges; and in overdoses produces sickness, stupor, dimness of sight, hard pulse, delirium, and coma, with dilatation of the pupils; until the pulse gradually becoming weak and tremulous, petechiæ make their appearance, and death ensues. Dissections show the effects of inflammation both in the stomach and bowels, and the membranes of the brain. After an emetic is given, and the stomach fully cleared, vinegar is the best antidote.

The effects of henbane as an anodyne were known to the ancients¹: but as those were ill-understood, and its use was almost completely relinquished till the time of Baron Stoerck, he may be regarded as having introduced it. It may be employed in all the cases in which the use of opium is indicated, where the latter disagrees with the habit, or where its constipating effect is wished to be avoided. In painful and spasmodic affections, hysteria, rheumatism, and gout, much benefit has resulted from its use; and we have found it particularly serviceable when united with colocynth, or other powerful cathartics, in colica pictonum. It is used externally to lessen and allay the irritation of very sensible parts: hence fomentations of the leaves have been found serviceable in scrophulous and cancerous ulcers, hæmorrhoids, and other painful swellings; and Hufeland recommends the leaves and marsh-mallow flowers boiled in milk, with the addition of a few grains of acetate of lead, as a topical application in scrophulous ophthalmia. Its effects in dilating the pupil, when an infusion of it is dropped into the eye, are similar to those of Belladonna, and hence it is also employed as a preparative to the operation for cataract. It is used, generally, in the forms of extract and tincture only.

Official preparations. *Extractum Hyoscyami*. L. E. D. *Tinctura Hyoscyami*. L. E. D.

HYSSOPUS. *Spec. Plant. Willd.* iii. 47.

Cl. 14. Ord. 1. Didynamia Gymnospermia. Nat. ord. Verticillatæ Linn. Labiatae Juss.

G. 1096. Corolla, lower lip three-parted, with a small intermediate subrenate segment. Stamens straight, distant.

Species 1. *H. officinalis*. Common Hyssop. *Med. Bot.* 2d ed. 318. t. 113.

Official. HYSSOPI OFFICINALIS HERBA. *Edin.* HYSSOPUS; FOLIA. *Dub.* The herbaceous part and leaves of Hyssop.

Syn. Hyssope (F.) Isop (G.) Isopo (L.) Hyssop (S.) Zuffiy yaibus (Arab.)

This is a perennial plant, a native of Siberia and Austria; cultivated in our gardens², and flowering from June to Sep-

¹ Hyosciamus in potu cibove sumptus, qualem ebriorum mentis alienationem infert. *Dioscorid. Alexif.* c. xv. 407.

² It was first cultivated in England by Gerard in 1596. It is not the esof of the Hebrews, nor the *hyssopus* of the Greeks. It has been supposed to be the *zufe* or *cife* of the Arabians. *Alston's Mat. Med.* ii. 153.

tember. The root is knobbed, woody, and fibrous: the stalk about two feet in height, obscurely quadrangular, erect, shrubby, and branching. The leaves do not exceed an inch in length, and one third of an inch in breadth, are sessile, of a somewhat glaucous deep green colour, elliptical, entire, punctured, and stand in pairs. The flowers are produced on one side, in long half-verticillated terminal spikes, and intermixed with leaves. The calyx is persistent, nearly tubular, divided at the edge into five acute teeth, striated, and of a purplish colour at first, but afterwards green: the corolla is violet-coloured, with a long whitish tube; the upper lip short, round, and notched at the apex; the lower one separated into three segments, the undermost of which is inversely ovate. The filaments are crowned with simple anthers; the style is slender and bifid; and the seeds are four, at the bottom of the calyx.

Qualities. — The leaves of hyssop have an agreeable aromatic odour, and a bitterish moderately warm taste; qualities that appear to depend on a volatile oil of a yellow colour, which can be obtained separate by distillation with water. It is elevated by alcohol also; but soon exhales, and the spirit loses the odour it had when newly distilled.

Medical properties and uses. — Hyssop is stimulant and tonic. It has been recommended in hysteria; and was formerly employed in catarrhal and other pulmonary affections with the view of promoting expectoration; but the stimulant properties of hyssop render its use doubtful in these diseases; and as a tonic it scarcely merits the least attention.

INULA. *Spec. Plant. Willd.* iii. 2089.

Cl. 19. Ord. 2. Syngenesia Superflua. Nat. ord. Compositæ discoideæ Linn. Corymbiferae Juss.

G. 1489. Receptacle naked. Pappus simple. Anthers ending in two bristles at the base.

Species. I. *Helenium*. Elecampane. *Med. Bot.* 2d edit. 64. t. 26.

Smith Flora Brit. 890. *Flora Danica*, t. 728.

Officinal. ENULA CAMPANA; RADIX. *Dub.* Elecampane root.

Syn. Inula Laleniere (F) Alantwurz (G.) Enula Campana (L.) Enula Campana (S.) Usululason (Arab.)

This species of inula is an indigenous perennial, found occasionally in pastures and rich moist soils¹, flowering in July and August, and ripening its seed in September. The root is thick, branched, externally of a brown or grey colour, and internally white. The stem, which rises about three feet in height, is leafy, round, and furrowed; branched near the top and villous. The leaves are large, ovate, serrated, veined, of

¹ Not unfrequent in Essex. *Hudson.* Between Worcester and Ludlow, and Bishop's Castle and Newton. *Smith.* I have seen it near Ewell, Surry.

a deep green colour on the upper surface, and on the under reticulated, tomentose, and whitish: the radical ones are petiolate, but those of the stem sessile and embracing. The flowers are terminal, solitary, large, and of a golden colour. The calyx is scaly; the exterior scales are large, ovate, imbricated, and externally tomentose; the interior are narrow, linear, equal, and chaffy. The florets of the ray are numerous, spreading, twice the length of the calyx, linear, with the apex tridentate. The anthers end in two bristles at the base. The seeds are quadrangular, smooth, slightly curved, and furnished with a somewhat chaffy pappus. The receptacle is reticulate and papillous.

The roots of elecampane found in the shops, are generally obtained from garden plants. They are fit for use in the second year of their growth; and at this age are preferable to the older roots, which become stringy and woody. They should be dug up in autumn.

Qualities.—Elecampane root when dry has an aromatic, yet slightly foetid odour; and when chewed, the taste is at first disagreeable, glutinous, and in some degree resembling that of rancid soap; then aromatic, bitter, and hot. Both water and alcohol extract its virtues: the tincture possessing more of the bitterness and pungency of the root than the watery infusion. The decoction, after standing some hours, deposits a white powder resembling starch in appearance; but its properties show it to be a distinct principle; and it has therefore been named *inulin*.¹ In distillation with water this root yields a concrete flaky substance, which seems to hold an intermediate place between camphor and volatile oil in its nature.²

Medical properties and uses.—Elecampane is usually ranked as a tonic; and supposed to possess deobstruent, diuretic, and expectorant properties. It was formerly regarded as a remedy of great efficacy in dyspeptic affections, flatulencies, palsy, dropsies, uterine obstructions, and pulmonary complaints: but Cullen observed, that its diuretic powers were trifling; and could not discover that it possessed any expectorant properties.³ It is scarcely ever used by the regular practitioner. The dose of the powdered root may be from ʒj to ʒj.

*IRIS.*⁴ *Spec. Plant. Willd.* i. 224.

Cl. 3. *Ord.* 1. Triandria Monogynia. *Nat. ord.* Ensatae *Linn.*
Iridæ Juss.

¹ This substance which was first noticed, and its properties investigated, by Rose; was named by Dr. Thomson, *System of Chemistry*, 4th edit. iv. 697.

² *Newman's Chem. by Lewis*, 2d edit. ii. 216.

³ *Mat. Med.* ii. 459.

⁴ "Iris a celestis arcus similitudine nomen obtinuit." *Dioscorides*.

G. 97. Corolla six-parted; the alternate segments reflected. Stigmas petal-like.

* Bearded with ensiform leaves.

Species 7. *I. florentina*. Florentine Iris. *Med. Bot.* 2d edit. t. 262.

Sibthorp Flora Græca. 28.t. 39.

Officinal. IRIDIS FLORENTINÆ RADIX. *Edin.* The root of Florentine Iris.

Syn. Iris de Florence (F.) Violenzwurzel (G.) Ireos (L.) Iris (S.)

This species of iris, which is found in a wild state in Carniola, the island of Rhodes, Laconia, and other places of the south of Europe, is cultivated in our gardens¹, flowering in May and June. The root is tuberous, horizontal, somewhat jointed, and sends off many fibres from the under part. The leaves spring directly from the root, spreading in opposite directions, are sheathing, sword-shaped, vertical, nerved, curved inwards at the apex, and of a sea-green colour, yellowish at the base. From amidst them the stem rises upwards of a foot in height, erect, simple, naked, round, and commonly bearing two flowers. The flowers are large, of a pale whitish blue colour, erect, terminal, and odorous, bursting from a ventricose, nerved, floral leaf: the petals are alternate, three larger and three smaller: the larger have thickish claws about an inch long, bordered with a thin edge, green on the outside, and bearded within with yellow-tipped white hairs: the border is an inch in width and longer, reflected, whitish, and striated near the flexure: the smaller are whitish blue, stand erect, are bent inwards with a reflected margin; and have thick attenuated greenish claws. The anthers are white, covered by the stigmas, which have the colour of the corolla, and are cleft at the apex into two acute, serrated, upright segments. The capsules are three-celled, containing many seeds horizontally placed.

The roots of the Florentine iris are brought in a dry state from Leghorn, packed in large casks. They are in irregular knobbed pieces, with the cuticle pared off; of a dirty yellowish white colour, and full of small holes, which mark the places whence the radical fibres issued. The best pieces break with a rough, but not fibrous, fracture.

Qualities. — These roots when recent have a bitterish, nauseous taste, and are very acrid; but this acrimony is lost by drying. In their dry state they are brittle, easily pulverized, have a sweetish bitter taste, with a slight degree of pungency, and the agreeable odour of the violet; for which they are chiefly valued. When chemically examined, they appear to consist principally of fecula, with a portion of mucilage and saccharine

¹ It was cultivated by Gerarde in 1596.

matter: and to contain malic acid, as their infusion strikes a brown colour with sulphate of iron.

Medical properties and uses.—The fresh root is cathartic, and has been recommended in dropsies; the dry is nearly inert: but in neither state does it merit a place in the list of materia medica.

JUNIPERUS. *Spec. Plant. Willd.* iv. 851.

Cl. 22. *Ord.* 13. *Dicæcia* Monadelphia. *Nat. ord.* Coniferæ.

G. 1841. Male. *Amentum* ovate. *Calyx* a scale. *Corolla* 0. *Stamens* 3. Female. *Calyx* three-parted. *Petals* 3. *Styles* 3. *Berry* three-sided, irregular, with the 3 tubercles of the calyx.

Species 6. *J. Sabina.* Savine. *Med. Bot.* 2d edit. 10. t. 5.

Species 10. *J. communis.* Common Juniper. *Med. Bot.* 2d ed. 13.

t. 6. *Smith Flora Brit.* 1085. *Eng. Bot.* 1130.

1. **JUNIPERUS SABINA.**¹

Officinal. **SABINÆ FOLIA.** *Lond.* **JUNIPERI SABINÆ FOLIA.** *Edin.*
SABINA; FOLIA. *Dub.* Savine leaves.

Syn. *Sabinne* (F.) *Sadebaum* (G.) *Sabina* (L.) *Sabina* (S.)

This shrub is a native of the south of Europe and the Levant; but has been long cultivated in our gardens, flowering in May and June. It seldom rises above three feet in height; is covered with a brown bark, and divided into numerous subdivided branches; which are completely invested with very small, erect, firm, opposite, pointed leaves, of a bright green colour, that lie over each other, and terminate the branches in sharp points; giving the whole shrub a very lively aspect. The male and female flowers are on different plants. The male catkin consists of three opposite flowers placed in a triple row, and a tenth flower at the end: and at the base of each flower is a broad scale fixed laterally to a columnar pedicel. There are filaments in the terminal flower only; tapering and united at the base, with simple anthers, which are sessile in the lateral flowers. In the female flowers, the calyx is three permanent scales; the petals are stiff, sharp, and also permanent; and the germen supports three styles with simple stigmas. The fruit is a spurious fleshy berry of a blackish purple colour; marked with tubercles the vestiges of the calyx and petals, and containing three small hard seeds.

Qualities.—The leaves and tops of savine have a strong, heavy, disagreeable odour, and a bitter hot taste, with a considerable degree of acrimony. These qualities depend on an essential oil, which is obtained in considerable quantity by distillation with water. Both water and alcohol extract its active principles; and Lewis found that “on inspissating the spirituous tincture, there remains an extract consisting of two distinct substances, of which one is yellow, unctuous or oily,

¹ *Ægæus* Dioscoridis. There are two varieties of Savine; the variety β is our plant.

bitterish, and very pungent; the other black, resinous, tenacious, less pungent, and subastringent."¹

Medical properties and uses.—Savine is a powerful stimulant, possessing diaphoretic, emmenagogue and anthelmintic properties. It has certainly a considerable effect on the uterine system; but, on account of its stimulating properties, is suited to those cases only of amenorrhœa which are unattended by fever, and in which the circulation is languid. In plethoric habits its use should be preceded by repeated bleedings²; and at all times its internal exhibition requires caution. It has been given in gout, and worm cases also, but is seldom used. As an external local stimulant or escharotic, the dried leaves in powder are applied to warts, flabby ulcers, and carious bones; and the expressed juice diluted, or an infusion of the leaves, as a lotion to gangrenous sores, scabies, and tinea capitis; or mixed with lard and wax as an issue ointment. The dose of the powered leaves is from grs. v. to grs. x. two or three times a day.

Official preparations. *Oleum volatile Juniperi Sabinæ*. E. D. *Extractum Sabinæ*. D. *Ceratum Sabinæ*. L.

2. JUNIPERUS COMMUNIS.³

Official.—JUNIPERI BACCÆ ET CACUMINA. *Lond.* JUNIPERI COMMUNIS BACCÆ. *Edin.* JUNIPERUS; BACCÆ. *Dub.* Juniper berries. *Syn.* Genevrier ordinaire (F.) Wachholderbeeren (G.) Ginepro (I.) Embro (S.)

The common juniper is indigenous, growing on heaths and chalky hills, and flowering in May. It is a low, very branching, rigid, smooth, evergreen shrub; but when planted in a good soil it rises to fifteen feet in height. The leaves are very numerous, narrow, entire, sharply pointed, channelled, of a glaucous colour on the upper surface, and sessile, standing in ternaries. The catkins are axillary, sessile, solitary, ovate, small, and furnished with bractes; the male flowers yellow at first, and afterwards brown, with great abundance of pollen; the female smaller, and of a yellowish-green colour. The berry is globular, in colour blackish-purple with a glaucous bloom, composed of the scales of the amentum, which become fleshy and coalesce. The seeds are three, and angular.⁴

The berries require to remain two years on the tree before they are fully ripe. The greater quantity of those which are used in Britain are brought from Germany, Holland, and Italy. The Italian berries are less shrivelled, and have a fresher and more beautiful bloom upon them than the German, and are therefore generally preferred. They are imported in bags.

¹ *Mat. Medica.*

² *Home. Clinical Experiments*, 387.

³ *Agaveus μ. x. x. Dioscoridis.*

⁴ The resinous substance known by the name of Sandarach, which is brought from Morocco, exudes from the stem of the juniper in warm climates.

Qualities. — Juniper berries have a peculiar, aromatic odour, and a sweetish pungent bitterish taste when chewed. In distillation with water they yield a volatile terebinthinate oil of a greenish colour, on which their virtues depend.¹ Both water and alcohol extract their active properties. Their principal constituents are mucus, saccharine matter, and volatile oil.

Medical properties and uses. — Juniper berries are diuretic and cordial. They have been long known as a remedy in hydropic affections; but they cannot be depended on alone, although they form an excellent adjunct to foxglove and squill. The tops are also used; and as the virtues of the berries depend on the essential oil, which is found in the woody part also of the plant, they must be equally efficacious. They have been recommended in scorbutic and cutaneous affections; and Rosenstein asserts that a strong decoction of them soon clears the hands in scabies. The berries are sometimes given in substance, triturated with sugar or some neutral salt; but the best form is that of infusion, made with ʒij of the berries bruised, and Oj of boiling water. The dose of the first preparation is from ʒj to ʒss ; that of the infusion, a tea-cupful every three or four hours.

Official preparations. *Oleum Juniperi*. L. E. D. *Spiritus Juniperi compositus*. L. E. D.

KINO. *Lond. Edin. Dub. Kino.*

Syn. Gomme de Kino (F.) Kinoharz (G.) Chino (I.) Tumble hōan. (Tam.)

Although the Edinburgh College has inserted kino as the inspissated juice of the *Eucalyptus resinifera* in the list of materia medica of its pharmacopœia, and the Dublin College has considered it as the product of the *Butea frondosa*; yet we believe that the plant which yields the best kino is an African tree; and from a specimen sent home by Mungo Park in his last journey, which is in the possession of Sir Joseph Banks, it is a *Pterocarpus*. It is nevertheless true that kino, such as was brought from Botany Bay about twenty years ago, is the production of the above species of *Eucalyptus*, the brown gum-tree of that country²; but it differs in several of its qualities

¹ The flavour and diuretic properties of Hollands depend on this oil. English gin is flavoured by oil of turpentine.

² This plant belongs to the 1st order of the 12th class of the Linnean system. It is a lofty tree, exceeding an English oak in size; and bearing yellowish flowers in umbellated clusters. The calyx is hemispherical, perfectly entire in the margin, and afterwards becomes the capsule; on its top just within the margin stands a pointed calyptra, of the same colour as the calyx, and as long. This calyptra, which is the essential mark of the genus, is analogous to the corolla in other plants, but neither splits nor divides; on removing it a great number of red stamens appear, standing in a conical mass, very resinous, aromatic, and bearing small red anthers. In the centre is a simple style terminated by a blunt stigma, and rising from a transversely cut trilocular germen. The quantity of juice obtained from incisions made into the wood of the trunk amounts sometimes to sixty gallons from one tree. See *White's Voyage*, 231.

from the kino described by Dr. Fothergill, who introduced this remedy into practice.¹ We are informed none of it has been brought to this country since the above period. Another sort is said to come from Jamaica, and is stated by Dr. Duncan junior, to be the extract of the *Cocoloba uvifera*, or Sea-side grape²; while Mr. Murray says, "he has been informed that it is the extract of the wood of the mahogany."³ The Dublin College indicated the *Butea frondosa* on the authority of Dr. Roxburgh; but the red juice which this plant yields has been examined by Dr. Duncan, and found to differ very considerably from kino, although it may be used as a substitute for it. The kino now found in the shops comes from India. It is imported in chests containing from one to two cwt. and on the inside of the lid of each chest is a paper, inscribed with the name of John Brown, the month and year of its exportation; and stating that it is the produce of Amboyna.

Qualities. — 1. *Kino* which was given to me as a specimen of true *African Kino*, is inodorous, and insipid when first taken into the mouth; but after some time it imparts a slight degree of roughness, with a scarcely perceptible sweetness, to the palate; feels gritty between the teeth when chewed, and does not colour the saliva. It is in very small, irregularly shaped, shining, deep-ruby-brown-coloured fragments, and intermixed with small twigs and minute bits of wood, which are white in the inside. It is pulverulent, affording a dark chocolate or reddish-brown powder. Water at 60° dissolves the larger moiety of it, and gives a brick red rather turbid infusion, which does not become clear after standing twenty-four hours. Alcohol dissolves nearly two-thirds of it, the tincture having a very deep brown colour: what remains undissolved is nearly colourless. Ether takes up about one-third; and the tincture, which is of a beautiful claret colour, when evaporated on the surface of water-leaves a pellicle of brittle brown resin; while a sweetish red-coloured extractive matter remains dissolved in the water.

2. *Botany Bay kino* is inodorous; tastes bitterish and more austere than the African; is in larger fragments, equally brittle, breaking with a glassy fracture; of a chocolate hue, and affording a brown-coloured powder but it is not uniform in appearance, some of the fragments being of a lighter hue. Water at 60° dissolves nearly the same quantity as of the former variety, and the infusion is brown and transparent. Alcohol dissolves rather more than two-thirds of its weight, but the tincture is not so deep coloured as that of the former variety,

¹ *Medical Observations and Inquiries by a Society of Physicians in London*, i. 238, 243.

² *Edinburgh New Dispensatory*, 5th edit. 292.

³ *System of Mat. Med. and Pharmacy*, ii. 304.

Ether takes up $\frac{1}{20}$ th; a pale brownish straw-colour only is imparted to it; and when evaporated on water, the resinous pellicle is scarcely perceptible, and very little extractive is deposited.

3. The *Kino* said to have been brought from Jamaica, but of which none is now to be procured, is in bitterness and roughness nearly equal to the last variety, but these qualities are accompanied with a slight degree of acidity. It is in brittle fragments of an almost black colour, having a shining, resinous fracture, in which appear small air-bubbles. The powder is of a reddish-brown colour. With alcohol and ether it affords results very similar to those of the first variety. Water dissolves a greater portion of it than of the other two kinds, and forms an infusion intermediate in colour and transparency; approaching in colour to the first, and in clearness to the second variety.

4. *East India* or *Amboyna Kino*, is inodorous, very rough, and slightly bitter when first taken; but it afterwards impresses a degree of sweetness on the palate. It is in small uniform, deep brown, shining, brittle fragments, which appear like portions of a dried extract broken down; being perfectly uniform in their appearance. It is easily pulverized, affording a powder of a lighter brown colour than the fragments. Water dissolves two-thirds of it, forming a deep brown clear solution; whilst the portion that remains undissolved, is long suspended, if mixed with a fresh portion of water. Alcohol dissolves the greater part of this variety, forming a deep claret-coloured tincture, which is not rendered turbid on the addition of water. Ether takes up a portion of it, and forms a yellowish red tincture, which, when evaporated on water, leaves no resinous pellicle.

The following Tables show the result of some experiments with several chemical re-agents on the watery infusions of these three varieties of kino.¹ They point out the distinctive features of the four varieties I have enumerated; but they have no pretensions towards advancing the knowledge of the chemical properties of kino.

¹ The specimens subjected to these experiments I have reason to think were perfectly genuine. The African kino was brought home twenty years ago.

TABLE I. Precipitates formed in the Aqueous Solution of Kino, by Gelatine and Solutions of some Metallic Salts.

Variety of Kino.	Solution of Isinglass.	Solution of Oxy-sulphate of iron.	Nitrate of Silver.	Solution of Oxy-muriate of Mercury.	Solution of superacetate of Lead.
1st.	copious, slowly formed, of a brick red colour.	copious, quickly formed, of a dirty olive black.	copious, slowly formed, of a deep reddish brown.	not very copious, slowly formed, reddish.	copious, flocculent, quickly formed, brown.
2d.	copious, almost instantly formed, of a pink colour.	very slowly formed, of a deep brownish black.	copious, quickly formed, of an olive black.	copious, quickly formed, yellowish pink.	copious, flocculent, quickly formed, lilac.
3d.	scanty, slowly formed, of a pinkish colour.	copious, quickly formed, of a blue black.	copious, quickly formed, reddish brown.	scarcely altered.	copious, flocculent, quickly formed, brownish lilac.
4th.	The same as No. 1.	copious, and dirty olive black.	copious, and quickly formed reddish brown.	quickly formed, reddish.	the same as No. 1.

TABLE II. Precipitates formed by Solution of Potash and Acids.

Variety of Kino.	Potash.	Sulphuric Acid.	Nitric Acid.	Muriatic Acid.
1st.	none, but renders it clear and of a deep brown colour.	copious, pale brown.	scanty, slowly formed; reddish yellow.	scanty, slowly formed, yellowish brown.
2d.	flocculent, purplish.	copious, deeper brown.	copious, quickly formed, yellowish brown.	scanty, more quickly formed, pale red brown.
3d.	flocculent, brownish purple.	very copious, very deep brown.	copious, brown.	scanty, quickly formed, a beautiful red.
4th.	the same as No. 1.	copious, pale brown.	copious, quickly formed, brown.	quickly formed, yellowish brown.

From these experiments there appears to be a considerable difference between three of the four varieties of kino known in commerce, but the first and fourth appear to be nearly the same. The most remarkable differences are, the small portion of resin which that from Botany Bay and Amboyna contain; the blue colour of the precipitate of the Jamaica variety by the oxysulphate of iron; and the effect of the solution of potash in rendering that from Africa transparent, while it precipitates the 2d and 3d varieties. The predominant principles in all the varieties are tannin and extractive matter; and the portion of resin in the 1st and 3d varieties enables ether to take up their colouring matter and some extractive, whilst the second variety is scarcely affected by it. Dr. Duncan¹ and Vauquelin² observed, that although heat increases the solvent power of water over kino, yet that a substance insoluble either in water or alcohol always remains. Vauquelin also found that the solutions form a precipitate with tartarized antimony and salts of iron.

The best menstruum is diluted alcohol.

Medical properties and uses. — Kino is a powerful astringent. Like catechu it is employed in obstinate chronic diarrhœas, uterine and intestinal hæmorrhagies, and fluor albus; but as it is less certain in its qualities than catechu, it is less used. Externally it has been applied as a styptic, and to give tone to, and diminish the ichorous discharge of, flabby ill-conditioned ulcers.

It may be exhibited internally in substance, or in the form of watery infusion, or of tincture. The dose in substance is from grs. x. to ʒiſs. In ordering the infusion or tincture, it is necessary to recollect that solutions of isinglass, sulphate of iron, nitrate of silver, muriate of mercury, superacetate of lead, tartarized antimony, the alkalies, and the strong acids, are incompatible in prescriptions with kino.

Official preparations. *Tinctura Kino.* L. E. D.

LACTUCA. *Spec. Plant. Willd.* iii. 1523.

Cl. 19. *Ord.* 1. *Syngenesia æqualis.* *Nat. ord.* *Compositæ semiflosculosæ* Linn. *Cichoraceæ* Juss.

G. 1404. *Receptacle* naked. *Calyx* imbricate, cylindrical, with a membranous margin. *Pappus* simple, stipitate. *Seed* even.

Species 1. *L. Sativa.* Garden Lettuce. *Blackwell.* t. 8.

¹ *LACTUCA SATIVA.*

Species 12. *L. virosa.* Strong-scented Lettuce. *Med. Bot.* 2d edit. 75. t. 31. *Smith Flora Brit.* 819.

¹ *Nicholson's Journal*, vi. 234.

² *Annales de Chimie*, xlv. 321. Vauquelin states generally that the salts of iron precipitate kino green; but Dr. Duncan justly observes, that by the red sulphate it is precipitated black: the sulphate only precipitates it green.

Official. — LACTUCE SATIVA HERBA: LACTUCARIUM. The herbaceous part and inspissated juice of the Garden Lettuce.

Syn. Laitue (F.) Lattich (G.) Lattuca (L.) Lechuga (S.)

This species of lettuce is cultivated almost generally over Europe. The root is fibrous; and sends up a corymbose stem, which sometimes rises three feet in height. The leaves are roundish, obovate or cordate, shining, crisped, rugose, irregularly plaited, and of a yellowish green colour: but the plant is so well known as to require no description. When it is in flower, the slightest touch of the pedicels occasions the exudation of drops of a white opaque milky looking fluid. The leaves and stem, immediately under the cuticle, contain a secreted juice, which is pellucid and colourless when in the vessels of the plant; but becomes milky when first exposed to the air, and afterwards acquires a brownish colour resembling that of East Indian opium. This is the *Lactucarium*¹ of the Edinburgh College. The best method of procuring it, as first suggested by Mr. John Young, Surgeon in Edinburgh, is to cut off the top of the stem, when it is in flower, about a foot above the ground, and to absorb the milky juice that exudes by means of a moist sponge, from which it can be again compressed into a proper vessel to inspissate. But as the cut surface soon ceases to bleed, another slice must be taken under the first, and this may be repeated as long as the fresh cut surface will yield the juice. The process may be repeated two or three times a day.

Qualities. — Lactucarium has the colour, and in some degree the taste and odour of opium. Distilled water dissolves the greater portion of it; and the clear solution, which is of a deep brown colour, when treated in the same manner as opium, discovers the presence of that principle detected in opium by Serturmer, and denominated Morphia; on which its narcotic property depends. It contains besides extractive, resin and mucilage; and Dr. John states that caoutchouc, also, is one of its components.

Medical properties and uses. — Lactucarium has been proposed as a substitute for opium by Dr. Cox of Philadelphia; but its value as a narcotic has been more lately examined by Dr. Duncan, senior, who conceives it to be particularly well adapted for allaying the cough in phthisis pulmonalis: and his opinions have been confirmed by the experience of many other respectable practitioners. It may, undoubtedly prove useful as a soporific² where, from peculiar idiosyncrasy or other causes, opium cannot be taken. The dose is from ʒi. to ʒvj. in the

¹ This name was imposed by Dr. Duncan, sen. who first suggested its use as a narcotic. Vide *Obser. on Pulmonary Consumptions* by A. Duncan, M. D. Appen. p. 169.

² I have always found that, when I eat lettuce to supper it acts as a soporific.

form of pill: or, of a tincture made with one ounce of lactucarium and a pint of diluted alcohol, from ten to sixty drops may be taken.

• Official preparations. — *Succus spissatus Lactucæ Sativæ*. E.

2. LACTUCA VIROSA.

Official. — *LACTUCÆ VIROSÆ HERBA*. Edin. Strong-scented Lettuce leaves.

Syn. *Laitue virens* (F.) *Lattuca Salvatica* (L.)

This is an indigenous biennial plant, found growing on the banks of ditches, and borders of fields, flowering in July and August. The stalk rises about three feet in height, erect, slender, prickly below, smooth above, round, paniced, and not very leafy. The leaves are rather smooth and toothed, the lower ones numerous, obovate, undivided; those of the stem smaller, often lobed, amplexicaule, with the midrib beset with prickles on the under side. The bractes are cordate and pointed. The flowers are numerous, compound, of a sulphur-yellow colour, on short peduncles, furnished with small scaly leaves, and one at the base of each. The calyx is oblong, and composed of small lanceolate scales; and the corolla consists of florets scarcely longer than the calyx. The seeds are elliptical, compressed, striated, black, and furnished with a stipitate scabrous pappus.

The leaves and stem under the cuticle contain a white opaque juice, that abounds more copiously when the plant is in flower; at which time, therefore, they should be gathered, and the juice immediately expressed.

Qualities. — The odour of the leaves is heavy and foetid, resembling in some degree that of opium; their taste is bitter and acrid: qualities depending on their milky juice. When triturated with water, the solution never clears; and the morphia, which is separated by treating it like opium, cannot be freed from the mucus of the extract.

Medical properties and uses. — The expressed juice is narcotic and diuretic (see *Preparations* and *Compositions*) The leaves themselves are not used.

Official preparation. *Succus spissatus Lactucæ virosæ*. E.

LAURUS. *Spec. Plant. Willd.* ii. 477.

Cl. 9. Ord. 1. Enneandria Monogynia. Nat. ord. Oleraceæ Linn.
Lauri Juss.

G. 798. Calyx none. Corolla calycine, six-parted. Nectary of three two-bristled glands, surrounding the germen. Filaments interior, glanduliferous. Drupe one-seeded.

Sp. 1. *L. Cinnamomum*. The Cinnamon tree. *Mat. Med.* 2d ed. 670. t. 233. *Percival's Account of Ceylon*, 4to. 346—350.

Sp. 2. *L. Cassia*. The Cassia tree. *Carua*, *Rheede Hort. Malabar.* i. p. 107. t. 59.

Sp. 3. *L. Camphora*. The Camphor Laurel. *Med. Bot.* 2d edit. 681. t. 236.

Sp. 10. *L. nobilis*. Common Sweet Bay. *Med. Bot.* 2d ed. 678. t. 235.

Sp. 34. *L. Sassafras*. Sassafras Laurel. *Med. Bot.* 2d edit. t. 234.

1. LAURUS CINNAMOMUM.

Official.—CINNAMOMI CORTEX. CINNAMOMI OLEUM. *Lond.* LAURI CINNAMOMI CORTEX. *Edin.* CINNAMOMUM; CORTEX, OLEUM ESSENTIALE. *Dub.* Cinnamon, and Oil of Cinnamon.

Syn. Canelle (*F.*) Kanohl (*G.*) Kaneel (*D.*) Caneila (*I.*) Canela (*S.*) Dârchini (*H.*) Dârcasita (*San.*)¹

The cinnamon tree is a native of Ceylon², growing in great abundance in many parts of the island, particularly near Columba. It also grows plentifully in Malabar, Cochin China, Sumatra, and the eastern islands. It has been cultivated in the Brazils, the Mauritius, and other places. France is partly supplied from Guiana. It seldom rises above thirty feet in height; has a slender branching trunk covered with a brown ash-coloured cuticle, and from the root spring a number of suckers, which form a bush round the trunk. The leaves, which stand in opposite pairs in short slightly channelled petioles, are from six to nine inches in length, oblong, pointed, trinerved; when young reddish, but afterwards of a bright green colour; and have a spicy odour, and a hot taste when rubbed and chewed. The flowers, which appear in January, are white and inodorous, in axillary and terminal panicles. The petals are oval, pointed, concave, and spreading, longer than the filaments, which are in ternaries, flattish, erect, and the three innermost glanduliferous at the base; and the anthers are double. The fruit is an oval berry, resembling a small acorn, but with the apex depressed, and the pulp fleshy, with a terebinthine odour; and a taste not unlike that of the juniper berry.

There are several varieties of the cinnamon tree known at Ceylon. Seba enumerates ten, but the four following only are said to be barked: 1. Honey, or sharp sweet cinnamon, (*Rase Curundu* in the language of the natives,) which is the finest sort; 2. Snake cinnamon, (*Nai Curundu*), similar to the first; 3. Camphorated cinnamon, (*Capura Curundu*), so named from its having the odour of camphor, and the root yielding camphor by distillation; and 4. Bitter astringent cinnamon, (*Cahatte Curundu*),

¹ The Malays call cinnamon kayu-manis, which is sometimes pronounced as if it were written kaina-manis, which Mr. Marshall supposes to have been the original of the ancient Greek name kinnamomon.

² Notwithstanding the jealousy of the Dutch, the cinnamon tree, long before the British obtained possession of Ceylon, was cultivated at the Isle of France, in several parts of India, Jamaica, and some other of the West India islands. Mr. Miller first cultivated it in this country in 1768; and a plant of it has regularly flowered and ripened seed in the hot-house of the Bishop of Winchester at Farnham several years past.

which has smaller leaves than the former varieties.¹ The trees that grow in the valleys in a white sandy soil are fit to be barked when four or five years old, but those in a wet soil, or in shady places, require to be seven or eight years of age. The bark is good for nothing if the tree be older than eighteen years. The tree was formerly propagated by a species of pigeon, that ate the fruit, and voided the seed; but since Falck, one of the Dutch governors, about the middle of the eighteenth century, raised it from berries sown in his garden, it has been regularly cultivated.

The barking, particularly in the vicinity of Negombo and Matura, commences early in May, and continues until late in October. The *chaliahs*, or people who perform it, are under native officers called cinnamon *moodeliars*², who are answerable for the quantity barked. Branches of three years old are selected, and lopped off with a pruning knife, or bill hook called a *ketta*. To remove the bark, a longitudinal incision is made through it on both sides of the shoot, so that it can be gradually loosened, and taken off entire, forming hollow cylinders. The bark in this state tied up into bundles, is allowed to remain for twenty-four hours, by which a fermentation is produced that facilitates the separation of the epidermis, which with the green pulpy matter under it, is carefully scraped off. The bark now soon dries, contracts, and assumes the quilled form, after which the smaller pieces are put within the larger.³ The cinnamon, when dry, is tied up in bundles of 30 lbs. weight, and carried to the government store-house, where the quality is determined by inspection of the bundles. It was formerly chewed, and the surgeons who used to be thus employed, had their mouths so excoriated, as to be unable to continue the process longer than two days together: but tasting is now seldom had recourse to.

Cinnamon is brought home in bags or bales, weighing 92 lbs. each⁴: and in stowing it black pepper is mixed with the bales to preserve the cinnamon. According to Mr. Marshall's ac-

¹ The other sorts mentioned by Seba are: Sandy cinnamon, *Welle Coronde*, which feels gritty when chewed; Glutinous cinnamon, *Sewel Coronde*; Insipid and inodorous cinnamon, *Nicke Coronde*; Drum cinnamon, *Dawel Coronde*, so named because the natives make drums of the wood; Prickly cinnamon, *Calle Coronde*; Flowering cinnamon, *Mael Coronde*, the tree being always in bloom; and Three-leaved cinnamon, *Toupat Coronde*. *Phil. Trans.* xxxvi. 97—105.

² Under the Moodeliars are inferior officers, named *Mohandrams* and *Aratchays*; and in 1811 General Maitland appointed a superior, who is named *Maha-Moodeliar*.

³ Prior to the 15th century, all the cinnamon used in Europe was imported by the Arabs, and passed through the hands of the Venetians; after this the Portuguese became the sole importers, and continued to be so until 1645, when their trade was divided with the Dutch, who obtained entire possession of it in 1658; and were the principal cinnamon merchants until 1796, when Ceylon fell into the power of the British.

⁴ The bags are made of cloth of the cocoa nut bark.

count, the annual quantity of cinnamon sold at the East India Company's sales, taken on an average of the last eight years, up to 1810, is 318,258 lbs.; at an average price of six shillings per pound.¹ But much cinnamon, of an inferior kind, reaches Europe through private merchants, particularly from China.

The *oil of cinnamon* is prepared by macerating the bark in sea-water for two days, then distilling with a slow fire, and separating the oil from the water with which it comes ² over. It is generally adulterated with alcohol or expressed oil. Eleven pounds of cinnamon are required to procure one ounce of the oil. Cinnamon is sometimes intermixed with cinnamon from which the oil has been drawn, and with cassia. The former is detected by the weakness of its odour and taste; and the latter by its thickness, smooth fracture, and remarkably slimy taste.

Qualities. — Cinnamon has a very pleasant fragrant odour, and a pungent aromatic sweetish taste; but when it is very hot, without sweetness, and leaves a mawkish taste in the mouth, it is of an inferior quality. The best is rather pliable, but breaks in splinters; is as thin as paper, and of a light yellowish colour: thickness and a dark or brown colour, are marks of inferiority. What is called Chinese cinnamon is darker coloured, rougher, denser, and breaks shorter. The taste is harsher, more pungent, and ligneous, without the sweetness of the Ceylon cinnamon. These qualities depend on the *essential oil*, which may be separated by macerating the bark in alcohol, and distilling the tincture; in which process the oil does not rise with the spirit, but remains in the retort. From 3xvj of the bark Neumann obtained only two scruples and a half of oil.³ It has a pale gold colour, is heavier than water, perfectly soluble in alcohol, and has the odour and taste of the cinnamon concentrated; But both a heavy and a light oil is obtained from cinnamon, 80 lbs. yielding about five ounces of the former, and two of the latter.

Medical properties and uses. — Cinnamon bark is astringent, cordial, and tonic. Hence it is found to be efficacious in alvine fluxes, proceeding from a weakened and languid state of the intestines, dyspepsia, and chronic nervous debility; and, when given in the form of watery infusion, it removes nausea, and checks vomiting. But the principal use of cinnamon is to cover the nauseous taste of other remedies. The *oil* is a powerful stimulant and stomachic; and is used as such in cramps

¹ *Annals of Phil.* vol. x. p. 358.

² The bark of the roots yields an aromatic essential oil, denominated oil of camphor, which is used in Ceylon as a rubefacient in painful affections of the joints, and in sprains.

³ *Neumann's Chemistry*, ii. 188.

of the stomach, flatulent colic, hiccough, and nervous languors. It is sometimes inserted into the hollow of a decayed tooth to allay the pain of tooth-ach.

The dose of the bark in powder is from grs. x to ʒj; that of the oil from mʒ to mʒj on a lump of sugar.

Official preparations. *Aqua Cinnamomi*. L. E. D. *Spiritus Cinnamomi*. L. E. D. *Tinct. Cinnamomi*. L. E. D. *Tinct. Cinnamomi comp.* L. *Pulvis Cinnamomi compositus*. L. E.

2. LAURUS CASSIA.¹

Official. LAURI CASSIÆ CORTEX; FLOS NONDUM EXPLICITUS.

Edin. Dub. The bark, and flower buds of the Cassia tree.

Syn. of the bark. Casse (F.) Casia (G.) Cannellina (I.) Seleckheh (Arab.) Tej (H.) Twacha (San.)—*of the buds.* Fleur de la Cannelle (F.) Cassia Bloemen (D.) Tejpatka konpul (H.) Sirnāgāpoo (Tam.)

The cassia tree is a native of Malabar, Ceylon, Sumatra, and Java; and has been generally supposed to be rather a variety of the cinnamon than a distinct species of *Laurus*; although Marsden's description of the plant², and Gärtner's of the fruit³, afford some reason for thinking that it is properly marked as a distinct species. It rises fifty feet in height, and gives out, almost from the bottom, large spreading horizontal branches: the leaves are from four to six inches long, elliptical, narrow, pointed, entire, smooth, longitudinally nerved, of a deep green colour above, and pale grey beneath: the flowers are in axillary clusters, six together on slender flower-stalks: they are monopetalous, white, small, and divided into six stellular points: the fruit is an ovate, oblong, black berry, with a mucronated apex, standing in a bell-shaped, coriaceous, angled, unequally five or six toothed calyx; it contains a bitterish pulp, and when dry is insipid and inodorous.

Like the cinnamon, those trees which grow in a dry soil and high exposed situation, yield a superior bark to those in a moist soil and shaded spot. The larger branches and the trunk are said to be the parts of the tree barked: and the cuticle only appears to be scraped off, the cellular integument being left, which, as the bark is taken from the larger branches, is thick, spongy, and full of a slimy mucus. This plant is never decorticated at Ceylon. According to Mr. Marshall⁴, the *Cassia bud* of commerce is the hexangular fleshy receptacle of the seed of the *L. Cinnamomum*, and not the *L. Cassia*, as supposed by the Dub-

¹ This is this Dawul Kurundu of the Cingalese, the Cannella Matto of the Portuguese, and the wilde Canule of the Dutch. Marshall, *Phil. Trans.* 1817.

² *History of Sumatra*, 125.

³ *De Fructibus*, ii. 69. t. 92. If Gärtner be correct, the fruit of the *Cassia* is depicted, instead of that of the Cinnamon, in the plate of the Cinnamon plant, in Woodville's Medical Botany.

⁴ *Annals of Phil.* vol. x. p. 245.

lin College. They are not prepared at Ceylon, but come chiefly from China, through Calcutta, Madras, and Bombay.

Cassia is imported in chests, half chests, and occasionally in quarter chests.

Qualities.—The odour of cassia bark is similar to that of cinnamon, but fainter; and the taste is more pungent, but less agreeable; appearing slimy when much chewed. It is of a cinnamon colour, in pieces more or less quilled, about one-tenth of an inch in thickness; which break with a short close fracture, and show it to consist of two parts, the inner darker and of a fine texture, and the outer paler and somewhat spongy. When these are separated, the inner part has all the sensible qualities of real cinnamon, only more pungency, whilst the outer has scarcely either flavour or taste: and I am of opinion that the allowing this cellular integument, from which the cinnamon is freed, to remain in the cassia, constitutes the chief cause of the difference between these two barks.¹ *Cassia buds* have the same odour and taste as the cinnamon bark. They are of a brown colour, and resemble a nail, with a round head, surrounded with the hexangular calyx, which gradually terminates in a point. Both the bark and buds yield in distillation with water an essential oil, similar to that of cinnamon, on which their qualities depend.

Medical properties and uses.—Cassia bark and buds are stimulant cordials; and are used in the same cases, and in the same manner as cinnamon bark.

Official preparation. *Aqua Lauri Cassiæ distillata.* E.

3. LAURUS CAMPHORA.

Official. CAMPHORA. Lond. Edin. CAMPHORA; RESINA.² Dub. Camphor.

Syn. Camphre (F.) Kampfer (G.) Canfora (I.) Alcanfor (S.) Cafoor (Arab.) Cafur (H.) Curfura (San.)

The species of laurel here designated, is a native of Japan. It yields camphor; but I have already stated, that the camphor which comes from Sumatra, that is, the greater part of what is brought to Europe, is the produce of the *Dryobalanus Camphora*, a tree belonging to a different genus altogether from the laurel. The camphor laurel³ rises to a considerable height, is much branched, and covered with a smooth greenish bark. The leaves, which stand on long footstalks, are acutely lanceolate, entire, smooth, ribbed, of a pale yellowish green colour on the upper surface, and on the under glaucous. The flowers are

¹ The rejected, or third sort of cinnamon, prepared in Ceylon, has been imported into England and sold as cassia.

² This is an error of the Dublin College, chemists being now agreed that camphor is not a resin, but a proximate vegetable principle, sui generis.

³ Specimens of it are common in our hot-houses; but they rarely flower.

small, white, pedicellated, in roundish close clusters, which terminate long axillary peduncles. The corolla consists of six small ovate, unequal petals, enclosing a tuberculated bristled nectary, which surrounds the germen; the filaments are shorter than the corolla, and support round anthers; the germen is roundish, with a simple style and obtuse stigma. The fruit resembles that of the cinnamon.¹

The roots, wood and leaves of this tree have a very strong odour of camphor; and from the roots and smaller branches it is obtained by distillation. They are cut into chips, which are suspended in a net within a kind of still, or iron pot, the bottom of which is covered with water, and an earthen head fitted to it: heat is then applied, and the steam of the boiling water, penetrating the contents of the net, elevates the camphor into the capital, where it concretes on straws with which this part of the apparatus is lined.² But as we have already stated, the greater part of the camphor brought to Europe is obtained in Sumatra; where the trees which yield it are cut and split, and the camphor which is found concentered in the heart of them is picked out, and washed in a ley of soap. It is imported into this country in chests, drums, and casks; and is in small granular, friable masses, of a dirty white, or grayish colour, very much resembling in appearance half refined sugar. It often contains earth and other impurities.³

Formerly all the crude camphor brought to Europe was purified by the Venetians, and afterwards by the Dutch, who kept the art secret; but it is now practised to a considerable extent in this country. It is sublimed in glass vessels, after being mixed with one twentieth of its weight of quick lime; and afterwards fused either "by increasing the heat suddenly when the sublimation is almost ended, without transferring the camphor to different vessels, or by melting the sublimed flowers in a vessel for that purpose."⁴ Thus refined, it is in large

¹ Camphor is not the production of those plants merely from which that known in commerce is obtained, but has also been procured from the roots of the cinnamon, cassia, and sassafras laurels; from those of galangale, zedoary, ginger; and from cardamom seeds and long pepper. The essential oils of lavender, sage, thyme, peppermint, rosemary, and several other labiated plants, yield it: and an artificial camphor is prepared by passing muriatic acid gas through oil of turpentine. The varieties of camphor thus obtained, however, differ in some respects from common camphor.

² According to Kæmpfer, the process is carried on chiefly by the peasants of Satzuma. *Amoen.* 779.

³ Zea describes a variety of camphor which is procured in South America, from a tree, the botanical characters of which are not yet known; but which is termed *caratte* by the natives. The camphor exudes from the bark in the form of tears.

⁴ *Aikin's Dictionary of Chemistry*, art. *Camphor*. Professor Robison, who saw the process as it was conducted in Holland, says, that the camphor is in a liquid state in the subliming vessel. *Black's Lectures*, ii. 351.

round cakes, about two or three inches thick, concave on one side, convex on the other, and generally perforated.

Qualities.—Pure camphor has a strong, peculiar, fragrant, penetrating odour; and a bitter, pungent, aromatic taste. It is white, transparent, unctuous to the touch, and friable, breaking with a shining foliated or tabular fracture, which displays a crystalline texture: and although brittle, yet it is also in some degree ductile, and therefore not easily pulverised. It swims on water, its specific gravity being 0.9887¹: and is so volatile, that if it be not kept in well stopt vessels, it loses a very considerable proportion of its bulk and weight by evaporation. It melts at a temperature of 260°, and sublimes in close vessels, crystallizing unchanged in hexagonal plates. It is readily ignited, and burns with a brilliant flame, giving out much smoke. When triturated with water, very little is dissolved², although it communicates to the water its odour and pungency; but the addition of carbonic acid gas augments very much the solvent power of water over camphor. Alcohol, ether, the fixed and volatile oils, the sulphuric and nitric acids a little diluted, and the muriatic, the strong acetic, and the fluoric acids, dissolve camphor, which is again separated unaltered from these solutions by the addition of water. Concentrated sulphuric acid decomposes it, forming artificial tannin; and by repeatedly distilling it with nitric acid, it is converted into camphoric acid. Alkalies exert scarcely any action on camphor: but it unites with, and converts into a soft tenacious mass, the hardest resinous substances. Camphor, when mixed with clay, and distilled in close vessels, is decomposed, and resolved into a volatile oil and charcoal: hence, as a chemical compound, it appears to differ from the essential oils, only in containing a larger proportion of carbon.

Medical properties and uses.—Camphor is stimulant, narcotic, and diaphoretic, but its stimulant powers are very transitory, and followed by sedative effects. The Arabians appear to have first used camphor as a medicine³, and by them it was regarded as refrigerant; an opinion which, even in more recent times, has been the subject of much controversy. In moderate doses it operates as a cordial, increasing the heat of the body, exhilarating, softening, and rendering fuller the pulse, and promoting diaphoresis: in larger doses it allays irritation, and spasm, abates pain, and induces sleep. But in immoderate

¹ Brisson.

² Cadet asserts that one French pint of water dissolves about sixteen grains of camphor, which are again precipitated by pure potass. *Ann. de Chimie.* lxii. 132.

³ They called it *Camfur* as well as *Casoor*. *Clusius Exot.* 243, quoted by *Alston*.

doses camphor produces vomiting, vertigo, delirium, convulsions, and other deleterious effects.

As a stimulant, camphor is beneficially used in all fevers of the typhoid kind, cynanche maligna, malignant measles, confluent small-pox, and as an adjunct to bark and opium to check the progress of gangrene; and in spasmodic affections, as hysteria, epilepsy, chorea, asthma, and painful menstruation. Its narcotic and anodyne effects being produced with very little increase of pulse, it has been successfully employed for allaying pain and irritation even in some inflammatory diseases, as pneumonia, acute rheumatism, gonorrhœa, small-pox, when attended with convulsions, gout, and in the delirium of mania, and inflammatory fevers. But in these cases its use should be preceded by evacuations; and the remedy itself combined with nitre, or antimonials. Camphor is also given internally to obviate the irritating effects of some other medicines, as mezereon, cantharides, the saline preparations of mercury, and drastic purgatives; to correct the nauseating property of squill, and prevent the irritation it is apt to produce on the coats of the bladder.

Camphor may be administered in the solid form; but as in this state it is apt to occasion nausea, it is generally ordered in a state of minute division, suspended in fluids by means of mucilage or the yolk of eggs; sometimes by magnesia, which, assisting its division, and rendering it smooth as starch, admits of its combination with acids; and as several of the gum resins, when triturated with it, form a soft, uniform, soluble mass, they also may be employed for diffusing it in water.¹ It may be advantageously united with ammonia, aromatics, opium, bark, and other tonics, in low fevers and diseases of debility; with calomel, antimonials, digitalis, and neutral salts, in inflammatory diseases; with the fetid gums and other narcotics, in spasms and convulsive affections; and with squill and ipecacuanha, in pulmonary complaints.

As a local anodyne, camphor is used in frictions, dissolved in oils, alcohol, or acetic acid, for allaying rheumatic and muscular pains; and with the addition of laudanum we have found it of great efficacy when rubbed on the abdomen, in flatulent colic, dysentery, and inflammations of the viscera. In collyria it is useful in ophthalmia; and dissolved in oil, as an injection in ardor urinæ; and as an enema in the tenesmus occasioned by ascarides, or other irritations of the rectum. A

¹ Murray's *System of Mat. Med. and Pharm.* ii. 157.

² In some constitutions it must be exhibited in this form with caution; "two scruples of it given to a woman in a glyster, proved so irritating as to bring on pains resembling those of labour." Heberden. *Med. Trans.* vol. i. p. 473.

pill of camphor and opium put into the hollow of a carious tooth, affords almost immediate relief in tooth-ach.

The dose of camphor is from grs. ij to ʒj, repeated at shorter or longer intervals according to the extent of the dose. The bad effects of an overdose are most effectually obviated by opium.

Official preparations. *Mistura Camphoræ*. L. D. *Emulsio camphorata*. E. *Spiritus Camphoræ*. L. E. D. *Tinctura Camphoræ composita*. L. E. D. *Acidum acetosum camphoratum*. E. D. *Linimentum Camphoræ*. L. E. D. *Linimentum Camphoræ comp.* L.

4. LAURUS NOBILIS.¹

Official. LAURI BACCÆ ET FOLIA. *Lond.* LAURI NOBILIS FOLIA; BACCÆ; OLEUM FIXUM. *Edin.* Laurel berries and leaves, and the fixed oil of the berries.

Syn. Baies de Laurier (F.) Lorbeeren (G.) Bacchi di Lauro Riccio (I.) Bayas (S.)

This tree is a native of Italy and the south of Europe; but is cultivated in this country, and is not uncommon in our gardens, flowering in April and May. It is a handsome evergreen; and although it appears as a shrub in England, yet in its native soil and climate it rises twenty or thirty feet in height. The bark is smooth, and of a green olive colour. The leaves are lanceolate, about three inches long, and an inch and a half broad, on short petioles, smooth, entire, veined, often waved at the margin, of a firm texture, and a deep green colour. The flowers are male and female on different plants, in short racemes, and of an herbaceous or yellowish white colour. The corolla is divided in both descriptions of flowers into four oval segments. The berry is superior, of an oval shape, fleshy, and of a dark purple almost black colour.

Laurel berries, and the oil which is obtained by boiling the berries in water, are imported from the Streights. The simple expressed oil is insipid.

Qualities.—Both the *leaves* and *berries* have a sweet fragrant odour, and an aromatic, astringent taste; and the *oil*, which is of a yellowish green colour, has a stronger but similar odour and taste. Water distilled from the leaves shews traces of Prussic acid.

Medical properties and uses.—Bay leaves, berries, and oil; are stimulant and carminative. They were formerly given in flatulent colic, hysteria, and obstructed menstruation, but their internal use is now abandoned; and, as an external application, they are generally compounded with other stimulants.

5. LAURUS SASSAFRAS.

Official. SASSAFRAS; LIGNUM ET RADIX. *Lond.* LAURI SASSAFRAS LIGNUM, RADIX. *Edin.* SASSAFRAS; LIGNUM, CORTEX, RADIX. *Dub.* The wood, root, and bark of Sassafras.

Syn. Sassafras (F.) Sassafras (G.) Sassofrasso (I.)

¹ Δαφνη Dioscoridis.

This species of laurel is a native of North America and Cochinchina. It is cultivated in Jamaica; and withstands the cold of our climate so as to be frequently reared in gardens as an ornamental shrub. The flowers appear in May and June. In America the plant rises twenty or thirty feet in height, with the trunk about twelve inches in diameter, covered with a rough, furrowed, gray bark, and brownish towards the top. The leaves are of different shapes and sizes; some being oval, entire, and about four inches long and three broad; others lobed, about six inches long, and nearly as broad: they are of a lucid green colour, downy on the under surface, petiolate, and alternate. The flowers which appear in spring immediately under the leaves when they begin to be evolved, are small and produced in pendant panicles; and at the base of the pedicels are linear bractes. The corolla is divided into six narrow, convex, yellowish, or greenish white segments, inclosing, in the male flowers, nine stamens supporting yellow anthers. The hermaphrodite flowers, which are on a separate plant, have six stamens only, and a simple style. The berry is oval, and when ripe of a blue colour.

The sassafras laurel was discovered by the Spaniards, immediately after their conquest of Florida, in 1538, under Ferdinand de Soto, and termed by them cinnamon wood, on account of its odour.¹ It is imported in what are termed logs; which are straight and branched pieces, light, of a spongy texture, and covered with the thick rough bark. The bark is separated, and the wood then cut into chips, as is also the root.

Qualities. — Sassafras wood, root, and bark have a fragrant odour, and a sweetish aromatic taste. The wood is of a brownish-white colour; and the bark ferruginous within, spongy, and divisible into layers. Their sensible qualities and virtues depend on an essential oil, which can be obtained separate by distilling the chips or the bark with water. It is very fragrant, hot and penetrating to the taste, of a pale yellow colour, and heavier than water. Water extracts the virtues of sassafras partially; alcohol completely; and when the tincture is evaporated it leaves an extract which contains the whole virtue of the plant.

Medical properties and uses. — Sassafras is a stimulating diaphoretic and diuretic. It has been employed in cases of scurvy, chronic rheumatism, gout; and in cutaneous affections: and was once regarded as serviceable in lues venerea, but it has no pretension whatever to the character of an antisiphilitic. Its effects are very uncertain: and even the diaphoresis which it is

¹ Savary's Dictionary, ii. l. 487.

supposed to occasion, may rather be ascribed to the guaiac, and other more powerful medicines, with which it is generally combined. An infusion of the chips taken as tea, is a common domestic remedy in the above complaints; but I know instances in which it has been taken regularly every morning for a couple of years without any perceptible benefit. The infusion, however, is the best form of giving the remedy, as much of the oil is dissipated in making the decoction. The oil is sometimes given with the same intentions as the infusion.

Official preparations. *Oleum Sassafras*. L. E. D. *Decoctum Sarsaparillæ compositum*. L. D.

LAVANDULA. *Spec. Plant. Willd.* iii. 60.

Cl. 14. *Ord.* 1. Didynamia Gymnospermia. *Nat. ord.* Verticillatæ. G. 1099. *Calyx* ovate, somewhat toothed, supported by a bract.

Corolla resupine. *Stamens* within the tube.

Species 1. *L. Spica*. Lavender. *Med. Bot.* 2d ed. 221. t. 114.

Official. LAVANDULÆ FLORES. *Lond. Dub.* LAVANDULÆ SPICÆ FLORES. *Edin.* The flowers of Lavender.

Syn. Lavande (F.) Lavendelblumen (G.) Lavanda (L.) Alhazema (S.)

This plant is a perennial, a native of the south of Europe, but commonly cultivated in our gardens¹, flowering from June to September. It is a much branched shrub, rising in its proper soil often six feet in height; the woody part of the stem being covered with a rough brown bark, while that of the shoots, which are four cornered, is of a pale glaucous colour. The leaves of the most common variety are glaucous, narrow, nearly linear, and entire, the lower petiolate, and the upper ones sessile. The flowers are produced on the young shoots, in terminal spikes, which consist of interrupted whorls. The corolla is blue, tubular, and labiate, the upper lip larger and bifid, the lower divided into three segments. The filaments are within the tube, and support small simple anthers; the style, which is slender, and crowned with a bilobed stigma, rises from the centre of four naked seeds at the bottom of the tube.

There are two other varieties² of this species; but they are more rare, and do not differ in their sensible and medicinal qualities. The flowers are cut in dry weather, when they begin to blow.

Qualities. — Lavender flowers have an agreeable fragrant odour, and warm bitterish taste. Alcohol extracts their virtues completely, and elevates in distillation all their odorous parts; water acts less completely. The oil, however, on which their virtues depend, is obtained separate in distillation with water; in the proportion, according to Lewis³, of one ounce of oil from sixty ounces of the flowers.

¹ It was cultivated in England so early as 1568, according to Turner.

² β *L. angustifolia flore albo.* γ *L. latifolia.*

³ *Mat. Med.* 371.

Medical properties and uses. — Lavender is stimulant, and tonic. The oil extracted by alcohol enters into several compositions. The dried leaves in powder were used formerly as a sternutatory; but they are now neglected.

Official preparations. *Oleum Lavandulæ*. L. E. D. *Spiritus Lavandulæ*. L. E. D. *Spiritus Lavandulæ compositus*. L. E. D.

LEONTODON. *Spec. Plant. Willd.* iii. 1544.

Cl. 19. Ord. 1. Syngenesia Æqualis. Nat. ord. Compositæ Semi-flosculosi Linn. Cichoraceæ Juss.

G. 1407. Receptacle naked. Calyx double. Pappus stipitate, hairy. Species 1. L. *Taraxacum*.¹ Dandelion. *Med. Bot.* 2d ed. 39. t. 16.

Smith Flor. Brit. 822. Eng. Bot. 510.

Official. TARAXACI RADIX. *Lond.* LEONTODI TARAXACI HERBA, RADIX. *Edin.* TARAXACUM; (DENS LEONIS) RADIX, FOLIA. *Dub.* The root and leaves of common Dandelion.

Syn. Dent de Lion; Pissenlit (*F.*) Lowenzahn wurzel (*G.*) Tarassaco (*I.*) Cardilios tagarnina (*S.*)

This is one of our most common indigenous plants, flowering from April to September. The root is fusiform, and externally of a dark colour. The leaves are all radical, in general runcinate, but in very moist situations nearly entire², toothed, smooth, and of a pleasant green colour. The flower-stem is an erect, one-flowered simple scape, naked, smooth, fistulous, fragile, and abounding with a milky bitter juice. The flower is terminal, large, of a golden colour, and closes in the evening: the calyx is smooth, with the exterior scales loosely turned down: the florets are very numerous, ligulate, and toothed at the extremities. The receptacle is spheroid, and punctured. The seeds are obovate, furrowed, of a pale olive colour; and furnished with a radiated pappus, on a large stipe.

The herbaceous part of this plant is blanched, and used on the continent as a salad; but in this country, although it is designated by the Edinburgh and Dublin Colleges, yet it is very seldom used, the root possessing much more of the principle on which the medicinal powers of the plant depend. The recent full-grown root only should be used. It is white, and covered with a brown cuticle.

Qualities. — Dandelion is inodorous, but has a bitter, somewhat sweetish acidulous taste. The milky juice reddens the vegetable blues, owing, according to Hermbstadt³, to the presence of tartaric acid. Water extracts its virtues better than alcohol; and scarcely any thing is taken up by ether: yet Dr. John detected caoutchouc in it. The decoction is precipitated by infusion of galls, and solutions of nitrate of silver, muriate of mercury, and superacetate of lead. Sulphate of iron

¹ Ἀφάκη Græcorum.
Marsh Dandelion.

² It must be distinguished from *Leontodon palustre*,

³ Thomson's Chemistry, 4th ed. v. 643.

strikes with it a pale olive colour, and after some time throws down a precipitate. Hence it is probable that the active principles of taraxacum are extractive, gluten, a bitter principle which does not appear to be resinous, and tartaric acid either free or as a supertartrate. The above re-agents are incompatible with the decoction.

Medical properties and uses.—Dandelion is aperient, and diuretic. It has been long used on the continent as a remedy in jaundice, dropsy, pulmonic tubercles, hepatic obstructions, and some cutaneous diseases.¹ In this country it has been lately tried: and although its powers appear to have been overrated by the German physicians, yet it certainly possesses some efficacy in these diseases: and Dr. Pemberton affirms, that he has seen great advantage result from using the extract in chronic inflammation and incipient scirrhus of the liver, and in chronic derangements of the stomach.² It may be given in the form of extract, or of infusion, made by boiling ʒij of the sliced root in Oij of water, down to a pint, and to the strained fluid adding ʒiij of supertartrate of potass: fʒij may be given for a dose three or four times a day.

Official preparation. *Extractum Taraxaci*, L. D.

LICHEN.

Cl. 24. Ord. 5. Cryptogamia Algæ. Nat. ord. Algæ.

Generic Char. Male. Scattered warts.

Female. Smooth shields or tubercles, in which the seeds are embedded.

Species 1. L. *Islandicus*. Iceland or Eryngo-leaved Liverwort.

Engl. Bot. 1830. Flor. Danica, 155. Regnault, *Observations on*

Pulmonary Consumption. fig.

Species 2. L. *Roccella*. Dyer's Lichen, or Orchall. Engl. Bot. 211.

1. LICHEN ISLANDICUS.

Official. LICHEN. Lond. LICHEN ISLANDICUS. Edin. Dub. Iceland Liverwort.

Syn. Lichen d'Islande (F.) Isländisches Moos (G.) Lichen Islandico (L.)

This species of lichen is an indigenous perennial. It is very abundantly found in Iceland, and in the north of Germany; and is more or less common on all the heaths and mountains of the north of Europe.³ It grows to the height of two or three inches only, and has a rugged bushy aspect. The frond is dry, coriaceous, lobed and lacinated, the lobes being subdivided and notched, resembling in appearance a buck's horn; but concave above and convex beneath; their surface is smooth, shining, and blistered; the margins beset with short, very minute, rigid, parallel hairs: and the colour of the whole is greenish yellow, or grayish brown.

¹ Bergius, *Mat. Med.* ii. 649.

² *Diseases of the Abdominal Viscera*, 42.

³ It grows abundantly in the Asturias. *Journ. de Physique*, 1806.

This plant is used in Iceland and Lapland as an article of diet; being boiled in broth or milk after being freed from its bitter by repeated maceration in water, or dried and made into bread. It has of late years been brought in considerable quantity to this country for medicinal purposes.

Qualities. — The dried lichen differs very little in its appearance from the recent plant. It is inodorous, and has a bitter mucilaginous taste; is neither very tough nor very brittle, but is not easily pulverized. When macerated in water it absorbs more than its own weight of the fluid, and the blisters appear like little white opaque glands, while the other parts of the plant are diaphanous. If the water employed in the maceration be warm, it acquires a strong bitter taste, very similar to that of an infusion of quassia. The macerated lichen boiled in water affords a yellow-coloured inodorous decoction, which thickens as it cools, and becomes a tremulous jelly, resembling starch, but without any viscosity. After some time this jelly cracks, separates from the watery part, and dries into semi-transparent masses which are not soluble in cold water, but soluble in boiling water; and from which it is again precipitated by infusion of galls. According to the analysis of Proust, 100 parts of lichen afford 64 parts of a substance insoluble in hot water, somewhat resembling vegetable gluten, 33 parts of a matter soluble in hot water, resembling starch, and three parts of a bitter extractive principle.¹

Medical properties and uses. — Iceland liverwort is tonic, and demulcent. From some remarks of Linnæus, made in 1737 in the *Flora Lapponica*, it would appear that the Danish physicians had long before that time employed this lichen, and found it efficacious in hæmoptysis, and pulmonary complaints; but it did not excite the attention of even the continental physicians, till after Scopoli's observations on it, in 1769, were published; and very few years have passed since it was known as a remedy in this country. Its virtues for the cure of phthisis have been very highly extolled; but experience has not altogether confirmed the truth of the praises which have been lavished on it.² Its supposed specific effects are said to depend on the combination of its tonic bitter and its demulcent properties. As a demulcent it is certainly superior to the mucilages; and owing to the bitter principle it contains, its decoction affords all the good effects that can be obtained from the other demulcents, and the mucilages, without loading the stomach. It allays the tickling cough, and relieves the oppressed breathing; involves the acrid matters contained in the stomach and bowels

¹ *Journal de Physique*, 1806.

² It still possesses a high reputation as a remedy for phthisis, by the natives of Iceland. *Mackenzie's Travels*, 4to. *Appendix*, p. 411.

which often induce diarrhoea, and renders more bland the whole mass of animal fluids, so as to mitigate hectic fever, while at the same time it tends to invigorate the digestive organs. Still, however, its efficacy in phthisis is very circumscribed; but the circumstances above enumerated ought not to be overlooked, nor the Iceland lichen regarded, as it often is, as a demulcent not more worthy of notice than the other articles of the same class. Besides phthisis, it has been also found useful in debilities after acute diseases, and in emaciations, particularly those arising from the great discharge of ulcers; in diarrhoeas, dysentery, and whooping-cough.

It is generally exhibited in the form of decoction; (See *Preparations* and *Compositions*;) but as the bitter proves hurtful where the lungs or other viscera are actively inflamed, that part must be therefore separated. This is effected by cutting or pounding the lichen, macerating it in several waters, and then, after boiling it for ten minutes, and decanting off the water, boiling it to the form of a mucilage in a fresh portion of water.

Official preparation. *Decoctum Lichenis*. L. D.

2. LICHEN ORCELLA.¹

Official. LITMUS; LACMUS TINCTORIUS. *Dub.* Litmus.

Syn. Orchel, Orseille (F.) Oricello (I.) Orciglia (S.)

This is an indigenous lichen, found in Portland island; but as an article of commerce it is obtained from the Levant; and also the Canary islands² which produce annually, 2600 quintals. It is a small species, seldom exceeding two inches in height, and is firmly fixed to the rocks by a solid base. From this base rises a tuft of worm-like stems, round, acutely pointed, often curved, more or less branched, smooth, of a white, gray, or brownish hue, and studded about their upper part with scattered tubercles, replete with white powder, which have been thought the seeds; but the fructification of this species is not well understood.

From this lichen is prepared the *argol* or *archil* of commerce. It was known to the ancients, being the *Λειχην* of Dioscorides and the *Phycos thalassion* of Pliny. Its use as a dye, was, however lost; till it was again accidentally discovered by a merchant of Florence, in 1300³, observing that urine gave the lichen a fine violet colour. The preparation was long a secret, and was confined to Florence and Holland; but it is now known in England, and large manufactories of it are car-

¹ Vide *Dillenius' Hist. Muscorum*, 4to. p. 120. tab. 17. fig. 39. where it is figured under the name of *Coralloides corniculatum fasciculare tinctorium, fusci teretis facie*.

² The ancients named the Canaries the purple Isles, from the abundance of orchilla which they yielded. *Mem. de l' Acad. des Inscriptions*, tom. iv. p. 457.

³ Thomson's *Chemistry*, 4th ed. v. p. 254. Bancroft on *Philosophy of Colours*, 2d ed. vol. p. 292.

ried on in London and Liverpool. The lichen, after being dried and cleaned is reduced to powder in a mill resembling an oil-mill.¹ It is then mixed in a vat with one half of its weight of pearl ash, and moistened with human urine: fermentation soon succeeds, and is kept up by stirring, and by successive additions of urine, until the colour of the materials changes first to red and then to blue. In this state it is mixed with a third of its weight of good potash, and spread out to dry.² Chalk is sometimes added to it, but with no other view than to increase the weight.³ It is generally sold in the form of cakes, but sometimes in that of a moist pulp.

Qualities. — Prepared argol has a slight violet odour, and a mawkish taste, leaving some degree of pungency in the mouth. When moist, the form of the lichen is evident in the pulp. It communicates to water and to alcohol a beautiful violet colour, which however is very evanescent: all acids and salts with an excess of acid change it to red, which is again destroyed and the blue restored by the addition of alkalies; and even exposure to the air of a room in which many people are assembled, reddens the watery infusion. The tincture is least liable to change when kept, if it be reddened by an acid and kept in close vessels.

Use. — This species of lichen is said to have been “administered medicinally with an intention of allaying the tickling attendant on phthisis, and in hysterical coughs⁴,” but we must suppose the recent lichen is meant, or before it has undergone any preparation as a colouring matter. We know of no other use of the prepared lichen than as a dye stuff, or a chemical test of the presence of acids; and it is certainly the most delicate.

LINUM.⁵ *Spec. Plant. Willd.* i. 1533.

Cl. 5. *Ord.* 5. Pentandria Pentagynia. *Nat. ord.* Gruinales Linn. Caryophyllæ Juss.

G. 590. *Calyx* five-leaved. *Petals* five. *Capsule* five-valved, ten-celled. *Seed* solitary.

* with alternate leaves.

Species 1. *L. usitatissimum*. Common Flax. *Med. Bot.* 2d ed. 566. t. 202. *Smith Flora Brit.* 342. *Curtis Lond. fasc.* 5. t. 22.

** with opposite leaves.

Species 26. *L. catharticum*. Purging Flax. *Smith Flora Brit.* 344. *Eng. Bot.* 382.

1. LINUM USITATISSIMUM.

Official. LINI USITATISSIMI SEMINA. *Lond.* *Edin.* LINUM; SEMINA. *Dub.* Linseed, and Linseed oil.

Syn. Grains de Lin. (*F.*) Leinsaamen; Flachsamen (*G.*) Semi di Lino (*I.*) Laxor (*S.*) Busrue (*Arab.*) Tisi (*H.*) Atasci (*San.*)

¹ Sometimes it is not ground, but prepared in the entire state.

² *Nicholson's Journ.* 4to. ii. 311.

³ Archil is chiefly used by the dyers, and in times of scarcity the lichen has been sold at 1000*l.* sterling the ton. It is often mixed with the lichen fuciformis.

⁴ Translation of the Dublin Pharmacop. p. 165.

⁵ *Arves* Dioscoridis.

The common flax is an annual plant, flowering in July. It is supposed to have been originally brought from those parts of Egypt which are annually inundated by the rising of the Nile; but it is now found growing wild in this country; and is cultivated in most parts of Europe. The root is simple and fibrous. The stem is erect, round, smooth, slender and leafy; branched with a panicle at the summit, and rising about two feet in height. The leaves are small, lanceolate, entire, obscurely three-nerved, smooth, sessile, standing nearly upright, and alternate on both the stem and branches. The flowers are petiolate; the calyx persistent, composed of five sharp-pointed, keeled, trinerved, ovate leaflets; and the corolla consists of five notched, oblong, sky-blue, streaked petals, which spread into funnel-formed blossoms. The filaments are white, dilated, and slightly united at the base; the germen is ovate, and crowned with five blue; thread-like, spreading, reflected stigmas. The capsule is globular, the size of a common pea, crowned with a sharp spine, formed by the junction of the spines of the valves in one point: and containing in each cell an elliptical shining seed.¹

Although this plant is extensively cultivated in Britain, yet the greater part of the linseed used here is brought from the Baltic. The seed ripens in September; and the plant is then pulled up as soon as the heads begin to change brown and hang downwards, otherwise the seeds are soon scattered.

Qualities.—These seeds are inodorous, and have an oily, mucilaginous, sweetish taste. They are small, flat, oval, and covered with a smooth, shining, brown-coloured cuticle, which abounds with a mucus, that can be extracted pure by infusion in boiling water. By expression they yield one-sixth of their weight of fixed oil. The mucus of linseed is colourless, insipid, inodorous, and resembles in its viscosity mucilage of acacia gum; but differs from it in the following particulars: Alcohol precipitates it in white flocks, but the liquid remains clear; superacetate of lead throws down a dense precipitate; but oxy-sulphate of iron and silicated potash produce no sensible effect. For the qualities of the oil, see *Preparations*.

Medical properties and uses.—Linseed is emollient and demulcent. The mucus obtained by infusion is a cheap and very useful demulcent in catarrh, pneumonia, diarrhoea, and dysentery: visceral inflammations, calculus, gonorrhoea, ardor

¹ The partitions of the cells are singular. Gærtner thus describes them: "Dissepimenta membranacea, conduplicata, laminis suis extrorsum partitis, ita valvularum marginibus inserta, ut, cum hæc dehiscunt, illæ corii foliis adinstar explicentur:" and adds, "Dissepimentorum in Radiola atque Lino fabrica, hactenus sine pari est, et essentialium hujus generis præbet characterem." *De Fructibus*, ii. 147.

urinæ; and during the exhibition of oxymuriate of mercury. When the seeds are boiled in water, the mucus is obtained in union with a portion of the oil; forming a useful local remedy when given in the form of enema in abrasions of the intestines and tenesmus, particularly in the advanced stage of puerperal fever, when the offending matter in the bowels stimulates to frequent and involuntary stools: but the portion thrown up must be small in quantity.* The seeds ground into powder or meal, and simply mixed with boiling water, form an excellent poultice; valuable on account of the facility with which it is made.

Official preparations. *Infusum Lini*. L. *Oleum Lini*. L. E. D.

2. LINUM CATHARTICUM.

Official. LINUM CATHARTICUM. Lond. LINUM CATHARTICUM; HERBA. Dub. Purging Flax.

Syn. Lin Purgatif (F.) Purgier factis (G.)

This is an indigenous annual plant, found on dry and hilly pastures, flowering from June to August. The root is small, and sends up several delicate, leafy, erect, smooth stems, simple at the base, but above dichotomous and many flowered, and from three to nine inches high. The leaves are opposite, of a subelliptical lanceolate shape, obtuse, entire, green on the upper surface, and glaucous beneath. The flowers are small, and white; nodding before they open, and then erect. The leaves of the calyx are pointed, serrated, and one-nerved; the petals obovate, acute, white, and spreading; the filaments are united, forming a circle round the lower part of the germen, which is furnished with capitate stigmas. The seeds are yellow and shining.

Qualities.—Purging flax, whether in the recent state or dried, is nearly inodorous, and has a bitter subacid taste. Water extracts the virtues of the plant, which communicates to it, besides its sensible qualities, a yellow colour. Macerated in ether it affords a green tincture, which deposits when it is evaporated on the surface of water a green bitter resin, and an extractive matter, on which the virtues of the plant seem to depend.

Medical properties and uses.—This species of flax was celebrated as a purgative by Gerarde. It may be given in the form of infusion, made with ʒij of the dried plant, and fʒij of boiling water; or ʒj of the dried plant in powder may be taken for a dose. But it possesses no particular advantages, and appears only to swell unnecessarily the list of purgatives.

LYTHRUM. *Spec. Plant. Willd.* ii. 865.

Cl. 11. Ord. 1. Dodecandria Monogynia. Nat. ord. Calycanthemæ Linn. Salicariæ Juss.

* Denman's Midwifery, ii. 251.

G. 951. *Calyx* twelve-toothed. *Petals* six, inserted into the calyx. *Capsule* two-celled, with many seeds.

Spec. 1. *L. Salicaria*.¹ Loosetrife, or Purple Willow Herb. *Med. Bot.* 2d edit. *Smith Flora Brit.* 510. *Engl. Bot.* 1061.

Officinal. LYTHRUM SALICARIA; HERBA. *Dub.* Loosetrife.

This is an indigenous perennial plant, found wild in almost every part of Europe, in marshes and on the banks of rivers, flowering from July till September. It is an elegant plant. The root is woody, branched, and extended; sending up an erect, leafy, slender, reddish, downy stem, about three feet in height, quadrangular, and sometimes hexagonous. The leaves are opposite, sessile, lanceolate, and cordate at the base; smooth on the upper surface, but pubescent beneath, and at the margin. The flowers are in the axillæ of the leaves, forming a leafy spike of a verticillated aspect: the calyx is red, hairy, and the segments of different shapes, six being awl-shaped and erect, and six small, ovate, concave, and bent inwards; the petals are oblong, undulated, and of a purple colour. The stamens are alternately longer, and inflected. The capsule is elliptical and small.

Qualities. — Loosetrife in the dried state is inodorous, and has an herbaceous subastringent taste. In coction with water it renders the fluid mucilaginous; and the decoction strikes a black with sulphate of iron.

Medical properties and uses. — This plant is astringent and tonic. It has long been celebrated in Ireland as a remedy in diarrhœa; and has also been found useful in dysentery. It is always proper to give a purgative prior to its use being begun. The best form of giving it is that of decoction.

LYTTA. *Syst. Nat. Gmelin.* 2013.

Cl. 5. *Ord.* 1. Insecta Coleoptera *Linn.* Eleuterata. *Fabric.*

G. 215. *Feelers* filiform. *Palpi* four, unequal; the posterior ones clubbed. *Thorax* nearly round. *Head* inflected, gibbous. *Elytra* soft, flexible.

Species 1. *Lytta vesicatoria.* Blistering Fly.

Officinal. LYTTA. *Lond.* CANTHARIS VESICATORIA. *Edin.* CANTHARIS. *Dub.* Blistering or Spanish Fly. *Cantharides.*

Syn. *Cantharides* (F.) Spanische Fliegenoder Kanthariden (G.) Cantarelle (L.) Cantharidas (S.)

This insect is found on the privet, ash, elder, lilac, white poplar, and the tartarian honey-suckle, in Spain, Italy, France; and to a certain extent over all Europe. They are two-thirds of an inch in length, and one-fourth of an inch in breadth, oblong, and of a green, gold shining colour; with soft elytra or wing sheaths, marked with three longitudinal raised stripes, and covering brown membranous wings. The body is terminated by

¹ *Aufgoss* Dioscoridis.

two small callous sharp spines; and on the head are two black, jointed feelers. When alive they have a foetid odour.¹ They are gathered by smoking with brimstone the trees on which they are found; and catching them on a cloth spread underneath. They are sometimes simply shaken from the trees, and then killed by the steams of boiling vinegar, and dried either by the sun or in a stove.

Blistering flies are imported from Sicily, but chiefly from Astracan, packed in casks and small chests. The best are of a lively fresh colour, a small size, and not mouldy, nor mixed with the *Melolontha vitis*; an insect resembling them in some degree, but possessing no vesicating property. It may be distinguished by its form, which is altogether more square than that of the *Lytta*, and by its black feet.² If the blistering flies have been properly dried, and are kept in a well-stopped glass bottle, they will remain unchanged in appearance, and retain their acrimony for a great length of time³: but sometimes, in spite of every precaution, they are attacked by a small worm, which, however, feeds on the inactive part only of the fly, reducing it to a powder, that still possesses the active quality of the entire insect. They soon putrefy when kept in a damp place; and, therefore, should be occasionally spread out to the air.

Qualities.—Blistering flies have a heavy disagreeable odour, and an acrid taste. Lewis found that their active constituents are soluble both in water and in alcohol; and that the residuum with these menstrua is inert. Thouvenel, Beaupoil, and Robiquet, have analysed the insect; but their inquiries lead to no very certain conclusions.

Thouvenel treated the entire flies with *water*, *alcohol*, and *ether* separately, submitting them to the press; and obtained the following results: 1st, Three-eighths of reddish yellow, very bitter extractive, affording by distillation an acid liquor: 2d, One-tenth of concrete, waxy, green oil, having the odour of the flies, and yielding by distillation a very sharp acid and a thick oil: 3d, One-fiftieth of concrete yellow oil, apparently the colouring matter of the insect: and 4th, One-half of solid parenchymatous matter. He imagines that the blistering principle resides in the green waxy oil; and that the strangury

¹ It is asserted that a person who sits under a tree on which many of these insects are, particularly at the time of copulation, experiences ardor urinæ, pain of the bladder, and sometimes ophthalmia.

² Fabricius thus describes the *Melolontha*; "*Maxilla brevis cornea; apice multidentata. Antennæ lamellatæ. Melolontha vitis. Viridis, thoracis lateribus flavis, pedes nigri.*" Vide *Römer Gen. Insect.* t. 1. fig. 11.

³ Van Swieten kept them upwards of thirty years, in a glass vessel not particularly well corked, and they still produced vesication.

produced by blisters is the effect of the acid obtained from this oil by distillation.¹

Beauvoir in his researches found that an aqueous infusion of the flies, when exposed to the air, lets fall a yellow precipitate, exhales an ammoniacal odour, and reddens tincture of turnsole: the addition of ether or alcohol divides it into two parts; viz. a black gluey matter insoluble in alcohol, and a yellowish-brown, very soluble matter.² The black matter blistered the skin without affecting the urinary organs; the yellow matter did not blister when applied alone, but blistered quickly when united with wax; and a green matter, which he also obtained, acted under similar circumstances, but less actively.

Robiquet asserts that the flies, when recently collected, yield some uric acid. By treating them with water, alcohol, and ether, he obtained a peculiar matter, in the form of small crystalline micaceous plates, insoluble in water and in cold alcohol, but soluble in boiling alcohol and in ether; and very soluble in oils; on the presence of which the vesicatory property of the flies depend; and which, in combination with oil, might supersede their use. Dr. Thomson has named it *Cantharidin*.³

Medical properties and uses. — Blistering flies internally exhibited are powerfully stimulant and diuretic; and externally applied, rubefacient and epispastic. Notwithstanding their acrimony, they appear to have been given as an internal remedy so early as the time of Hippocrates, who prescribed them chiefly in cases of dropsy and amenorrhœa. They have a considerable effect on the urinary organs, even when externally applied; and unless their internal exhibition be conducted with great caution, they act with so much violence on the kidneys, bladder, and small intestines, as to produce bloody urine, purulent stools, insupportable pains of the abdomen, vomiting, and other symptoms of intestinal inflammation; convulsions, delirium, syncope, and death. They have, however, been successfully employed in dropsy, obstinate gleet⁴, leucorrhœa, and incontinence of urine arising from paralysis of the sphincter

¹ *Annales de Chimie*, xlvii. 280.

² From one ounce of cantharides he obtained, Of black matter 2 gros 2 grs. Yellow matter 1—2. Green matter 1—8. Parenchyma 4—36. Phosphate of lime 12 grains. Carbonate of lime 2 grains. Sulphate and muriate of lime 4 grains. Oxide of iron 2 grains, and an acid, the quantity of which was not ascertained. *Annales de Chimie*, xlviii. 33.

³ Vide *System of Chemistry*, 5th edit. iv. p. 436. and *Ann. de Chim.* lxxvi. p. 308.

⁴ Probably gleet was included in the term gonorrhœa by the old writers, who frequently mention cantharides as a remedy for gonorrhœa. Thus Boeccone (*Musco di Fisica*, 1699) says, they were much used by the Sicilians in gonorrhœa.

vesicæ. The free use of diluents, as milk, almond emulsion, and mucilaginous solutions, is absolutely necessary during their employment to moderate their action. The tincture is the more proper form for internal use; or, if given in substance, the dose should not exceed one grain of the powdered flies, formed into a pill with opium or extract of henbane. But they require to be continued for some time, in order to prove beneficial.

Blistering flies, when applied to the skin, act as a local stimulant, first reddening and inflaming the part, and then producing from the exhalants a copious discharge of serum under the cuticle, so as to raise a blister. These effects they produce more certainly and completely than any vegetable acid; and therefore they are more generally employed as a vesicatory than any other substance.

It is uncertain whether blisters were used by the ancients, who we know employed some epispastics; but in the hands of modern practitioners they are daily and successfully employed. Although their first operation is local, yet, under certain circumstances, the stimulus is sufficient to rouse the whole nervous energy, and excite the general system, so as to render their application useful in diseases of diminished excitement: and on this account, in deep-seated local affections, when the inflammatory diathesis is considerable, the force of the circulation must be diminished by bleeding, purging, or other evacuates, before blisters can be advantageously applied. The diseases of debility in which they are useful are low nervous fever, when accompanied with delirium, pale urine, frequent sighing, great anxiety, deafness, a fixed stare and glistening eyes. In palsy, and gutta serena, they are applied to the forehead over the supra-orbital nerve. They are found efficacious also in spasmodic and convulsive affections, from the irritation they produce overcoming the morbid irritation which induced the spasm. Blisters, by their local action, relieve internal inflammatory diseases, by altering the balance of the circulation; and, in part, by diverting the attention from the prior seat of pain. Hence their utility in ophthalmia, applied behind the ears, on the temples, or the forehead; in phrenitis, over the head; in cynanche tonsillaris, and in small-pox, when the swelling of the fauces affects respiration, upon or near the neck; and in phthisis, catarrh, hepatitis, pneumonia, gastritis, and other intestinal inflammations, immediately over the seat of pain.¹ In acute rheumatism, par-

¹ Contrary to the opinion of the older physicians, who imagined that the efficacy of blisters arose from the serous evacuation, experience has fully proved that their utility is in the ratio of their vicinity to the affected part.

ticularly that variety of it named sciatica, they have been found very useful. On the same principle caries in the bones and joints, or a disposition to it, is often cured by the repeated application of blisters. "Under their application the enlargements obviously subside; the crepitation between the bones, the consequence of the abrasion of the cartilages, ceases to be felt when the blister begins to operate, the use of the joint is effectually recovered, and ankylosis prevented."¹ A succession of blisters, also, to the vicinity of an inflamed organ is more beneficial than a protracted discharge from one; and a second blister often relieves after the first has failed. Blisters are contra-indicated in diseases of great debility, where there is a tendency to mortification; as in the low stages of petechial fevers, cynanche maligna, confluent small-pox, and malignant measles; and in dropsy, in which they are apt to occasion a very painful, dangerous erysipelas, and gangrene. Peculiar idiosyncrasies forbid their use in some persons; as they irritate, heat, produce thirst, pain, tremors, and sometimes convulsions. In those of irritable temperaments their application is often attended with strangury and bloody urine; and this effect is much increased if the blister be applied over an abraded surface, as a newly shaved head, or if the blister plaster be allowed to remain too long on after the blister has risen. To prevent strangury from the application of blisters, camphor has been erroneously regarded as a specific. It is more effectually prevented and relieved by copious dilution with milk, and mucilaginous fluids; and by fomentations of warm milk and water to the blistered part after the removal of the plaster: and much inconvenience of this nature may be prevented by interposing between the vesicatory and the skin, a piece of gauze, wetted with vinegar, and applied smooth, and close over the plaster.

The dose of the flies, when given internally is gr. j to grs. iij.

Officinal preparations. *Tinctura Lyttæ*. L. *Emplastrum Lyttæ*. L. *Emplastrum Cantharidis vesicatoriæ*. E. *Ceratum Lyttæ*. L. *Unguentum infusi Cantharidis vesicatoriæ*. E. *Unguentum Cantharidis*. D. *Unguentum Pulveris Cantharidis vesicatoria*. E.

MAGNESIÆ SULPHAS. Lond. **SULPHAS MAGNESIÆ.** Edin. **SULPHAS MAGNESIÆ**; olim *Sal catharticum amarum*. Dub. **Sulphate of Magnesia.** Bitter purging Salt.

Syn. Sulphate de Magnesie (F.) Schwefelsaure Magnesia (G.) Sale amaro; Ossisolfato di Magnesia (I.)

This salt is found native in a pure state²; but it is more

¹ Ford on Diseases of the Hip-joint, 53.

² In the mercury mines of Idria it is found crystallized, and named by the Germans *Haarsalz*. According to Klaproth, it contains 1 per cent. of oxide of iron. *Analyt. Ess.* 80.

commonly combined with gypsum¹; and in solution in sea-water, and several mineral springs. It was first artificially obtained in England in 1675, from the evaporation of the water of the Epsom spring: whence it was named Epsom salt: and in 1700 it was made in considerable quantity from two springs at Shooter's-hill, in Kent²; but the discovery of it in bittern, or the residual brine after the crystallization of sea-salt, soon opened a more copious source from which it might be obtained at all times; and for many years past, all the sulphate of magnesia used in this country has been manufactured from bittern. This substance consists chiefly of muriate of magnesia, muriate of lime, some common salt, and a small portion of sulphate of lime; and therefore it is probable, that the sulphate of magnesia is obtained by decomposing the muriate by means of sulphate of iron, or sulphuric acid in some form, although some affirm that the bittern is only boiled down to a high point of concentration; when the sulphate of magnesia forms, and is purified by a second solution and crystallization. The sulphate found in the shops generally contains some muriate of magnesia, which renders it deliquescent; and consequently it requires to be preserved in close covered jars. It is often adulterated with Glauber salt, which is made to resemble Epsom salt, by stirring it briskly, when it is about to crystalise. It may be detected, by precipitating the magnesia by pure ammonia, aiding by heat; filtering, and evaporating the filtered fluid to dryness, by a heat sufficient to volatilize the sulphate of ammonia. If it contained glauber salt, the soda will remain fixed. Muriate of lime is detected by the oxalic acid.

Qualities.—Sulphate of magnesia is inodorous, and has a very bitter nauseous saline taste. It is usually in small needle-like crystals, but the form of its regular crystal is a quadrangular prism, acuminated by four planes. When pure it effloresces; and is soluble in its own weight of water at 60°, increasing the volume of the fluid rather more than 4-tenths, or a solution of 3j of sulphate of magnesia in f3j of water, measures eleven fluid drachms and a quarter. Heat expels its water of crystallization; and the mass is melted, but not decomposed; it loses merely its water of crystallization, and a minute portion of its acid. According to Bergman, 100 parts consist of 29.35 of sulphuric acid, 17 of magnesia, and 53.65 of water of crystallization.³ Its specific gravity is 1.66. It is de-

¹ In the gypsum quarries of Piedmont; and, as Proust relates, it abounds so much in Spain, that in Andalusia large tracts are covered with an efflorescence of it after floods. *Journ. de Physique*, xxxiii. 312.

² It is also made in Bohemia from the mineral water of Sedlitz.

³ According to Dr. Henry, the composition is, acid 38, magnesia 18, and water 44 parts, in 100 of the salt.

composed by the alkalies, and their carbonates, lime-water, the muriates of barytes and lime, nitrate of silver, and acetate and superacetate of lead, which are therefore incompatible with it in prescriptions.

Medical properties and uses.—This salt is purgative and diuretic. It operates readily without griping; and notwithstanding its nauseous taste, is generally retained by the stomach when it rejects almost all other things, especially when administered in small repeated doses largely diluted, or united with acidulated infusion of roses. In these forms it is a useful purgative in hypochondriasis, colica pictonum, ileus, puerperal fever, and in all acute diseases. It is also used as an adjunct to stimulating clysters. By moderate exercise in the open air, while taking this salt, the purgative effect is diminished, and its diuretic property increased. The dose is from ʒfs to ʒij dissolved in water, gruel, or any other vehicle; and taken either at once, or in divided doses frequently repeated.

Off. preparations. *Enema Catharticum.* D. *Enema fœtidum.* D.

MALVA. *Spec. Plant. Willd.* iii. 774.

Cl. 16. *Ord.* 6. *Monadelphja Polyandria.* *Nat. ord.* *Columniferæ* *Linn.* *Malvaceæ* *Juss.*

G. 1290. *Calyx* double, the exterior three-leaved. *Capsules* numerous, one-seeded.

*** with angular leaves.*

Species 43. *Malva sylvestris.*¹ *Common Mallow.* *Med. Bot.* 2d edit. 554. *t.* 199. *Smith Flora Brit.* 740. *Engl. Bot.* 671.

Officinal. **MALVA.** *Lond.* **MALVÆ SYLVESTRIS HERBA, FLORES.** *Edin.* *Mallow.*

Syn. *Mauve* (F.) *Käsepappel* (G.) *Malva* (I.) *Malvas* (S.)

This is a perennial, indigenous plant, common over all Europe, flowering from May till August. The root is fusiform, branching, and of a whitish colour. The stem frequently erect, branched, round, hairy, and many-flowered. The leaves are alternate, petiolate, cordate, divided into seven lobes, plaited, somewhat rough, and crenate; the upper ones are almost palmate. At the base of each footstalk are two stipules. The flowers, which stand on slender hairy peduncles, are large; composed of five inversely cordate purple petals, three times longer than the calyx, which is hispid. The capsules are from ten to fifteen in number, of a rounded kidney form, crustaceous, brittle, close all round, of a dark straw colour, excavated, and wrinkled on the back. The seeds are kidney-shaped, ash-coloured, and furnished with an arillus which opens inwardly.

Qualities.—Common mallow is inodorous, and has a weak, herbaceous, mucilaginous taste. The decoction is precipitated

¹ *Μάλαχ'ν* *Græcorum.*

by acetate and superacetate of lead; and is nearly a simple solution of vegetable mucus.

Medical properties and uses.—This herb is demulcent. Its decoction is employed in dysentery, ischuria, strangury, and nephritic complaints, but is in every respect inferior to that of althea root. It is chiefly used in the form of enema in tenesmus, and nephritic colic: and as cataplasms and fomentations in phlegmonous inflammation.

MANGANESIUM. Manganese.

This is a brittle gray coloured metal, somewhat resembling iron in its external aspect, of a granular texture, and not possessing ductility or malleability. It has not been discovered native in its metallic state, but its ores are found in most of the countries of Europe both in primitive and transition mountains. Manganese in the ore is found

A. United with oxygen:

i. oxidized

Sp. 1. *Gray manganese ore.*

Var. a. Radiated. b. Foliated.

c. Compact. d. Earthy.

2. *Black manganese ore.*

3. *White manganese ore.*

4. *Red manganese ore.*

5. *Sulphuret of manganese.*

6. *Phosphate of manganese, and iron.*

—a. and combined with }
carbonic acid. }

—b. ————— with sulphur.

c. ————— with phos- }
phoric acid. }

Of these species the first only has been introduced into the list of materia medica.

Officinal. MANGANESE.¹ *Dub.* Manganese, or more properly Black Oxide of Manganese.

Syn. Manganese (F.) Braunstein (G.) Manganese (I. S.)

Under the name of black oxide of manganese are implied all the varieties of the first species. It was discovered in England by Boyle, in the beginning of the 17th century, but was regarded as a modification of iron ore, till the separate experiments of Scheele and Bergman, published in 1774, proved it to be an oxide of a peculiar metal; which Gahn afterwards succeeded in obtaining in its metallic state. It is found in Great Britain, Germany, Switzerland, the north of Italy, and France.

The greater part of the black oxide of manganese used in England is obtained near Exeter in Devonshire, in Cornwall, and at Howth, near Dublin. It occurs crystallized and amorphous; and is generally in combination with small portions of oxide of iron, carbonate of lime, silex, and barytes.

Qualities.—Black oxide of manganese differs in its exter-

¹ This term is improperly used by the Dublin College: for although the black oxide was originally named *manganese*, and is still so named in commerce; yet, in a professedly scientific work, more accuracy of nomenclature is required.

nal characters. Its usual colour varies from iron-gray to black; when crystallized it is shining, but when amorphous devoid of lustre. Its texture is radiated, foliated, compact or earthy. None of the varieties are very hard; all of them are brittle, and several of them soil the fingers. Their specific gravity varies from 3.5 to 4.7. One hundred parts of the black oxide consist of 71.23 of metallic manganese, and 28.67 of oxygen. Exposed to the heat of ignition, all the varieties afford oxygen gas; and when mixed in powder with sulphuric acid, they afford it at a low temperature. It also parts with its oxygen to muriatic acid, converting it into oxymuriatic acid¹; or, according to the theory of Sir H. Davy, the hydrogen of the muriatic acid is attracted by the oxygen of the oxide of manganese, and chlorine is evolved.

Medical properties and uses.—This metallic oxide is only used for procuring oxygen gas; and for fumigation in cases of infection. To procure oxygen gas, a portion of the oxide is put into an iron retort, fitted with a long curved tube, the extremity of which being placed under an inverted jar filled with water in a pneumatic trough, the retort is put into a common fire and exposed to a full red heat. The caloric at this high temperature weakens the affinity between the manganese and the oxygen with which it unites, and causing it to assume a gaseous state, the oxygen gas is transmitted through the water, and collected in the jar. From the necessity of oxygen for carrying on the process of animal respiration, much benefit was expected from the breathing oxygen gas in disease; but experience has not confirmed the high expectations which were formed of its powers. It certainly increases the force and velocity of the pulse; and has been exhibited with seeming advantage in asthma, chlorosis, scrofula, typhoid fevers, and other diseases of debility. Diluted with from ten to twenty parts of atmospheric air, one or two quarts of it may be breathed at intervals in the course of the day.

But a more certain benefit is obtained from the use of this oxide of manganese in fumigations. Medicine is indebted to Morveau for the discovery of this mode of destroying infection, and the numerous instances in which it has proved beneficial have fully established its use. For a fumigation the following ingredients are required: common salt $\mathfrak{z}\text{iv}$, oxide of manganese in powder $\mathfrak{z}\text{j}$, sulphuric acid $\mathfrak{f}\mathfrak{z}\text{j}$, and water $\mathfrak{f}\mathfrak{z}\text{ij}$; the water and acid must be mixed together, and then poured over the other ingredients in a China basin, which should be placed in a pipkin of hot sand. The doors and windows of the room to be fumigated, must be closely shut for two hours after the charged

¹ The greatest consumption of black oxide of manganese is for the formation of the oxymuriatic acid, as employed in the art of bleaching.

basin has been placed in it; then thrown open, and a current of air allowed to pass through the room.

MANNA. Vide *Fraxinus Ornus*.

MARRUBIUM. *Spec. Plant. Willd.* iii. 109.

Cl. 14. Ord. 1. Didynamia Gymnospermia. Nat. ord. Verticillatæ Linn. Labiatæ Juss.

G. 1111. Calyx salver-shaped, rigid, ten-streaked. Corolla, upper lip bifid, linear, and straight.

** with ten-toothed calyxes.

Species 8. *M. vulgare*.¹ White Horehound. *Med. Bot.* 2d edit. 332. t. 118. *Smith Flora Brit.* 636. *Engl. Bot.* 410.

Official. MARRUBIUM. Lond. MARRUBII VULGARIS HERBA. Edin. MARRUBIUM ALBUM; FOLIA. Dub. Horehound leaves. Syn. Marrube blanc (F.) Weisser andorn (G.) Marrubio (I.) Marubio (S.)

White horehound is an indigenous, perennial plant, growing in waste grounds, and flowering in July. The root is fibrous, sending up numerous stems about eighteen inches high, quadrangular, erect, and very downy. The leaves are in pairs upon broad footstalks, rounded, crenate, wrinkled, hoary, and woolly on the under surface. The flowers are white, in crowded axillary whorls, sessile, villous; and furnished with setaceous awned bractes. The calyx is tubular, furrowed, and divided at the margin into ten narrow segments, which are hooked at their points: the corolla is tubular, compressed, opening at the mouth into two lips, the upper of which is narrow and cloven; the under broader, reflected, and three-cleft, with the middle segment broad, and scalloped. The filaments are two long and two short, with simple anthers, within the tube; and the style is slender, with a cloven stigma. The seeds are four, at the bottom of the calyx.

Qualities. — Horehound dried has an aromatic odour, which however is soon lost by keeping; and a bitter taste. Both water and alcohol extract its virtues. The infusion reddens tincture of litmus, gives a deep olive green precipitate with sulphate of iron, a brown with nitrate of silver, and a pale yellow with muriate of mercury: acetate and superacetate of lead do not affect it. The active principles of horehound, therefore, appear to be a bitter extractive, volatile oil, and gallic acid.

Medical properties and uses. — Horehound is tonic, diuretic, and laxative. It was formerly much used in pulmonary affections, and is still a popular remedy for asthma and obstinate coughs. It loosens the belly when taken in large doses, and was consequently recommended in jaundice, cachexies, menstrual obstructions, and hysteria; but its powers are not found by modern practitioners equal to the account the ancients gave of them, and therefore it is very seldom prescribed.

¹ *Πικρὸν* Dioscoridis. Lemery says the name is derived from the Hebrew word *Mar-rob*, which means a bitter juice.

The dried herb may be given in powder, in doses of from ʒss to ʒj; or of the expressed juice of the fresh plant from fʒss to fʒjss may be taken twice or thrice a day. It is also used in the form of infusion.

MASTICHE. Mastich. See *Pistacia Lentiscus*.

MEL. Lond. Edin. Honey.

Syn. Miel (F.) Gemeiner Honig (G.) Mele (I.) Miel (S.) Ussub (Arab.) Medhú (H. and San.)

Honey is collected by bees from the nectaries of * flowers, in which it is abundantly secreted; but it probably undergoes some change within the insect before it is excreted by it, and deposited in the comb. That it does not however undergo the process of digestion as food is likely, for the honey or sugar on which bees are fed during winter is not again excreted as honey; and the flavour of honey varies according to the nature of the flowers from which it collected. Thus the honey of Minorca, Narbonne, and England are known by their flavours; and the honey prepared in different parts even of the same country differs.¹ It is separated from the comb by dripping, and by expression: the first method affords the purest sort; the second separates a less pure honey; and a still inferior kind is obtained by heating the comb before it is pressed. When obtained from young hives, which have never swarmed, it is denominated virgin honey. It is sometimes adulterated with flour, which is detected by mixing it with tepid water; the honey dissolves, while the flour remains nearly unaltered.

Qualities.—Honey has a peculiar saccharine aromatic odour; and a sweet acidulous sharp taste. In colour it varies from white or yellowish white, to a pretty deep shade of amber or golden yellow: in consistence, from the fluidity of limpid oil to the stiffness of soft suet: and when the more limpid kind is kept, partly crystallizes into little irregular concretions. It evidently contains sugar, mucilage, wax, and an acid; and occasionally some essential oil, as in the perfumed honey of the Crimea. Honey is soluble in water, and partially in alcohol; and, like sugar, passes into the vinous and acetous fermentation. When heated over a slow fire it throws up a scum; and if the heat be continued so as to produce evaporation, the vapour is inflammable; and the honey becomes brown, and acquires an unpleasant flavour, which is strong in proportion to the degree of temperature employed. Lowitz found that the addition of charcoal to a solution of honey deprives it of odour,

¹ The nectary is a glandular organ of the corollas of flowers. In many flowers it forms part of the petals themselves; in others it is a distinct organ. It is not easy to assign the use of honey in the vegetable economy.

² In some parts of Asia and America a poisonous honey is met with, which probably owes its deleterious properties to the flowers on which the bees feed.

taste, and colour; but the colour again returns when the solution is evaporated. Cavezzali separated the sugar by first melting the honey, then adding carbonate of lime (egg-shells) in powder as long as any effervescence appeared; and, after separating a scum which forms by rest, filtering it, and setting it aside to crystallize. The crystals he purified by washing them with alcohol.¹ Proust separated it from a ready granulated honey by the action of alcohol.² Nitric acid converts honey into oxalic acid.

Medical properties and uses. — Honey is laxative, and externally detergent and stimulant. Simple honey is seldom ordered as an internal medicine; indeed, when freely eaten as food it passes off quickly by stool, and induces cholera in some habits; on which account, simple syrup should perhaps be preferred in all cases for forming medicinal preparations for internal use. As a local stimulant, it is employed in glysters; and forms an excellent adjunct to gargles in cynanche, and aphthous ulceration of the mouth and fauces. It is also a useful detergent to foul ulcers.

Official preparation. *Mel despumatum*. L. D.

MELALEUCA. *Spec. Plant. Willd.* iii. 1428.

Cl. 18. Ord. 3. Polyadelphia Icosandria *Nat. Ord.* Hesperideæ *Linn.* Myrti *Juss.*

G. 1392. *Calyx* five-cleft, half superior. *Corolla*, *Petals* five. *Filaments* numerous, connate in five bodies. *Style* one. *Capsule* half-covered, three-celled.

Species Nova. M. *Cajuputi*.³ *Cajuputi Melaleuca*. *Rumphius* (*arbor alba minor*) *Herbar. Amboinense*, ii. lib. 2. cap. 26. t. 17.

Official. CAJUPUTI OLEUM *Lond.* MELALEUCA LEUCADENDRI OLEUM VOLATILE. *Edin.* OLEUM CAJUPUT. *Dub.* *Cajuputi oil.* *Syn.* *Cajeput* (F.) *Kajeputohl* (G.) *Cajeput* (I.) *Cajuputa* (Malay) *Kyapootie tyllum* (Tam.)

The tree which yields this oil is a native of Amboyna, and the south part of Borneo, where it grows very abundantly in dry arid places. It is named *Cajuputa* in the Malay language; and also by the natives *Dau Kitsjil*, and *Cajukilan*. It is a small tree, in some situations rather a shrub than a tree with a running root, often arched and half above the ground. The stem is covered with a rough, pale, lamellated bark. The leaves are alternate on short petioles, not unlike those of the willow, about three inches long, and little more than half an inch broad, lanceolate, and somewhat falcated; entire, smooth, three-nerved, firm, dry, fragile, of a pale yellowish green colour, and having a very grateful odour. The

¹ *Annales de Chimie*, xxxix. 110. ² *Journal de Physique*, lix. 428.

³ As the specimens of the tree which yields the true *Cajuputi* oil, which were sent home by Mr. Christopher Smith, differ from the *M. Leucadendron*, which was formerly supposed to yield it, and agree with the *Arbor alba minor* of *Rumphius*; Drs. Maton and Smith have fixed this as a new species under the name of *M. Cajuputi*.

flowers are white, sessile, and accompanied with minute, ovate bractes. The calyx is tubular, five-toothed, and one half deciduous; the petals are roundish, and concave; and the bundles of the filaments, which are long, filiform, and bearing small ovate anthers, are fixed within the tube of the calyx. The germen is inferior, roundish, crowned with a simple slender style longer than the filaments; and becomes a three-celled capsule, containing many small, oblong, angular seeds.¹

To prepare the oil, the leaves are collected in a hot dry day, and put into thoroughly dry bags; in which nevertheless they soon spontaneously heat and become moist, as if macerated in water. They are then cut in pieces, infused in water, and left to ferment for a night; after which they are distilled. The quantity of oil they yield is very small, scarcely more than three fluid drachms being obtained from two bags of leaves.² When newly drawn it is very limpid, pellucid, and volatile; and, Rumphius says, smells strongly of cardamoms, but is more pleasant. It is generally imported in copper flasks or canisters; but lately some has been brought to us in quart glass bottles. On account of the high price of real Cajuputi oil, it is said to be often adulterated with oil of turpentine, and coloured with resin of milfoil.

Qualities.—The odour of this oil, as it is brought to us, is at first powerful, and similar to that of a mixture of oil of turpentine and camphor, but it soon becomes extremely fragrant and agreeable: the taste is pungent, and resembles very much that of camphor. It is limpid, transparent, and generally of a blueish green colour, which is said to be partly derived from the copper of the flasks. When dropped on the surface of pure water, it diffuses itself over it, and very soon completely evaporates, which is a good test of its purity; and it burns rapidly, without leaving any residuum. Like other volatile oils, it is soluble in alcohol, and partially in water.

Medical properties and uses.—Cajuputi oil is a highly diffusible stimulant, antispasmodic, and diaphoretic.³ When taken into the stomach, it produces a sensation of heat, fills and quickens the pulse; and soon afterwards a copious sweat breaks out. It is efficaciously given in dropsy, chronic rheumatism, palsy, hysteria, flatulent colic, and other spasmodic and nervous affections. As a local and external stimulant, it is employed diluted with olive oil, as an embrocation to allay the pain

¹ The natives of the Moluccas macerate the leaves and flowers in fresh oil, and afterwards impregnate it with the smoke of benzoin. This preparation they call *Minyac Money*, or odorated oil, and use it as an unguent for the head. *Rumphius Herb. Amboin.* l. c.

² *Rumphius.*

³ "Hujus olei binæ guttæ cum cerevisia vel vino propinatæ sudores excitant vehementes, cui finis apta medicamenta India exhibet perpauca." *Rumphius.*

of gout and rheumatism, and to restore vigour to joints after sprains. When put into a carious tooth, it lulls the pain of tooth-ach; and we have seen much benefit derived from rubbing it on the temples, in defective vision from a weakened state of the eyes. The dose is three or four drops on a lump of sugar.

MELISSA. *Spec. Plant. Willd.* iii. 146.

Cl. 14. Ord. 1. Didynamia Gymnospermia. Nat. ord. Verticillatæ Linn. Labiatæ Juss.

G. 1118. Calyx dry, nearly flat above: with the upper lip subfastigiate. Corolla, upper lip somewhat arched, bifid; lower lip with the middle lobe cordate.

Species 1. *Melissa officinalis*.¹ Officinal or Common Balm. *Med. Bot.* 2d edit. 335. t. 119.

Officinal. MELISSÆ OFFICINALIS FOLIA. *Edin.* Balm leaves.

Syn. *Melisse* (F.) *Melisse* (G.) *Melissa* (L.) *Balsamina* (S.)

Balm is a perennial plant, a native of the south of Europe, growing in mountainous situations, and flowering from July to September. It is cultivated in our gardens.² The root is fibrous, and sends up annual stems, which rise about two feet high, and are branched, quadrangular and smooth. The leaves are opposite in pairs, of a bright green colour, ribbed, deeply serrated, and cordate; the lower ones on long foot-stalks, and the upper nearly sessile. The flowers, which are in small axillary bunches forming semi-whorls, stand on slender peduncles, at the base of which are small, oblong, notched, hairy bractes. The calyx is tubular and pentangular; the upper lip tridentate; the lower shorter, and cut into two acute teeth. The corolla, which is tubular, of a yellowish white colour, with the upper lip shorter, and notched, and the lower three-cleft, encloses the anthers; the seeds are four, ovate, and placed at the bottom of the calyx.

For medicinal use the herb should be cut before it flowers, as it is then more odorous.

Qualities.—The recent plant has the agreeable odour of lemons, which is lost in drying; and an austere, slightly aromatic taste. In distillation with water, it yields a small portion of a yellow essential oil, on which its odour depends. The watery infusion tastes rough; reddens slightly litmus paper; and affords with oxysulphate of iron a deep olive, with nitrate of silver a deep brown, and with superacetate of lead a copious greenish white precipitate.

Medical properties and uses.—Officinal balm is stomachic and diuretic. It was formerly prized as a corroborant in hy-

¹ *Μελισσοφύλλον* Dioscoridis, bees being very fond of it.

² It was cultivated by Gerarde in 1596.

pochondriacal and nervous affections; but it is now used only in the form of tea, as a grateful diluent in fevers.

MENTHA.¹ *Spec. Plant Willd.* iii. 74.

Cl. 14. Ord. 1. Didynamia Gymnospermia. Nat. ord. Verticillatæ Linn. Labiatæ Juss.

G. 1102. Corolla not quite equal, four-cleft; the broader segment emarginate. Stamens upright, distant.

* Spiked.

Sp. 7. *M. viridis*. Spearmint. *Smith (spec. 3.) Flora Brit.* 612. *Med. Bot.* 2d edit. 338. t. 121.

** Capitate.

Sp. 13. *M. piperita*. Peppermint. *Smith (spec. 4.) Flora Brit.* 613. *Med. Bot.* 2d edit. 336. t. 120. *Eng. Bot.* 461.

*** Verticillate.

Sp. 20. *M. Pulegium*. Pennyroyal. *Smith (spec. 12.) Flora Brit.* 624. *Med. Bot.* 2d edit. 342. t. 122.

1. MENTHA VIRIDIS.²

Official. MENTHA VIRIDIS. *Lond.* MENTHA SATIVA; FOLIA. *Dub.* Spearmint.

Syn. Baume verte (F.) Frauenmurze (G.) Menta Romana (I.) Menta (S.)

This is an indigenous perennial plant, growing in marshy places, and flowering in August. For medicinal purposes, it is cultivated to a considerable extent. Dr. Smith enumerates four varieties of the species, the first of which is our plant. The root is creeping; the stem quadrangular, and foliaceous, rising about two feet in height, erect, smooth, and branching. The leaves are opposite, nearly sessile, lanceolate, about two inches and a half long, and an inch broad; of a deep green colour above, paler beneath, pointed, serrated, smooth, and sometimes a little hairy underneath: the flowers are supported on smooth partial flower-stalks, verticillated, in long pointed paniced spikes; furnished with setaceous, ciliated, lanceolate bractes, longer than the flowers: the calyx is cylindrical and furrowed, with five nearly regular teeth: the corolla funnel-shaped, tender, smooth, and of a purple colour: the stamens are varying in length, with roundish anthers; and the style, which is filiform, with a bifid divaricated stigma, rises from a four-cleft germen: the seeds are four, small, and generally abortive, owing to the viviparous nature of the roots.

For medicinal use, spearmint is generally cut just as the flowers appear; but for obtaining the essential oil, the flowering plant is preferred. It should be cut in very dry weather.

Qualities.—Spearmint has a strong aromatic odour, and a warm slightly bitter taste; neither of which qualities is impaired by drying. Both alcohol and water extract its virtues; and in distillation with water an essential volatile oil is obtained.

¹ *Mintæ* Dioscoridis.

² Hæc species dignoscitur pedicellis semper glaberrimis. *Smith Flor. Brit.* 613.

Medical properties and uses.—Spearmint is stomachic and carminative. The infusion is serviceable in allaying sickness and vomiting in a weakened state of the stomach; and is a common diluent in febrile diseases.

Official preparations. *Aqua Menthæ viridis.* L. D. *Infusum Menthæ comp.* D. *Oleum Menthæ viridis.* L. D. *Spir. Menthæ viridis.* L.

2. MENTHA PIPERITA.

Official. MENTHA PIPERITA. *Lond.* MENTHÆ PIPERATÆ HERBA. *Edin.* MENTHA PIPERITIS; HERBA. *Dub.* Peppermint.

Syn. Menthe poivrée (F.) Ofeffermünze (G.) Menta piperita (L.)

Peppermint is an indigenous perennial plant, growing in moist places, and flowering in August and September. It is generally cultivated for medicinal use; particularly about Mitcham in Surry¹, whence the London market is chiefly supplied. There are three varieties of peppermint, the first of which is the officinal plant. The root is creeping: the stem quadrangular and channelled, nearly upright, and about two feet high, branching, purplish, and rather hairy, with the hairs bent backwards: the leaves are of a dark green colour, opposite; petiolate, ovate, rather pointed, serrated, the upper side smoother and less pubescent than the under, which is paler, with white and purple veins: the flowers are in terminal spikes, solitary, almost capitate, interrupted beneath, with the lower whorl more remote, and on a footstalk: the bractes are lanceolate and ciliated: the calyx is furrowed, tender, studded, with glandular points, the base entirely naked, very smooth, and five-cleft, with the teeth of a blackish purple colour, and ciliated: the corolla is purple: and conceals within its tube the anthers, which are on short filaments: the germen is four-cleft, with a filiform style longer than the corolla, and furnished with a bifid stigma.

Dr. Smith supposes that this plant was discovered by Doctor Eales; and on examining the Linnean Herbarium, now in his possession, he found that the *Mentha piperita*, described by Linnæus, was not our officinal plant, but merely a variety of the *M. hirsuta*, with the odour of peppermint. "The cultivators of the plant observe, that to keep up its quality, the roots must be transplanted every three years; otherwise it degenerates into the flavour of spearmint."² If the plant be cut in wet weather it changes to black, and is little worth.

Qualities.—The odour of both the recent and dried plant is penetrating, grateful, in some degree resembling camphor; and the taste pungent, warm, glowing, and bitterish, followed by a sensation of coldness in the mouth. These qualities de-

¹ Considerably more than one hundred acres of this herb are grown in the parish of Mitcham; but the greater part of the peppermint is made into a *liqueur*, which is sold as a dram in London. *Stevenson's Survey*, 377, 378.

² *Linnean Transactions*, v. 176.

pend on an essential oil and camphor. The oil can be obtained separate by distillation in water, is of a yellowish colour, and holds the camphor in solution.

Medical properties and uses. Peppermint is tonic, antispasmodic, and carminative. It is chiefly used to allay nausea and griping, to relieve flatulent colic, and in hysteria: or as a vehicle to cover the nauseous taste of other medicines; but to many palates it is extremely disagreeable. It may be given under the form of watery infusion; but the distilled water and the essential oil are generally preferred.

Official preparations. *Aqua Menthae piperitæ.* L. E. D. *Oleum Menthae piperitæ.* L. E. D. *Spiritus Menthae piperitæ.* L. E.

3. MENTHA PULEGIUM.

Official. PULEGIUM. *Lond.* MENTHÆ PULEGII HERBA. *Edin.* PULEGIUM; HERBA. *Dub.* Pennyroyal.

Syn. Menthe peuliot (F.) Polei (G.) Puleggio (I.) Poleo (S.)

This is an indigenous perennial plant, growing on heaths and in moist meadows, and flowering in September. Like the other mints, it is cultivated for medicinal purposes; and becomes more luxuriant and erect. The stem is obtusely quadrangular, trailing, branching, and somewhat hairy: the leaves are petiolate, small, obtuse, bluntly serrated, and in a small degree hairy underneath: the flowers, which are supported on stalks covered with short thick hairs, are in sessile whorls, numerous, and many-flowered; and without bractes: the calyx is of a purplish green colour, tender, furrowed, and covered with thick short hairs: five-cleft, with the teeth pointed, unequal, and ciliated: the corolla is twice the length of the calyx, purple, four-cleft, with the base white and externally villous: the stamens are erect, and longer than the corolla; and the germen similar to that of the former species.

Qualities—The odour is similar to that of spearmint, but less fragrant; the taste aromatic and pungent, with a slight flavour of camphor. These qualities reside in a very volatile essential oil, which rises in distillation with water.

Medical properties and uses.—Pennyroyal was formerly regarded as emmenagogue, expectorant, and diaphoretic; and was in repute for promoting the uterine evacuation, and relieving hysteria, hooping-cough, and asthma; but it is now justly considered of no value, and seldom used in regular practice.

Official preparations. *Aqua Pulegii.* L. E. D. *Oleum Pulegii.* L. D. *Spiritus Pulegii.* L.

MENYANTHES. *Spec. Plant. Willd.* iii. 810.

Cl. 5. *Ord.* 1. Pentandria Monogynia. *Nat. ord.* Preciæ Linn. *Lysymachia.* Juss.

G. 299. *Corolla* hirsute. *Stigma* cloven. *Capsule* one-celled.

Sp. 4. *M. trifoliata.* Buckbean. *Med. Bot.* 2d ed. t. 97. *Smith Flor. Brit.* 225; *Engl. Bot.* 405.

Officinal. MENYANTHES. *Lond.* MENYANTHIS TRIFOLIATÆ FO-LIA. *Edin.* TRIFOLIUM PALUDOSUM. *Dub.* The leaves of Buckbean.

Syn. Menianthe (F.) Bitterklee (G.) Trifolio fibrino (I.) Menyantes de tres en rama (S.)

This is one of the most beautiful of our indigenous plants. It is a perennial, not uncommon in watery situations, in a black boggy soil, flowering in June and July. The root is long, round, fibrous, and of a black colour; the stems are spreading, branched, and clothed with sheathing footstalks, each of which supports a ternate leaf, formed of three obovate smooth, bluntly toothed leaflets, of a beautiful green on the upper surface, and pale beneath: the flower stalk, which springs from within the sheath of a leaf, is longer than the leaves, erect, smooth, round, bearing a thyrsus of about ten flowers, accompanied by small ovate entire bractes: the calyx is obtusely five-toothed; the corolla a funnel-shaped petal, cleft into five deep segments, which are white, tipped with rose colour, and closed within with long fleshy shaggy fibres on their upper side: the anthers are sagittate, and of a red colour: the germen round: and the stigma cloven and notched, on a slender style twice the length of the stamens.

Qualities.—The leaves of buckbean have a faint disagreeable odour, and an intensely bitter nauseous taste, which is extracted by infusion with water.

Medical properties and uses.—Buckbean is tonic, diuretic, and purgative. It has been used with seeming benefit in remittent and intermittent fevers, rheumatism, arthritic affections, and in cachectic and cutaneous diseases. In large doses it is apt to excite vomiting. The dose of the dried leaves powdered, is from ʒj to ʒj; or of an infusion made with ʒls of the dried leaves, and boiling water Ofs, from fʒj to fʒjss may be taken three or four times a day. It is adviseable to unite some aromatic with either of these forms.

MEZEREI CORTEX. Mezereon Bark. Vide *Daphne*.

MOMORDICA. *Spec. Plant. Willd.* iv. 601.

Cl. 21. *Ord.* 8. Monœcia Monadelphia. *Nat. ord.* Cucurbitaceæ.

G. 1739. Male. *Calyx* five-cleft. *Corolla* five-parted. *Filaments* five.

Female. *Calyx* five-cleft. *Corolla* five-parted. *Style* trifid.

Gourd opening elastically.

Species 13. *M. Elaterium*.¹ Squirting Cucumber. *Med. Bot.* 2d edit. t. 72.

Officinal. ELATERII POMA.² *Lond.* ELATERIUM. *Edin.* ELATERIUM; FRUCTUS. *Dub.* The fruit of the Wild Cucumber: Elaterium.

Syn. Concombre sauvage (F.) Esselsgurhen (G.) Cocomero salvatico (I.) Cohombrillo (S.)

¹ *Sinus apocis* Dioscoridis.

² The London College have erred in styling the fruit an apple, as it is evidently a pepo or gourd.

This species of *momordica* is a perennial; native of the south of Europe, flowering in June and July. It is cultivated in England, but does not survive the severity of our ¹ winters. The root is large and fleshy, sending forth several thick rough trailing stems, which branch and extend three or four feet every way: the leaves are on long petioles, large, rough, of a grayish green colour, and cordate: the flowers are axillary, similar in appearance to those of the common cucumber, but smaller, of a pale yellow colour, with a greenish base: the male flowers stand on short peduncles, but the female sit on the germen, which is inferior: the fruit into which it swells has the appearance of a small oval cucumber, of a grayish colour, and covered with prickles. When fully ripe it quits the peduncle, and casts out the seed and juice, with great force and to a considerable distance, through the hole in the base where the footstalk is inserted.

For medicinal use the fruit is gathered in September just before it is ripe; and the clear juice which runs from it, and that obtained by the expression of the fruit, are inspissated, and form the elaterium of the shops.

Qualities. — The juice is nearly inodorous, and has a very slightly bitter taste. It deposits by rest a considerable portion of feculent matter; for an account of the nature of which see *Extractum Elaterii* among the Preparations.

Medical properties and uses. — This fruit is a very violent cathartic. It was much employed by the ancients, who extolled it as highly efficacious in melancholic and maniacal attacks. They used the root also in similar cases. It is still frequently given in dropsies; and although when incautiously given, it may bring on a dangerous hypercatharsis, yet, properly prescribed, it is the best hydragogue with which I am acquainted. The extract is always employed in preference to the recent fruit.

Official preparation. — *Extractum Elaterii*. L. E. D.

MORUS. *Spec. Plant. Willd.* iv. 368.

Cl. 21. Ord. 4. Monœcia Tetrandria. Nat. ord. Scabridæ Linn. Urticæ Juss.

G. 1664. Male. *Calyx* four-parted. *Corolla* 0.

Female. *Calyx* four-leaved. *Corolla* 0. *Calyx* becoming a berry. *Seed* one.

Species 5. *M. nigra*. Common Mulberry tree. *Med. Bot.* 2d ed. 712. t. 243.

Official. MORI BACCÆ. Lond. Mulberries.

Syn. Murier noir (F.) Schwarze Maulbeeren (G.) Morone o Gelso (I.) Moras (S.)

This species of mulberry is a native of Persia, whence it

¹ It was cultivated by Gerarde in 1596.

was brought to Italy, and gradually spread over Europe. It is now abundantly cultivated in this country, flowering in June, and ripening its fruit in September. The tree, which seldom exceeds thirty feet in height, is covered with a brownish gray bark: the leaves are numerous, on short footstalks, cordate, serrated, veined, about three inches long, and nearly as broad; rough on the upper surface, which is of a deep green colour, and covered with minute warts; and paler and villous underneath. The male flowers, which are on the same tree as the female, are in close roundish catkins, composed of caducous florets, which consist of four concave, oval, erect, calycinal leaves, inclosing four filaments bearing simple anthers: the female flowers contain a roundish germen, crowned with two divaricated styles furnished with simple stigmas, inclosed in a calyx of four ovate concave erect leaves; which, after flowering, swell, become succulent and coloured, investing the seed; and many of them being crowded together on one peduncle form a spurious compound berry, that has the appearance of a real succulent berry composed of a number of smaller berries.¹

Qualities.—Mulberries are inodorous, have a sweet acidulous taste, and abound with a deep blood red juice. Hermbstadt found that their acidulous quality depends on the presence of tartaric acid, and I find they contain also jelly and mucus.

Medical properties and uses.—This fruit is cooling and laxative; and, when not too ripe, allays thirst, and proves exceedingly grateful in febrile diseases. It is seldom, however, used medicinally; and, when eaten too freely as an article of food, is apt to occasion diarrhoea.

Official preparation. *Syrupus Mori*. L.

MOSCHUS. *Syst. Nat. Gmelin*. i. 172.

Cl. 1. Ord. 5 Mammalia Pecora.

G. 28. Horns none. Fore teeth eight in the lower jaw. Tusks one on each side in the upper jaw, projecting out of the mouth.

Sp. *M. moschiferus*. The Musk Deer. *Pennant Quadr.* 56. t. 10. f. 1.

Official. MOSCHUS. *Lond. Edin. Dub.* Musk.

Syn. *Musc* (F.) *Bisam* (G.) *Muschio* (I.) *Almizcle* (S.) *Meshk* (Arab. & H.)

This animal is an inhabitant of the alpine mountains of the east of Asia, particularly those which divide Thibet from India. It is a solitary animal, living among the rocks, and frequenting the highest tops of the snowy peaks; very timid, and difficult to be taken. The length of the full grown animal scarcely ever exceeds three feet, and in its general aspect it resembles the deer; the head is elegant: the fleece coarser than that of

¹ It is a curious fact, that two mulberry trees growing near each other, bear generally more fruit, and that of a finer quality, than if planted alone. This is supposed to be owing to the male flowers in one of the trees being more effective than those of the other.

the stag, but very light and soft, and varying in colour at different seasons of the year, and different periods of life, chiefly from brown to nearly black, hoary underneath, and sometimes, but rarely, whitish: the tail is very short. Between the navel and the prepuce is an oval bag, flat on one side, and convex on the other, about three inches long, and two broad, projecting, with a very small orifice, and beset with short hairs. This is the musk bag: it is empty in the young animal; but in the adult contains from $\frac{3}{16}$ to $\frac{3}{8}$ of musk. The animal often expresses part of the contents of the bag, when it becomes too full, by rubbing itself against stones; and the matter thus ejected is said to be a purer musk than that which is brought to this country.

Musk is imported into England from China in caddies, which contain from twenty to sixty and one hundred ounces each; but an inferior kind is brought from Bengal, and a still baser sort from Russia. The best is that which is in the natural follicle, or the *pod* as it is denominated in mercantile language. This is a sac or bag about the size of a pigeon's egg, of a brownish colour, lined with a very thin membrane, and covered externally with coarse hairs. The musk itself is in grains concreted together, dry, yet slightly unctuous, and free from grittiness when moistened and rubbed between the fingers, or chewed.

As musk is a very high-priced article, it is often adulterated. When this is the case, the bag, which should not have any appearance of having been opened, appears, if narrowly examined, slit or punctured in several places, through which sand, lead, and other heavy matters are inserted. The musk is sometimes nearly all abstracted, and a mixture of dried blood and asphaltum introduced into the bag; or both the bag and the musk are artificial, and only scented with real musk. The first of these adulterations is easily detected; the presence of blood may be suspected, if the musk, when held over the flame of a candle on a thin spatula, emits, as it inflames, a fetid smoke: and asphaltum is discovered by its melting, and running before it in flames, if heated on a spatula, whereas real musk inflames without running, and is converted into charcoal.¹ The artificial bags are known by the inner membrane, which lines the real musk bags being deficient.

Qualities.—The odour of musk is aromatic, but peculiar, extremely powerful and durable; the taste bitterish and heavy; and the colour a deep brown, with a shade of red. Exposed to heat it burns with a white flame, and leaves a light spongy

¹ The formation of ammonia when rubbed with potash has also been mentioned as a test of the presence of blood; but the fixed alkalies have developed ammonia in the best specimens of musk we have ever seen.

charcoal. Trituration with potass developes ammonia. Boiling water dissolves it partially, alcohol better, and sulphuric ether still more completely. The watery *infusion* has a yellowish brown colour, a bitterish taste, and the strong odour of the musk; and reddens infusion of litmus. Solutions of muriate of mercury and of sulphate of iron produce with it copious precipitates; as does also infusion of yellow cinchona bark. Solution of nitrate of silver throws down a whitish precipitate, which, on exposure to the light, changes to a livid blue; and nitrate of mercury produces a brownish precipitate. The *alcoholic tincture* is of a reddish brown colour, transparent, but with scarcely any odour of the musk. Water renders it milky, and gives out the strong musk odour; but with the other tests it presents the same results as the watery infusion. The *ethereal tincture* has a deep brown colour; and, when evaporated on the surface of water, deposits a brown, tenacious, nearly insipid resin, and renders the water milky. The resinous matter has the musk odour in perfection; while the substance which occasions the turbidness of the water possesses the properties of extractive. From these results musk appears to contain albumen, gelatin, muriate of ammonia, phosphate of soda, and an uncombined acid; but the greater part of it consists of a resin combined with a volatile oil, and a mucilaginous extractive matter.

Medical properties and uses.—Musk is stimulant and antispasmodic. Aëtius is the first writer who mentions it as a medicine; but it did not come into general use in this country till the beginning of the sixteenth century. It raises the pulse without much augmenting the heat of the body, and has a remarkable power of resolving spasm, and increasing the energy of the brain and nerves. Hence it is very efficaciously given in typhoid fevers, when low delirium, subsultus tendinum, and hiccough supervene; and in combination with ammonia to arrest the progress of gangrene. Its beneficial effects in all spasmodic diseases are well established; and Cullen says, he can vouch for its powers in retrocedent gout, which in many instances he had seen suddenly relieved by large doses of musk¹. It checks the vomiting in cholera, at the same time that it allays the tormina of the intestines. In epilepsy we have seen more benefit derived from musk in combination with calomel than from any other remedy; and we are inclined to attribute much of the disappointment which others have experienced, either to the remedy not having been genuine, or the smallness of the dose. To obtain the full benefit of musk in this disease,

¹ *Mat. Med.* ii. 381.

the dose must be much larger than what is usually given; it should be repeated at shorter intervals, and its use longer continued. In an old confirmed case, in which three and four fits were experienced daily, musk, given to the extent of ʒss four times a day, reduced the number of fits to one in three months. Upon the whole, we agree with Cullen "that musk is one of the most powerful antispasmodics we are acquainted with," and regret that the high price of the drug necessarily limits very much its employment.²

As a local remedy, musk is said to be useful in atonic deafness when inserted into the ear with cotton; and it is recommended in the form of enema in the convulsions of children arising from the irritation of dentition.

Musk is best given in substance, in the form of bolus. The dose may be from grs. vj to ʒj, repeated at intervals of six or eight hours.

Official preparations. *Mistura Moschi*. L. *Tinctura Moschi*. D. MYRISTICA. *Spec. Plant. Willd.* iv. 869.

Cl. 22. Ord. 13. Diœcia Monadelphia. Nat. ord. Lauri Juss.

G. 1851. Male. Calyx bell-shaped, trified. Corolla 0. Filament columnar. Anthers six or ten united.

Female. Calyx bell-shaped, trified, deciduous. Corolla 0. Style 0. Stigma two. Drupe, a nut involved in an arillus (Mace) with one seed.³

Species 1. *M. moschata*. The Nutmeg-tree. *Med. Bot.* 2d ed. 698.

t. 238. *Rumphius. Herb. Amboin.* ii. lib. 11. c. 5. t. 4.

Official. MYRISTICÆ NUCLEI. Lond. MYRISTICÆ MOSCHATÆ NUCLEI, INVOLUCRUM vulgo MACIS. Edin. NUX MOSCHATA; OLEUM ESSENTIALE, OLEUM EXPRESSUM, INVOLUCRUM MACIS DICTUM. Dub. Nutmeg; Mace; Oil of Nutmeg, essential and expressed; Oil of Mace.

Syn. of the nutmeg. Noix muscade (F.) Moskatnuse (G.) Nosce moscata (L.) Nuez moscada (S.) Jaëphal (H.) Jatiphalo (San.) Pela (Malay.)—Of the Mace. Moshat blumen (G.) Macis (L.) Macias (S.) Jawairi (H.) Jatipatri (San.) Benga pela (Malay.)

The nutmeg-tree is a native of the Molucca islands. It has, however, been nearly extirpated from the greater number of them by the narrow policy of the Dutch, and is cultivated at Banda⁴ only, where a sufficient quantity is reared to supply with mace and nutmegs the whole of Europe. It rises to the height of thirty feet, producing many erect branches, which, as well as the trunk, exude, when wounded, a red glutinous juice,

¹ *Mat. Med.* l. c. 380.

² A mixture of musk and cinabar in arrack is used by the Tonquinese as a remedy in hydrophobia. *Phil. Trans.* xlv. 78. No benefit has been derived from its use in this disease in this country, although it has been fairly tried.

³ In our description, we have followed Gaertner, who denominates the fruit "Bacca monosperma;" although, in our translation of the Generic character by Willdenow, we have not altered the term "Drupe."

⁴ This term includes six smaller islands, Neyra, Lenteira, Pulo-Aya, Goenenga, Apia, Pelerona, and Rossengenia; but the three first only bear nutmeg-trees.

and are covered with a smooth ash-coloured exterior bark. The leaves, which stand alternately on short petioles, are elliptical, pointed, undulated, entire, and obliquely nerved; of a bright green colour on the upper surface and grayish underneath, with an aromatic taste. The flowers are present at the same time with the fruit, inodorous, small, supported on axillary peduncles; and male and female on the same, and separate trees: the calyx in both is fleshy, smooth, and divided at the edge into three moderately spreading segments. There are no corollas. The filaments in the male flowers are short, united into one columnar bundle, inserted into the receptacle, and bear each a linear anther which surrounds the upper half of the filament. The germ in the female is superior, oval, and crowned with a style terminated by two stigmas. The fruit is an ellip-tico-spheroidal, one-celled, superior berry, marked with a shallow longitudinal groove on one side, fleshy, smooth, one-celled, and the size of a small peach; the flesh is thick, rather solid, and finally dries up to a coriaceous crust, which opens at one side, and displays the nutmeg in its shell covered with an aril-lus, which is the officinal *mace*, and by it fixed to the bottom of the cell. This is a fleshy, coriaceous, saffron, or yellow-co-loured substance, divided deeply into many slips, which closely invest the shell of the nutmeg. The kernel, which is the proper nutmeg, is of a roundish oval form, marked on the outside with many vermicular furrows, within, of a fleshy-farinaceous substance; variegated whitish and bay, and having a cavity at the bottom for the embryo.¹

The nutmeg-tree yields three crops annually: the first in April, which is the best; the second in August, and the third in December, yet the fruit requires nine months to ripen it. When it is gathered, the outer coriaceous covering is first stripped off, and then the mace carefully separated and dried in the sun. The nutmegs in the shell are next exposed to heat and smoke for three months, then broken, and the kernels thrown into a strong mixture of lime and water, after which they are cleaned and packed up. This process is necessary for their preservation, and with the same intention the mace is sprinkled with salt water. There are several varieties of the tree; but that denominated the Queen nutmeg, which bears a small round nut, is the best. They are imported in chests which contain each from 100 to 140lbs. weight; the mace comes in chests also of different sizes: the essential oil, which is obtained in Banda by the distillation of the nuts, is brought in bottles; and the expressed oil in stone jars.

¹ Gærtner de Fructibus, t. 41.

Qualities.—The nutmeg has a fragrant agreeable spicy odour, and a warm aromatic taste. It is easily cut with a knife, but not very pulverulent. When cut transversely, and examined by the microscope, the dark coloured veins which run through its substance appear to consist of cellular matter filled with oil, which is the active matter of the nutmeg. Alcohol and ether extract completely the active qualities of nutmeg. When the ethereal tincture, which is limpid, and of a golden yellow colour, is evaporated on water, a small portion of volatile essential oil unites with the water, and a white opaque granular sebaceous substance, heavier than water, which has much the appearance of the expressed oil, is deposited. When alcohol is digested on this substance, it dissolves very little of it, but becomes yellow, and acquires the qualities of a spirituous solution of the essential oil; the undissolved substance, if washed in water, is nearly insipid, melts at a temperature of 150° , and, on cooling, concretes into a translucent brittle cake which has the properties of wax. The part of the nutmeg insoluble in ether is chiefly gum and starch. In distillation with water, nutmegs yield $\frac{1}{7}$ of their weight of essential volatile oil, and by expression one-third of a sebaceous fixed oil.* Hence, the components of the nutmeg seem to be starch, gum, volatile oil, wax, and a fixed fat oil. The *volatile oil* possesses the odour and taste of the nutmeg in a concentrated degree, is of a pale straw colour, limpid, transparent, and lighter than water. The *expressed oil*, which is erroneously called *oil of mace*, when first drawn, is limpid and yellow, but on cooling acquires the consistence of spermaceti and somewhat of the appearance of Castile soap, being whitish, mottled with reddish brown. Its odour is agreeable and slightly aromatic, and its taste fatty, pungent, and bitterish. It appears to be a vegetable cerate, or a triple compound of fixed oil, volatile oil, and wax. Besides the genuine expressed oil, there are two other sorts found in the shops; one, which is said to come from Holland, of a paler colour, and in flat square cakes; and another, which is an artificial composition of suet, palm oil, and spermaceti scented with a little volatile oil of nutmeg. *Mace* resembles the nutmeg in its odour and taste, but is more pungent and bitter. It is in lacinated, flexible, thin pieces, unctuous to the feel, and of a deep reddish yellow colour. Alcohol and ether extract its active principles; and when the ethereal tincture is evaporated on water, a thick deep yellow coloured, very pungent, and odorous oil is left in drops on the surface of the water, with some resin; and a small portion of extractive is deposited, but no waxy granular matter.

* *Newman's Chemistry*, 404.

*Medical properties and uses.*¹—As the medical properties of nutmeg and mace depend on the essential oil they contain, they agree in these circumstances; and both are stimulant, carminative, and in large doses narcotic. Mace is more generally used as a culinary spice; but the nutmeg and its volatile oil are in frequent use to cover the disagreeable taste of other medicines; and are sometimes ordered in cases of languors, vomiting and diarrhœa, and in flatulent colic. On account of the narcotic property of the oil, nutmeg should be cautiously employed in apoplectic and paralytic habits. In India its dangerous effects have been frequently felt²; and in this country instances have occurred in which the nutmeg, taken in large quantity, produced drowsiness, great stupor, and insensibility; and, on awakening, delirium which alternated with sleep for several hours.³ The volatile oil is sometimes used as an external stimulant, and the expressed oil is seldom employed for any other purpose. The dose of the nutmeg and the mace is from grs. v. to ʒj; that of the volatile oil, m̄j, to m̄vj.

Official preparation. *Spiritus Myristicæ*. L. E. D.

MYROXYLON. *Spec. Plant. Willd.* ii. 546.

Cl. 10. Ord. 1. Decandria Monogynia. *Nat. ord.* Lomentaceæ
Linn. Leguminosæ Juss.

G. 829. *Calyx* bell-shaped, five-toothed. *Petals* five, the upper one larger than the others. *Germen* longer than the corolla. *Legume* with one seed only at the point.

Species 1. *M. peruvianum* Sweet-smelling Balsam-tree. *Hernandez Nova Plant. &c. Mexican. Hist. fol.* 51. *cum figura.*

Official. MYROXYLI PERNIFERI BALSAMUM. *Edin.* Peruvian Balsam.

Syn. Baume de Perou (*F.*) Peruvianischer Balsam (*G.*) Balsamo del Peru (*L.*) Balsamo de Quinquica (*S.*)

The Peruvian balsam tree is a native of the warmest provinces of the continent of South America.⁴ It is a very beautiful tree, with a smooth thick bark, which is very resinous, as is every part of the tree. The leaves are alternate and abruptly pinnate. The leaflets in two pairs, nearly opposite, petiolate, ovato-lanceolate, with the apex lengthened, blunt, emarginate, entire, veined, and very smooth. The midrib, which runs through the whole length of the under surface of the leaf, is raised and pubescent; the common petiole is round and pubescent. The flowers are scattered, on axillary erect racemes, longer than the leaves. The peduncles are roundish and pubescent; each supported by a small, erect, ovate, concave bracte, appearing to the naked eye like a tubercle. Pedi-

¹ Avicenna first noticed nutmegs as a medicine.

² *Bontius de Medicina Indorum.* 20.

³ Cullen, *Mat. Med.* ii. 204.

⁴ Mutis discovered it, and sent a branch of the tree to the younger Linnæus about the year 1781.

cels erect. The calyx is bell-shaped, hoary green, and surrounded by the petals and anthers, which are white, and containing within, a green legume that has a singular appearance in the flower. The substance of the leaves is full of translucent, linear, points, like the leaf of the orange-tree.

This tree yields by incisions made early in the spring, a liquid balsam, which is collected in bottles. What is found in the shops is obtained by boiling the twigs in water. It is imported in jars, each containing from twenty to forty pounds weight. A mixture of resin and some volatile oil with benzoïn is often sold for Peruvian balsam, and the fraud is not easily detected.

Qualities. — The balsam which we receive has a fragrant aromatic odour, much resembling that of benzoïn, with a warm bitterish taste, leaving a slight sensation of burning in the throat after it is swallowed, with some degree of sweetness. It is viscid, of a deep reddish brown colour, and of the consistence of fluid honey. Water boiled on the balsam becomes acidulated, and deposits on cooling crystals of benzoic acid. In distillation with water, a small portion of a volatile limpid oil is obtained, and benzoic acid sublimes in the neck of the retort. Its remaining matter is a resin. Ether in small quantity dissolves it readily and completely; alcohol also dissolves it, but the quantity of menstruum must be considerable. Sulphuric acid converts it into artificial tannin and charcoal. Treated with nitric acid, some prussic acid is evolved, benzoic acid sublimes, and the residual matter is artificial tannin.¹ The alkalis and their carbonates form with it thick masses, which, on the addition of sulphuric acid lets fall a resinous matter, and benzoic acid crystallizes. Hence Peruvian balsam appears to consist chiefly of a resin, volatile oil, and benzoic acid.

Medical properties and uses. — Balsam of Peru is stimulant and tonic. It has been regarded as expectorant also, and recommended in catarrh and other pulmonary affections; but it is contra-indicated wherever any inflammatory action is present; and to its stimulant operation on the pulmonary exhalants we may ascribe its use in chronic asthma and old obstinate coughs.² In gleet, leucorrhœa, palsy and chronic rheumatism, its tonic powers have proved beneficial; as well as in many other cases of debility. It may be given to the extent of fʒj for a dose. As a local stimulant it is employed externally with great advantage for cleansing and stimulating foul and indolent ulcers; and a mixture composed of ʒj of the

¹ Hatchet. *Phil. Trans.* 1806. Thomson's *Chemistry*, iv, ed. v. 126.

² Sydenham gave it in phthisis.

balsam and ʒiij of ox gall I have found extremely useful when dropped into the ear every day, after syringing with a solution of soap, in fetid discharges of the ear.

MYRRHA.¹ *Lond. Edin.* MYRRHA; GUMMI-RESINA.

Dub. Myrrh, a gum-resin.

Syn. Myrrhe (F.) Myrrhen (G.) Mirra (I.) Mirra (S.) Murr (Arab.) Ból (H.) Bóla (San.)

The tree or plant which produces this gum-resin is a native of the eastern coast of Arabia Felix, and of Abyssinia, growing, according to Mr. Bruce's account, behind Azab, along the coast towards the straits of Babelmandel. It is undescribed by naturalists; and the conjectures of Mr. Bruce in favour of its being a *Mimosa* are by no means satisfactory.² The appearance of the best myrrh, as we receive it, affords reasons for supposing that it is an exudation from the plant. It is imported in chests each containing from one to two hundred weight. The Abyssinian myrrh comes to us through the East Indies, while that produced in Arabia is brought by the way of Turkey.

Qualities.—Myrrh has a peculiar, rather fragrant odour, and bitter, aromatic taste. It softens in the mouth, adheres to the teeth when chewed, and is in small irregularly shaped pieces, which can scarcely be called tears; they are translucent, of a reddish yellow colour, brittle, breaking with a resinous fracture, and easily pulverized. It does not melt when heated, and is not very inflammable. Its specific gravity is 1.360.³ Such are the characters of good myrrh; but it is often opaque mixed with many impurities, and either white or of a dark colour approaching nearly to black, with a disagreeable odour, in which case it should be rejected.

Myrrh is partially soluble in water, alcohol, and ether. In distillation with water, it yields an oil heavier than water. When it is triturated with very soft or distilled water, nearly the whole appears to be dissolved, forming an opaque yellowish solution; but the greater part is deposited by rest, and not more than one-third of the gum-resin is actually dissolved. The alcoholic tincture is rendered milky and opaque when mixed with water, but no precipitate appears. Braconnot asserts, that 100 parts of myrrh consist of 23 resin and 77 gum⁴, but my experiments lead to a somewhat different conclusion, and accord more with those of Pelletier, who found the proportions to be, 34.68 of resin and 66.32 of gum. Ether digested on powdered myrrh dissolved three parts in eight,

¹ *Myrrha* Dioscoridis. The name *Myrrha*, used by Hippocrates, is derived from *μυρον*, an ointment.

² *Phil. Trans.* lxx. 413.

³ Brisson.

⁴ *Annales de Chimie*, lxxviii. 52.

and the tincture evaporated on water deposited two grains and a half of very bitter resin, and half a grain of extractive matter, which also tasted bitter. The part insoluble in the ether was nearly all soluble in water, and afforded a solution resembling that of acacia gum; but differed from it in being precipitated by solutions of muriate of mercury and of superacetate of lead. When treated with nitric acid it yields oxalic acid. Hence myrrh seems to consist of resin, essential oil, extractive, and mucus rather than gum.

Medical properties and uses. — Myrrh is tonic and expectorant. In moderate doses it stimulates the stomach, promoting the appetite and digestion; but in large doses, increases the frequency of the pulse, and augments the general heat of the body.¹ As a tonic, it is efficaciously given in cases of debility, as amenorrhœa, chlorosis, and convalescencies; and in phthisis pulmonalis, when the inflammatory symptoms and hectic fever do not run high. Its use in phthisis has indeed been condemned by several physicians of great repute²; but when there is an evident ulceration of the lungs without much hectic, and the patient's strength is considerably reduced by the quantity of the expectorated matter, the proper exhibition of myrrh is certainly productive of much benefit. In the first-mentioned diseases, it is advantageously combined with aloes, cinchona, or other bitters, and chalybeates; and in phthisis, with nitre, digitalis, opium, camphor, and the sulphate of iron or of zinc. Combined with oxide of zinc it has been found extremely useful in the peculiar cough which sometimes accompanies pregnancy, and continues after abortion. As an expectorant it is often employed in humoral asthma and chronic catarrh; and with the same view also has been given in phthisical affections; but as it cannot be employed with propriety in pulmonic cases, where there is much inflammatory action or hectic present, any advantage derived from its use in phthisis probably depends altogether on its tonic operation counteracting the exhaustion produced by a copious purulent expectoration. As a local stimulant the alcoholic solution of myrrh diffused in water is used as a lotion in a spongy state of the gums, and for correcting the fœtid discharge of vitiated ulcers, particularly when connected with caries of the bone; and as a gargle in cynanche maligna.

Myrrh is administered in substance, or in the form of watery infusion, or a tincture properly diluted. A watery extract is ordered in some foreign pharmacopœias, and preferred by many physicians, from an idea that it is less heating than the

¹ Cullen, *Mat. Med.* ii. 193.

² Cullen. Fothergill.

gum resin; but it is equally bitter, and is perhaps not different from a diminished dose of the myrrh.

Official preparations. *Tinctura Myrrhæ* L. E. D. *Tinctura Aloes et Myrrhæ*. E. *Pilulæ Aloes cum Myrrhæ*. L. E. D. *Pilula Ferri cum Myrrhæ*. L.

MYRTUS. *Spec. Plant. Willd.* ii. 967.

Cl. 12. Ord. 1. Icosandria Monogynia Nat. ord. Hesperideæ Linn.

Myrti Juss.

G. 973. *Calyx* five-cleft, superior. *Petals* five. *Berry* two or three-celled, many seeded.

Species 28. *Myrtus Pimenta*. Pimenta, or All-spice tree. *Med. Bot.* 2d. ed. 541. t. 194.

Official. PIMENTÆ BACCÆ. Lond. MYRTÆ PIMENTÆ FRUCTUS Edin. PIMENTO; (*Piper Jamaicense*) BACCÆ. Dub. Pimenta Berries. Jamaica Pepper.

Syn. Poivre de Jamaïque (F.) Nelhenpfeffer (G.) Pimenti (I.) Pimienta (S.)

This tree is a native of South America and the West India islands. It grows in great plenty on the hilly parts, on the north side of the island of Jamaica; flowering in June, July, and August, and soon afterwards ripening its fruit. It is a handsome tree, rising in height about thirty feet, straight, branching, and covered with a very smooth gray bark. The leaves, which are supported on footstalks at the ends of the twigs, are elliptical, pointed, of different sizes, but the largest five inches long, and two broad in the middle, smooth, thin, entire, shining, and of a deep green colour; the flowers are produced in terminal bunches, or rather trichotomous panicles: the calyx is four-cleft; the petals four, reflected, of a pale green colour, inclosing many longer spreading filaments of the same colour, supporting pale yellow roundish anthers: the fruit is a spherical berry, crowned with the persistent calyx; when ripe black, or dark purple, smooth, shining, and bilocular, with the seeds enveloped in a moist, green, pungent, aromatic pulp.¹

The fruit, which is the part of this plant medicinally used, is gathered before it is ripe², and exposed to the sun for many days, spread thin upon cloths. They require to be frequently turned, and carefully preserved from the dews. By degrees, under this management, they become wrinkled, and change from green to a brown colour; after which they are packed in bags and hogsheads for the European market. The more fragrant and smaller they are, the better they are accounted.³

Qualities.—Pimenta has an aromatic, agreeable odour, resembling that of a mixture of cinnamon, cloves, and nutmegs, with the warm pungent taste of the cloves; qualities which

¹ Sloane, *Phil. Trans.* xvii. 462.

² When the berries ripen, they lose much of the aromatic warmth for which they are esteemed, and acquire a taste similar to that of juniper berries.

³ Sloane, l. c.

reside chiefly in the cortical part of the dried berry. Water, alcohol, and ether extract its virtues. The watery infusion is of a brown colour, and reddens litmus infusion. With solution of sulphate of iron it immediately strikes a deep black colour, and slowly lets fall a precipitate. Nitrate of mercury precipitates it of a yellowish brown; superacetate of lead of a dirty green; and nitrate of silver of a deep reddish brown colour. It is also precipitated by infusion of yellow cinchona bark. The sulphuric and muriatic acids redden it, and throw down pale rose-coloured precipitates. The nitric acid forms no precipitate, but gives it a yellow hue. The alcoholic tincture is rendered milky, and slowly precipitated by water: the ethereal, when evaporated on water, deposits drops of a greenish yellow volatile oil, a pellicle of a pungent nauseous tasted resin, and some extractive. Hence pimenta appears to contain a volatile oil, resin, extractive, tannin and gallic acid.

Medical properties and uses. — Pimenta is stimulant and tonic. It is useful as an adjunct to bitters in dyspepsia attended with much flatulence, and in arthritic and hysterical affections. The watery infusion of it sweetened with sugar, and with the addition of a little milk, is very readily taken by children; and is an excellent cordial in malignant measles, scarlatina, confluent small-pox, and the other exanthemata, when the fever assumes the typhoid type. But the principal use of pimenta in medicine is to cover the disagreeable taste of other remedies, or to give them warmth. The dose of the berries is from gr. v. to ʒij in powder, or swallowed in their entire state.

Official preparations. *Aqua Pimentæ*. L. E. D. *Oleum Pimentæ*. L. E. D.

NICOTIANA. *Spec. Plant. Willd.* i. 1014.

Cl. 5. *Ord.* 1. Pentandria Monogynia. *Nat. Ord.* Luridæ Linn. Solanææ Juss.

G. 379. *Corolla* funnel-shaped with the border plaited. *Stamens* inclined. *Capsules* two-valved, two-celled.

Sp. 1. *N. Tabacum*.¹ Tobacco. *Med. Bot.* 2d ed. 208. t. 77.

Official. TABACI FOLIA. *Lond.* NICOTIANÆ TABACI FOLIA. *Edin.*

NICOTIANÆ FOLIA. *Dub.* Tobacco leaves.

Syn. Tabac (F.) Taback (G.) Tabacco (I.) Tobaco (S.) Bujjirbhang (Arab.) Tam-bacu (H.) Tāmracuta (San.)

Tobacco is an annual plant, a native of America, and par-

¹ This plant was first discovered by the Spaniards in Yucatan in 1520, and was there called *petun* or *petum*. It was afterwards transported to the West Indies and North America; and brought to Europe by Hernandez de Toledo, who came from Florida to Portugal in the beginning of the 16th century. The seeds were sent from Portugal to Catherine de Medicis by Jean Nicot, an agent of Francis II., after whom it received its generic name Nicotiana: the specific appellation being taken either from *tabac*, the name of an instrument used by the natives of America in the preparation of the herb; or *Tabaco*, the name of a Mexican province.

tially cultivated in Europe; flowering in July and August. The root is large and fibrous, and sends up an erect branching stem about four feet in height, round, villous, slightly viscid, and furnished with numerous large, alternate, entire, pointed leaves, the lowermost of which are about two feet long, and four inches broad; they are sessile, a little decurrent, with a strong midrib, and of a pale green colour on the upper surface, and still paler underneath. The flowers are in large terminal panicles, with long linear pointed bractes at the base of each division: the calyx is bell-shaped, obscurely pentangular, villous, slightly viscid, and cleft into five acute erect segments; the corolla is very viscid, its tube twice the length of the calyx, of a pallid greenish hue, and swelling into an oblong cup, which expands into five-pointed, plaited, pale red or rose-coloured segments: the stamens are the length of the tube of the corolla, and support awl-shaped, compressed, oblong anthers: the style, which is the length of the corolla, and crowned with a capitate slightly cleft stigma, rises from a conical germen, that changes to an ovate capsule containing many reniform small seeds, and opening at the apex.

Tobacco was at one period raised to a considerable extent in Yorkshire¹; but the cultivation of it for the purposes of trade has been long prohibited; and this country, as well as the greater part of Europe, is chiefly supplied from Virginia, where the plant is cultivated in the greatest abundance. There are two varieties of this species, known by the name of Virginian tobacco, a broad and a narrow leaved sort; but they do not differ in their medical properties. In Virginia the plant is not allowed to attain its full height, but is topped whenever a certain number of leaves is thrown out. It is cut down in August, and the plants hung up in pairs in sheds to dry, after which the leaves are separated from the stem, bound up in bundles, and packed in the hogsheads in which they are exported.

Qualities.—The recent leaves possess very little odour or taste; but when dried their odour is strong, narcotic, and somewhat fetid; their taste bitter, and extremely acrid. When well cured, their colour is yellowish green. They emit sparks in burning, and give out a suffocating smoke; and when distilled, yield an essential oil of a green colour, on which their medicinal properties are supposed to depend, and which is said to be a very virulent poison.² This oil is dissipated by the

¹ It was first cultivated in England in 1570, according to Lobel's account.

² The poisonous effects of this oil are very powerful: Mr. Barrow, speaking of the use which the Hottentots make of tobacco oil for destroying snakes, says, "A Hottentot applied some of it from the short end of his wooden tobacco-pipe to the mouth of a snake, while darting out his tongue. The effect was instantaneous as an electric

long coction of tobacco with water; yet in distillation with ether, water, or alcohol, no oil comes over. By infusion, however, it yields its active principles to both these fluids. Its deflagration shows the presence of nitrate of potash; and Bouillon la Grange discovered muriate of potash in its inspissated juice.¹ According to Vauquelin, tobacco appears to contain albumen or gluten, supermuriate of lime, acetic acid, nitrate and muriate of potash, muriate of ammonia, a red matter, soluble in alcohol and water, a green fecula, and a peculiar substance, on which the properties of the plant appear to depend, and which has been therefore named *nicotin*.²

Medical properties and uses. — Tobacco is narcotic, sedative, emetic, diuretic, cathartic, and errhine, whether it be taken into the stomach, or externally applied. The three first mentioned properties are sufficiently obvious, even from the effects which smoking or chewing it produce on persons unaccustomed to its use.³ These are, very severe sickness, headach, extreme debility, cold sweats, and sometimes, even convulsions. The production of such a state of the habit, however, being useful for relieving violent spasmodic constriction, tobacco is advantageously employed in obstinate constipation, ileus, suppression of urine, and incarcerated hernia, when other remedies fail of affording relief. The smoke is either thrown into the rectum by means of a pair of bellows of a peculiar construction, or an infusion of the leaves is exhibited in the form of enema.⁴ From its narcotic power also, the smoking or chewing tobacco has been found useful in allaying the pain of toothach; and smoking it has been recommended, and in some instances found useful in shortening, and rendering

shock: with a convulsive motion that was momentary, the snake half untwisted itself, and never stirred more; and the muscles were so contracted, that the whole animal felt hard and rigid, as if dried in the sun." *Travels in Africa*, p. 268.

¹ *Journal de Physique*, xxxix. 193.

² This substance is colourless, acrid, has the odour of tobacco, and like it occasions violent sneezing. It is volatile, poisonous, and produces colourless solutions with alcohol and water, from which it is thrown down by tincture of nut-galls. Vauquelin regards it as approaching the volatile oils in its properties. Vide *Ann. de Chimie*, tome lxxi. p. 139.

³ The custom of smoking tobacco was introduced into England by Sir Walter Raleigh; and was at one time extremely prevalent, but is now confined chiefly to the lower class of the people. In some parts of Europe, however, it is still regarded as the greatest solace and pleasure of the luxurious. It is a curious fact, that in England an edict was published against its use; that Urban the viiith anathematised those who used it in churches; and in Constantinople, where its use is now so general, the custom was in the beginning of the 17th century thought so ridiculous and hurtful, that a Turk found smoking was conducted in ridicule through the streets with a pipe transfixed through his nose.

⁴ The native doctors in India apply the leaves to the orifice of the anus. Vide *Ainslie's Mat. Med. of Hindostan*, 4to. p. 48.

more supportable the paroxysm of spasmodic asthma. The infusion has been used as an emetic; but the practice cannot be recommended: and notwithstanding the success of Dr. Fowler¹, who employed it in dropsy and dysury; its general effects are too violent for internal exhibition, and it is not equal as a diuretic either to squill or foxglove, which are more manageable remedies. In dysury, however, as Dr. Pearson has observed, its antispasmodic properties are of advantage, and consequently its use in that complaint is less objectionable.² The external application of a strong infusion of tobacco, or of a cataplasm of the moistened leaves themselves, is sometimes employed as a local stimulant in porrigo, scabies, and some other cutaneous eruptions; but even in this mode of using it, tobacco is apt to induce the same virulent effects as when it is internally administered in large doses.

But tobacco is chiefly employed as a sternutatory, and is the basis of all the kinds of snuff generally used. The powdered leaves, when snuffed up the nostrils of those unaccustomed to the use of snuff, excites vehement sneezing, and promotes a considerable discharge from the nostrils, answering all the purposes for which errhines are employed. As a luxury snuff has been used upwards of two hundred years in Britain, and has been taken in great quantities without any perceptible bad consequence; although it has been asserted that its immoderate use weakens the sight, produces lethargy, and gives a tendency to apoplexy. After the use of it has become habitual, it cannot be relinquished without considerable risk, arising from the suspension of the artificial discharge it produces, as Dr. Cullen observed from his own experience.³

The London College has given a formula for an infusion proper to be used as an enema; as a diuretic, that employed by Dr. Fowler is made with ʒj of the dried leaves, and ʒj of boiling water, and given in doses of ʒlx to ʒlxxx, twice a day. Official preparations. *Infusum Tabaci*. L. *Vinum Nicotianæ Tabaci*. E.

OLEA. *Spec. Plant. Willd.* i. 44.

Cl. 2. Ord. 1. Diandria Monogynia. Nat. ord. Separiæ Linn. Jasmineæ Juss.

G. 36. Corolla four-cleft, with subovate segments. *Drupe* one-seeded. *Species* 1. *O. Europæa*.⁴ European Olive. *Med. Bot.* 2d. ed. 280.

t. 93. *Silthorp Flora Græca*, t. 3.

Official. OLIVÆ OLEUM. *Lond.* OLEÆ EUROPEÆ OLEUM FIXUM. *Edin.* OLEUM OLIVARUM. *Dub.* The oil of the olive.

Syn. Huile d'Olive (F.) Olivenöl (G.) Olio d'Ulive (I.) Azeite (S.)

¹ *Med. Reports on the Effects of Tobacco, &c.*

² *Practical Synopsis, &c.* 229.

³ *Materia Medica*, ii. 437.

⁴ *Ελαια αγραία* Dioscoridis.

The olive tree is a native of the south of Europe and the north of Africa; but is cultivated in great abundance in France, Spain, and Italy. It has been cultivated in the open air in England, but its fruit has never been ripened.¹ It grows upon the most rocky soil, seldom exceeds twenty feet in height; and has a solid, upright stem, covered with a gray bark, and very branching: the leaves are evergreen, opposite, spreading, nearly sessile, stiff, lanceolate, from two to three inches long, and half an inch broad in the middle, with the margin a little turned back; of a full green colour, smooth and even on the upper surface, and white or hoary below. The flowers are in opposite axillary clusters, half the length of the leaves, on short flower stalks, with small, concave, obtuse, hoary bractes: the calyx is deciduous, four-cleft, and regular: the corolla white, four-parted, regular, spreading, with ovate, obtuse, obscurely three-nerved segments; the stamens are shorter than the corolla, divaricated, supporting large pale yellow elliptical anthers: the stigma bipartite on an erect style, rising from a roundish superior germen: the fruit is a smooth, oval plum or *drupe*, about three-fourths of an inch in length, and half an inch in diameter; of a deep violet colour when ripe, whitish and fleshy within, bitter and nauseous, but replete with a bland oil²; and covering an osseous, oblong, pointed, rough nut.

There are several varieties of the olive tree, of which the variety γ or *longifolia* of Willdenow is most esteemed, as affording the best oil. The mode of obtaining the oil from the ripe fruit was known very early in Egypt; and it is chiefly for this purpose that the tree is now cultivated in Spain, Provence, and Italy. To procure the oil, the ripe fruit is gathered in November, and immediately bruised in a mill, the stones of which are set so wide as not to crush the nut. The pulp is then subjected to the press in bags made of rushes, and by means of a gentle pressure the best oil, which is called virgin oil, flows first: a second sort is got by breaking the marc, moistening it with warm water, and returning it to the press; and lastly, a very inferior kind is obtained, either by boiling the magma, or by breaking, moistening, and fermenting it in large cisterns, and again submitting it to the full force of the press. When the olive is not sufficiently ripe, the recent oil has a bitterish taste, and when too ripe is fatty. After the oil is drawn, it deposits by standing a white fibrous albuminous matter; from this the clear oil is poured off, and a second deposition takes place; after which, if put into clean glass flasks, there is no further alteration.

¹ Miller's Gardener's Dictionary, ed. 1797. Art. *Olea*.

² The unripe fruit, when pickled in a strong solution of common salt, is a well-known luxury of the table.

The best oil is made in Provence; its excellence arising from the olives being carefully cleaned and garbled; but what we receive in this country comes from Lucca and Florence. Sicily also furnishes some; but it has a resinous flavour¹; and good oil has lately been brought from Samos. It is imported in jars, half-jars, and what are called half-chests, which are wooden packages containing flasks.

Qualities.—Pure olive oil is an insipid, inodorous, pale greenish yellow-coloured, viscid fluid; unctuous to the feel; inflammable, incapable of combining with water, and nearly insoluble in alcohol. It is fixed in any temperature under 600°, suffering considerable expansion, but not evaporating; and congeals at 38° of Fahrenheit. It is the lightest of the fixed oils; its specific gravity being 0.9153. When kept for a great length of time, or much exposed to the air, its components² are partially separated, the sebatic acid and water are formed, and the oil acquires a disagreeable smell and sharp taste, becomes thick, brown-coloured, and is then said to be rancid. The rancidity is hastened by heat, and by the admixture of poppy oil, with which it is often adulterated.

Medical properties and uses.—Olive oil is demulcent, relaxant, and laxative. It is used internally as a demulcent in catarrh and other pulmonary affections, diffused in water by means of mucilage; and is also given internally, in large quantities, to mitigate the action of acrid substances, as some poisons, taken into the stomach; and in cases of worms. Externally applied it is a very useful relaxant, and instead of stopping up the cutaneous exhalants, appears to promote the excretion of sweat; on which account it has been employed with great advantages in frictions in the commencement of plague. The body is ordered to be very briskly rubbed all over with a clean sponge dipped in warm olive oil: copious perspiration generally follows, and the operation must be repeated once a day until symptoms of recovery appear. Mr. Jackson relates, that the Coolies who are employed in the oil stores at Tunis smear themselves all over with oil, and are seldom afflicted with the plague when it rages in that city³; an effect which may be owing to the oil forming a coating to the skin, so that it cannot come directly in contact with the contagion. Frictions with it are useful in ascites. It is also used as an injection in gonorrhœa; as an adjunct to glysters in dysentery, and

¹ This flavour has been ascribed to the Sicilian olives being grown on dry hilly situations. *Galt's Letters from the Levant*, svo. p. 129.

² Vide *Expressed Oils*.

³ *Reflections on the Commerce of the Mediterranean*, p. 64.

⁴ Lord Bacon, speaking of Inunction, says, — "Ante omnia igitur usum olei vel

intestinal abrasions, and extensively in pharmacy, in the composition of ointments, cerates, and plasters.

The dose of olive oil is from f3j to f3j, triturated with mucilage, or mixed with water by means of a few drops of solution of potash. In cases of poisons or of worms, as much may be given as the stomach can bear.

ONISCUS. *Syst. Nat. Gmelin. v. 3009.*

Cl. 5. Ord. 7. Insecta Aptera.

G. 272. Jaw truncated, toothed. Lip bifid. Palpi unequal. Feelers bristly. Body oval. Feet fourteen.

Sp. 14. *O. asellus*.² Slaters.

Officinal. MILLEPEDÆ; SPIRITUS VINI VAPORE ENECATÆ. *Dub.*
Slaters killed by the vapour of spirit of wine.

Syn. Cloporte (F.) Kellerwürmer (G.)

These insects are found on roofs of houses, old walls, and under stones; they are rather more than half an inch in length, whitish on the belly, with seven pairs of legs, each terminated by a sharp horny claw. The head is somewhat pyramidal, and furnished with two articulated feelers; and the whole of the animal on the upper part is guarded by a callous brownish livid-coloured jointed armour, consisting of fourteen semicircular scales, within which the insect rolls itself like a ball when touched. Like some other insects it casts the skin, and carries the young in valvular follicles under the abdomen. Slaters are prepared by hanging them inclosed in a canvas bag, in the steam of hot alcohol, till they are killed.

Qualities. — Prepared slaters have a fetid odour, and a sweetish nauseous taste; on analysis they furnish an alkaliescent fluid and an inert oil.

Medical properties and uses. — These insects were formerly regarded as expectorant, and diuretic; and used in humoral asthma, dropsy, jaundice, and a long list of diseases. The retention of them in the list of materia medica exhibits the remains of a barbarous practice, which the good sense of modern practitioners should altogether explode. Their value as a medicine was justly estimated by professor Alston, when he observed, "Upon the whole there is reason to think Millepedarum 3j is good for nothing; and ʒls not much worth."

OPIUM. See *Papaver*.

OPOPONAX. See *Pastinaca*.

ORIGANUM. *Spec. Plant. Wild. iii. 132.*

Cl. 14. Ord. 1. Didynamia Gymnospermia. *Nat. Ord. Verticillatæ Linn. Labiatæ Juss.*

G. 1116. Strobile four-cornered, spiked, collecting the calyces. *Co-*

olivorum vel amygdali dulcis, ad cutem ab extra unguendum, ad longevitatem conducere existimamus. *Opera*, fol. 1665. p. 536.

¹ *Oniscus* Discoridis.

² *Lectures on Mat. Med. ii. 496.*

rolla with the upper lip erect and flat, the under three-parted, with the segments equal.

Species 10. *O. vulgare*.¹ Common Marjoram. *Med. Bot.* 2d. ed. 344. t. 123. *Smith Flor. Brit.* 639. *Engl. Bot.* 1143.

Species 15. *O. Majorana*. Sweet Marjoram. *Med. Bot.* 2d edit. 345. t. 124.

1. ORIGANUM VULGARE.

Officinal. ORIGANUM. *Lond.* Common Marjoram leaves.

Syn. Oriang (F.) Dort, Wohlgenuth (G.) Origano (I.) Origano Sylvestre (S.)

This plant is indigenous and perennial, growing on dry chalky and gravelly hills, flowering from July to September. The root is creeping and fibrous, sending up erect, branching, trichotomous, tetragonous stems, about eighteen inches in height, downy, and of a purplish hue. The leaves are ovate, entire, somewhat hairy, ciliated, punctured, and of a deep yellowish green colour. The flowers are in terminal panicles, of a pink-purple or rose colour, and furnished with ovate, sessile, brownish-red bractes. The calyx is tubular, toothed; the segments being nearly equal: the corolla is funnel-shaped, with the upper lip bifid and obtuse, and the under trifid, blunt, and spreading. The filaments are furnished with double anthers, and the style is filiform, with a bifid reflected stigma.

Qualities. — The odour is agreeable and aromatic, and the taste warm and pungent, much resembling thyme. In distillation with water it affords a very acrid penetrating volatile oil, on which its qualities depend.

Medical properties and uses. — Common marjoram is regarded as tonic, stomachic, and emmenagogue. It was formerly used in debilities of the stomach; but is now neglected. The dose is from grs. x. to ʒj, in powder.

Officinal preparation. *Oleum Origani.* L.

2. ORIGANUM MAJORANA.²

Officinal. ORIGANI MARJORANÆ HERBA. *Edin.* MAJORANA; HERBA. *Dub.* Sweet Marjoram.

Syn. Marjolaine (F.) Majoran (G.) Maggiorana (I.) Origano (S.)

This is an annual plant, a native of Portugal and Syria; but cultivated in our gardens for culinary and medicinal purposes, and flowering in July and August. The root is long, brown, and fibrous; the stems numerous, woody, branching, and rising a foot and a half in height. The leaves are downy, entire, ovate, petiolate, and of a pale green colour. The flowers are small, white, appearing successively among the bractes, which are numerous, and form roundish, compact, terminal spikes. The calyx is tubular, five-toothed, with the teeth acute: the corolla funnel-shaped and bilabiate; the upper lip erect and roundish; the lower cut into three pointed segments.

¹ *Σαμψύρον* Dioscoridis.

² *Ορίγανος* Dioscoridis.

It is cut for medicinal use when it begins to flower in July.

Qualities.—The odour is pleasant, and the taste moderately warm, bitterish, and aromatic. Both alcohol and water extract the virtues of sweet marjoram; and in distillation with water it yields a large portion of volatile oil, which, on being long kept, becomes solid.

Medical properties and uses.—Sweet marjoram is tonic, and was formerly regarded as possessing errhine powers. It is scarcely ever used except as a culinary herb, or as an adjunct to cephalic snuffs, to which, however, it adds no efficacy.

OSSA. Bones. *Edin.*

Syn. Des Os (*F.*) Knochen (*G.*) Ossi (*I.*) Huesos (*S.*)

The bones of animals are composed of earthy salts, gelatin, albumen, and oil. According to the analysis of Fourcroy and Vauquelin, the components of ox bones are, in 100 parts, 51 of animal matter, 37.7 of phosphate of lime, 10 of carbonate of lime, and 1.3 of phosphate of magnesia. Besides these M. Hatchett detected sulphate of lime, and Berzelius some fluuate of lime in bones.

OSTREA. *Syst. Nat. Gmelin. vi. 3315.*

Cl. 6. Ord. 3. Vermes Testacea.

G. 313. Animal Tethys. Shell bivalve; the valves unequal, and somewhat eared. *Hinge* toothless, but furnished with an ovate hollow cavity, with lateral transverse furrows. *Vulva*, or anus, none.

Species 105. O. edulus. The common Oyster. *Pennant's British Zoology, iv. 102. t. 62.*

Officinal. TESTÆ. Lond. The shells.

Syn. Ecaïlles des Huitres (*F.*) Austerschaalen (*G.*) Conchiglia d'Ostrica (*I.*) Cascara (*S.*)

This well-known shell-fish inhabits the European and Indian oceans throughout; and is particularly plentiful on the British coasts, which were early famed for producing the best oysters to supply the stews of ancient Rome, in the most luxurious period of its history.¹ They are naturally attached to shelving rocks; but for the facility of always obtaining them for the purposes of aliment, they are generally laid down near the shore. They are hermaphrodite, and throw out a spat in spring which gradually enlarges to a perfect oyster. The nature of the shell in some degree, and the taste and goodness of the fish, depend on the soil of the bed; they are tender and friable on a calcareous bottom, thick and solid on rocks, more glutinous on marle, and oily and luscious on a slimy bed. The green colour of those fed in pits on the coast of Holland has been supposed to be owing to copper; but it arises from a species of

¹ Sergius Ovata was the inventor of stews for oysters among the Romans. *Pliny, lib. xiv. cap. 54.*

conferva which covers these stagnant pools.¹ The best oysters on the British shores are found at Purfleet, the worst near Liverpool. The oyster, when good, is very digestible and nutritious, particularly when eaten raw; and forms an excellent article of food for the phthisical, and convalescents. When they are sick, which is known by a black substance on the fringe or fin, or a very milky appearance of it, they are unwholesome. The shells only are officinal.

Qualities.—Oyster shells consist of alternate layers of carbonate of lime and an animal matter supposed to be coagulated albumen. When thrown into a fire, they emit a great deal of smoke; the animal matter is destroyed, and the carbonic acid dissipated in the form of gas, while pure lime remains.

Medical properties and uses.—Oyster shells are antacid; but as in their unburned state they are less so than chalk, and when burned differ in nothing from lime; their retention in the list of materia medica is unnecessary.

Officinal preparation. *Testæ præparatæ*. L.

OVIS. *Syst. Nat. Gmelin.* i. 197.

Cl. 1. Ord. 5. Mammalia Pecora.

G. 31. Horns concave, rough, inclined outwards, and spirally twisted. Cutting teeth eight in the lower jaw. Tusks none.

Species. 1. *O. Aries*. The Sheep. *Buffon Hist. Nat.* v. p. 1. t. 1, 2.

Officinal. SEVUM. *Lond.* ADEPS OVILLUS. *Edin.* SEVUM; OVILLUM. *Dub.* Mutton Suet.

Syn. Graisse de Mouton (F.) Hammeltalg (G.) Grasse duro (I.) Grassa. (S.)

The sheep is too well known to require any description. It is an inhabitant of almost every climate, and delights in dry, saline, moderately elevated and warm pastures. It is the most innocent, simple, and timid of quadrupeds: scarcely ever living beyond fourteen years of age; yet liable to many diseases. There are several natural varieties of the sheep in the British islands, the largest of which is found in Lincolnshire, and the smallest in Zetland; and the number of these is much increasing by the cross breeds which, for the improvement of the wool and flesh, are annually effected. Mutton is less dense than beef, very digestible and wholesome, and is at its greatest perfection when about five years old. It is very much improved by the castration of the animal, and is then called wether mutton. The broth made of it does not agree so well as light beef tea or veal tea, with delicate and weakened stomachs, but it forms an excellent emollient enema in cases of ulceration or abrasion of the rectum; and in that state of the bowels of in-

¹ Beckman's Observations, *Phil. Mag.* vi. 97. In Scotland, oysters laid down to feed near the salt-works on the shore, attain a large size and a great richness of flavour: they are called Pandoors, and are much esteemed.

² Περίκαρον *Aristot. Hist. Animal.* v. cap. 11.

fants which occasions green stools and aphthæ.¹ The suet, which is the officinal part of the animal, is chiefly obtained from about the kidneys and loins.

Qualities.—Suet is the most consistent of the real animal fats. It is white, has some degree of brittleness; is inodorous, and requires a temperature of 127° Fahrenheit to melt it. In other respects, it agrees with the other animal fats. (See the qualities of fat under *Sus scrofa*.)

Medical properties and uses.—Like the other fats, suet is emollient. It is sometimes boiled in milk in the proportion of 3ij of the suet to 0j of milk; and a cupful of the mixture given occasionally in chronic diarrhœa, when there is much acrimony of the contents of the bowels; but its principal use is to give consistence to ointments and plasters.

Officinal preparation. *Sevum preparatum*. L.

OVUM. See *Phasianus*.

OXALIS.² *Spec. Plant. Willd.* ii. 772.

Cl. 10. Ord. 5. Decandria Pentagynia. Nat. ord. Gruinales Linn. Gerania Juss.

G. 918. Calyx five-leaved. Petals connected by claws. Stamens unequal, the five shorter exterior ones connected at the base.

Capsules opening at the corners, five-cornered.

*** leaves ternate, scape one-flowered.

Species 25. O. *Acetosella*. Wood-sorrel. *Med. Bot.* 2d edit. 563. t. 201. *Smith Flor. Brit.* 491. *Jacquin's Oxalis*, 114. t. 80. f. 1.

Officinal. ACETOSELLA. Lond. Wood-sorrel.

Syn. Oseille des Bucherons (F.) Sauerblee (G.) *Acetosa salvatica* (L.) *Oxalide arderilla* (S.)

This is an indigenous perennial plant, found in woods, under hedges and other shaded places, and flowering in April and May. The root is horizontal, toothed, fleshy, and of a reddish colour. The leaves are all radical, ternate like the trefoil, and petioled; with the leaflets obcordate, very entire, hairy, of a yellowish green colour, and purplish underneath. The scape or flower-stalk is furnished with two scaly bractes, placed about an inch and a half beneath the flower, which is sub-nutant, delicate, and of a flesh colour streaked with red. The calycine leaflets are oblong, oval, acute, ciliated, and purple at the tip. The corolla is bell-shaped: with the claws of the petals upright, and the borders obovate, rounded, and spreading: the filaments are somewhat connate at the base, and furnished with oblong incumbent anthers; and the styles smooth, rising from an ovate germen. The capsule is membranous, and contains two seeds in every cell. Each seed is invested with a fleshy

¹ The milk of the ewe is seldom used either as aliment or medicine. It contains more cream and less whey than cow's milk, but the butter yielded by it never acquires a proper consistence. It is made into cheese in Scotland, which is bitterish; and when old warm and biding. It resembles Parmesan cheese.

² *Oxalis*, Dioscoridis.

white aril; at first smooth and closed on every side, but at length, opening at the apex elastically, it rolls back and throws off the seed with considerable force.¹

Qualities.—This plant is inodorous, and has a pleasant acidulous taste. The expressed juice reddens vegetable blues; coagulates milk, and instantly precipitates lime from its solutions. Its active principle is superoxalate of potash, which is obtained crystallized from the expressed juice, and sold in the shops under the name of *Essential salt of lemons*.² The same salt may be formed by cautiously dropping a solution of potash into a saturated solution of the oxalic acid, obtained from sugar by the action of the nitric acid; the superoxalate precipitates as soon as the proper quantity of alkali is added.³

Medical properties and uses.—Wood-sorrel is refrigerant and antiseptic. Boiled with milk it forms a pleasant whey, which may prove a useful refrigerant in fevers, as may also the expressed juice, or the superoxalate obtained from it diluted with water: but although they are much extolled in inflammatory, bilious, and putrid cases, by the continental physicians, yet their place is well and easily supplied by lemon juice, or the citric acid, dissolved in water. The recent herb eaten as a salad, may be serviceable in scorbutic affections.

PAPAVER. *Spec. Plant. Willd.* ii. 1144.

Cl. 13. Ord. 1. Polyandria Monogynia. *Nat. ord.* Rhœadææ Linn. Papaveracæ Juss.

G. 1015. Corolla four-petalled. Calyx two-leaved. Capsule one-celled, opening by pores under the persistent stigma.

** with smooth capsules.

Sp. 5. *P. Rhœas*. Corn or Red Poppy. *Med. Bot.* 2d edit. 387. t. 139. *Smith Flora. Brit.* 567. *Eng. Bot.* 645.

Sp. 7. *P. somniferum*. White Poppy. *Med. Bot.* 2d edit. 376. t. 138. *Smith Flora. Brit.* 568.

1. PAPAVER RHŒAS.⁴

Officinal. RHŒADES PETALA. *Lond.* PAPAVER ERRATICUM; PETALA. *Dub.* Petals of the Red Poppy.

Syn. Coquelicot (*F.*) Klatschrossen (*G.*) Passavero salvatico (*L.*) Adormidera sylvestre; Amapola (*S.*)

This species of the poppy is an indigenous annual, growing in the greatest abundance in corn-fields, and waste places, and flowering in June and July. The stem rises about a foot in height, is branched, and every where furnished with stiffish

¹ *Gärtner de Fructibus*, ii. 152. t. 113. fig. 5.

² This salt is prepared on the continent by the following process: 'The juice is allowed to subside after being slightly heated, and then clarified by adding to it water, in which a small portion of fine clay is suspended. This clarified juice is next boiled till a pellicle forms on its surface, and put aside for a month to crystallize; the operation being repeated until the whole of the salt is obtained, when it is purified by a second crystallization. *Annales de Chimie*, xiv. 7. The essential salt of lemon of the shops is generally one half cream of tartar.

³ *Crell's Annals*, (trans.) i. 107.

⁴ *Peires Dioscoridis*.

horizontally spreading hairs. The leaves are sessile, pinnatifid, sometimes doubly so, serrated or cut, and generally hairy. The flowers are solitary, on slender hairy peduncles; the calyx consists of two ovate, rough, concave leaves, which fall before the petals expand; these are four, large, roundish, unequal, and spreading, of a full bright scarlet colour, and sometimes marked with a black spot at the base. The germen is ovate, smooth, with a convex, sessile, shield-like stigma, scalloped on the edge, having many purple-coloured rays; and becomes an urn-shaped capsule.*

The petals must be gathered when they begin to blow, as they very soon drop after they are fully expanded.

Qualities.—They have a faint narcotic odour, and a mucilaginous, very slightly bitter taste. They yield their colouring matter to warm water; and on this account only are used, as they cannot be said to possess any anodyne properties.

Official preparation. *Syrupus Rhocades. L. D.*

2. PAPAVER SOMNIFERUM.

Official. PAPAVERIS CAPSULÆ. OPIUM. *Lond.* PAPAVERIS SOMNIFERI CAPSULÆ. OPIUM. *Edin.* PAPAVER ALBUM; CAPSULÆ; OPIUM; SUCCUS CONCRETUS. *Dub.* Poppy capsules or heads; and Opium.

Syn. Capsules des pavots blancs; Opium (*F.*) Capi del Papavero; Oppio (*I.*) Adormideras; Opio (*S.*) Afecoon (*Arab.*) Afion (*H.*)

The somniferous or white poppy is a native of Asia; and although it is found growing wild in the southern parts of Europe, and even in England, yet, there is every reason for thinking, that its seed must have been carried to these parts. It was very early cultivated in Greece, perhaps, at first solely for the sake of its seed, which was used as food¹; and in the present age, not only on account of the opium, for which it is reared in Turkey and India, but also on account of the capsules, and of the bland oil obtained from the seeds, the poppy is extensively cultivated in most of the states of Europe.³ It is an annual plant, flowering in July, with a glaucous coloured, smooth, erect, round stem, rising to the height of five or six feet, when in a favourable situation. The leaves are large, simple, obtuse, lobed and crenated, and embracing the stem on which they are alternately placed. The flowers are large and terminal; the calyx is formed of two smooth, ovate, bifid, con-

¹ This form of capsule easily distinguishes it from *Papaver dubium*, which has a long narrow capsule, but in other respects closely resembles the corn poppy.

² Homer notices it under the name of *μῆκων*, as a garden plant; and it is said to be nourishing, by Hippocrates: the seeds are not narcotic.

In England, it has been cultivated for the purpose of obtaining opium; and a Mr. Ball, in 1796, received a premium from the Society for the Encouragement of Arts, for a specimen of British opium little inferior to the Oriental; but the project of making opium in this country has not been pursued to any useful extent. *Transactions of the Society of Arts*, xiv. 260 to 270.

cave leaves, that drop on the expanding of the petals; which are four in number, large, roundish, entire, somewhat undulated and white: the filaments are very numerous, slender, shorter than the corolla, and support erect, compressed anthers; and the germen, which is globular, is crowned with a many-rayed stigma. The capsule, which stands on a short pedicel, is globular when well grown, from three to four inches in diameter, a little flattened at the top and bottom, and crowned with the persistent stigma, the segments of which stand erect, and have an elegant appearance. The seeds are small, and very numerous.

All the parts of the poppy contain a white opaque narcotic juice; but it abounds more in the capsules: hence these are the only officinal parts of the plant, and for them chiefly is the plant cultivated in this country. They are gathered as they ripen; and as this happens at different times, there are annually three or four gatherings. They are brought to market in bags, each containing about 3000 capsules, and sold to the druggists.¹

The milky juice of the poppy in its more perfect state, which is the case in warm climates only, is extracted by incisions made in the capsules, and inspissated; and forms the opium of commerce. The plants during their growth are carefully watered and manured, the watering being more profuse as the period of flowering approaches, and until the capsules are half grown, when it is discontinued, and the collection of the opium commences. At sun-set, longitudinal incisions are made upon each half-ripe capsule, passing from below upwards, and not penetrating to the internal cavity. The night dews favour the exudation of the juice, which is collected in the morning by old women and children, who scrape it from off the wounds with a small iron scoop, and deposit the whole in an earthen pot, where it is worked by the hand in the sunshine, until it attain a considerable degree of spissitude. It is then formed into cakes, which are laid in earthen basins to be further exsiccated, when it is covered over with poppy or tobacco leaves.² Such is the mode followed in India, and according to Kämpfer's account nearly the same is practised in Persia: and when the juice is drawn in a similar manner in this country, and inspissated, it has all the characters of pure opium.

Opium is brought to this country in chests from Turkey and India. The *Turkey opium* is in flat pieces, covered with leaves, and the reddish capsules of some species of rumex, which is considered an indication of its goodness, as the inferior kinds of opium have none of these capsules adhering to them. Tur-

¹ The London market is chiefly supplied from Mitcham in Surry. The average price of each bag containing 3000 capsules, is about 4*l.* 10*s.*—*Stevenson's Survey*, 382.

² *Med. Observ. and Inquiries*, v. 317.

key opium generally contains about one-fourth part of impurities. *East Indian opium* is in round masses, covered with successive layers of leaves, to the thickness nearly of $\frac{1}{4}$ th of an inch. Mr. Kerr relates, that at Bahar it is frequently adulterated with cow-dung, the extract of the poppy procured by boiling, and various other substances. In Malava it is mixed with oil of sesamum, which is often one half of the mass: ashes and the dried leaves of the plant are also used.

Opium is regarded as bad when it is either very soft or friable, of an intensely black colour, or mixed with many impurities. A weak or empyreumatic odour, sweetish taste, or the power of marking, when drawn across paper, a brown continuous streak, are also symptoms of inferior opium.

Qualities. — 1. *The dried capsule* of the poppy is inodorous, and nearly insipid, a slight degree of bitterness only being perceptible when it is long chewed. Water by coction extracts its virtues; and when the decoction is evaporated, an extract is obtained, with properties similar to opium, but less powerful.

2. *Turkey opium* has a peculiar, strong, heavy, narcotic, odour, and a bitter taste, which is accompanied with a sensation of acrid heat, or biting on the tongue and lips, if the opium be well chewed. Its colour, when good, is a reddish brown, or fawn colour, its texture compact and uniform. When soft, it is tenacious; but when long exposed to the air, it becomes hard, breaks with an uniform shining fracture, is pulverulent, and affords a yellowish powder. It is inflammable, and partially soluble in water, vinegar, lemon juice, wine, alcohol, and ether. By long boiling in water under exposure to the air, its narcotic powers are impaired; yet nothing rises with water, when it is distilled with that fluid.* When carefully triturated with hot water, about five parts in twelve of the opium are dissolved and retained in solution, nearly six parts are simply suspended, and rather more than one part remains perfectly insoluble, of a viscid, plastic nature, somewhat resembling the gluten of wheat, but of a dark colour. Bucholz regarded this as caoutchouc; according to Proust it contains wax; and Gren supposed it to be analogous to gluten. By digesting alcohol on this substance I found that it dissolved a small portion of it, acquired a reddish yellow colour and became milky when added to water. Sulphuric ether digested on it, broke it down, and dissolved a portion of it, forming a yellowish tincture, which when evaporated on water left resin, a bitter extractive, and some acicular crystals of that salt which Derosne supposed to be the narcotic principle. The insoluble part, after the action of the ether, was subjected to a set of comparative experiments with the gluten of wheat,

* Beaumé, however, asserts that the odorous part of the opium is an oil.

when it afforded similar results with the majority of the tests employed. Hence this part of Turkey opium appears to be a modification of gluten combined with resin, extractive, and a peculiar salt.

3. *East Indian opium* has a strong empyreumatic smell, and less of the peculiar narcotic heavy odour of the Turkey opium; the taste is more bitter, and equally nauseous, but it has less acrimony: it agrees with the Turkey opium in its other sensible qualities, except that its colour is blacker, its texture less tenacious; and when triturated with water no insoluble plastic residuum is left, but it is altogether taken up; eight parts in twelve being dissolved, and the remainder suspended in the fluid.

The aqueous solutions of both kinds of opium are transparent when filtered, that of the East Indian having the deepest brown colour; both redden litmus paper; neither is decomposed by alcohol, but both are precipitated by the carbonates of potass and of soda, and by pure ammonia; precipitates are also formed by solutions of the muriate and nitrate of mercury, the acetate and super-acetate of lead, the nitrate of silver, and the sulphates of copper, of zinc, and of iron. They are also precipitated by infusion of galls; the precipitate, as doctor Duncan justly observes, resembling more that produced by cinchonin, than that by gelatine.¹ The solution of acetate of barytes does not alter the solutions of Turkey opium, but produces a copious precipitate with those of the East Indian; oxalic acid precipitates both, but the latter more copiously. From these experiments opium appears to contain resin, gum, bitter extractive, a peculiar crystallizable salt, and sulphate of lime, which appears to be very abundant in the East Indian opium: the Turkish contains besides, a species of gluten, and perhaps caoutchouc.

When ether is used as a menstruum for opium, and the resin and extractive which it takes up are separated by evaporating the tincture on the surface of water, the pellicle of resin deposited is nearly insipid, while the extractive dissolved in the water has an intensely bitter taste: from this fact, and the circumstance already mentioned of opium becoming inert when boiled in water, we might venture to conclude that the narcotic principle resides in the extractive. Derosne in 1804, asserted that the activity of opium depends on a peculiar salt. He evaporated a watery infusion of opium to the consistence of syrup, and digested the gritty precipitate formed by this evaporation in hot alcohol: as the solution cooled, a salt formed, which by repeated solutions and crystallizations was

¹ *Edinburgh New Dispensary*, 5th edit. 332.

obtained free from the resin, of a white colour, and in rectangular prisms with rhomboidal bases; these were inodorous, insipid, insoluble in cold water, but soluble in 400 parts of boiling water; soluble in 100 parts of cold, and 24 of boiling alcohol; soluble in hot ether and the volatile oils, but separating as these fluids cooled; and very soluble in all the acids. Given to dogs, it produced the effects of a strong dose of opium; but the bad effects were relieved by vinegar. In repeating the experiments of Derosne, I obtained a much greater proportion of crystals of this peculiar salt from East Indian than from Turkey opium, which I conceived to militate against his idea of its being the narcotic principle, in as much as larger doses of that variety of opium are required to produce its narcotic effect on the system. I have had no opportunities of ascertaining the power of the salt; but from Derosne's account it is not much more powerful as a narcotic than opium itself. My scepticism on this subject has been confirmed by the discovery of M. Sertuerner. The first experiments of this chemist were made public about the same time as those of Derosne: but they excited little attention until he published a second memoir in 1817. According to Sertuerner the salt of Derosne is not the narcotic principle of opium, but a combination of it with a peculiar acid which he discovered in opium, and named the *meconic*, the narcotic principle being according to him an alkaline salt, which he had obtained in a separate state. This salt has been named *morphia*. Robiquet, however, has demonstrated the fallacy of Sertuerner's opinion as far as it concerns Derosne's salt; but has confirmed his statement regarding the existence of *morphia*. To obtain it, he orders a concentrated solution of opium to be boiled for a quarter of an hour, with a small quantity of magnesia. A greyish precipitate forms, which is to be separated by filtration, washed on the filter with cold water, dried, and then digested for some time with weak spirit, in a moderate heat, in order to separate the colouring matter. The residue is now again to be separated by the filter, washed with a little cold alcohol, and then boiled in a large quantity of rectified alcohol: on filtering the solution whilst it is yet boiling, *morphia* beautifully crystallized and almost free from colour is deposited as it cools. By repeating the last part of the operation three or four times, with the residue of the previous boilings, the whole of the *morphia* is obtained. The salt thus procured is colourless and crystallized, in regular parallelopipeds. It burns without leaving any

¹ *Annales de Chimie*, lxx. 270. Derosne concludes from the effects of nitric acid and caloric on this salt, that it is composed of oxygen, hydrogen, azote, and carbon. It does not redden vegetable blues. *Ibid.* p. 279.

² *Annales de Chimie & de Phys.* tome v. p. 275.

residue; restores, like the alkalies, the colour of reddened turnsole, browns turmeric paper, and readily combines with acids forming neutral salts. It is but little soluble in water or in cold alcohol, or ether; but, is readily soluble in the two latter fluids in the boiling state; the salt being again precipitated in crystals as the solutions cool. As an alkali, it holds the next place to ammonia, having less affinity for the acids than either that salt or magnesia. Morphia being scarcely soluble in water or in the fluids of the stomach in its uncombined state, does not display in a striking manner its properties when exhibited alone; but these are very striking when it is combined with acids, particularly the acetic, or the meconic; with the latter of which it exists in opium a state of combination, as a super-meconate.

In repeating Sertuerner's experiments, I obtained from *Turkey* opium nearly three times the quantity of morphia yielded by *East Indian* opium; that from the latter was also more coloured, and in smaller crystals. Although the utmost nicety of manipulation was not attended to in these experiments, yet as both specimens were treated exactly in the same manner, the experiments are sufficient to shew the comparative richness of these varieties of the drug in this salt; and the result is certainly in favour of the opinion that the narcotic property of opium depends on this alkaline salt; and accounts for the fact which has been stated above, that much larger doses of the *East Indian* opium are required to produce its sedative effect on the system. Practitioners and physiologists in this country have not yet made any decisive experiments with morphia, to determine its effects on the animal economy; but this point has been investigated by M. M. Orfila and Majendie.* The experiments of the former being made upon dogs, they can be regarded as important only inasmuch as they confirm the opinion, that opium owes its soporific powers to this salt, and displays the comparative activity of the different combinations of the salt. Of the saline compounds he found the acetate the most powerful; but a solution of morphia in olive oil acts with still greater intensity, and with more than double the effect of the aqueous extract of opium. The experiments of M. Majendie being made on the human subject, are more interesting. He found that a quarter of a grain of acetate of morphia produces the most beneficial effects that can be expected from an anodyne, allaying pain and procuring sleep without, in any degree, affecting the cerebral functions. The sulphate acts in a similar manner but with less energy.

Medical properties and uses.—Poppy heads or capsules possess anodyne properties: they are chiefly employed, boiled in

Nouveau Journ. de Médecine, tom. i. p. 1. 23.

water, as fomentations to inflamed and ulcerated surfaces; and a syrup prepared with the inspissated decoction is used as an anodyne for children, and to allay the tickling cough in chronic catarrh, and phthisis.

Opium operates as a powerful and very diffusible stimulus, but its primary operation is followed by narcotic and sedative effects in a degree much greater than could be expected from the previous excitement it induces. It acts directly on the nervous system, and when taken into the stomach destroys irritability, and allays pain in the most distant parts of the body, independent of the circulation, and without inducing any change on the composition of the blood. As the principle, therefore, on which opium acts is the same over all the body, the topical application of it is capable of producing similar effects, only in a diminished degree, to those resulting from it when it is taken into the stomach. The larger the dose is, the more quickly its primary action is extended over the whole habit; and as every part is excited nearly at the same moment of time, the general consequent exhaustion must necessarily more rapidly follow than when the dose is merely sufficient to induce a degree of excitement, scarcely exceeding the powers of the system on which it operates. Hence either the stimulant or the sedative effects of opium may be rendered obvious by the nature of the dose in which it is exhibited; and the early knowledge of this truth might have saved much of the keen controversy which this subject at one period occasioned.

In moderate doses opium increases the fullness, the force and frequency of the pulse, augments the heat of the body, invigorates both the corporeal and mental functions, exhilarating even to intoxication¹: but by degrees these effects are succeeded by languor, lassitude and sleep; and in many instances headach, sickness, thirst, tremors, and other symptoms of debility, such as follow the excessive use of ardent spirits, supervene. In very large doses the primary excitement is scarcely apparent, but the pulse seems to be at once diminished, drowsiness and stupor immediately come on, and are followed by delirium, sighing, deep, and stertorous breathing, cold sweats, convulsions, apoplexy and death. The appearances on dissection are those which indicate the previous existence of violent inflammation of the stomach and bowels; but notwithstanding the

¹ The Turks call opium *afioni*; and in the *teriakihana*, or opium shops of Constantinople, they take it in graduated doses from ten grains to one hundred grains in a day. It is mixed with rich syrup and the inspissated juices of fruit to render it more palatable and less intoxicating; and is taken with a spoon, or made up into small lozenges stamped with the words *Mash Allah*, literally "The work of God." The Tartar couriers who travel great distances, and with astonishing rapidity, take nothing else to support them during their journeys. *Dallaway's Constantinople*, 4to. 78.

symptoms of apoplexy which an overdose when it proves fatal occasions, no particular appearance of an inflammatory state or fullness of the vessels of the brain are perceived.

Opium is efficaciously given in some diseases of debility, as, for instance, fevers of the typhoid kind, and intermittents; and combined with calomel to check the progress of gangrene. In typhus, when given in small doses frequently repeated, it is an useful assistant to wine and tonics in supporting the vis vitæ; and at the same time allaying irritation, and obtunding the susceptibility of those morbid impressions which occasion watchfulness, delirium, tremors, and subsultus tendinum. It is to this effect of it that Alibert and others ascribe its power, when moderately used, of rendering the human body less susceptible to different diseases.¹ Some caution, however, is required in its exhibition; for if the heat of the body be much above the natural standard, and the skin dry, opium increases these symptoms, augments thirst, and occasions restlessness. But if moisture be coming on, opium accelerates it, and tranquillity and sleep follow. Hence the propriety of Dr. Currie's advice, not to give the evening dose of opium in these fevers till very late or about one or two o'clock in the morning, when the heat is subsiding; or first to lower the temperature, and excite sensible perspiration by the effusion of cold water, or tepid sponging.² It is hurtful also where there is any disposition to local inflammation, particularly of the chest; and where there is much determination to the head. Opium very materially assists the bark in curing intermittents, and prevents it from running off by the bowels. When given at the approach of the paroxysm, it sometimes checks its attack, or shortens and renders it milder, and abates the violence of the hot stage by determining to the surface, and inducing sleep.

In acute rheumatism opium is given united with ipecacuanha or antimonials, and nitre, and always relieves when it determines to the surface. In the other phlegmasiæ³, however, it cannot with propriety be used in the early stages; but after the inflammatory action is subdued, it is useful in quieting cough, allaying pain, and procuring sleep.

In eruptive diseases, particularly small-pox, the liberal use of opium is found to be highly beneficial, when convulsions precede the appearance of the eruption, or if the accompanying fever assume the typhoid type. In malignant scarlatina, pemphigus, and several others of the exanthemata, it is equally

¹ *Nouveaux Elémens de Thérapeutique*, &c. 4 edit. tome xi. p. 76.

² *Medical Reports on the Use of cold and warm Water*, i. 290.

³ Were it allowable in this work to criticize nosological arrangements, we might justly question the propriety of placing rheumatism among the phlegmasiæ.

valuable; but its use is contra-indicated in this class of diseases when the fever is inflammatory.

In the hæmorrhagiæ it is useful when the discharge arises chiefly from an increased degree of irritability, and where the pulse, instead of being strong and full, is small, quick, and intermitting. Hence its efficacy in the floodings of weakened habits after abortions and in phthisical hæmoptysis. It has been recommended also after blood-letting, in the hæmoptysis and hæmatemesis of the later months of pregnancy.

Although opiates are hurtful at first, and check expectoration in catarrh, yet when the cough remains obstinate their good effects are undoubted; and in the contagious catarrh or influenza, an opiate at bed-time is requisite for quieting the cough in every stage of the disorder. In dysentery, also, the benefit to be derived from opium depends very much on the bowels having been previously well cleared, in which case it allays the tormina and tenesmus; and the same remark applies to diarrhœa.

But the spasmodic and convulsive diseases are those in which opium is most evidently useful. In tetanus, although it does not always succeed, even when given in the largest doses, yet, many cases have occurred in which the continued exhibition of large doses has overcome the spasm, and cured the disease; particularly when it has been judiciously combined with cathartics: often, however, very large quantities of the remedy have been taken without any sensible effect on the state of the habit, and without relieving the disorder; and the same is the case in hydrophobia, in which 180 grains of solid opium have been taken in the space of twelve hours without producing any apparent effect. It has been found beneficial in chorea; but as, in tetanus, it is necessary to precede its use by strong cathartics, or at least to give it in combination with these.¹ In epilepsy it proves useful when given in combination with musk; and it has been recommended by highly respectable authority² in eclampsia, but its efficacy in this complaint is rather doubtful. In spasmodic asthma it shortens the paroxysms, abates the violence of the cough in pertussis, when given after the primary fever subsides; and is more especially useful in pyrosis and cholera than any other medicine. Solid opium, either alone or united with camphor, is the most effectual remedy for checking obstinate vomiting proceeding from a morbid irritability of the stomach. In colic and ileus it is given in combination with laxatives, and allays the spasm and pain; nor is it less

¹ *Observations on the Administration and Utility of Purgative Medicines*, &c. 86.

² Denman. Bland.

efficacious in flatulent colic with hernia. As a remedy in lues venerea opium is still relied on by some foreign practitioners, but the idea of its anti-venereal powers has been justly exploded in this country; and it is properly regarded only as an useful adjunct to mercury in this disease: "by diminishing the sensibility of the stomach and bowels, it prevents many of those inconveniences which this mineral is apt to excite in the primæ viæ, and allows it to be more easily introduced into the system." In short, in all cases where the irritability is morbidly increased, and where it is of importance to lessen pain, and procure sleep, opium is undoubtedly the most valuable article of the materia medica.

Opium is contra-indicated in all morbid states of the body where a strong inflammatory diathesis exists; in pulmonary affections, when the cough is dry and hard, and the expectoration difficult and scanty; and if not hurtful, its use is at least doubtful in mania, in which it generally occasions restlessness instead of procuring sleep.

Externally used, opium is almost as efficacious as when it is taken into the stomach, and produces its narcotic effects without affecting the head or producing nausea. It is applied in the form of frictions, either combined with oil, or with the camphor liniment, or in the form of tincture: thus applied, it may be used in all the diseases above enumerated. We have often seen its good effects in colic; and have also witnessed its singular efficacy in symptomatic trismus, when rubbed on the jaw, and applied to the scrobiculus cordis by means of pledgets soaked in the tincture. A piece of solid opium stuffed into a carious tooth relieves the pain of tooth-ach; and introduced into the rectum, either in the solid form or dissolved in water as an enema, it affords relief in tenesmus, in painful affections of the prostate gland, and in spasmodic strictures. A weak watery solution of it also is an useful adjunct to injections in gonorrhœa, and to collyria in ophthalmia; and the vinous tincture dropped into the eye removes the suffusion which often remains in that disease after the inflammation has been subdued; and restores the tone of the diseased organ. The aqueous solution also lessens the pain of open cancer, when cloths soaked in it are laid over the sore.

Opium is exhibited either in substance as a pill, or under the form of tincture. It is necessary to avoid combining it with substances which decompose it; and therefore solutions of oxymuriate of mercury, acetate of lead, sulphates of zinc, iron, and copper; of the carbonates of alkalies, lime water, infusion of galls, and infusion of yellow cinchona bark, are incompati-

¹ Pearson's Observations, &c. on Articles used in the Cure of Lues Venerea, p. 60.

ble in prescriptions with opium. In combination, however, with vinegar, the vegetable acids and oil, its narcotic power is much increased.¹

The dose of opium varies according to the nature of the disease, and the peculiar intention for which it is ordered. The circumstance of the patient having been previously accustomed to its use must also regulate the extent of the dose; for in this case a dose, which to one unaccustomed to its use would prove fatal, may perhaps to another in the habit of taking it be scarcely sufficient to produce its narcotic effects. A quarter of a grain, or even less, frequently, repeated, is, in general, sufficient to keep up its stimulant effect; and from gr. j. to grs. ij. act as a narcotic, and produce sleep; while in tetanus, hydrophobia, and some other diseases, f3vís of laudanum have been given in twenty-six hours, without occasioning any bad effects, or even producing sleep.²

The use of opium for the purpose of exhilarating the spirits has long been used in Turkey, Syria, and China; and of late years it has been unfortunately adopted by many, particularly females, in this country. Russell³ says that in Syria, when combined with spices and aromatics, he has known it taken to the amount of ʒiij in twenty-four hours. Its habitual use cannot be too much reprobated. It impairs the digestive organs, consequently the vigour of the whole body, and destroys also gradually the mental energies. The effects of opium on those addicted to its use, says Russell, are at first obstinate costiveness, succeeded by diarrhoea and flatulence, with loss of appetite and a sottish appearance. The memories of those who

¹ The effects of vegetable acids in augmenting the efficacy of opium is explained by what has been said on the combinations of morphia. The greater power of that preparation of opium, which has been known, for upwards of a hundred years, under the name of "Black Drop," appears to depend on its containing an acetate of morphia. The following is the mode of preparing it, as published by Dr. Armstrong, (*vide Practical Illustrations of Typhus*), from the papers of the late Edward Walton, of Sunderland, one of the near relations of Edward Tonstall, of Bishop's Auckland, by whom it was originally prepared.

"Take half a pound of opium sliced; three pints of good verjuice; one and a half ounce of nutmegs; half an ounce of saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonsful of yeast. Set the whole in a warm place near the fire, six or eight weeks, then place it in the open air until it becomes a syrup; lastly decant, filter, and bottle it up, adding a little sugar to each bottle."

One drop of this preparation is calculated to be equal to three drops of the Tincture of Opium, of the London College.

There is also some reason for thinking that another preparation of opium, the *Liquor Opii Sedativus*, of Mr. Batley, of Fore-Street, London, which has been justly esteemed one of the best preparations of the drug hitherto discovered, owes its efficacy to the acetate of morphia. The mode of preparing it is as yet kept secret; but I know that the whole of the resinous part of the opium employed is separated and rejected; and I am inclined to believe that acetic acid is employed to separate the gummy part.

² Currie's Medical Reports, &c. i. 138.

³ History of Aleppo, i. 128.

take it soon fail, they become prematurely old, and then sink into the grave objects of scorn and pity.¹

When opium has been taken in an overdose, the first thing to be done for counteracting its bad effects is the exhibition of a powerful emetic; and for this purpose ℥j of sulphate of zinc, or from grs v. to grs x. of sulphate of copper dissolved in water should be immediately swallowed; and the vomiting kept up for a considerable time, and urged by irritation of the fauces. Large draughts of vinegar and water, or other acidulated fluids should afterwards be frequently taken; and the powers of the habit supported by brandy, coffee, and cordials. The sufferer should be kept awake, and, if possible, in continued gentle motion. Currie recommends for removing the drowsiness the affusion of warm water at 106° or 108°.²

Official preparations. Of the poppy capsules—*Decoctum Papaveris*. L. *Extractum Papaveris*. L. E. *Syrupus Papaveris*. L. E. D. Of Opium—*Opium purificatum*. D. *Confectio Opii*. L. E. *Extractum Opii*. L. E. D. *Pilulæ Opii*. E. *Pilulæ Saponis cum Opio*. L. *Pulvis opiatu*s. E. *Pulvis Cornu usti cum Opio*. L. *Pulvis Cretæ comp. cum Opio*. L. *Pulvis Ipecacuanæ comp.* L. E. D. *Tinctura Opii*. L. E. D. *Tinctura Camphoræ composita*. L. D. *Tinctura Opii ammoniata*. E. *Trochisci Glycyrrhizæ cum Opio*. E.

PASTINACA. *Spec. Plant. Willd.* i. 1465.

Cl. 5. *Ord.* 2. *Pentandria Digynia*. *Nat. Ord.* *Umbellatæ*.

G. 558. *Fruit* elliptical, compressed, flat. *Petals* involute, entire. *Species* 3. *P. Opoponax*. *Opoponax*, or Rough Parsnip. *Med. Bot.* 2d ed. 122. t. 47.

Official. *OPOPONACIS GUMMI RESINA*. *Lond.* *Opoponax*.

Syn. *Opoponax* (F.) *Panax gummi* (G.) *Opoponace* (L.) *Iáwesheer* (Arab.)

This species of parsnip is a perennial plant, a native of the south of Europe, flowering in July. The root is as thick as the human arm, branched, of a yellow colour, and covered with a corky bark: the stem rises about five feet in height, the thickness of a man's finger, round, striated, scariose at the base, angular at the summit, and shining: the radical leaves are simple, cordate, and crenated; those of the stem ternate and quinate, with the terminal leaflet cordate and very large: the whole are petiolate, with the petioles sheathing, and the leaflets hairy on the under surface: the umbelliferous branches are very smooth; first alternate, erect; then two, three, or four together, in a sort of whorl, two or three inches long, with one or two spatheaceous leaflets towards the middle or at

¹ Mustapha Shatoor, an opium eater in Smyrna, took daily three drachms of crude opium. The visible effects at the time were the sparkling of his eyes, and great exhilaration of spirits. He found the desire of increasing his dose growing upon him. He seemed twenty years older than he really was; his complexion was very sallow, his legs small, his gums eaten away, and the teeth laid bare to the sockets. He could not rise without first swallowing half a drachm of opium. *Phil. Trans.* xix. 289.

² *Reports on Water*, i. 80.

the top: the universal umbels have seven or eight rays, an inch long, of a yellowish green colour: both the involucre and involucels consist of from four to six very short leaflets, frequently permanent. The fruit is flat.

In the Levant, where this plant grows, the milky juice which exudes from incisions made in the roots, and dried in the sun, forms the opoponax of the shops. It is imported from Turkey and India in chests; and is sometimes in tears or drops, but more usually in irregular lumps.

Qualities.—Cpoponax has a strong disagreeable smell and a bitter acrid taste. The masses are of a reddish yellow colour, speckled with white on the outside, paler within, and frequently variegated with large white pieces. Its specific gravity is 1.622.¹ It appears to be a compound of gum, resin, starch, extractive, wax, malic acid, a trace of caoutchouc,² and essential oil. When triturated with water, about one half of it dissolves, forming an opaque milky solution, which deposits, on standing, a portion of resinous matter, and becomes yellowish. Alcohol acts feebly on it; and in distillation either with it or with water, the odour of the opoponax is very strongly communicated to the fluids, but scarcely any oil is obtained in a separate state.

Medical properties and uses.—This gum resin is regarded as antispasmodic and emmenagogue, and as such has been used in hysteria and chlorosis; but it is very seldom ordered. The dose may be from grs. x. to ʒss.

PETROLEUM. Vide *Bitumen*.

PHASIANUS. *Syst. Nat. Gmelin.* i. 737.

Cl. 2. Ord. 5. Aves, Gallinæ.

G. 101. Beak short, strong. Cheeks made smooth, with a naked skin. Feet spurred.

Species 1. P. Gallus. The Dunghill Fowl. Willd. Ornith. 154. t. 26.

Officinal. Ova. Lond. The Egg.

Syn. Œuf (F.) Hühnerier (G.) Ovo (L.) Huevo (S.)

The common domestic fowl is too well known to require any description. The country whence it originally came has not been correctly ascertained; although it is conjectured that it was brought from Persia by the Phœnicians, about 500 years before the birth of Christ.³ As an article of food it is the least stimulating of animal substances; and the broth made of the young fowl or chicken is not only the best restorative diet for the convalescent, but is also a useful diluent in cholera,

¹ Brisson.

² Pelletier, *Ann. de Chim.* lxi. p. 90.

³ *British Zoology*, i. 280. There is a variety of the common fowl, named the *Dorking Fowl*, from being generally procured at Dorking, in Surry, which has two toes behind instead of one. Another variety is found at Mozambique, and at Siam, which has the skin, bones, periosteum, and sometimes the flesh, quite black, and yet is esteemed good eating.

dysentery, and other disorders of the bowels. After they are a year old, their flesh becomes less and less digestible; but the capon and poulard retain their tenderness longer.

The egg consists of two distinct fluid matters, the white and the yolk; the membranes which inclose these, and the shell.¹

Qualities.—The *white* is inodorous and insipid, of a glary viscid nature, readily dissolving in water, coagulable by a heat of 165° Fahrenheit, and also by acids and alcohol. When coagulated it becomes sapid, and is no longer soluble either in cold or hot water. From the experiments of Dr. Bostock, it appears to be composed of water 85.0, albumen 1.2, in 100 parts; and besides shows traces of uncoagulable matter 2.7, and salts 0.3, sulphureted hydrogen gas, and benzoic acid. The *yolk* is also inodorous, but has a bland oily taste; and when agitated with water forms a milky emulsion. When boiled it becomes a granular solid, and yields by expression a yellow insipid fixed oil. It consists of four constituents, water, oil, albumen, and gelatine; on the presence of the albumen depends the hardness of the boiled yolk. The *shell* consists of carbonate of lime, phosphate of lime, and animal mucus. When it is burnt, the carbonic acid is dissipated, the animal cement destroyed, and pure lime, with phosphate of lime, obtained. As long as the yolk remains suspended in the centre of the albumen, an egg is supposed to be good; but it spoils as soon as the yolk touches the shell. The preventing the admission of air, through the pores of the shell, preserves eggs for a longer period than they otherwise could be kept good. This is effected by covering the egg with grease, or dipping it into lime water. A fresh or good egg appears semi-transparent, when placed between the eye and the light: but when it is opaque or irregularly cloudy, it must be rejected.

Medical properties and uses.—The yolks of raw eggs are gently laxative, and have been thought serviceable in jaundice and other hepatic obstructions. Beaten up with sugar and wine, they are extremely nutritive, and are consequently useful in convalescencies, and other cases of debility. In pharmaceutical operations the yolks are used for rendering oil and balsams miscible with water; and the whites for clarification.² The shells are antacid; but possess no advantages over chalk when unburned, or lime when they are burned.

PHYSETER. *Syst. Nat. Gmelin.* i. 227.

¹ Hens have been known to lay eggs when twenty years old. *Supplement to Latham*, 207.

² Owing to peculiar idiosyncrasy, the smallest portion of the white of egg cannot be eaten by some persons without occasioning pain, sickness, and an erysipetalous eruption on the skin.

Cl. 1. Ord. 7. Mammalia Cete.

G. 39. Teeth in the lower jaw, but none in the upper. Tube in the head or great front.

Species 2. *P. Macrocephalus*. Spermaceti Whale. Willough. Pisc. t. A. 1. f. 3. Phil. Trans. lx. 321. t. 9.

Official. CETACEUM. Lond. SPERMACETI. Edin. SPERMA CETI; SEVUM. Dub. Spermaceti.

Syn. Spermaceti; Cétine (F.) Wallrath (G.) Spermaceti (L.) Espermaceti (S.)

This species of whale inhabits chiefly the Southern Ocean, although some are occasionally seen in the European seas. It is a large fish, generally measuring about sixty feet in length, and thirty in circumference at the thickest part of the head, which is blunt, and about nine feet in height. It is of a blackish colour on the upper part of the body, and white on the belly. There are 46 double teeth in the lower jaw, which is shorter than the upper; and in the head is a triangular bony cavity covered by the common integuments only, and filled with an oily fluid, which, on the death of the fish, congeals into a spongy mass. The eyes are small: the pectoral fins near the angles of the mouth; and the tail forked.

The spongy oily mass is dug out from the cavity of the head, and the oil separated from it by dripping.¹ In this state it has a yellow unctuous appearance, and is brought to England in barrels. The following is the mode of purifying it in the great way: The mass is put into hair bags, and pressed between plates of iron, in a screw press, until it becomes hard and brittle. It is then broken in pieces, and thrown into boiling water, where it melts, and the impurities rising to the surface are skimmed off. After being cooled, and separated from the water, it is put into fresh water in a large boiler, and a weak ley of the potash of commerce added to it by degrees. This part of the process is thrice repeated, after which the whole is poured into coolers, where the spermaceti concretes into a white semitransparent mass, which, on being cut into small pieces, assumes the flaky aspect it has in the shops.²

Qualities. — Purified spermaceti is a white, crystallized, friable, semitransparent, unctuous substance, nearly inodorous and insipid. Its specific gravity is 9.433. It melts at 112° Fahrenheit³; and at a higher temperature evaporates, very little altered; although by repeated distillations it is partly decomposed, and a brown acid liquor obtained. Like the fixed oils it leaves, when heated, on paper, a greasy stain, and can be diffused in water by means of the yolk of egg or mucilage. It is soluble in hot alcohol, ether, and oil of turpentine, but con-

¹ An ordinary sized whale will yield upwards of twelve large barrels of crude spermaceti.

² Monthly Magazine, August 1809.

³ Rostock, Nichol. Journ. iv. 134.

cretes again as the fluids cool; and is completely soluble in the fixed oils. When boiled with alcohol, it becomes fusible at 49°, more brilliant and less unctuous, less odorous, and more soluble in alcohol.¹ Of the acids, the sulphuric only acts on it, dissolving it, and forming a dark-coloured, thick, soapy, solution, which has a faint smell of sulphur. The alkaline carbonates do not affect it, but it is partially dissolved in the pure alkalies; and with hot ammonia it forms an emulsion, which is not decomposed by cooling. Long exposure to hot air renders it rancid; but it may be again purified by being washed in a warm ley of potash.

Medical properties and uses. — Spermaceti is demulcent and emollient. It however possesses no advantages for internal use over the fixed bland oils. It is used in dysentery and irritations of the alimentary canal, and in catarrh and phthisis: but in the latter cases it is less beneficial than the bland oils; for, as these are readily united with water by means of alkalies and mucilages, the compounds formed with them are more viscid, and better adapted for smearing the fauces. Several imaginary healing virtues were formerly supposed to belong to spermaceti; on which account it was, and still is, often given to women in child bed. It is, however, when combined with water by means of the yolk of egg, a pleasant vehicle for tincture of opium, when the after-pains are troublesome. It forms a part in the composition of several ointments.

The dose is from ʒfs to ʒjfs rubbed with sugar, or in the form of emulsion.

Off. preparations. *Ceratum Cetacei*. L. *Unguentum Cetacei*. L. D. **PIMPINELLA.** *Spec. Plant. Willd.* i. 1471.

Cl. 5. *Ord.* 2. Pentandria Digynia. *Nat. ord.* Umbellatæ.

G. 562. Fruit ovate-oblong. *Petals* inflected. *Stigma* nearly globular.

Species 8. *Pimpinella Anisum*. Anise. *Med. Bot.* 2d edit. 135. t. 52.

Officinal. ANISI SEMINA. *Lond.* PIMPINELLE ANISI SEMINA.

Edin. ANISUM; SEMINA. *Dub.* Anise seeds.

Syn. Graines d'Anis (F.) Anis (G.) Anice (I.) Anis; Matalahuga (S.) Anceessoon (Arab.) Souf (H.)

This is an annual plant, a native of Egypt; but cultivated abundantly in Malta, and Spain, and in our physical herb gardens²; flowering in July. It is a delicate plant, and rises about a foot only in height. The stem is striated, smooth, jointed, and branching: the lower leaves are roundish, lobed, and toothed; but the upper ones are divided into narrow pinnated segments: the flowers are small and white, in flat terminal um-

¹ Chevreul, *Ann. de Chim. et de Phys.* tom. vii. p. 157.

² A considerable quantity is cultivated at Mitcham in Surry, chiefly for the use of the rectifiers of British spirits. *Stevenson's Survey*, 379.

belts, without involucre: the seeds are oblong, swelling, striated, and of a greenish colour.

The anise grown in this country ripens its seed sufficiently to be gathered about the middle of August. A greater quantity of seed, however, than is grown here, is annually imported from Malta and Spain. The Spanish is small, and generally preferred.

Qualities.—Anise seeds have an aromatic odour, and a sweetish, warm, grateful taste. Both alcohol and water extract their virtues; and in distillation with water they yield a yellowish volatile oil, which concretes at a temperature of 50° of Fahrenheit. An oil of a greenish colour also is obtained from anise seeds by expression; it consists of a bland fixed inodorous oil, mixed with a large portion of the proper essential oil.

Medical properties and uses.—These seeds are carminative; and are supposed to possess the power of promoting the secretion of milk. They are chiefly used in flatulencies, and in the tormina of infants. They are given in substance bruised, in doses of from grs. x to ʒij.

Official preparations. *Oleum Anisi.* L. E. D. *Spiritus Anisi.* L.

PIMENTÆ BAC'CÆ. Vide *Myrtus*.

PINUS. *Spec. Plant. Willd.* iv. 494.

Cl. 21. Ord. 8. Monœcia Monadelphia. Nat. ord. Coniferæ.

G. 1711. Male. *Calyx* four-leaved. *Corolla* none. *Stamens* many. *Anthers* naked.

Female. *Calyx* strobiles, with a two-flowered scale. *Corolla* none. *Pistil* one. Nut with a membranous wing.

* with double leaves.

Species 1. *P. sylvestris.* The Wild Pine, or Scotch Fir. *Med. Bot.* 2d ed. 1. t. 1. *Smith Flora Brit.* 1031. *Lambert, Description of the Genus Pinus,* i. t. 1.

**** with fascicled leaves.

Species 24. *P. Larix.* The Larch. *Med. Bot.* 2d edit. 7. t. 4. *Lambert,* 53. t. 35.

***** with solitary leaves, distinct at the base.

Species 27. *P. Balsamea.* Balm-of-Gilead Fir. *Lambert,* 48. t. 31.

Species 32. *P. Abies.* Norway Spruce Fir. *Med. Bot.* 2d ed. 4. t. 2. *Lambert,* 37. t. 25.

1. THE SCOTCH FIR.

Official. α. *TEREBINTHINA VULGARIS.* *Lond. Edin.* *TEREBIN'THINA VULGARIS; RESINA.* *Dub.*

β. *TEREBIN'THINE OLEUM.* *Lond.* *PINI OLEUM VOLATILE.* *Edin.*

γ. *RESINA FLAVA.* *Lond.* *RESINA PINI.* *Edin.* *RESINA ALBA.* *Dub.* *RESINA NIGRA.* *Lond.*

δ. *PIX LIQUIDA.* *Lond. Dub.* *RESINA EMPYREUMATICA, VULGO PIX LIQUIDA.* *Edin.*

Common Turpentine. Oil of Turpentine. Resin. Black Pitch. Tar.

Syn. α. Térébinthe (F.) Gemeiner Terabenthin (G.) Trementina (I. & S.)
 β. Huile, essentielle de Térébinthe (F.) Terbenthinöl (G.) Olio della Trementina (I.)
 Azeyte de Trementina (S.) γ. Resine blanche et flave (F.) Fichtenharz (G.) Ragia (I.)
 Resina (S.) δ. Goudron (F.) Theer (G.) Pece liquida (I.) Brea (S.)

The wild pine, or Scotch fir, so named from its growing wild on the Scotch mountains¹, is common in most of the northern parts of Europe. It is a straight, abruptly-branched tree, rising in a favourable soil to the height of eighty feet, covered with a rough, cracked, brownish-coloured bark, and always clothed with foliage. The leaves are short, linear, entire, pointed, concave on one side, and convex on the other, about two inches long, of a bright green colour, and issuing in pairs from a white truncated sheath: the flowers are white: the male catkin is densely spiked, bracteated, elliptical, obtuse, with numerous scales crested on the upper side, but on the under bearing a sessile anther: the female is inferior, often ternate, or three together round the branches, peduncled, smooth, of a green colour, and changes into a small, nearly pointed, conical strobile or cone, which appears tessellated and warty, and bears within each scale two winged seeds.²

This tree is at its perfection when between seventy and eighty years old; but it yields turpentine at the age of forty. Those trees which are most exposed to the sun, and have the thickest bark, afford it in the greatest abundance. The operations for procuring it commence in the month of May: the outer bark is stripped off for six inches, so as to expose the inner smooth bark, near the foot of the tree, and a wound made with a sharp tool three inches square, and an inch deep. The resinous juice soon begins to exude in transparent drops, which fall into a hole previously dug at the foot of the tree: fresh incisions are successively made till September, when the cold checks the further exudation. The warmer the weather is, the greater quantity of turpentine is obtained: and a healthy tree may thus yield from six to twelve pounds of turpentine annually, for a century of years. Part of the juice concretes in the wounds, and is called *galipot* in Provence, and *barras* in Guienne; but although it contains oil, yet it is not used for the purpose of procuring it. The proper turpentine is purified by being exposed to liquefy in the sun's rays in barrels perforated in the bottom, through which it filters.

The oil of turpentine is obtained by distilling the resin with water in a common still, when the oil is found in the receiver swimming on the water, from which it is easily separated: the

¹ When Cæsar asserted that the fir did not grow in Britain, he must have meant the P. Abies. The ancient name of the fir in Scotland was *Gius*, in Ireland *Giumhus*, and in Wales *Fymidrydh*. It prefers an arid siliceous soil.

² Essence of spruce is a fluid extract prepared by coction of the twigs; which, when fermented with sugar or molasses and water, forms spruce beer.

average proportion is 60lbs. of oil from 250lbs. of good turpentine. This process is carried on both abroad and at home; but the oil drawn in this country is always preferred.

Common resin, or *yellow resin*, is the residue of the distillation of turpentine. It receives different appellations according to the mode in which the process is carried on. When the distillation is performed without addition, and continued to dryness, the residue is called *common resin*, or *colophony*¹, but when agitated with about one-eighth of fresh water while yet fluid, it is named *yellow resin*. A similar resin is made by melting and agitating the *galipot* in water; and this is preferred in general to the former kind, on account of its greater ductility, which arises from its containing a portion of oil.

*Tar*² is the last officinal preparation from this species of fir which we have to notice. The greater part of the tar imported into Britain is brought from the Baltic, and is still prepared in nearly the same method as is described by *Dioscorides* to have been practised by the ancients. The branches of the trees are cut into billets, and piled up in large stacks which are covered with turf. Fire is then applied to the wood, and it is suffered to burn with a slow smothered flame, during which the tar is formed by the decomposition of the resinous juice, flows to the bottom, and runs out through a small channel cut for the purpose. The stacks are generally built on the slope of a hill, so that the tar is easily collected, and put into barrels; in which state it is brought to this country.

2. THE LARCH TREE.

Officinal. α. RESINA LIQUIDA, *vulgo*, TEREBINTHINA VENETA.

Edin. TEREBINTHINA VENETA; RESINA. *Dub.*

β. PINI OLEUM VOLATILE. *Edin.*

Venice Turpentine; Oil of turpentine.

Syn. Térébinthe de Venise (*F.*) Venetischer Terbenthin (*G.*) Trementina Veneta (*I.*)

There are two varieties of the larch tree, one of them a native of America, the other of the south of Europe and Siberia.³ It rises erect to the height of fifty feet, sending off slender spreading branches, which droop at their extremities. The leaves are deciduous, soft, and of a bright green colour; in tufts generally containing forty or more, springing from short, thick corrugated sheaths, and spreading like a painter's brush; linear, somewhat obtuse, and entire: the male flowers, which appear in April, are in small lateral, cylindrical catkins, with the apexes of the anthers inflated; the female are in erect ovate catkins, twice as large as the male, and in some instances purple at the

¹ The colophonia of the ancients was a liquid resin, named from *Κολοφον*, a town of Ionia in Asia Minor, whence it was brought.

² *Καύρον* Græcorum.

³ The larch tree has been cultivated in England since 1629. *Hort. Kew.*

top; the strobiles or cones are about an inch long, obtuse, and purplish at the apex, with the scales smooth on the surface, lacerated at the edges, and concealing under each two winged seeds.

The larch tree grows to very great perfection in the forests of Baye in Provence, where a very large proportion of the Venice turpentine of commerce is procured. It is obtained by boring a hole with an auger into the heart of the tree, at about two feet from the ground, and fitting into it a small pipe, through which the turpentine flows slowly into vessels placed for its reception. This process is begun in May, and continued till September; when the different quantities collected are put together, and purified by straining through cloths or hair sieves. No trees under twelve inches in diameter are tapped; but vigorous trees will yield annually seven or eight pounds for forty or fifty successive years, or during the term of their life.¹ Much of the Venice turpentine of the shops is brought from America; and is perhaps procured from a different species of fir.

The essential oil is separated from it by distillation in the same manner as from the common turpentine.

3. BALSAM OR BALM-OF-GILEAD FIR.

Officinal. TEREBINTHINA CANADENSIS. *Lond.* BALSAMUM CANADENSE.² *Dub.* Canada Turpentine. Canada Balsam.

Syn. Kanadischer balsam (G.)

This tree is a native of North America, flowering in May. It is a straight elegant tree, covered with a smooth whitish-gray bark. The leaves are in double rows like a comb, short, and linear, but broader than the former two species, and less pointed; of a dark green colour on the upper surface, marked with whitish lines underneath, and fragrant: the cones, which ripen in October, stand erect on the branches, are large, of a beautiful deep glossy purple colour, inclining to black; and exude a great quantity of transparent resin, which gives them a very rich, beautiful appearance.

The manner in which the Canada balsam, or fine turpentine, yielded by this tree is collected, is not well known in this country: but it is probably by simple incisions, as it exists in great quantity in vesicles between the wood and the bark. Canada

¹ Besides turpentine the larch tree exudes a species of manna, which is named Briançon manna. It is in little white concrete drops, which adhere to the leaves, and tastes sweet like new honey; but it has the flavour of turpentine, which it contains. The inner part of the tree yields also a gum similar in its properties to acacia gum, of a reddish colour, with a slight resinous taste. In Russia it is officinal, and sold, as Pallas observes, under the improper name of Orenberg gum, being obtained from the Uralian Forest. *Flora Rossica*, i. p. 2, 3.

² The Dublin college have erred in retaining this name; for, as this substance does not afford benzoic acid, it cannot be ranked as a balsam.

balsam is brought to this country in casks, each containing about one hundred weight.

4. NORWAY SPRUCE FIR.

Official. α. *ABIETIS RESINA.* *Lond.* Resin of the spruce fir.

β. *PIX ARIDA.* *Lond.* *RESINA SPONTE CONCRETA, vulgo, PIX BURGUNDICA.* *Edin.* *PIX BURGUNDICA.* *Dub.* Burgundy pitch.

The Norway spruce fir is a native of Europe, and of the moist parts of northern Asia; flowering in April.¹ It is a lofty noble tree, rising 150 feet in height; straight, pyramidal, and covered with a reddish scaly bark. The leaves are short, thickly set upon the branches, slightly carinated on both sides, of a dusky green colour, shining on the upper surface, and often curved: the male catkins are ovate, purplish, and scattered in the axils of the leaves; the female are also purple, and generally terminal: the strobiles or cones are long, nearly cylindrical, greenish before they are ripe, but afterwards purple, and always pendent: the scales, which are arranged in eight spiral rows, have an oval shape terminating in a point, and become ragged at the edges.

The resin or *thus* of the old London Pharmacopœia exudes spontaneously from the bark of the Norway spruce fir, and concretes as it exudes. It undergoes no preparation, but is brought to us in the form of tears or small masses, packed in casks, each containing from one to two hundred weight. The greater part comes from Germany, but a small quantity of a purer description comes from France.

Burgundy pitch is obtained by making incisions through the bark so as to lay bare the wood. It concretes in the form of flakes at the incisions, which are detached by an iron instrument once a fortnight during the summer, and fresh incisions successively made. The flakes, after being detached, are put into large boilers with a sufficient quantity of water, melted, and then strained through coarse cloths under a press. The greatest quantity is collected in the neighbourhood of Neufchatel, whence it is brought to this country packed in casks. A factitious sort is made in England, and found in the shops under the title of *common Burgundy pitch*. It may be distinguished by its friability, want of viscosity, and unctuousity, and the odour which characterizes the genuine sort.

Qualities. — *TURPENTINES.* Although these are produced from different species of the pine tribe, and one sort from the *Pistacia Terebinthus*, yet all of them possess the same general and chemical properties. They have a peculiar somewhat

¹ This species of fir is cultivated in Britain, but it does not appear to have been introduced before 1739.

aromatic odour, and a warm, pungent, bitterish taste; are semifluid, tenacious, translucent, combine readily with fixed oils, and are inflammable, burning with a white flame and much smoke. Alcohol and ether dissolve them entirely, leaving the impurities; but water takes up only their flavour. When distilled with water a volatile oil comes over, and resin remains in the retort; the turpentines being compounds of these two substances. But each sort of turpentine has characteristic qualities which require to be noticed: 1. *Common turpentine* has a strong somewhat fragrant odour, and a bitter disagreeable taste; its consistence is greater than that of honey; its colour whitish, and it is more opaque than the other sorts. 2. *Venice turpentine* is more fluid, having the consistence of new honey, a yellowish colour, and is less unpleasant to the smell and taste than the common. 3. *Canadian balsam* (or more correctly *turpentine*) has a strong not disagreeable odour, and a bitterish taste; is transparent, whitish, and has the consistence of Copaiva balsam. 4. *Chian or Cyprus turpentine* (see *Pistacia*) is very fragrant, but almost insipid, nearly transparent, thick, tenacious, and of a whitish colour.

Oil of Turpentine has a strong, penetrating, peculiar odour, and a hot, pungent, bitterish taste. It is perfectly limpid and colourless: extremely light, volatile, and inflammable; and dissolves completely in six parts of sulphuric ether; but although hot alcohol readily dissolves it, yet it again separates in drops as the spirit cools, and is very sparingly soluble in the cold in the strongest alcohol. In all other respects it agrees with the other essential volatile oils. A stream of oxymuriatic gas passed through it converts it into a yellow resin.

Tar has a strong odour familiar to every body; a resinous, subacid, bitterish taste; and a coarse thick consistence, with a deep brown colour approaching to blackness, derived from the charring of the wood during its formation. It consists principally of empyreumatic oil, resin, and acetic acid; is partially soluble in water; and inspissated by boiling into pitch.

Yellow and White resin are varieties of the same substance. They are nearly inodorous when cold, but heated emit a slight terebinthinate odour. Their taste is slightly acrid and bitterish; and the colour a dull whitish yellow, or a greenish yellow. The mass of resin is semipellucid, brittle, breaks with a true vitreous fracture, and adheres moderately to the fingers. Its specific gravity is 1.0742. It melts when heated, then inflames, and burns with a yellow flame giving out much smoke. It is insoluble in water, but entirely soluble in alcohol, ether, the fixed oils, and the alkalies. The acids also dissolve resin, and convert it into artificial tannin; with the exception of the

acetic acid, which only dissolves it. When sulphuric acid is employed, charcoal, in the proportion of 43 per cent. of the resin acted on, is produced.¹ The resin of the Norway spruce possesses nearly the same properties. It is solid, brittle, in tears, of a brownish yellow colour on the outside, and internally white; and emits a very agreeable odour when burning.

Burgundy pitch has a terebinthinate odour and taste, is brittle, opaque, and of a light yellow, or reddish-brown colour. It softens moderately in the heat of the hand, appears unctuous, and has a considerable degree of tenacity.

Medical properties and uses. The *turpentine*s and their *essential oil* are stimulant, cathartic, diuretic, and anthelmintic; and externally rubefacient. Of those which I have described, the Venice and Canada turpentine are more generally employed for internal purposes; the common turpentine proving offensive to most stomachs, and the Chian not being easily procured. The ancients were well acquainted with the medicinal properties of turpentine²; and, besides the diseases for which they are prescribed by the moderns, gave them liberally in coughs and all pulmonary affections. Turpentine seems to derive their virtues from the oil they contain. When swallowed, they produce a sensation of warmth in the stomach, increasing the quickness and force of the pulse; and if the dose be large, some degree of nausea is excited, with slight vertigo, and soon a copious discharge from the bowels; but if small, they act chiefly upon the kidneys. The cathartic operation of large doses of the oil, in particular, seems to counteract the determination to the kidneys, which smaller doses produce; for in doses of even f3x and f3xij, no other effect on the urinary organs is perceived than the violet smell of the urine.³ The odour of violets is produced by the oil, even when it is not taken into the stomach, or rubbed upon the skin; for if a quantity of oil of turpentine be poured on a table in a room, this odour will be perceived in the urine of any one who remains in the room for half an hour, or even a shorter time. Turpentine is chiefly prescribed in gleet, leucorrhœa, mucous obstructions of the urinary passages, and calculous affections; but in the latter cases their stimulant operation on the kidneys requires that they be given with caution. The oil is regarded as a useful remedy in lumbago, sciatica, and some other varieties of chronic rheumatism, particularly when combined with the cinch on a bark; and it has lately been very successfully given in unusually large doses for the expulsion

¹ Hatchett, *Phil. Trans.* 1806.

² *Dioscor.* lib. i. cap. 91. p. 50.

³ *Transactions of the London Medical Society*, i. part 1. 212. 227.

of the tape-worm. It differs in its action from the other remedies which have been employed against tape-worm, by killing the worm before it throws it out; and thence promises to be more permanently useful.* As local stimulants, turpentine and the oil have been efficaciously exhibited in the form of enema, in cases of colic, obstinate costiveness, and ascarides. The oil is useful when dropped into the ear in deafness from defect of wax; and is an excellent addition to embrocations in acute rheumatism, bruises, and paralysis of the extremities. As a discutient it is applied to indolent tumours, and is a useful primary application to burns.

Turpentine is given in doses of grs. x to 3j, either made into pills with powdered liquorice root, or diffused in water by means of almonds, mucilage, or yolk of egg. The dose of the oil may be $\text{m} \times$ to 3j, to produce its diuretic effect; but for the expulsion of tænia it is necessary to give from f3ss to f3ij, repeated every eight hours till the worm is thrown out. In these large doses it is more easily taken when exhibited uncombined.

Tar is stimulant, diuretic, and sudorific; and externally detergent. For its internal use see *Aqua Picis liquidæ* among the Preparations. As an external application it has been found beneficial in porrigo scutulata, foul ulcers, and some other cutaneous diseases.

The resins and Burgundy pitch are adapted for external use only; the former entering into the composition of some ointments and plasters; the latter being used as a rubefacient plaster. It excites some degree of inflammation, and a serous exudation from the part over which it is applied, without raising the cuticle. It is used in cases of catarrh, pertussis and dyspnoea; and seems to be chiefly serviceable from the length of time its action can be continued.

Officinal preparations. Of turpentine—*Oleum Terebinthinæ*. D. Of the oil—*Linimentum Terebinthinæ*. L. Of yellow resin—*Emplast. Resinæ*. L. E. D. *Ceratum Resinæ*. L. E. Of Burgundy pitch.—*Emplast. Picis. comp.* L. E. Of tar—*Aqua Picis liquidæ*. D. *Unguentum Picis liquidæ*. D.

PIPER. *Spec. Plant. Willd.* i. 159.

Cl. 2. Ord. 3. Diandria Trigynia. *Nat. ord.* Piperitæ Lin. Urticæ Juss.

G. 74. Calyx O. Corolla O. Berry one-seeded.

Sp. 1. *P. nigrum*. Black Pepper. *Med. Bot.* 2d ed. 721. t. 246.

Melago codi. *Rheede Hort. Malabar.* vii. 23. t. 12. Marsden. p. 105.

Sp. 12. *P. longum*. Long Pepper. *Med. Bot.* 2d ed. 724. t. 247.

Cattu-tirpali. *Rheede Hort. Malabar.* vii. 27. t. 14.

* In all the cases of the expulsion of tænia by oil of turpentine, the ejected worm has generally had a livid hue, without any appearance of animation.

I. PIPER NIGRUM.

Officinal. PIPER NIGRI BACCÆ *Lond.* PIPERIS NIGRI FRUCTUS. *Edin.* PIPER NIGRUM; BACCÆ SEMEN. *Dub.* Black Pepper.

Syn. Poivre (*F.*) Schwarzin Pfeffer (*G.*) Pepe nero (*I.*) Pimienta (*S.*) Falfal, filfil (*Arab.*) Mirch (*H.*) Maricha (*San.*)

This species of pepper is a native of the East Indies; and is very abundantly cultivated at Malacca, Java, and Sumatra, whence the whole of Europe is supplied. It is a climbing plant, the stem being round, smooth, jointed, and swelling towards each joint, woody, slender, branched, and from eight to twelve feet in length. The leaves are petiolate at the joints of the branches, ovate, entire, pointed, seven-nerved, and of a dark green colour: the flowers are sessile, white, small, and placed on terminal spikes; without any regular calyx or corolla: the filaments are flat, awl-shaped; and the anthers roundish: the germen is ovate, crowned with three rough stigmas: the fruit is a globular berry of a red-brown colour.

In Sumatra the pepper vines are propagated by cuttings or suckers. In growing they are supported by props called *chinkareens*, which are cuttings of *Morinda citrifolia*, or of *Erythrina*, and at the root of each of which two vines are planted. The plants are three years old before they bear fruit, and bear for eight years. The berries are four or five months in coming to maturity; are gathered as soon as any of them ripen; and then spread upon mats to dry, and trodden to separate the fruit from the stalk; when they become black, and more or less shrivelled. The vines yield two crops yearly; the first in December, the second in July. White pepper is the ripe and perfect berries, freed of their outer coat by means of a preparation of lime and mustard oil, called *chinam*, applied before it is dried. The pepper is now also cultivated to a considerable extent in India.¹

Qualities.—Black pepper has an aromatic odour, and a hot pungent taste. Its virtues are entirely extracted by ether and alcohol, and partially by water. The aqueous infusion is brown, and reddens vegetable blues; and the decoction of the ground pepper forms a precipitate with infusion of galls, which dissolves again when the fluid is heated to 120°. When the alcoholic infusion is distilled, a green, resinous, oily matter is left, which appears to be the source of the odour and taste of the pepper. The principal constituents are starch, the above oily matter, and extractive.² Ether digested on powdered pepper takes up three parts in ten; and when eva-

¹ Dr. Roxburgh began the cultivation of black pepper in the Circars in 1787. The prop trees he used were the Moochy wood tree, *Erythrina Corallodendron*. One thousand plants yield from 500 lbs. to 1000 lbs of pepper.

² Thomson's Chemistry, 4th ed. vol. iv. 266.

porated on water deposits an intensely hot, biting, yellowish resin, with the odour of the pepper, and an insipid extractive matter.

Medical properties and uses. — Black pepper is stimulant and carminative. Its use as a condiment is well known; and although in general it is not hurtful, but rather useful to those who have a weak digestion, yet, even in small quantities, it proves injurious in inflammatory habits, and to those subject to piles. As a medicine, pepper is found sometimes serviceable in checking nausea and vomiting, and removing hiccough. It is also used as a stimulant in retrocedent gout, and in palsy. The watery infusion forms a useful gargle in relaxation of the uvula.

The dose of black pepper may be from grs. x to ʒj.

Official preparation. *Unguentum Piperis nigri*. D.

2. PIPER LONGUM.

Official. *PIPERIS LONGI FRUCTUS*. Lond. Edin. *PIPER LONGUM*; *FRUCTUS*. Dub. Long Pepper.

Syn. Poivre longue (F.) Langer Pfeffer (G.) Pepe lungo (I.) Pimienta larga (S.) Darfilfel (Arab.) Pipel (H.) Tipilie (Tam.) Pipāli (San.)

This plant is a perennial, a native of Malabar and Bengal. The stems are round, smooth, branched, slender, and scandent: the leaves are commonly cordate, pointed, nerved, and of a deep green colour: the flowers are small, in dense short terminal spikes, nearly cylindrical. In other circumstances the fructification agrees with the former species. The fruit consists of very small berries or grains imbedded in a pulpy matter.

The fruit is hottest in its immature state, and is therefore gathered while green, and dried in the heat of the sun. It comes in the entire spikes, which are about one inch and a half long, and indented on the surface.

Qualities. — Long pepper has a weak aromatic odour, an intensely fiery pungent taste, and a dark grey colour. Its constituents appear to be similar to those of black pepper. Ether digested on powdered long pepper takes up two parts and a half in ten parts, and when evaporated on water deposits a resin less hot than that of black pepper, but more permanent and a smaller proportion of extractive.

Medical properties and uses. — These are in every respect the same as those of black pepper.

*PISTACIA.*¹ *Spec. Plant. Willd.* iv. 752.

Cl. 22. Ord. 5. Diœcia Pentandria. Nat. Ord. Amentaceæ Linn
Terebintaceæ Juss.

¹ Πιστάκιος Dioscoridis.

G. 1782. *Male. Calyx* five-cleft. *Corolla* 0. *Female. Calyx* three-cleft. *Corolla* 0. *Styles* three. *Drupe* one-seeded.

Species 4. *P. Terebinthus*. Chian Turpentine tree. *Med. Bot.* 2d edit. 29. t. 12. *Du Hamel Arbres*, ii. t. 87.

Species 6. *P. Lentiscus*. Mastich tree. *Med. Bot.* 2d edit. 26. t. 11. *Du Hamel Arbres*, ii. t. 136.

1. PISTACIA TEREBINTHUS.

Official. TEREBINTHINA CHIA. *Lond.* Chian Turpentine.

Syn. Térébinthe de Chio (F.) Zyprischer Terebinthin (G.)

The tree which yields the Chian turpentine is a native of Barbary and the south of Europe. It is cultivated in the islands of Chios and Cyprus, and also bears the severity of our climate; it is cultivated here as an ornamental tree, flowering in June and July; is low in stature, sending off many spreading branches, and is covered with a smooth bark: the leaves are pinnate, composed of three pair of lanceolate ovate veined, entire leaflets, with a terminal one: the male and female flowers are on different trees. The male are in an amentum, with the calyx divided into five small ovate segments; the filaments four or five in number, very short, and supporting large, brown, erect, quadrangular anthers. The female are placed on a common peduncle in alternate order; consisting of a calyx of three small squamous segments, and an ovate germen crowned with two or three styles, with reflected clubbed stigmas. The fruit is subovate, reddish, smooth, and gibbous towards the top on one side.

The turpentine is gathered chiefly in Chio by making incisions in the bark of the trunk in the month of July. It is allowed to flow upon stones placed at the bottom of the tree, and after being condensed by the cold of the night, is scraped off the following morning before sun-rise. It is then reliquefied by the sun's heat, and strained to free it from any extraneous matter, and in this state is imported into this country in casks. On account of its high price it is often mixed with common turpentine.

Qualities. — Chian turpentine has a fragrant odour, a moderately warm taste, devoid of acrimony or bitterness; and a white or very pale yellow colour: it has the consistence of thick honey, is clear, transparent, and tenacious; and in its other qualities, as well as in its medicinal properties, resembles the other turpentine. See *Pinus*.

2. PISTACIA LENTISCUS.

Official. MASTICHE.¹ *Lond.* PISTACHIE LENTISCI RESINA. *Edin.* Mastic.

Syn. Mastic (F.) Mastix (G.) Mastice (I.) Almastiga; Almaciga (S.)

The lentisk, or mastich tree, is a native of the Levant,

¹ *Ætius*; Dioscoridis.

flowering in May, and ripening its fruit in August.¹ It is a low tree, seldom exceeding twelve feet in height, and eight inches in thickness; is covered with a smooth brown bark; and towards the top sends off numerous branches: the leaves are abruptly pinnate, consisting of five or six opposite pairs of narrow ovate leaflets, of a lucid green colour on the upper, and pale on the under side, sessile on the common footstalk, which has a narrow foliaceous membrane or wing on each side running from one pair of leaflets to the other. The flowers resemble those of the former species: the fruit is a drupe, containing an ovate smooth nut, of a brownish colour when ripe.

Mastic is most abundantly obtained in the island of Chios. Incisions are made in the trunks and branches of lentisk trees from the 15th to the 20th of July, from which the mastic slowly exudes, some dropping on the ground, which is made smooth and hard as a pavement for the purpose of receiving it; and some remaining fixed on the trees, and hardening so as to require for its detachment the aid of a sharp iron chisel. It is not gathered until August, when fresh incisions are made, and a second gathering takes place about the middle of September: no more incisions are made this year, but the gathering is continued twice a week until the 19th of November.

The low trailing lentisks yield the finest mastic, and in the greatest quantity. Chios exports annually about 1508 cwts.², part of which is brought to this country packed in chests.

Qualities. — Mastic is almost inodorous, unless when rubbed or heated, when it exhales an agreeable fragrant odour. It is nearly insipid; and when chewed, at first crumbles, feeling gritty between the teeth, but by degrees becomes soft and white. Ether dissolves it entirely, but in alcohol about one fifth remains undissolved, which has, when moist, the characters of caoutchouc³, but becomes brittle when dried; and therefore appears to be a peculiar vegetable principle. In other respects it resembles the pure resins; and perhaps contains a small portion of essential oil.

Medical properties and uses. — Mastic has generally been regarded as astringent and diuretic, and ordered for the same diseases as turpentine; but its virtues, if it has any, are very trifling. The wood and leaves of the lentisk were used by the ancients in fluor albus and ulcerations of the uterus; and the

¹ It appears to have been cultivated in Britain so early as 1664. But it never attains here any degree of perfection.

² *Olivier's Travels*, (translation) ii. 90. Olivier says, a soft mastic having all the qualities of mastic, except in its consistence, which is that of turpentine, is procured by engrafting the lentisk on the Chian turpentine tree.

³ *Crell's Annals*, 1794, ii. 185. *Thomson's Chemistry*, 4th edit, vol. v. 93.

Turkish and Armenian women use the resin as a masticatory for cleaning the teeth, and giving an agreeable smell to the breath. It is employed to fill the cavities of carious teeth.

PIX ARIDA. Vide *Pinus Abies*.

PIX LIQUIDA. Vide *Pinus sylvestris*.

PLUMBUM. *Edin.* Lead.

Syn. Plomb (*F.*) Blei (*G.*) Piombo (*I.*) Plomo (*S.*) Soorb (*Pers.*) Anuk (*Arab.*) Sisa (*H.*) Ecum (*Tam.*) Sisaca (*San.*)

This is a metal of a blueish grey colour, occurring in great abundance in most countries of both hemispheres of the globe, in primitive, transition, and floetz formations. It is found, A. in its metallic state:

1. Sulphuretted.

Sp. 1. *Galena*.

Var. a. Common.

b. Compact.

2. *Blue lead ore*.

a. and combined with }
antimony.

3. *Antimonial Sulphuret*.

B. united with oxygen:

4. *Earthy lead ore*.

Var. a. Coherent.

b. Friable.

5. *Native minium*.

b. and combined with }
carbonic acid.

6. *Carbonate of lead*.

7. *Black lead ore*.

c. — with muriatic acid.

8. *Murio-carbonate of lead*.

d. — with phosphoric acid.

9. *Phosphate of lead*.

Var. a. Brown lead ore.

b. Green lead ore.

e. — with chromic acid.

10. *Chromate of lead, or Red lead of Siberia*.

f. — with sulphuric acid.

11. *Sulphate of lead*.

g. — with molybdenic acid.

12. *Molybdate of lead*.

h. — with arsenic acid.

13. *Arseniate of lead*.

Var. a. Reniform.

b. Green arseniate.

Galena is the ore from which metallic lead is commonly procured. When brought up from the mine the ore is broken in pieces, and the impurities, which are mostly iron pyrites, quartz, calcareous spar, and clay, are separated by picking and washing: it is then exposed to a strong heat in a common reverberatory furnace till the sulphur is all separated, after which the metal is brought into a state of fusion; and some spade-fuls of lime being thrown in, the scoræ which are thus rendered solid on the surface of the melted metal are raked to the side of the furnace, while the lead is run out into moulds through an aperture near the bottom; and in this state it is called *pig-lead*. It frequently contains silver, which is sepa-

rated by oxidizing the lead into litharge, and freeing the silver from what remains by cupellation.

Qualities. — Pure metallic lead is of a light blueish colour, and immediately after being melted or cut has a very considerable degree of lustre, which it quickly loses on exposure to the air. It is nearly insipid, and emits, when rubbed, a peculiar unpleasant odour. It stains the fingers and paper of a blueish colour, and has a specific gravity of 11.352, which is somewhat diminished after it is well hammered.¹ It is the softest and least elastic of the solid metals; and although its ductility be trifling, yet it is very malleable, and may be reduced into thin leaves and drawn into wire: it melts at a temperature of 594°; and at a greater heat is volatilized. Its susceptibility of oxidizement is very considerable, and is the cause of its diminished lustre when exposed to the air. According to Dr. Thomson's experiments it is capable of uniting with four doses of oxygen, and forming four distinct oxides, 100 parts of each of which contain the following proportions of lead and oxygen.³

Yellow (*protoxide*) contains of lead 91.5.—oxygen 8.5.

Yellow (*duetoxide*) - - - 90.5 - - 9.5.

Red (*tritoxide*) - - - 88. - - 12.

Brown (*peroxide*) - - - 80. - - 20.⁴

Medical properties and uses. — Lead has no action on the animal system in its pure metallic state; but when oxidized, or in combination with acids, it produces very deleterious effects. Hence metallic lead taken into the stomach may prove a poison, from its meeting with acids in the primæ viæ; and liquors which are apt to become in any degree acidulous, if kept in leaden cisterns, may, from the same cause, be productive of much danger to those who drink them. I know an instance of the officers of an East Indiaman having been nearly poisoned from drinking water which was kept in a leaden cistern, and which by the constant agitation of it, from the rolling of the ship, had oxidized the lead; and there have been instances also of plumbers being poisoned by the volatilized particles of lead which in great part form into a grey oxide. But the greater number of cases of poisoning from this metal are produced by the preparation of it we are about to describe; and therefore the mode in which lead acts on the animal system will be more properly noticed under it than in this place.

¹ Muschenbroeck.

² Irvine, *Chemical Essays*, 35.

³ Thomson's *System of Chemistry*, 4th edit. i. 274—277.

⁴ This oxide was first discovered by Proust. Mr. Murray thinks there is reason for believing it to be a subsalt. *System of Chemistry*, iii. 266.

1. SUBCARBONATE OF LEAD.

Official. PLUM'BI SUBCARBONAS. *Lond.* CARBONAS PLUMBI, *vulgo, Cerussa.* *Edin.* CERUSSA. *Subacetas Plumbi.* *Dub.* Carbonate of lead. White oxide of lead. Ceruse.¹

Syn. Plomb carbonaté (F.) Bleiweiss (G.) Cerussa (I.) Blanco de Plomo (S.) Isfeedi (Arab.) Sussida (H.) Vüllay (Tam.)

This substance, which is known in commercial language by the name of *White-lead*, appears, from the analysis of it, by several of the most expert chemists, to be a carbonate of lead.² It is prepared in the large way in the following manner:—Sheets of lead about two feet long, five inches broad, and a quarter of an inch thick, cast in a mould and not afterwards flattened, are rolled up into loose coils and placed in earthen pots which are wider at the mouth than at the bottom. Each pot is capable of holding six pints of fluid, but into it as much vinegar only is poured as will rise so high as not to wet the lead, which rests on a ledge half way down. In some manufactories, however, the pots are made to contain about a pint of vinegar only; and the lead, instead of being coiled up, is in form of a simple plate, which is laid over the mouth of the pot. The vinegar and lead being arranged, the pots are buried in fresh stable litter, where they remain for about two months, during which time the vapours of the vinegar elevated by the heat of the dung oxidize the surface of the lead, and the oxide combines with the carbonic acid gas evolved from the fermenting materials of the bed. The carbonate appears as a white, scaly, brittle matter, on the surface of the lead, and is separated “by spreading the coils upon a perforated wooden floor covered with water, and drawing them to and fro by rakes, which detaches the oxide, and causes it to sink through the water and the holes of the floor to the bottom of a vessel placed below.”³ In some places this operation is performed by merely scraping the carbonate off with a knife. It is afterwards ground in mills fitted for the purpose. It was, formerly, ground dry, and the workmen suffered very severely; but it is now ground in water, and the carbonate afterwards dried in earthen pans placed in stoves heated by means of flues. The beauty of the carbonate depends on the purity of the lead.

Qualities.—Carbonate of lead is inodorous, and nearly insipid; in the form of a heavy white powder insoluble in water, but soluble in pure potass. When exposed upon charcoal to

¹ Σαῦδος Dioscoridis.

² The various appellations given to this substance by the different Colleges, arise from the indeterminate ideas which prevail of its composition.

³ Aikin's Dictionary.

the action of the blowpipe, a button of metallic lead is produced. Its constituents, according to Berzelius, are yellow oxide of lead 83.5 and carbonic acid 16.5 in 100 parts.¹ It is often adulterated with chalk, which may be discovered by pouring distilled vinegar on the suspected carbonate, and then adding oxalic acid to the solution. The formation of a precipitate proves the presence of chalk.

Medical properties and uses. This preparation of lead is a very powerful astringent. It is used externally only, being sprinkled on inflamed and excoriated parts; and enters into the composition of some ointments.

It is from this preparation that most of the cases of poisoning from the internal use of lead occur. This often happens to painters, and to those employed in grinding whitelead, from the want of cleanliness in not washing their hands before eating, by which some of the white lead is introduced into the stomach with their food; and also from the criminal custom of putting white lead, as well as sugar of lead, into acid wines for the purpose of sweetening them, and into hollands to deprive the spirit of the colour which it acquires when long kept in the wood. The symptoms which preparations of lead produce are obstinate costiveness, pain in the stomach, and vomiting; the pulse becomes small and hard; the respiration laborious; and tremors ending in paralysis of the extremities, or death, ensue, when its operation is not counteracted by medicine. The exhibition of cathartics combined with opium or henbane, plentiful dilutions with mucilaginous liquids, the warm bath, and injecting mutton broth per anum, are the best antidotes.

When the presence of any salt of lead is suspected in a dry substance, it may be discovered by reducing it to a metallic state with the blowpipe upon charcoal; and in a liquid, by dropping into it a watery solution of sulphuretted hydrogen gas²; when it is made obvious by a dark brown precipitate, which is insoluble in tartareous acid, the salt of lead being formed into an insoluble hydrosulphuret.

Official preparations. *Plumbi Superacetat.* L. E. D. *Unguentum Cerussæ.* D.

2. SEMI-VITRIFIED OXIDE OF LEAD.

Official. PLUMBI OXYDUM SEMI-VITREUM. *Lond. Edin.* LITHARGYRUM. *Dub.* Litharge.

Syn. Litharge (F.) Bleiglätte (G.) Piombo semi-vitreo (I.) Almartago (S.)

¹ *Annales de Chim.* lxxvii, p. 83.

² To prepare this solution, put into a phial a paste made of iron filings and sulphur; then after some time add to it a small portion of sulphuric acid, and receive the gas which is produced through a bent tube connected with the phial into a flask filled with distilled water, and inverted in a basin or pneumatic trough full of water.

This oxide is prepared by the simple action of heat and air upon lead. It is generally obtained during the calcination of lead, when separating the silver with which this metal is often combined. The lead is placed in a wind furnace, on a large cupel, or hollow dish made of ashes, and kept at a red heat with the blast of a large pair of bellows directed upon its surface; a scaly yellowish white glistening oxide is soon produced, and successively formed by raking it off and exposing new surfaces till the whole of the lead is thus converted into litharge. The varying of the circumstances of the process varies the colour of the oxide: some kinds of it from having a silvery gloss are denominated litharge of silver; and others, from the colour being a reddish yellow, litharge of gold.

Qualities.—Litharge is inodorous and insipid: it is in flakes with a vitreous lustre, dissolves in many of the acids; and, according to the experiments of Dr. Thomson, 100 parts of it contain 86.9 of lead and 9.1 of oxygen, forming 96 of yellow oxide and 4 of carbonic acid, which, however, does not appear to be essential so as to constitute litharge a subcarbonate of lead. For an account of the action of this oxide on fixed oils see *Plasters*.

Medical properties and uses.—Litharge, like the other preparations of lead, is a powerful astringent. The ancients were acquainted with it. It is never given internally; and is used only for pharmaceutical purposes.

Official preparations. *Emplastrum Plumbi*. L. E. D.

3. RED OXIDE OF LEAD.¹

Official. OXIDUM PLUMBI RUBRUM. *Edin.* Red oxide of Lead.

Syn. Minium (F.) Mönige; Mennig (G.) Minio (I.) Vermillon (S.) Isrenj (Arab.) Sindar (H.) Segāpoo Sindoorum (Tam.) Sindura (San.)

This preparation is lead in the highest state of oxidizement. It is prepared in a reverberatory furnace, vaulted like a baker's oven, and having two internal walls rising from the floor of the surface, but not reaching to the roof. The coals are placed between these internal walls and the wall of the furnace, by which means the flame is drawn over the top, and reflected from the roof down upon the surface of a quantity of lead placed on the floor. The metal soon melts, and is altogether converted into a yellow oxide, or *massicot*, by successively raking off the pelli-cles which form on its surface: this is then ground in a mill, and washed to separate any metallic lead, by which it becomes of an uniform yellow colour, and, after being replaced in the furnace, is exposed to the flame while it is constantly stirred for about forty-eight hours, when it is converted into red oxide of lead.² By this process, 20 cwts. of lead produce on an ave-

¹ *ῥιμυρδόν* Dioscoridis.

² *Watson's Chemical Essays*, iii. 398. *Aikin's Dictionary*.

rage 22 cwts. of red lead, notwithstanding a portion is necessarily volatilized. To save the previous calcination, litharge is sometimes employed.

Qualities.—Red oxide of lead is inodorous and insipid; in the form of a scaly powder, very heavy, its specific gravity being 8.940¹, and of an intense red or scarlet colour, verging into orange: when heated to redness it gives out oxygen gas, and runs into a dark brown hard glass. According to Doctor Thomson's experiments, 100 parts of it contain 88 of lead, and 12 of oxygen.

Medical properties and uses.—Red lead may be applied to the same uses as litharge, but it is now rarely or never used. Its chief use is in the arts, as a pigment.

POLYGALA. *Spec. Plant. Willd.* iii. 871.

Cl. 17. *Ord.* 3. Diadelphia Octandria. *Nat. ord.* Lomentaceæ *Lin.* Pedicularæ *Juss.*

G. 1313. *Calyx* five-leaved, with two of the leaflets wing-shaped, and coloured. *Legume* obcordate, two-celled.

*** *beardless; herbaceous, with a simple stem.*

Species 67. *P. Senega.* Seneka root. *Med. Bot.* 2d ed. 452. *t.* 162. *Amæn. Acad.* iii. 124.

Officinal. SENEGÆ RADIX. *Lond.* POLYGALÆ SENEGÆ RADIX. *Edin.* SENEKA; RADIX. *Dub.* Seneka root.

Syn. Polygala de Virginie (*F.*) Senegawurzel (*G.*) Poligala Virginiana (*L.*)

This plant is a perennial native of North America, flowering in June.¹ The root is woody, branched, contorted, about half an inch thick, and covered with ash-coloured bark: it sends up several stems a foot in height, erect, slender, round, smooth, and of a dark reddish colour. The leaves are petiolate, alternate, lanceolate, acute, and pale green: the flowers are in loose terminal spikes, small, white, and papilionaceous, with the calyx divided into three narrow persistent segments: the fruit is an inversely cordate capsule, containing several small seeds.

The root is brought from Virginia in bales, each containing from two to four hundred weight.

Qualities.—Seneka root is inodorous: the taste is at first sweetish and nauseous, but after being chewed for less than a minute becomes pungent and hot, producing a very peculiar tingling sensation in the fauces. These qualities reside in the bark; which on the dried root is white within, and covered with a brownish grey, corrugated, transversely cracked cuticle: the central part is white, but woody and inert: alcohol extracts the whole of its active matter, which is precipitated from the tincture by the addition of water; and the ethereal tincture de-

¹ Muschenbroeck.

² Cultivated in England by Mr. P. Miller, in 1759.

posits a pellicle of resin, but no extractive. Hot water extracts its virtues partially only; but in a sufficient degree to exert its influence on the animal system.

Medical properties and uses. — This root is a stimulating expectorant and diuretic; and in large doses emetic and cathartic: it increases absorption, and consequently augments the natural excretions, particularly that of urine; and frequently occasions a copious ptyalism. It was introduced to the notice of physicians by Dr. Tennant, who, having discovered that it was the antidote employed by the Senagaro Indians against the bite of the rattle-snake, and reasoning from the effects of the poison, and of the remedy in removing these, was induced to try it in pneumonic affections, and found it useful. On account of its stimulant properties, however, it can be employed in these complaints, only after the resolution of the inflammation by bleeding and evacuations. It proves more directly useful in humoral asthma, chronic catarrh, and some kinds of dropsy. The extract of it combined with carbonate of ammonia has been found by Dr. Brandroth, of Liverpool, to be efficacious in some cases of lethargy; and in America the decoction given in divided doses, at short intervals, till it vomits or purges, has been employed with seeming success in croup¹: it has also been used as a stimulant gargle, in the same disease.

It may be administered either in the form of powder or decoction, combined with aromatics, opium, or camphor, which check its nauseating qualities. Madeira wine, where it can be ordered, may be used to cover the taste of the powder. The dose in substance is from grs. x to ʒj, repeated every three or four hours.

Official preparation. *Decoctum Senegæ*. L. E.

POLYGONUM. *Spec. Plant. Willd.* ii. 440.

Cl. 8. Ord. 3. Octandria Trigynia. Nat. ord. Holoraceæ Linn. Polygoneæ Juss.

G. 3. Corolla five-parted, calycine. Seed one, angular.

* * *Bistorts, with a single spike.*

*Species 3. P. Bistorta.*² Great Bistort or Snakeweed, *Med. Bot.*

2d edit. 668. t. 232. *Smith Flora Brit.* 427. *Eng. Bot.* t. 509.

Official. BISTORTA. *Lond.* POLYANI BISTORTI RADIX. *Edin.*

BISTORTA; RADIX. *Dub.* Bistort root.

Syn. Bistortt (*F.*) Natter Wurzel (*G.*) Bistorta (*L.S.*)

This plant grows in many parts of Europe, Siberia, and Japan, and is indigenous to Great Britain: found generally in

¹ *London Medical Review and Magazine*, iii. 426.

² Bistorta, quasi bis torta, twice twisted. *Alston, Mat. Med.* vol. i. 399.

moist meadows, flowering in May and June.¹ The root is perennial, woody, and tortuous: the stem rises nearly two feet in height, is foliaceous, jointed, swelling at the joints, solid, smooth, and bending a little near the top: the leaves are ovate, those next the root cordato-lanceolate; the whole are entire, waved at the edge, veined, of a fine green colour on the upper surface, and glaucous below; the radical ones are on long winged footstalks, those of the stem almost sessile, amplexicaule, and sheathing. The flowers are small, of a pale rose colour, collected into a close, oblong, terminal spike an inch and a half long; the single flowers standing on short white flower stalks which rise in pairs from membranous, withering, floral leaves. The corolla is divided into five obtuse segments, with nectareous glands at the base: the filaments are longer than the corolla, tapering, and supporting purple anthers: and the germen is triangular, of a red colour, crowned with three long styles, with small round stigmas. The seeds are three-sided, of a dark brown colour, and shining.

Qualities.—The dried root is inodorous, and has a very austere taste. Water extracts its virtues; and the decoction strikes a deep black with oxysulphate of iron.

Medical properties and uses.—The root of bistort is astringent and tonic. It is employed in hæmorrhagies, obstinate fluxes, and all diseases in which simple astringents are indicated. It has also been given in intermittents, combined with Gentian, or Acorus calamus. Externally a strong decoction of it is a useful lotion for spongy gums and ill conditioned ulcers. But it is almost discarded from modern practice.²

The dose of the powdered root is from grs. xv. to ʒj, twice or thrice a day.

PORRI RADIX. Vide *Allium Porrum*.

POTASSÆ NITRAS. Lond. NITRAS POTASSÆ, Edin. NITRUM. Dub. Nitrate of Potash. Nitre.

Syn. Nitrate de Potasse (F.) Salpetersaures kali (G.) Niro (I.) Salitre (S.) Shora (H.) Yavac Shora (San.)

This salt is well known in commerce under the name of salt-petre or nitre. It may be regarded both as a natural and artificial production, being found effloresced on the surface of the soil in some parts of Europe³, South America,

¹ It is, however, not confined to low situations, being found on the Carpathian Alps, vegetating under *Pinus magnus*, at an elevation of 4476 feet. Vide *Wahlenberg's Flora Carpatorum*.

² In Iceland the recent root of Bistort is eaten raw, or converted into bread. It may, therefore, be reasonably enquired, what effect can it have as a medicine, when prescribed in the small doses usually ordered?

³ The greatest repository of native nitre in Europe, is the Pulo of Molfetta, in the province of Puglia, in the kingdom of Naples. It is a deep cavity, formed by the

Africa¹, and very abundantly in India², whence this country is chiefly supplied; while in some countries, as in Germany and France, it is artificially produced. Nitre is prepared by art by the same means as nature employs, the artificial composts being imitations only of the natural soils where it is most abundantly formed: by giving, therefore, an account of the former mode, both will be better understood. Glauber first suggested the formation of what are termed nitre beds. In France they consist of a compost of putrefying animal and vegetable matters, such as blood, offal, excrementitious matters, and decaying leaves, with street sweepings, old mortar, chalk, and other calcareous matter; which are mixed in casual proportions, and lightly spread in long beds, covered with roofs to protect them from the weather. These are turned up occasionally, frequently moistened with putrid water, or urine; and at the end of two years or less are supposed to be fit to yield the nitre by lixiviation. The theory of this process, which is not yet completely elucidated, was not at all understood till the experiments of Thouvenel and the discovery of the composition of nitric acid by Mr. Cavendish removed much of the obscurity in which it was involved: the following is the explanation. The spontaneous decomposition of the animal and vegetable matter evolves azote, oxygen, hydrogen and carbon, which reuniting by the operation of new affinities, new compounds are formed, and among these nitric acid by the union of the azote or nitrogen from the animal substances with the oxygen from the vegetable matter: the acid thus formed is attracted partly by the calcareous earth of the beds, and partly by a portion of potash, either contained in them ready formed, or, as some have supposed, formed during the process. The presence of a certain degree of heat, and a moderate exposure to atmospheric air, are required, and that of carbonate of lime is absolutely necessary; for, besides fixing the nitric acid when formed, the affinities lime exerts to oxygen and azote favour very much their combination, and consequently the formation of the acid.

The compost when ready to be lixiviated, is first mixed with wood ashes, or with pulverized impure potash, to decompose the nitrate of lime; then put into a cask furnished with a cock at the bottom, and an inner false perforated bottom; a quantity of river water is now poured over it, and after some hours the cock is turned, and the liquor drained off, which is

falling in of several caverns. The Abbé Fortis first drew public attention to this place, at which time it was lined with a crust of nitre an inch thick, which on being scraped off was successively renewed in a few days.

¹ Near the city of Tlemsan, in the kingdom of Algiers, six ounces of nitre is extracted by simple lixiviation, from one quintal of the common mould.—*Shaw's Travels*, 228.

² The presidency of Calcutta exports annually upwards of 8000 tons of nitre.

used instead of water for a second portion of earth; and this is successively repeated till it is supposed to be sufficiently impregnated with the soluble matter of the compost. The *lixivium*, which contains chiefly nitrate of potash, and the muriates of potash and of soda, is now boiled and clarified with bullock's blood or a solution of glue; and the boiling continued, the muriates as they form being withdrawn by perforated ladles, till the liquor is so concentrated that a few drops poured on cold iron immediately crystallize: it is then, when nearly cold, poured into separate crystallizing dishes, in which after some days the salt is found deposited in a confused mass of opaque dirty white imperfect crystals, which after being broken to pieces and drained, are known under the name of rough or crude nitre.

Nitre is brought from Bengal in an impure state, but crystallized, put up in bags, each containing two Bazar mounds, or 164lbs. weight.¹ The crystallized state of this impure nitre arises from the *lixivium* of the soil having been slowly evaporated in shaded shallow pits. To purify crude nitre it is repeatedly washed with cold water, which dissolves the deliquescent muriates; and then is boiled with half its weight of water, until a pellicle forms on the surface; after which the solution is poured into leaden coolers, and stirred till it is quite cold, by which means the salt is deposited in acicular crystals.

Qualities.—Pure nitrate of potash is inodorous; and has a bitterish sharp taste, occasioning a sensation of cold both in the mouth and stomach. It is generally in white, pellucid, brittle, hexahedral prisms, terminated by two-sided summits, the specific gravity of which is 1.933. These crystals are soluble in seven parts of water at 60°, producing cold during their solution; but boiling water takes up its own weight of them. They are perfectly insoluble in strong alcohol. They are permanent in the air; melt when exposed to a moderate heat, and when cast into moulds, form *sal prunelle*. In a strong heat, oxygen gas is disengaged at first, and afterwards azotic gas; and in a continued intense heat the acid is completely expelled and decomposed, leaving behind pure potash. Nitre when mixed with inflammable substances detonates in a strong heat; and if charcoal be used, a pure subcarbonate of potash remains behind. It is likewise decomposed by the sulphuric acid when aided by heat, and in the cold by barytes. According to the analysis of Berard, 100 parts of nitrate of potash contain 51.36 nitric acid, 57.8 potash, and 48.64 of water.²

Nitrate of potash sometimes contains muriate and sulphate

¹ Each Bengal ship of 800 tons generally brings home in a period of war about 5000 bags of nitre.

² *Ann. de Chim.* t. lxxi. p. 69.

of soda, and sulphate of potash. The muriate is discovered by nitrate of silver, throwing down a precipitate, every 100 grains of which denotes $42\frac{1}{2}$ of muriate of soda. The sulphates are detected by nitrate of Barytes.*

Medical properties and uses.—Nitrate of potash is refrigerant and diuretic; and, when externally applied in solution, cooling and detergent. If taken in repeated small doses, it abates heat and thirst in diseases of increased excitement, diminishes the force and frequency of the arterial action, and increases the secretion of urine, in which the salt may be detected by chemical tests. It is efficaciously given in all inflammatory cases, active hæmorrhages, and in herpetic eruptions. Although diuretic, yet it is of little use in dropsies, and is contra-indicated in typhus and hectic fever; in the latter of which, as Dr. Percival has justly observed, it lowers the pulse at first, but afterwards raises it higher than before. A small portion of it allowed to dissolve slowly in the mouth, often removes incipient inflammatory sore throat; and hence its utility in gargles in that complaint.

It is most advantageously given dissolved in mucilaginous fluids, as almond emulsion, in moderate doses not exceeding grs. xv frequently repeated. In large doses it excites nausea; and ʒj given for a dose, which has sometimes occurred by mistake for sulphate of soda, occasions vomiting, hypercatharsis, bloody stools, convulsions, and sometimes death. Opium and aromatics are the best antidotes.

Official preparations. *Acidum nitricum*. L. E. D. *Trochisci Nitratis Potassæ*. E.

POTASSÆ SUPERTARTRAS. Lond. Vide *Supertartras Potassæ*.

POTA'SSA IMPU'RA. *Carbonas Potassæ impura*. Lond. SUB-CARBONAS POTASSÆ IMPURUS. Edin. CINERES CLAVELLATI. *Kali impurum*.² Dub. Impure Potash. Impure Sub-Carbonate of Potash. Potashes. Pearl-ashes.

Syn. Carbonate alkalinule de Potasse (F.) Koloensuares Kali; Pottasche (G.) Potassa del Commercio (I.) Mara Ooppio (Tam.)

This substance consists chiefly of subcarbonate of potash, mixed with some other salts. It is known in commerce by the name of potash; and is brought to us principally from the Baltic and America. The manipulation of the process by which it is prepared differs in different countries; but the general features of it are every where the same. The dried stems and

* Henry's *Elements of Experimental Chemistry*, 7th ed. vol. ii. p. 464.

² Of these three appellations that of the Dublin College is the least exceptionable, because it does not convey an erroneous idea of the nature of the substance, which is the case with the others. As synonyma, those of the London College are at complete variance.

branches of plants are set fire to, and reduced to ashes; which are lixiviated by pouring over them, in proper vessels, hot or cold water, so as to dissolve the alkaline matter they contain. The impregnated solution, drawn off from the ashes, is then boiled to dryness in iron boilers, and leaves behind a solid saline mass, coloured brown by a small portion of vegetable inflammable matter, and generally becomes moist. This is the *potash* of commerce. After the colouring matter is destroyed, and a portion of the water dissipated by calcination in a reverberatory furnace, it assumes a spongy texture, with a blueish or greenish colour, and is then denominated *pearl-ashes*.

Those vegetables only which grow at a distance from salt water, are employed to obtain this product. Herbaceous plants yield the largest proportion, and shrubs more than trees. It has lately been obtained in great abundance from the herbaceous part of the potatoe, cut down just as the fruit is beginning to form: 40,000lbs. of the dried stems yielding 2200lbs. of impure potash.¹ It is generally supposed that at least the greater part of the potash is contained ready formed in the vegetables; but, this is somewhat doubtful, and perhaps in living plants the base only of potash exists as an element, and is oxidized so as to form the alkali during the combustion. Such is the conjecture of Mr. Murray²; and the same may take place during the spontaneous decomposition of plants where much water is present, for potash can be obtained by the evaporation of dung-hill water.³

The pearl-ash of commerce is still a very compound mass, containing, besides the subcarbonate of potash, sand with which it is often adulterated to a great extent, sulphate of potash, muriate of potash, oxide of iron, and oxide of manganese; to the last of which, according to Scheele, it owes its blueish or greenish colour. Different parcels of pearl-ash must undoubtedly contain different quantities of potash; and hence no accurate standard of the proportion of the ingredients can be fixed. The following table drawn up by Vauquelin shows the comparative value of samples from different countries, examined by him. The quantity of each was 1152 parts.⁴

¹ *Phil. Mag.* vol. i. p. 340.

² *Murray's Chemistry*, 2d ed. ii. 193.

³ See Birch's Experiments, *Phil. Trans.* for 1780, 345.

⁴ *Annales de Chimie*, xl. 284.

Kinds of Potash.	Real Potash.	Sulphate of Potash.	Muriate of Potash.	Insoluble Residue.	Carbonic Acid and Water.
Russian potash	772	65	5	56	254=1152
American do.	857	154	20	2	119=1152
Pearl-ash	754	80	4	6	308=1152
Potash of Treves	72	165	44	24	199=1152
Dantzic potash	603	152	14	79	304=1152
Potash of Vosges	444	148	510	34	304=1152

The proportion of real alkali in any quantity of pearl-ash may be ascertained in the following manner: Pulverize 500 grains of the pearl-ash, and digest in successive portions of hot water as long as any thing is dissolved. Mix the solutions, and drop in some diluted sulphuric acid (previously prepared by mixing one part of concentrated acid with thrice its bulk of water) from a phial containing a known quantity of it, till litmus paper indicates the slightest possible excess of acid. Next heat this mixture to expel the carbonic acid; and on trying it again with the litmus paper, if it show any excess of alkali, add a few drops more of acid. Ascertain now by weighing the phial of acid how much acid has been expended in saturating the alkali, and for every 100 parts of real acid set down 121.2 of pure potash.¹

The pearl-ash of commerce is not sufficiently pure for medicinal use; and therefore it is used only for pharmaceutical purposes.

Official preparations. *Potassæ Subcarbonas*. L. E. D.

PRUNUS. *Spec. Plant. Willd.* ii. 984.

Cl. 12. Ord. 1. Icosandria Monogynia. Nat. ord. Pomaceæ Linn. Rosaceæ Juss.

G. 982. Calyx five-parted, inferior. Petals five. Nut of the drupe with prominent sutures.

Species 29. *P. domestica*.² Common Plum-tree. *Med. Bot.* 2d edit. 520. t. 187.

Official. PRUNA. Lond. PRUNI DOMESTICÆ FRUCTUS. Edin. PRUNUS GALICA; FRUCTUS. Dub. Prunes.

Syn. Prunes (F.) Pflaumen (G.) Pruno domestico o Prugna (I.) Ciruelas pasas (S.)

¹ The value of the diluted acid must be previously ascertained by adding to 100 grains of it muriate of barytes as long as any precipitate falls. This forms sulphate of barytes, which, when washed and dried at a low red heat, contains 33.3 per cent. of sulphuric acid; by which the proportion of real acid in the diluted acid may be known. *Aikin's Dictionary*, i. 263.

² *Κοκκυμυηλια* Dioscoridis.

The tree which yields this fruit is a native of Asia and Greece, although it is now completely naturalized to our climate, growing wild in coppices, and flowering in April and May. It rises about fifteen feet in height, with a moderately spreading head. The leaves are pale green, standing on short petioles, which have two glands near the base of the leaf; they are serrated, smooth, and when young convoluted and pubescent underneath: the flowers are large, on short solitary peduncles, with an erect calyx, and obovate white petals: the fruit is a superior, berried, oval drupe, swelling a little more on one side, and there-grooved; of a blue violet colour on the outside, internally consisting of a yellow fleshy sweet pulp; and containing a smooth almond-shaped nut.¹

The dried fruit, which only is officinal, is imported from the continent in chests; and that which is brought from France is regarded as the best. The recent fruit, when perfectly ripe, is pleasant to the palate, and sufficiently wholesome; but when eaten too freely it occasions flatulence, griping and diarrhoea, more readily than any other fruit.

Qualities.—Prunes are nearly inodorous, but have an agreeable, sweet, subacid taste. They contain chiefly mucus, saccharine matter, and malic acid.

Medical properties and uses.—Dried plums or prunes are gently laxative, and form a pleasant addition to purgative electuaries and decoctions. Simply boiled, they may be beneficially given to children who are habitually costive; and in fevers.

Officinal preparation. *Confectio Sennæ*. L. E. D.

PTEROCARPUS.² *Spec. Plant. Willd.* iii. 904.

Cl. 17. *Ord.* 4. Diadelphia Decandria. *Nat. ord.* Papilionaceæ.

G. 1318. *Calyx* five-toothed. *Legume* falcated, leafy, varicose, surrounded with a wing, not gaping. *Seeds* solitary.

Sp. 6. *P. santalinus*. Red Saunders tree. *Med. Bot.* 2d ed. 430. t. 156. Willdenow *Spec. Plant.* iii. 906.

2. **PTEROCARPUS SANTALINUS.**

Officinal. **PTEROCARPI LIGNUM.** *Lond.* **PTEROCARPI SANTALINI LIGNUM.** *Edin.* **SANTALUM RUBRUM LIGNUM.** *Dub.* Red Saunders wood.

Syn. Santale rouge (F.) Sandalholz (G.) Sandalo Rosso (I.) Ract Chandan (H.) Racta Chandana (San.)

This tree is a native of the mountains of India, particularly the rocky parts in the Onore district³; and of Ceylon. It is a lofty tree, with alternate branches, and a bark resembling that

¹ Martyn, in his Edition of Miller's Gardener's Dictionary, enumerates sixty varieties of the plum. The French prunes are the same as those which were formerly brought from Damascus.

² From *πτερον* a wing, and *καρπος* fruit.

³ When transplanted to low situations and a richer soil the tree degenerates; and is in all respects less esteemed. *Forbes' Oriental Mem.* 4to. vol. i. p. 508.

of the common alder. The leaves are petiolate and ternate, each simple leaf being ovate, blunt, entire, retuse, veined, smooth on the upper surface, and hoary beneath; the flowers are in axillary spikes, without bractes: the calyx is brown: the corolla papilionaceous, consisting of an erect, obcordate *vexillum*, turned back at the edges, denticulate, curled, and waved, and of a yellow colour, with red veins: yellow, spreading, denticulate *wings* waved at the edges; and an oblong *keel* a little inflated and curled at the tip: the filaments are yellow, and support globular white anthers; the germen is oblong, compressed, hirsute, with a curved style, and an obtuse stigma: the pod is pedicelled, compressed, smooth, keeled along the lower edge; and contains one round, compressed seed.

This tree, which yields the true officinal red saunders, was first detected by Kœnig in India. It is brought home in billets, which are very heavy, and sink in water.

Qualities. — Red saunders wood has an aromatic odour, and is nearly insipid. It is extremely hard, of a fine grain, and a bright garnet red colour, which deepens on exposure to the air. It yields its colouring matter, which appears to be of a resinous nature, to ether and alcohol, but not to water.¹ The alcohol tincture is red, but becomes yellow when largely diluted with spirits. Volatile oil of lavender also extracts its colouring matter; yet it is scarcely affected by oil of turpentine, which acquires a pale yellow tinge only, even when assisted by heat. Neumann first noticed this fact²; and it has been suggested that the camphor contained in the oil of lavender may give it the above property; but camphoretted oil of turpentine has no more effect than the simple oil. I find that by shaking oil of turpentine which has been digested over red saunders with a little alcohol, the slight tinge of colour it received is instantly taken up by the spirit, and the oil settles as a colourless substratum.

Red saunders has no medicinal properties, and is used only as a colouring matter.

PULEGIUM. Vide *Mentha Pulegium*.

PUNICA. *Spec. Plant. Willd.* ii. 981.

Cl. 12. *Ord.* 1. *Icosandria Monogynia.* *Nat. ord.* Pomaceæ *Linn.* *Myrtæ Juss.*

G. 980. *Calyx* five-cleft, superior. *Petals* five. *Pome* many-celled many-seeded.

Sp. 1. *P. Granatum.*³ Pomegranate tree. *Med. Bot.* 2d edit. 531. t. 190.

¹ Yet Willdenow, who received the description of the tree and its wood from Kœnig, says, "attritu humido pulchre rubrum tingens." The yielding no colouring matter to water affords an easy mode of distinguishing red saunders from Brazil wood, which was first pointed out by Dr. Lewis. *Thomson's Chem.* v. 208.

² Neumann's *Chem.* 337.

³ *Pom* Dioscoridis.

Officinal. GRANATI CORTEX. *Lond.* GRANATUM; FLORES, PERICARPII CORTEX. *Dub.* Pomegranate Bark, and flowers.

Syn. Le Grenadier (*F.*) Granatass felschale (*G.*) Pomo Granato (*I.*) Granada (*S.*) Rānā (*Arab.*) Anār (*H.*) Darim (*San.*)

The pomegranate tree is a native of the south of Europe, Asia, and Barbary; but in the West Indies, where it was introduced from Europe, the fruit is larger and better flavoured than in its native climates.¹ In its proper soil it rises twenty feet in height, sending out branches the whole length, some of which bear thorns. The leaves are opposite, about three inches long, half an inch broad in the middle, pointed at each end, and of a light lucid green colour: the flowers are terminal, three or four together: the calyx is thick, fleshy, of a fine red colour, and divided into five pointed segments: the petals are wrinkled, and of a scarlet colour: the fruit, according to Gærtner², is a pulpy, many-seeded berry, the size of an orange, crowned with the calyx, which is sharply toothed, globular, and a little flattened, and covered with a thick coriaceous rind.

The red succulent pulp, which is not officinal, is pleasantly acid³, resembling that of the orange: it is cooling, and useful for quenching thirst, and gently aperient.

Qualities. — The flowers are inodorous, and taste bitterish and astringent; and the bark of the fruit has the same sensible qualities. Water extracts the virtues of both, and the solutions strike a deep blueish black with sulphate of iron.

Medical properties and uses. — Both the parts we have described are astringent. They are given in the form of decoction in chronic and colliquative diarrhoea, and the protracted stage of dysentery. They are supposed to prove beneficial also in checking the violent sweating which accompanies hectic fever; but the chief use of the decoction is as an injection in leucorrhœa, or a gargle in sore throats, after the local inflammation is moderated. Dr. Buchanan has stated that the bark of the root of the plant has been long used by the natives of Hindostan, in tape worm: and from Celsus we find it was used by the ancients for a similar purpose.⁴ The bark and flowers are given in the form of powder, in doses of ʒss to ʒj; or, of a moderately strong decoction, fʒvj may be given every three hours.

PYRETHRI RADIX. Vide *Anthemis Pyrethrum*.

PYRUS. *Spec. Plant. Willd.* ii. 1012.

Cl. 12. *Ord.* 5. Icosandria Pentagynia. *Nat. ord.* Pomaceæ *Linn.* Rosaceæ *Juss.*

¹ It stands our winters, and even bears fruit, but without the proper flavour.

² *De Fructibus*, i. 183. t. 38. f. 1.

³ Russel says there are three varieties in Syria; one sweet, another very acid, and a third partaking of the qualities of both blended. *Nat. Hist. of Aleppo*, ii. 85.

⁴ Vide *Celsus de Medicina*, lib. iv. § xvii.

G. 992. *Calyx* five-cleft. *Petals* five. *Pome* inferior, five-celled, many-seeded.

Species 17. *P. Cydonia*. The Quince tree. *Med. Bot.* 2d ed. 505. t. 182.

Official. CYDONIA SEMINA. *Lond.* Quince Seeds.

Syn. Semen de Coignassier (F.) Quittenkörner (G.) Semé de Cotogno (I.) Simiente de Membrillo (S.) Hubusfirjul (Arab.) Bebeckeybeej (H.)

The quince tree was originally brought from Cydon¹ in Crete by the Greeks; but it has been found growing wild on the rocky shores of the Danube, and is cultivated to great perfection in England, and many other parts of Europe; flowering in May. It is a low crooked tree, with many spreading branches, and covered with a brown bark. The leaves are ovate, very entire, about $2\frac{1}{2}$ inches long, and $1\frac{1}{2}$ inch broad, of a dusky green colour on the upper surface, paler and downy beneath: the flowers are large and solitary: the calyx spreading, persistent, and villous: the petals rose-coloured or white, concave, roundish, and inserted into the calyx: the filaments are awl-shaped, purplish, and support yellow anthers: the fruit is, according to Gärtner, a berry.² Its magnitude and shape are those of a moderate-sized pear; it is of a yellow colour, downy, umbilicated; and when ripe has a pleasant odour, and a very austere, acidulous taste³: each of its cells contains from eight to fourteen ovate, angled, reddish brown, coriaceous seeds, placed erect in pairs.

Qualities.—The seeds are inodorous, and nearly insipid, having a slight bitterness only when long chewed. The inner coat contains a very considerable quantity of mucus, which can be extracted by hot water; but is not quite pure mucus, being mixed with fecula and the other soluble parts of the seeds. For its qualities and medicinal use, see *Decoctum Cydoniæ* among the Preparations.

QUASSIA.⁴ *Spec. Plant.* Willd. ii. 567.

Cl. 10. Ord. 1. Decandria Monogynia. *Nat. ord.* Gruinales Linn. Magnoliæ Juss.

G. 849. *Calyx* five-leaved. *Petals* five. Nectary five-leaved. *Drupe* five, distant, bivalve, inserted into a fleshy receptacle.

Species 2. *Q. Simaruba*. Simaruba Quassia. *Med. Bot.* 2d edit. 569. t. 203. *Trans. of the Royal Society of Edin.* ii. 73—81.

Species 3. *Q. excelsa*. Lofty Quassia. *Trans. of the Royal Society of Edin.* iii. 205—210. t. 6.

¹ Whence its Greek name *μηλία Κυδωνία* is derived.

² *De Fructibus*, ii. 45. t. 87.

³ Although the fruit of the quince is not good in its raw state, yet it affords an elegant sweetmeat, called quince marmalade, *mira cydoniarum*: and from the expressed juice an excellent and wholesome wine is prepared.

⁴ Named after Quassia, a negro slave, who discovered to Rolander the wood of the *Quassia excelsa*, which he had employed with success as a secret remedy in the malignant endemic fevers of Surinam.

1. QUASSIA SIMARUBA.

Officinal. SIMARUBÆ CORTEX. *Lond.* QUASSIÆ SIMARUBÆ CORTEX. *Edin.* SIMARUBA; CORTEX, LIGNUM. *Dub.* Simaruba Bark and Wood.

Syn. Ecorce de Simarouba (*F.*) Simarubenrinde (*G.*) Corteccia de Simaruba (*I.*)

The Simaruba quassia, or mountain damson, as it is called in Jamaica, is a native of South America, Carolina, and the West India islands, growing in sandy places. It is a tall tree with alternate branches, and a smooth gray bark, maculated with yellow spots. The leaves are pinnate, consisting of from two to nine leaflets placed alternately on short petioles, elliptical, acute, smooth, and of a deep green colour above, and whitish beneath: the flowers are male and female on the same axillary panicles: the calyx in both is monophyllous and five-toothed: the petals lanceolate, yellowish, white, and inserted into the calyx: the nectary in the male is a small scale affixed to the inner part of the base of each filament; and the same in the female, except that the scales are placed in a regular circle: the filaments in the male are the length of the corolla; and in the female are five connate germens, with five striated styles and spreading stigmas; the fruit, according to Gærtner, consists of five smooth, ovate, black, one-celled berries, on a common receptacle: and opening spontaneously when ripe.*

The officinal part of this tree is the bark of the root; and although the wood is designated by the Dublin College, yet it is quite inert. The bark is imported in long pieces, a few inches in breadth, and folded lengthwise. It comes generally from Jamaica packed in bales.

Qualities.—Simaruba bark is inodorous, and has a bitter, but not disagreeable, taste. The pieces are of a very fibrous texture, rough, scaly, warty, and of a full yellow colour in the inside when fresh. Alcohol and water take up all its active matter by simple maceration, at a temperature of 60° Fahrenheit, better than at a boiling heat. The infusion is stronger in taste than the decoction, which grows turbid and of a reddish brown colour as it cools. The infusion is not affected by sulphate of iron, and scarcely by muriate of tin.

Medical properties and uses.—This bark is tonic, and has been employed with advantage in intermittent fever, obstinate diarrhoea, dysentery, and dyspeptic affections. It was first introduced at Paris in 1713 as a powerful remedy in dysentery; but its effects in this disease were previously known to the natives of Guiana, whence it was brought to France. Simaruba

* Owing to this circumstance, Gærtner allows that the pericarp is something between a berry and a capsule. It is certainly not a drupe, although mentioned as such in the generic character by Willdenow.

bark, however, was little known in this country till Dr. Wright's paper on it appeared in the Edinburgh Transactions. It cannot with propriety be used in the commencement of dysentery; but after the fever has abated, when the tenesmus continues with a weak sinking state of the pulse, it allays this symptom and griping, promotes the secretion of urine, determines to the surface, and restores the tone of the intestines. It has also been highly commended as a remedy in *fluor albus*; but notwithstanding the high character which it acquired, *simaruba* is not much employed by the British practitioner. It may be combined with aromatics and opium. The dose in substance is from ʒj to ʒss; but it is more frequently and commodiously given in the form of infusion.

Official preparation. *Infusum Simarubæ. L.*

2. QUASSIA EXCELSA.

Official. QUASSIA LIGNUM.¹ *Lond. Edin. Dub.* The wood of Quassia.

Syn. Bois du Quassia (*F.*) Quassienholz (*G.*) Legno della Quassia (*I.*) Quassia amarga (*S.*)

This species of quassia grows in the natural woods of Jamaica and the Caribbean islands, where it is called the bitter ash; and flowers in October and November. It is a beautiful tall tree, rising sometimes one hundred feet in height, with a trunk straight, smooth, tapering, and often ten feet in circumference near the base; and covered with a smooth gray bark. The leaves are pinnate, consisting of from five to eight opposite pairs of leaflets, with a terminal leaflet: they are oblong and pointed; the ribs reddish; and the young leaves are covered with a fine brown down: the flowers are in clusters from the lower part of the last shoot before the leaves; they are small, of a yellowish green colour, with a very small calyx: the male flowers are nearly similar to the hermaphrodite, except that they have the rudiments only of a style: the fruit is a small black drupe, round, the size of a pea, and attached in threes, sideways, to a round fleshy receptacle. It is ripe in December, and is not bitter.² The wood is sent to this country in billets, and is reduced to chips, or rasped by the druggists.³

Qualities.—Quassia wood is inodorous, and has an intensely bitter taste; it is of a pale yellow colour. Alcohol and water take up its bitterness, and when evaporated to dryness, leave a brownish yellow, somewhat transparent, brittle extract, which has been regarded as a vegetable constituent *sui generis*, and

¹ The official quassia was long erroneously supposed to be the wood of the *Quassia amara*, which is a very rare tree, and excels all the others in bitterness.

² *Edinburgh Phil. Trans.* iii. 207.

³ It is asserted that of late years the brewers have used quassia wood instead of hops. Beer made with it certainly does not keep, but soon becomes muddy, flat, has a mawkish taste, and runs into the acetous fermentation.

named the bitter principle.* I am inclined to believe that this principle, although not itself of a resinous nature, is connected with resin, as ether takes it up, and the tincture, when evaporated on water, which becomes intensely bitter, leaves an insoluble pellicle that has the character of a resin. The infusion is rendered muddy by nitrate of silver, and a soft, flaky, yellow precipitate formed; and acetate of lead occasions a copious white precipitate: hence these salts are incompatible in formulæ with it.

Medical properties and uses.—Quassia is tonic. It has been found efficacious in dyspepsia and nervous irritability; intermittent and bilious remittent fevers, chlorosis, diarrhoea; and, when combined with cretaceous powder and ginger, in atonic gout. We have given it, combined with nitric acid, with evident benefit in typhus, and also in fluor albus. Infusion is the best form of administering Quassia; the raspings, for it cannot be properly pulverized, being too bulky: but it may nevertheless be given in substance in doses of from grs. x to 3j, three or four times a day.

Official preparations. *Infusum Quassiae*. L. *Tinctura Quassiae excelsæ*. E. D.

QUERCUS. *Spec. Plant. Willd.* iv. 423.

Cl. 21. Ord. 6. Monœcia Polyandria. Nat. ord. Amentaceæ.

G. 1692. *Male.* Calyx commonly five-cleft. Corolla none. Stamens five to ten.

Female. Calyx one-leafed, entire, rough. Corolla none.

Styles two to five. Nut coriaceous, surrounded at the base by the persistent calyx.

* * with toothed leaves.

Sp. 33. *Q. infectoria*. Dyers' Oak. *Olivier's Travels*, (translation,) ii. 41. t. 14, 15.

* * * * * with sinuated leaves and beardless lobes.

Sp. 65. *Q. pedunculata*. Common Oak. *Med. Bot.* 2d edit. 23. t. 10. (*Q. Robur*.) *Smith Flor. Brit.* 1026.

1. QUERCUS INFECTORIA. (*Quercus Cerris*. Edin.)

Official. GALLA. *Lond.* *Edin.* GALLÆ. *Dub.* The Gall.

Syn. Noix de Galles (F.) Galläpfel (G.) Galla (I.) Agalla (S.) Majja P'hal (H. and San.)

The London and Dublin Colleges have not named any particular species of oak, as furnishing the gall; the Edinburgh College has particularised the *Cerris*: but although it, as well as most of the other species of *Quercus*, may produce galls, yet it is not the species from which the galls of commerce are obtained. Olivier has distinctly pointed out from his personal knowledge the species above named as the real tree; and as we know no reason for doubting his veracity, we shall copy his description of it.

* Thomson's Chemistry, 4th ed. v. 32.

The *Quercus infectoria* is scattered throughout all Asia Minor, from the Bosphorus as far as Syria, from the coasts of the Archipelago as far as the frontiers of Persia. It has a crooked stem, seldom exceeds six feet in height, and more frequently assumes the character of a shrub than that of a tree. The leaves, which are deciduous in autumn, are on short petioles, smooth, of a bright green colour on both sides, and obtusely toothed: the acorn is elongated, smooth, two or three times longer than the cup, which is sessile, in a slight degree downy, and scaly: the gall comes at the shoots of the young boughs, and acquires from four to twelve lines in diameter: the insect which produces it is the *Cynips quercusfolii* of Linnaeus, (*Diplolepis gallæ tinctoriæ* of Geoffroy,) a small hymenopterous insect or fly, with a fawn-coloured body, dark antennæ, and the upper part of the abdomen of a shining brown. The insect punctures the tender shoot with its sting, and deposits its egg in the puncture. This is soon hatched; and in consequence of the irritation occasioned by the maggot feeding on the juices of the plant, a morbid excitement is induced, and kept up in the vessels of the part, sufficient for the production of this kind of vegetable wen.

Galls are gathered before the larva within them changes to a fly, and eats its way out; for when this has happened the galls become lighter, and contain less of the astringent principle. The first galls that are picked are named *yerli* by the natives, and are known in trade by the terms *black* or *blue galls* and *green galls*. Those which are gathered afterwards, from the circumstance of their being pierced, are of an inferior quality, and are denominated *white galls*. The best galls are those of Aleppo, Smyrna, Magnesia, Karahisser, Diarbekir, and the interior of Natolia. Those which are brought to this country come chiefly from Aleppo in bags and cases.

Qualities.—Galls are inodorous, and have a bitter, very astringent taste. They are nearly round, of different magnitudes, from the size of a pea to that of a hazel-nut; smooth on the surface, yet studded with tuberosities; and when good, of a blackish blue, or deep olive colour: a white or a red hue indicates an inferior quality.* They are heavy, brittle, break with a flinty fracture, and display a compact striated texture. The whole of their soluble matter is taken up by about 40 times their weight of boiling water, and what remains is tasteless. Alco-

* This is the character of the galls from which the insect has escaped; and which are also of a brighter colour. Another species of gall, produced by another species of the insect, is also, Olivier says, found on the same oak. It is spongy, very light, of a brown red colour, covered with a resinous coat, and, furnished with a circular row of tubercles placed nearly towards the most protuberant part. Their astringency is very inferior; and they are used only to adulterate the better sort.

hol digested on powdered galls takes up seven parts in ten; and ether five parts. The watery infusion reddens tincture of litmus, and forms precipitates with solution of Isinglass, the infusions of Cinchona bark, Cusparia bark, and Columba root: but not with infusion of Quassia. Sulphuric acid throws down a yellowish, curdy precipitate, and muriatic acid one flaky and whitish; while nitric acid changes the colour only of the infusion, first to deep orange, and afterwards to a paler orange yellow. The solution of ammonia occasions no precipitate, but deepens the colour; the carbonate, however, produces a precipitate. Carbonate of potash throws down a yellowish flaky precipitate, and extricates ammonia; and lime water also throws down a copious deep green precipitate. Precipitates also are formed with solutions of the following metallic salts: with acetate and superacetate of lead, grayish; tartarized antimony, yellowish; sulphate of copper, brown; sulphate of iron, blueish black; sulphate of zinc, reddish black, but very slowly formed; nitrate of silver, deep olive; and nitrate of mercury, bright yellow. The muriate of mercury renders the infusion milky and opaque, but no precipitate is formed. The alcoholic tincture reddens litmus, and is affected by the same re-agents as the watery infusion. The ethereal tincture, when evaporated on water, leaves on the side of the glass an opaque pellicle, and on the surface of the water small drops of an oily resinous-like matter, while the substratum of water becomes charged with tannin and gallic acid. The pellicle and resinous-like matter is plastic, tenacious, resembling birdlime treated with ether; and when subjected to heat, melts, swells, burns, and leaves a dense black charcoal. These experiments show results which cannot altogether depend on the presence of tannin, gallic acid, extractive, or mucilage, which are supposed to be the constituents of galls. In Sir H. Davy's experiments, 500 grains of Aleppo galls yielded to pure water by lixiviation 185 grains of solid matter, of which 130 were tannin, 31 gallic acid and extractive, 12 mucilage and matter rendered insoluble by the evaporation, and 12 saline and earthy matter. From different experiments the proportion of extractive, however, if any, is very small: none appears in the evaporation of the ethereal tincture; and Dr. Bostock's experiments render the existence of mucilage very doubtful. From the experiments of Professor Branchi, it appears that galls also yield by distillation with water a concrete, volatile oil.* Hence we may conclude that the other constituents of galls, besides tannin and gallic acid, and the above oil, are still unascertained.

* *Phil. Mag.* vol. i, p. 401.

Medical properties and uses. — Galls are the most powerful of the vegetable astringents. They are seldom used as an internal remedy, although in combination with bitters or aromatics they have been given in obstinate diarrhoeas, passive intestinal hæmorrhages, and intermittents. They are frequently ordered in the form of gargles and injections; and an ointment formed of galls in fine powder, with eight parts of simple ointment, and a small proportion of powdered opium, is a useful application to blind piles. For internal exhibition, the dose of galls may be from grs. x to ʒj, twice or thrice a day.

Officinal preparation. *Tinctura Gallarum.* E. D.

2. QUERCUS PEDUNCULATA.

Officinal. QUERCUS CORTEX. Lond. QUERCUS ROBORIS CORTEX. Edin. Dub. Oak bark.

Syn. Ecorce de la Chêne commune (F.) Eichenrinde (G.) Cortecia della Quercia (I.)

This species of oak is indigenous. It is a well-known beautiful tree, often rising to a considerable height; and attaining a great degree of thickness in the trunk, which is covered with a rough brown bark. The leaves are alternate, nearly sessile, ovate-oblong, and sinuated, forming obtuse lobes: deep green, smooth, and shining on the upper surface, paler and nearly glaucous underneath: the flowers are in axillary catkins; the male lax, pendulous, many-flowered, and yellow; the female longer, peduncled, and only three-flowered: the calyx of the male flower is membranous, bell-shaped, often five-cleft; while that of the female is coriaceous, scaly, downy, and becoming hemispherical, entire, and woody: the stamens are ten, longer than the calyx: the germen is ovate, crowned with a short cylindrical style and three stigmas: the fruit is an elliptical, coriaceous, smooth nut, fixed in the calyx as in a shallow cup, but at length dropping from it. It ripens in October.

Almost every part of the oak is astringent, but the bark only is officinal; and, as its epidermis is perfectly inert, it is taken for medicinal purposes from the smaller branches, the epidermis of which is still thin and scarcely cracked. The bark cut in spring is preferable to that cut in winter, as it contains four times the quantity of the astringent principle or tannin.*

Qualities. — Oak bark is inodorous, has a rough astringent taste, and yields its virtues to both alcohol and water. The watery infusion is affected by all those tests which indicate the presence of gallic acid, tannin, and extractive (see *Decoctum Quercus*). Sir H. Davy† found that ʒj of the inner cortical part of young oak bark affords by lixiviation one hundred and eleven grains of solid matter, of which 77 are tannin; the cel-

* Biggin. *Phil. Trans.* 1799.

† *Phil. Trans.* 1803.

lular integument, or middle-coloured part, yields grs. 43 only of solid matter, of which 19 are tannin; and the epidermis furnished scarcely any quantity either of tannin or of extractive. The quantity of tannin, however, varies according to the size and age of the trees, and the season at which they are barked. Vauquelin discovered that the infusion of Oak bark does not precipitate tartarized antimony, or the infusion of Santa Fé Cinchona, which resembles the officinal red Cinchona, although both of these are precipitated by infusion of galls. I find, however, that infusion of Oak bark forms a precipitate with infusion of yellow Cinchona bark.

Medical properties and uses.—Oak bark is tonic and astringent. It has been given united with bitters and aromatics with seeming advantage in intermittents; but it is in every respect inferior to Cinchona, and cannot be depended on. It is, however, useful in obstinate diarrhœa and alvine hæmorrhages; and it is strongly recommended in the malignant coryza (*snuffles*) of infants, when in spite of keeping the bowels regular, and the use of cordials, the child becomes weak and pallid.* Its principal use is as a local astringent. (See *Decoctum Quercus*.)

The dose in substance may be from grs. xv to grs. xxx; but it is so difficultly pulverized that it is seldom given in this form.

Officinal preparation. *Decoctum Quercus*. L.

RHAMNUS. *Spec. Plant. Willd.* i. 1092.

Cl. 5. Ord. 1. Pentandria Monogynia. *Nat. ord.* Dumosæ Linn.

Rhamni Juss.

G. 405. *Calyx* tubular. *Corolla* scales defending the stamens inserted into the calyx. *Berry*.

* *Thorny*.

Species 1. *R. catharticus*. Purging Buckthorn. *Med. Bot.* 2d ed. 594. t. 210.

Officinal. RHAMNI BACCÆ. *Lond.* RHAMNI CATHARTICI SUCCUS. *Edin.* RHAMNUS CATHARTICUS; BACCÆ. *Dub.* Buckthorn Berries.

Syn. Nerprun (*F.*) Kreutz beeren (*G.*) Bacche del spino Cervino. (*I.*)

This is an indigenous shrub, growing in woods and hedges near brooks; flowering in May and June, and ripening its fruit in October. It rises with a strong rigid woody stem, sending off alternate round branches, which terminate in a spine. The leaves are in fascicles, on footstalks, ovate, serrated, nerved; and the younger one downy: the flowers come from the same buds as the leaves; they are peduncled, of a greenish yellow colour, four-cleft; and frequently, but not always, they are male and female upon different plants: the anthers are round, on short filaments which rise from the base of a small convex

* Underwood, *Diseases of Children*, 4th ed. i. 45.

scale: the germen is ovate, with a slender style and four-cleft stigma: the fruit is a small, round, black, four-seeded berry, about the size of a pea, compressed on one side.¹

These berries are said to be often mixed with those of the black-berried alder and of the dog-berry tree; but as the buck-thorn berry has four seeds, while the others have only two and one, it can be easily distinguished.

Qualities.—The odour of these berries is faint and unpleasant, the taste bitterish, acrid, and nauseous. They are very succulent, and yield by expression a deep green juice, or a purple juice, if they be gathered late in the autumn.

Medical properties and uses.—The berries, or their expressed juice, are briskly cathartic; but their operation is accompanied with thirst and severe griping, which is not altogether mitigated by the most plentiful dilution. They were formerly much used as a hydragogue purgative, but are now very seldom prescribed. The dose of the recent berries is ʒj; that of the expressed juice fʒj, or ʒj of the dried berries.

Official preparation. *Syrupus Rhamni.* L. E.

RHEUM.² *Spec. Plant. Willd.* ii. 488.

Cl. 9. *Ord.* 3. *Enneandria Trigynia.* *Nat. ord.* *Holoraceæ Linn.* *Polygoniæ Juss.*

G. 803. *Calyx* 0. *Corolla* six-cleft, persistent. *Seed* one, three-sided.

Sp. 2. *R. undulatum.* Wave-leaved Rhubarb. *Amaen. Acad.* iii. 212. *t.* 4.

Sp. 3. *R. palmatum.* Palmated Rhubarb. *Med. Bot.* 2d ed. 662.

t. 231. *Phil. Trans.* iv. 292. *t.* 12, 13.

1. RHEUM UNDULATUM.

Official. **RHEUM UNDULATUM; RADIX.** *Dub.* The root of Waved-leaved Rhubarb.

Syn. Rhubarb (*F.*) Rhabarber (*G.*) Rabarbaro (*I.*) Ruibarbo (*S.*) Rāwend (*Arab.*) Réwand Chini (*H.*)

This species of rheum was supposed by Boerhaave to be the true Chinese rhubarb; and as it is not unlikely that foreign rhubarb is taken from several species, that which we receive by way of Canton, which certainly differs more than simply in the drying from that which comes through Russia, may be the produce of this plant; and the Dublin College is right in giving it a place in the list of materia medica. It is a native of China and Siberia, but grows well in this country. The root divides into a number of thick fibres, which run deep, and are extremely yellow within: the leaves, which appear early in the spring, are supported on moderately thick footstalks, channelled on their under side, and plain on their upper: the leaves are long, running to a point much waved on their edges, a little

¹ The pigment called sap green is the inspissated juice of this berry.

² *Pnæ*, Dioscoridis.

hairy on the upper surface, and very strongly veined on the under: the flower-stem is of a pale brownish colour, rising about four feet high, and dividing into several loose panicles, or bunches of white flowers, which appear in May, and are succeeded by triangular seeds that ripen early in the season.

2. RHEUM PALMATUM.

Official. RHEI RADIX. *Lond. Edin. Dub.* Rhubarb root.

This species, like the former, is a native of China and Tartary; and arrives at considerable perfection, when cultivated in this country. The root is perennial, thick, oval, branched, externally brown, and internally of a deep yellow colour: the stem, which rises eight or ten feet in height, is erect, round, hollow jointed, slightly furrowed, sheathed, and branching at the top: the lower leaves stand upon long smooth petioles; are numerous, large, rough, of a roundish shape, and deeply sinuated into lobes, which are irregularly pointed; those of the stem spring from the joints, are sheathing, and gradually lessen in size toward the top of the stem: the flowers surround the branches in numerous clusters, forming a kind of spike: they appear in May: the corolla is divided into six obtuse very small segments of a greenish white colour: the filaments are nine, slender, the length of the corolla, and furnished with oblong double anthers: the style is short, with three reflected stigmas; and the germen is a triangular seed, with membranous reddish margins.

This plant has been generally believed to be the species which yields the foreign rhubarb; and under this belief, a very excellent and correct description of it was given by Dr. Hope, professor of botany at Edinburgh, in the Philosophical Transactions for 1765. He had raised it from seed sent to him by Dr. Mounsey from Petersburg two years before, and found that the root possessed all the medicinal qualities of the best foreign rhubarb. Since that period many laudable attempts have been made to introduce the cultivation of rhubarb into this country, in sufficient quantity to supply our domestic consumption of this valuable drug: but although many individuals have reared large quantities, and some of it extremely good, yet so powerful is prejudice, that very little of it can be sold, and the efforts, therefore, of the cultivators have of late very much relaxed.¹ It is still, however, uncertain which of the species yields the foreign rhubarb; nor is it of very great importance, as the roots of the two species above described, and another, the *R. compactum*, accord so very closely in their me-

¹ For an excellent account of those different trials, and some very judicious observations on the mode of cultivating rhubarb, see *Millar's Dictionary*, edited by Dr. Martyn, article *Rheum*.

dicinal powers, that any of them may be used with equal certainty of success.

Three varieties of rhubarb are known in the shops, named from the places whence we receive them; *Russian* rhubarb, *Turkey* rhubarb, and *East Indian* or *Chinese* rhubarb. The two first resemble each other in every respect, appearing to be the root of the same species of plant, prepared in the same mode; and although the *East Indian* is seemingly the root of a different species, yet we are informed by Dr. Rehman¹, that it is the same, only prepared with less care.

All the rhubarb of commerce, known under the names *Turkey* or *Russian*, grows on the declivities of the chain of mountains in Tartary, which stretches from the Chinese town Sini to the lake Kokonor, near Thibet. The soil is light and sandy; and the Bucharrians assert that the best grows in the shade on the southern side of the mountains. Rhubarb, however, is also cultivated in China, in the province of Shen-see, where it is called *Hai-houng*. In Tartary the roots are taken up twice a year in spring and in autumn², and after being cleansed, and decorticated, and the smaller branches cut off, the body of the root is divided transversely into pieces of a moderate size, which are placed on tables, and turned three or four times a day, during five or six days. A hole is then bored through each piece, by which it is hung up to dry exposed to the air and wind, but sheltered from the sun. In about two months the roots have lost seven parts in eight of their weight³, and are fit for the market. In China the roots are not dug up till winter⁴; and the cultivators, after cleaning, scraping off the bark, and cutting them, dry the slices by frequently turning them on stone slabs heated by a fire underneath; after which the drying is completed by hanging them up in the air exposed to the greatest heat of the sun.⁵ As soon as the rhubarb has been dried where it is grown, it is conveyed to Si-ning, where it is again cleaned and aired, and after being cut into smaller pieces and sorted, a large hole is drilled through that intended for the Russian market, in virtue of the

¹ The best Treatise on the Commerce of Rhubarb, and from which much of the information contained in this article has been taken, is from the pen of Dr. Rehman. Vide *Mem. de la Société Imperiale des Nat. de Moscou*. 1809. t. ii. p. 126.

² *Bell's Travels*.

³ *Bath Papers*, iv. 175.

⁴ *Bath Papers*, li. 249.

⁵ It is in the process of drying the roots that the British rhubarb cultivators are supposed to fail. Baumé proposes to steep the roots in water, to deprive them of their gummy matter, before drying them; then to lay them upon twigs in the open air for twelve hours, and lastly to place them in a stove heated to 120°, till they are dried. When sufficiently dry the wrinkles must be rasped out, and the pieces shaken together in a barrel turned on an axis, for half an hour, which covers them with a fine yellow powder formed by their attrition.

contract made with the Russian Government, for the examination of the heart of the pieces. It is then packed up in camel's-hair sacks, and conveyed to Mac-ma-tchin, where it is examined previously to its being transported to Kiachta. The whole of the trade in rhubarb, in China, is carried on by one Bucharian family, which has enjoyed the monopoly since 1772; and it is even by the agents of this family, that it is sold to the English at Canton. This Bucharian family resides at Sin-ning Fu, a town on the frontiers of Thibet, about 3000 verstes from Kiachta, the town on the Russian frontier, where the rhubarb is purchased on the account of the Russian Government. Part of the Tartarian rhubarb is carried to Turkey through Natolia; but the greater part is conveyed by the Bucharians to Kiachta, where it is examined by a Russian apothecary. The best pieces only are selected and sent to Petersburg. It is in roundish pieces perforated with a large hole, of a yellow or reddish colour on the outside, somewhat soft and friable, and when broken exhibiting many diverging streaks of a beautiful bright red colour. Agreeably to the contract with Russia, all which is rejected must be burnt: and even that which is approved undergoes another cleaning before it is finally packed up for St. Petersburg. The Chinese rhubarb, at least what we receive under that appellation, is conveyed to Canton, and there purchased by the East India Company's agents, who purchase all qualities; whence it is brought to this country by sea. It is in oblong, sometimes flat pieces, seldom perforated; considerably heavier, more compact, and less friable than the former kind; of a brownish yellow colour on the outside; and which when broken appear of a dull colour, variegated with yellow and white. Both kinds are brought to this country in cases and chests.

Qualities. — Good *Russian* or *Turkey* rhubarb has a peculiar, somewhat aromatic odour, and a bitter, slightly astringent, subacid taste; feels gritty between the teeth when chewed, and tinges the saliva of a bright yellow colour. It breaks with a rough hackly fracture, is easily pulverized, and affords a powder of a bright buff yellow colour. It should not be porous, but rather compact and heavy. Water at 212° takes up 24 parts in 60; the infusion is of a brown colour nearly clear, and reddens litmus paper. Alcohol extracts 2·7 from 10 parts, and gives a tincture of a rich golden colour, which reddens tincture of litmus; is not altered in its transparency by the addition of water; and strikes a blackish olive hue with solution

* At this examination each piece is struck with a small mallet, to detach from it any impurities, or decayed parts.

of sulphate of iron, but no immediate precipitate falls. Sulphuric ether takes up 1·5 in 10 parts of this rhubarb; the tincture is of a golden yellow hue, and when evaporated on water, leaves a thin pellicle of yellow resin and abundance of extractive dissolved in the water, combined, however, with tannin. *East Indian* or *Chinese* rhubarb has a stronger odour, and is more nauseous to the taste than the Turkey; breaks with a more compact and smoother fracture; and affords a powder of a redder shade. Water takes up 30 parts in 60; the infusion is not so deep-coloured as that of Russian rhubarb, is more turbid, and reddens also litmus paper. Alcohol extracts 4 parts in 10; the tincture is of a much deeper colour, and brownish; gives a deeper red to litmus tincture; is rendered slightly turbid by the addition of water; and strikes a green, not black, olive with sulphate of iron, which it also quickly and copiously precipitates. Ether takes up 2 parts in 10; the tincture is deeper coloured, and when evaporated on water affords the same results as the former kind, except that the compound of tannin and extractive is more soluble.

The infusion of Chinese rhubarb is more copiously precipitated by solution of isinglass than that of the Russian. Infusion of yellow cinchona throws down a copious greenish precipitate from infusion of Russian rhubarb, and a less copious, but more dense bright yellow precipitate from that of Chinese rhubarb.

The following Tables show the effects of re-agents on the aqueous infusions of the two varieties of rhubarb.

TABLE I. Precipitates formed by Acids, Alkalies, and Neutral Salts.

Variety of Rhubarb.	Sulphuric Acid.	Nitric Acid.	Muriatic Acid.	Oxyuriatic Acid.	Solution of Potash.	Solution of Subcarbonate of Potash.	Lime Water.	Muriate of Barytes.	Silicated Potash.
Russian.	copious, greenish yellow.	scanty, flocculent, pale yellow.	scanty, very slowly formed, yellow.	slowly formed, pale olive.	none, but strikes a deep lake colour.	none, but strikes reddish brown.	scanty, slowly formed, brown.	scanty, olive green.	none, but strikes a deep brown.
Chinese.	more copious, brownish yellow.	less scanty, pale yellow.	scanty, quickly formed, brownish yellow.	slowly formed, orange yellow.	none, a deeper lake.	none, but renders it turbid, and deep reddish brown.	copious, quickly formed, brown.	less scanty, orange yellow.	none, but strikes a deep brown.

TABLE II. Precipitates formed by Solutions of Metallic Salts.

Variety of Rhubarb.	Solution of Oxy sulphate of Iron.	Solution of Nitrate of Silver.	Solution of Nitrate of Mercury.	Solution of Nitrate of Lead.	Solution of Muriate of Mercury.	Solution of Acetate of Lead.	Solution of Tartarized Antimony.
Russian.	copious, nearly black.	scanty, pale greenish yellow.	copious, olive yellow.	scanty, slowly formed, yellow.	scanty, slowly formed, pale olive.	scanty, greenish yellow.	scanty, slowly formed, whitish.
Chinese.	copious, deep olive green.	copious, orange yellow.	copious, heavy, bright yellow.	scanty, slowly formed, deeper yellow.	copious, quickly formed, heavy yellow.	copious, yellow.	scanty, still more slowly formed.

When the residue, after the action of water, is digested in muriatic acid, and solution of ammonia added in excess, the liquid becomes milky, and deposits oxalate of lime. What remains consists of woody matter, a small portion of alumen, and silex. Of the specimens which I examined, one drachm of Russian rhubarb yielded twenty-six grains of the oxalate, while the same weight of East Indian yielded only eighteen grains.

From the results of the above experiments, rhubarb appears to contain a large portion of *extractive matter*, a small portion of *resin*, *mucus*, *tannin*, *gallic acid*, a *colouring matter*, much *oxalate of lime*, and minute proportions of *alumen* and *silex*. They show that the two varieties differ from each other in several respects. The Russian contains more tannin, oxalate of lime, and resin; the Chinese more extractive and gallic acid. But the purgative principle is still unascertained, although it appears to be combined with the extractive, and hence is soluble in water.

Medical properties and uses. — Rhubarb is stomachic and astringent or purgative, according to the extent of the dose in which it is administered. With a view to the first-mentioned properties, it is usefully given in dyspepsia, hypochondriasis, and in a weakened relaxed state of the bowels, combined with ginger, nutmeg, soda, or bitters.

As a purgative it operates mildly, and may be given to the youngest infants. Its operation is quickened by the addition of neutral salts and calomel, the purgative powers of which it also reciprocally augments; so that a compound formed of small portions of rhubarb and a neutral salt or calomel, acts with more certainty and quicker than large doses of either separately taken. Rhubarb is particularly adapted for the majority of cases of diarrhoea, as it evacuates any acrid matter that may be offending the bowels, before it acts as an astringent. Externally its powder is sometimes sprinkled over ulcers, to assist their granulation and healing.

The Chinese use it medicinally; but they chiefly employ it to colour a spirituous liquor.

Rhubarb is given in a variety of forms (see Preparations), but its purgative properties are most powerful in substance. From ʒj to ʒfs of the powdered root opens the bowels freely; and from grs. vi to grs. x may be given for a dose, when its stomachic properties only are required.

Officinal preparations. *Infusum Rhei*. L. E. *Vinum Rhei*. E. *Tinctura Rhei*. L. E. D. *Tinctura Rhei composita*. L. *Tinctura Rhei et Aloes*. E. *Tinctura Rhei et Gentianæ*. E. *Pilulæ Rhei compositæ*. E.

RHODODENDRON. *Spec. Plant. Willd.* ii. 603.
Cl. 10. Ord. 1. Decandria Monogynia. Nat. ord. Bicornes Linn.
Rhododendra Juss.

G. 867. *Calyx* five-parted. *Corolla* nearly funnel-shaped. *Stamens* declined. *Capsule* five-celled.

Species 7. *R. chrysanthum*. Golden-flowered Rhododendron. *Med. Bot.* 2d edit. 299. t. 103. *Pall. Ross.* i. p. 44. t. 30.

Official. RHODODENDRI CHRYSANTHI FOLIA. *Edin.* The leaves of Rhododendron.

Syn. Rosage (*F.*) Gelber Alpbalsam (*G.*) Rhododendro Aureo (*L.*)

This beautiful shrub is a native of the mountainous parts of Siberia, flowering in June and July. It rises a foot in height, and sends off spreading branches which are covered with a brown bark. The leaves are terminal, oblong, ovate, and attenuated to the petiole; few, smooth, stiff, with the margin entire and bent in; the upper surface reticulated, rugged, and of a deep green colour; and the under ferruginous or glaucous. The flowers are large, yellow, and terminate the branches, forming umbels: the calyx is persistent; the corolla monopetalous, inclining, and irregularly divided into five spreading segments: the filaments are slender, nearly as long as the corolla, supporting oval anthers; and the germen is pentagonal, bearing a long slender style, crowned with a five-lobed stigma. The capsule is ovate, somewhat angular; and contains many small gray irregular seeds, like sawdust.

Qualities.—The leaves of this plant are inodorous, and have an austere, astringent, bitterish taste. Water extracts their virtues either by infusion or decoction.

Medical properties and uses.—Yellow rhododendron leaves are stimulant, narcotic, and diaphoretic. When taken, they first increase the arterial action and the heat of the body, producing diaphoresis; and these effects, according to Dr. Home's observations, are followed by a proportional diminution of excitement, the pulse in one case having been reduced thirty-eight beats. In large doses they produce nausea, vomiting, purging, delirium, and all the symptoms of violent intoxication. Both the plant and its effects were first described by ¹Gmelin and Steller, in 1747, as a Siberian remedy for rheumatism; but it was not much noticed till after 1779, when Kœlpin strongly recommended it in this disease, and also in gout and lues venerea. Besides the effects we have already mentioned, it is said to excite a creeping sensation in the pained parts, which after a few hours subsides, and at the same time the pain is relieved. It has not been much used in this country, but, from the result of some trials of it in Scotland, it has obtained a place in the Edinburgh Pharmacopœia.

It is given in the form of decoction, made by boiling ʒiv of the leaves in fʒx of water, in a close vessel, over a slow fire for

¹ *Flora Sibirica*, iv. 121.

twelve hours. The dose of the strained liquor is from f3j to f3ij given twice a day, and gradually increased.

RHUS.¹ *Spec. Plant. Willd. i. 1479.*

Cl. 5. Ord. 2. Pentandria Digynia. Nat. ord. *Dumosæ Linn. Terebintaceæ Juss.*

G. 566. *Calyx* five-parted. *Petals* five. *Berry* with one seed.

** with ternate leaves.

Species 17. R. *Toxicodendron*. Poison Oak. Sumach. *Kalm's Travels, ii. 318.*

Official. TOXICODENDRI FOLIA. *Lond.* RHUS TOXICODENDRI FOLIA. *Edin.* Sumach leaves.

Syn. Toxicodendron; Herbe à la Puce (F.) Rus Tossicodendro (I.)

This shrub is a native of North America. It seldom exceeds three feet in height; the root sending up many stems, which divide into slender woody branches, and are covered with a brownish bark. The leaves are placed alternately, supported on long petioles; and are composed of three oval leaflets, about three inches long, and one inch and a half broad, angularly indented, hoary on the under surface, and of a deep shining green colour on the upper: the two lateral leaflets are nearly sessile, and the terminal one is considerably the largest of the three: the male flowers, which are on a distinct plant from the female, spring from the sides of the stalks in close short spikes, and are of an herbaceous colour; the female, which are larger, are produced in loose panicles, and embosom a roundish germen supporting three very short styles: the fruit is a striated berry.

The stems, if cut or broken, exude a milky juice, which was supposed to inflame the skin wherever it touched; but this is not the case, although the plant exudes a deleterious vapour.² The juice becomes black when it is exposed for a short time to the action of atmospheric air.³

Qualities.—The leaves of *Toxicodendron* are inodorous, and have a mawkish subacid taste. Their virtues are completely extracted by water, and partially by alcohol. The aqueous infusion reddens litmus paper; precipitates the solution of sulphate of iron black; that of nitrate of silver brown; and throws down a precipitate with gelatine. Hence it contains gum, resin, gallic acid, and tannin; but a narcotic principle is also present, on which its effects principally depend.

¹ *Pous* Dioscoridis.

² Vans Mons has proved that the acrimonious matter of the plant is exhaled during the night, combined with carbonated hydrogen gas. He collected a jar full of the gas, and on his brother, who was very susceptible of the poison of this species of rhus, plunging his arm into it, the skin was quickly inflamed and blistered. *Actes de la Soc. de Med. de Bruxelles.*

³ This juice forms an indelible black stain on linen cloth; and is used in Japan, where the shrub is a native, as a varnish. *Phil. Trans. xlix. 158.*

Medical properties and uses. — The leaves are stimulant and narcotic. In the hands of Dr. Alderson of Hull, who introduced them as a remedy, they proved successful in several cases of paralysis; but we believe their efficacy in this disease has not been confirmed by the observations of other physicians. They excite a sense of heat and pricking, and irregular twitchings in the affected limbs. We believe some advantage has been found from their use in herpetic eruptions. They have also been found useful in the form of tincture, in cramp of the stomach.

The dose of the powdered leaves may be gr. fs, given twice or thrice a day, and gradually increased to grs. iv, in the form of a bolus.

RICINUS. *Spec. Plant. Willd. iv. 564.*

Cl. 21. Ord. 8. Monœcia Monadelphia. Nat. ord. Tricoccæ Linn. Euphorbiæ Juss.

G. 1720. Male. Calyx five-parted. Corolla 0. Stamens numerous.

Female. Calyx three-parted. Corolla 0. Styles three, bifid.

Capsule three-celled. Seed one.

* *with palmated leaves.*

*Sp. 1. R. communis.*¹ Common Ricinus or Palma Christi. *Med.*

Bot. 2d ed. 625. t. 221. Rheede Hort. Malab. ii. 57. t. 32.

Official. RICINI SEMINA ET OLEUM. Lond. RICINI COMMUNIS

SEMINA; ET OLEUM FIXUM. Edin. RICINUS; OLEUM SEMINIBUS

EXPRESSUM. Dub. The seeds, and the fixed oil of the seeds of

the Ricinus. Castor oil.

Syn. Le Noix et l'huile du Ricin (F.) Rizinuskorner; Rizinushhl (G.) I semi e Pollo di Ricino (L.) Palmoel; Ricin soel (S.) Erunda (San.) Khirwa (Arab.) Sittamoonka unnay (Tam.)

This species of Ricinus is an annual plant, a native of the East and West Indies, South America, and Africa.² It is of very quick growth, and sometimes attains to the height of sixteen feet.³ The stem is round, thick, jointed, furrowed, glaucous in the lower part, but of a purplish red colour towards the top: the leaves are petiolate and subpeltate, large, deeply divided into seven pointed serrated lobes, and of a blueish green colour: the calyx of the male flower is composed of five oval, pointed, purplish segments, inclosing many long stamens united at the base; the female is at the upper part of the spike, and is composed of a three-cleft, reddish calyx: the styles are three, slender, and forked at the apex: the capsule is a trilocular nut, covered with rough spines, and bursting elastically to expel the seeds, which are generally three, and of an oblong flat figure, and white colour.

The oil, which is more frequently used than the seeds, is ob-

¹ *Kixi Dioscoridis.*

² It was first cultivated in Britain in 1562.

³ It has been asserted that this plant is in some places perennial, becoming a large tree. Willdenow, however, says, "Planta semper annua, nunquam fruticosa vel arborea, nec in calidissimis terræ plagis lignescit." *Spec. Plant. iv. 564.*

tained from the seeds both by coction and expression. The former method was generally used till lately; and was performed by tying up the seeds, previously decorticated and bruised, in a bag, which was suspended in boiling water till all the oil was extracted and rose to the surface, when it was skimmed off. This mode of preparation is still preferred by many of the West Indian practitioners; but as the oil is apt to get soon rancid when thus prepared, it is now obtained, both at home and abroad, by subjecting the seeds to the press, in the same manner as almonds to procure almond oil. The oil obtained is equal to one-fourth of the weight of the seeds employed.

Qualities. — Good expressed castor oil is nearly inodorous and insipid: but the best leaves a slight sensation of acrimony in the throat after it is swallowed. It is thick, viscid, transparent, and colourless, or of a very pale straw colour; that which is obtained by coction has a brownish hue; and both kinds, when they become rancid, thicken, deepen in colour to reddish brown, and acquire a hot, very nauseous taste. It has all the chemical characters of the other expressed oils, except that it is almost completely soluble in sulphuric ether.

Medical properties and uses. — The seeds are drastic cathartics, but are scarcely ever ordered. The oil is mildly purgative, operating very quickly, and with so little irritation, as to render it peculiarly fitted for cases in which the stimulating purgatives would prove hurtful; as in ileus, colica pictorum, (in which it may be advantageously joined with henbane,) calculous affections, piles, and after surgical operations in which the abdominal viscera are concerned. In dysentery, in which this oil is particularly indicated, the stomach will seldom retain it; but when this is the case it may be efficaciously exhibited per anum. It is also an excellent purgative for infants, even of the tenderest age, and for women in child-bed.

The dose is from $\mathfrak{z}\text{iv}$ to $\mathfrak{z}\text{ij}$ s, either floated on a little water, and covered with a small quantity of any ardent spirit; or diffused in a cup of coffee; or in water, by means of mucilage of acacia gum, or the yolk of egg. The addition of some aromatic tincture is generally necessary to make this oil remain on the stomach.

ROSA. Spec. Plant. Willd. ii. 1063.

Cl. 12. Ord. 5. Icosandria Polygynia. Nat. ord. Senticosæ Linn. Rosaceæ Juss.

G. 997. Petals five. Calyx pitcher-shaped, five-cleft, fleshy, contracted at the neck. *Seeds* numerous, hispid, affixed to the inner side of the calyx.

*** with ovate germens.*

Species 15. R. centifolia. Hundred-leaved Rose. Med. Bot. 2d ed. 495. t. 178.

Species 16. *R. gallica*. Red Rose. *Med. Bot.* 2d edit. 497. t. 179.
Species 31. *R. canina*. Dog Rose, or Hep Tree. *Med. Bot.* 2d ed.
 493. t. 177. *Smith Flor. Brit.* 540. *Gärtner*, i. 347. t. 73.

1. ROSA CENTIFOLIA.

Official. ROSÆ CENTIFOLIÆ PETALA. *Lond. Edin.* ROSA DAMASCENA; PETALA. *Dub.* The petals of the Hundred-leaved Rose.

Syn. Wurd (*Arab.*) Gooläbu-poo (*Tam.*)

Although this species of rose be commonly cultivated in almost every garden in Europe, yet the place whence it was originally brought is still undetermined, notwithstanding Loureiro's assertion that it is a native of China. In the Dublin Pharmacopœia it is improperly confounded with the damask rose, which is altogether a different species.¹ The bush rises with prickly stems about three feet in height. The leaves consist of two or three pair of leaflets, with a terminal one, attached on very short petioles to a rough common footstalk: the leaflets are oval, broad, smooth, of a deep green colour on the upper surface, hairy on the under, and serrated, with purple edges. The flowers, which appear in June, are large, supported on peduncles beset with brown, bristly hairs. The segments of the calyx are semipinnate; the petals large, of a beautiful pale red colour, fragrant, and very numerous.

The varieties of this species of rose are very many; but for medicinal purposes they may be indiscriminately used. The petals only are employed.

Qualities.— Their odour is extremely fragrant, and their taste sweetish, subacidulous, and at last very slightly bitter. In distillation with water, a small portion of a butyraceous oil is obtained; and the water is strongly impregnated with the odour of the rose.

Medical properties and uses.— The petals of this species of rose are slightly laxative; and as such are ordered, combined with sugar, in the form of a syrup, as an adjunct to oil and other purgatives in infantile diseases: but they are chiefly employed for the distillation of rose-water.

Official preparations. *Aqua Rosæ*. L. E. D. *Syrupus Rosæ*. L. E.

2. ROSA GALICA.

Official. ROSÆ GALICÆ PETALA. *Lond. Edin.* ROSÆ RUBRÆ PETALA. *Dub.* The petals of the Red Rose.

Syn. Fleurs des Roses rouges (*F.*) Essig-rosen (*G.*) Rosa domestica (*L.*)

This species is a native of the south of Europe, cultivated in our gardens, and flowering in June and July. The stalks rise about three feet in height, are erect, and almost destitute of prickles. The foliage resembles that of the *centifolia*; but the leaflets are not so large, scarcely tomentose below, and subacute.

¹ See *Hort. Kew. Willdenow*, &c. Gerarde cultivated this species in 1596.

The flowers also are less doubled; the petals large, widely spread open, of a deep rich crimson colour, fragrant, and displaying an abundance of yellow anthers, on thread-like filaments; with the papillary stigmas of numerous connected villose styles, rising from the germen. The petals of the unblown buds are the parts medicinally used. They are cultivated in abundance in the neighbourhood of London for medicinal purposes.

Qualities. — The odour of this rose is less fragrant than that of the former species, but it is improved by drying: the taste is pleasantly bitter, and austere. Water at 212° extracts both its odour and taste; and the infusion strikes a black with sulphate of iron; and also forms a precipitate of a dark colour with sulphate of zinc.

Medical properties and uses. — The red rose is astringent and tonic. It forms an elegant and useful vehicle for the exhibition of mineral acids, nitrate of potash, and other neutral salts, in hæmorrhages, and many other diseases. (See the Preparations of it.)

Official preparations. *Confectio Rosæ.* L. E. D. *Infusum Rosæ.* L. E. D. *Mel Rosæ.* L. D. *Syrupus Rosæ.* E.

3. ROSA CANINA.

Official. *ROSÆ CANINÆ PULPA.* Lond. *ROSÆ CANINÆ FRUCTUS.* Edin. The pulp of the Dog-rose fruit, or Hep.

Syn. Le fruit d'Eglantier de Chien (F.) Hagebutten (G.) La polpa di fruti di Rosa canina (I.)

This species is a common but beautiful ornament of our hedge-rows, flowering in June, and exhaling a very fragrant perfume. It rises to the height of eight or ten feet, has a smooth stem; with two alternate, compressed, conical-hooked, bright red internodial prickles; and elongated branches spreading from the upright. The leaves are pinnate, composed of seven ovate, pointed, inodorous leaflets, naked and smooth on both sides, but the upper shining, and of a deeper green than the under. The petioles are prickly and glandular. The floral peduncles generally form a kind of corymb; but are sometimes solitary and smooth. The calyx is pubescent within, and on the margin: the petals are inversely cordate, generally five, of a pale flesh colour, often white, and odorous. The fruit is an ovate, fleshy, smooth, red-berried calyx, with the apex sometimes open, sometimes shut, containing about thirty long angular seeds, embedded among white silky bristles.

Qualities. — The fruit is inodorous, and has a pleasant sweet acidulous taste, depending on uncombined citric acid and sugar, which it contains.

Medical properties and uses. — The pulpy part of heps is cooling, but possesses no direct medicinal properties. It is used only for the formation of the confection.

Official preparation. *Confectio Rosæ caninae*. L.

ROSMARINUS. *Spec. Plant. Willd.* i. 126.

Cl. 2. Ord. 1. Diandria Monogynia. Nat. ord. Verticillatæ Linn.
Labiatae Juss.

G. 62. Corolla unequal, with the upper lip two-parted. Filaments long, curved, simple with a tooth.

Species 1. *R. officinalis*.¹ Official Rosemary. *Med. Bot.* 2d edit.
329. *Sibthorp Flora Græca*. t. 14.

Official. ROSMARINICACUMINA. Lond. ROSMARINI OFFICINALIS CACUMINA. Edin. ROSMARINA; HERBA. Dub. Rosemary tops.

Syn. Romarin (F.) Rosmarin (G.) Ramarino (I.) Remero (S.)

This plant is a native of the south of Europe, Greece, and Barbary; but has been long cultivated in Britain, where it flowers in April and May. It is an evergreen, erect, very branching shrub, rising about four feet in height; the branches thickly covered with leaves, and the smaller ones four-cornered and downy. The leaves are opposite, almost sessile, more than an inch in length, and one-sixth of an inch broad, linear, obtuse, entire, with the margin turned back; of a dark green colour, smooth, and shining on the upper side, woolly, veined, and of a silvery hue on the under. The flowers, which are placed on little axillary, opposite, leafy branches, are axillary and terminal, erect, on short stalks. The calyx is bell-shaped, bilabiate, villous; the upper lip entire, the under cloven into two pointed segments: the corolla is ringent, downy, pale blue, variegated with purple and white; the tube longer than the calyx, a little compressed, the upper lip erect and bifid, the lower cleft into three segments, the middle one larger, concave, and notched. The stamens are longer than the upper lip, arched, furnished with a tooth above the base, and supporting an oblong, blue, terminal anther. The style is the length of the stamens, thread-like, arched, and terminated by a simple sharp stigma. The seeds are four, oblong, and lodged in the bottom of the calyx.

Qualities. — Both the leaves and flowers have a grateful aromatic odour, and a bitterish warm pungent taste, depending on an essential oil, which appears to be combined with camphor: Vide *Ol. rosmarini*. Alcohol extracts its virtues completely, but they are only partially given out to water. By distillation with water, its essential oil is obtained. The leaves afford the greatest quantity; the flowers the smallest.

Medical properties and uses. — Rosemary is stimulant, and, according to some, emmenagogue.² It has been given in the form of infusion in nervous head-ach, hysteria, and chlorosis, but it is now scarcely ever prescribed, unless as an odorous ad-

¹ *Διευρωρίς* Dioscoridis.

² *Bergius, Mat. Med. a Regno Veget.* p. 21.

junct to sternutatory powders. The dose in substance may be from grs. x to ʒij; and from ʒj to ʒifs, in infusion.

Official preparations. *Oleum Rosmarini*. L. E. D. *Spiritus Rosmarini*. L. E. D.

RUBIA. *Spec. Plant. Willd.* i. 603.

Cl. 4. *Ord.* 1. Tetrandria Monogynia. *Nat. ord.* Stellatæ Linn.

Rubiaceæ Juss.

G. 187. Corolla of one petal, bell-shaped. Berries two, one-seeded. *Species* 1. *R. tinctorum*.¹ Dyers' Madder. *Med. Bot.* 2d edit. 173. t. 67.

Official. RUBIÆ RADIX. *Lond. Dub.* RUBIÆ TINCTORUM RADIX. *Edin.* The root of Dyers' Madder.

Syn. Garance (F.) Krappwurzel; Færberrothe (G.) Radiche di Robbia o Garanza (I.) Rubia (S.) Murjith (H.) Mantjittie (Tam.)

This plant is a perennial, with annual stems. It is a native of the south of Europe, the Levant, and Africa; and has been cultivated to a very great extent for upwards of 300 years in Zealand: it flowers in June.² The root is composed of many long, thick, succulent fibres, about the thickness of a man's finger, united at the top in a head; from which go off many side roots, extending under the surface of the ground, and throwing up shoots, by which the plant may be propagated. The stems are quadrangular, jointed, procumbent, and furnished with rough, short, hooked points, by which they are supported on the neighbouring plants. The leaves, which are in whorls of four or five, are elliptical, pointed, rough, and ciliated, about three inches long, nearly one broad in the middle; and having the midribs armed with the same kind of spines as on the stems. The branches bearing the flowers spring from the joints of the stems. The flowers are small, terminal, with a campanulate yellow corolla, cut into four oval segments: the filaments short, supporting simple erect anthers; and the germen is inferior and double, crowned with a slender style bearing two globular stigmas; and becoming two round black berries.

Madder root is dug up for use in the third summer of its growth. It is then dried gradually in a stove built in the form of a tower, containing several floors; and from the uppermost it is progressively removed to the lowest; after which it is thrashed, to remove the cuticle; and then dried completely in a kiln. When perfectly dried it is pounded, and finally packed in barrels for the market. There are three descriptions of this powder. The first pounding separates and reduces to a

¹ *Erythrorhizon* Dioscoridis.

² As madder is an article of great national importance as a dye-stuff, many attempts have been made to cultivate it in this country, but without success, the Dutch madder being both better and cheaper than ours. That it can be grown to great perfection in this country is certain, and the effort to introduce its culture should not be dropped. The best comes from Zealand; to which, Britain alone is said to have paid 200,000*l.* annually for madder. *Bancroft on Permanent Colours*, 2d edit. v. ii. p. 222.

powder the fibrillæ, and the skins of the larger roots only, which is sold at a low price, under the name of *mull*; a second pounding separates one-third of the remaining parts of the large roots, and is sold under the name of *gemcens*: and a third pounding forms into a powder the pure, bright residue of the roots, which is the best; and is simply called *crop madder*.¹

Qualities.—Madder has an unpleasant but not strong odour, and a bitter slightly austere taste. It attracts the moisture of a damp atmosphere, and is injured by it. To water, alcohol, and volatile oils, at a temperature of 60°, it imparts a red colour; but to water at 212° the colour imparted has a deep tinge of brown. Its principal constituent is extractive; which is precipitated by solution of alum brownish red; by the alkaline carbonates and lime-water, blood-red or lake; and by acetate of lead, brown.² The taste and odour of the madder are imparted to water and alcohol by infusion.

Medical properties and uses.—Madder is usually regarded as emmenagogue; and was formerly much relied on in chlorosis and scanty and difficult menstruation. It has also been recommended in jaundice, and the atrophy of infants: but its efficacy in any disease is extremely problematical. Its colouring matter, however, is carried into the circulation, tinges the urine a blood-red colour, and is deposited in the bones.³

The dose of madder may be from grs. xv to ʒj, united with sulphate of potash; and given three or four times a day.

RUMEX. *Spec. Plant. Willd.* ii. 249.

Cl. 6. Ord. 2. Hexandria Digynia. Nat. ord. Holoraceæ Linn. Polygonæ Juss.

G. 699. Calyx three-leaved. Petals three, converging. Seed one, three-sided.

** *Hermaphrodites*: with naked valves, or not marked with a grain.

Species 18. *R. aquaticus*. Great Water-dock. *Smith Flora Brit.* 394. *Med. Bot.* 2d edit. t. 299.

*** with *diclinous* flowers.

Species 31. *R. acetosa*. Common Sorrel. *Med. Bot.* 2d edit. t. 230. *Smith Flora Brit.* 396.

1. RUMEX AQUATICUS.

Official. —; **RADIX.** *Dub.* The root of Water-dock.

Syn. Wasser Ampfer (*G.*)

Water-dock is an indigenous, perennial plant, growing in ditches, and on the banks of rivers; flowering in July and August. The root is thick. The stem rises about five feet in height, straight, furrowed, and smooth. The leaves are almost glaucous, lanceolate, and pointed; and the lower ones obcor-

¹ *Bancroft*, l. c.

² *Annales de Chimie*, iv. 104.

³ *Vide Phil. Trans.* xxxix. 287—299. The leaves of the plant are said to tinge the milk of cows reddish, when eaten by them.

date at the base. The flowers are in approximate whorls. They are nodding, on capillary pedicles, thickened at the apex. The valves are large, ovate, veined, entire, sometimes a little toothed, and all marked with a small linear, often obscure grain: the seed is large.

Qualities.—The root is nearly inodorous, and has a very austere taste. It yields its virtues to water.

Medical properties and uses.—Water-dock root is powerfully astringent. It was formerly celebrated under the name *Herba Britannica*, as a remedy for scurvy, and some cutaneous affections; but it is now scarcely ever employed.

2. RUMEX ACETOSA.

Official. ACETOSÆ FOLIA. *Lond.* RUMICIS ACETOSÆ FOLIA. *Edin.* Common Sorrel leaves.

Syn. Oseille ordinaire (F.) Sauer Ampfer (G.) Acetosa (L.) Acedera (S.)

This is an indigenous perennial plant, common in pastures, and flowering in June. The stem is round, striated and leafy, and rises from one to two feet in height. The leaves are oblong-ovate, and arrow-shaped; the radical ones petiolate and obtuse; and those of the stem sessile, amplexicaule, pointed, and a little rolled back. The flowers are dioecious, in branched panicles, and arranged in half whorls: the calyx and corolla small; the stamens very short, bearing large yellow anthers, and the styles short, with large crimson-bearded stigmas. The valves are ovate, entire, and graniferous.

Qualities.—Sorrel leaves are inodorous, and have a grateful austere acidulous taste, depending on the presence of superoxalate of potash, which they contain.

Medical properties and uses.—These leaves are refrigerant and diuretic. Their expressed juice diluted with water, or a decoction of them in whey, affords a useful drink in cases of inflammatory fever; and eating them in large quantities daily as a salad, may prove serviceable in some cutaneous affections. In France the plant is cultivated for the use of the table.

RUTA. *Spec. Plant. Willd.* ii. 542.

Cl. 10. *Ord.* 1. Decandria Monogynia. *Nat. ord.* Multisiliquæ Linn. Rutaceæ Juss.

G. 827. Calyx five-parted. Petals concave. Receptacle surrounded by ten melliferous points. Capsule lobed.

Sp. 1. *R. graveolens*.² Common Rue. *Med. Bot.* 2d edit. 437. t. 174.

Official. RUTÆ FOLIA. *Lond. Dub.* RUTÆ GRAVEOLENTIS HERBA. *Edin.* The leaves and herbaceous part of Rue.

Syn. Rue sauvage (F.) Raute, Garten raute (G.) Ruta (L.) Ruta de desperado (S.) Suddap (Arab.) Sauri (H.)

Rue is an evergreen perennial, a native of the South of Europe, but much cultivated in our gardens, flowering in June

² 'Ρουτ-κρυφον Dioscoridis.

and September. It rises to the height of two or three feet, shrubby and branching, with the lower part of the stems ligneous, and covered with a rough, striated, gray bark; but the upper branches are smooth, and of a pale green colour. The leaves are doubly pinnate; the pinnæ distant; and the leaflets obovate, sessile, decurrent, and very obscurely crenate, with the terminal one generally notched; the surface punctured, the texture rather thick, and the colour blueish green or glaucous. The flowers are produced in terminal branched corymbs on subdividing peduncles. The flower which opens first has a five-parted calyx, and a five-petalled corolla; but the others have the calyx four-parted only, and a four-petalled corolla. The petals are concave, wrinkled at the edge, of a pale greenish yellow colour, and very much spread: the stamens are awl-shaped, the length of the petals, and bearing small yellow quadrangular anthers.* The germen is large, oval, punctured, deep green, with crucial furrows, and crowned with a short style and simple stigma: and the seeds are angular, rough, and blackish.

Qualities.—Rue leaves have a powerful unpleasant odour, and a hot, bitter, nauseous taste. In the recent state, the leaves possess so much acrimony as to inflame and blister the skin; but much of this is dissipated in drying. In distillation with water they yield a pungent volatile oil, on which their virtues chiefly depend: consequently, decoction is a bad form of preparation of rue.

Medical properties and uses.—Rue is stimulant, and antispasmodic; and is supposed to possess emmenagogue powers. It was in high estimation so early as the time of Hippocrates, who frequently ordered it in female complaints.[†] In modern practice it is chiefly used in hysteria and flatulent colic. I have found a strong infusion of it, exhibited per anum, of great service in relieving the convulsions of infants, arising from flatulence and other intestinal irritations. The dose of the powdered leaves is from grs. xv to ʒij, given twice or three times a day.

Official preparations. *Oleum Rutæ*, D. *Extractum Rutæ graveolentis*, E. D.

SABINÆ FOLIA. Vide *Juniperus*.

SACCHARUM. *Spec. Plant. Willd.* i. 122.

Cl. 3. Ord. 2. Triandria Digynia. Nat. ord. Gramina.

G. 122. *Calyx* two-valved, involucre, with a long lanugo. *Corolla* two-valved.

* These stamens display in a striking manner the spontaneous motions which take place in some plants. They are very stiff, and cannot be disturbed from the posture in which they happen to be; but nevertheless they rise, by a spontaneous movement, one or two at a time, and lean over the stigma till the pollen be shed, when they fall back again, and give place to others.

† De Morbis Mulier.

Spec. 4. S. officinarum. Common Sugar-Cane. Sloane's Jamaica, i. 101. t. 66. Phil. Trans. lxxix. 207—278. t. 3.

Officinal. SACCHARUM. SACCHARUM PURIFICATUM. Lond. SACCHARUM. a. non purificatum. b. purificatum. c. syrupus empyreumaticus. Edin. SACCHARUM PURIFICATUM; SACCHARUM RUBRUM, EJUSDEMQUE SYRUPUS. (Molasses.) Dub. Unrefined Sugar. Refined Sugar. Molasses.

Syn. Sucre; Sucre-pur (F.) Zucker; Weisser Zucker (G.) Zucchero brutto; Zucchero in pane; Melassa (I.) Azúcar; Atriaca (S.) Shukhir (Arab.) Chenec (H.) Sakkara (San.)

The common sugar-cane is a native of both the East and West Indies. It is cultivated in Persia, and very abundantly in the West Indies. The root is jointed, and sends up several jointed stems, which rise in general to the height of eight or ten feet. A leaf springs from each joint, and the base of it embraces the stem to the next joint above its insertion, before it expands. From this point each leaf is about three or four feet long, and comparatively narrow, like a blade of grass; with the midrib broad, and prominent on the under side, and the edges thin, and sharply toothed. The flowers are in terminal panicles, two or three feet in length, and composed of subdivided spikes, with long flexuose down or lanugo, which incloses the flowers, and hides them from the sight. The seed is oblong-pointed, and ripens in the valves of the flowers.

Although the sugar-cane is undoubtedly a native of the American continent and its islands, yet the culture of it, and the art of making sugar, were carried from Spain to the Canary Islands, and thence extended, about the end of the fifteenth century, to the West Indies and the Brazils; the former of which supplies the greater part of the consumption of Europe¹, a small proportion only being brought from the East Indies. The quantity of sugar yielded by the plant is varied by climate: thus, the Otaheitean cane contains more crystallized matter than that of any other place.

In the West Indies the plant is propagated by cuttings of the stalk, taken from near its top, and laid horizontally in the ground. The canes are cut, for the purpose of making sugar, between the sixth and thirteenth month of their growth, when the stems have acquired from seven to ten feet in height, a proportionable size, and the cuticle appears smooth, dry, and brittle. This generally happens in the months of February, March, and April. As soon as they are cut, the canes are stripped of their leaves, and crushed between iron rollers, to express the juice, which is received into large leaden vessels, called *receivers*, whence it is immediately conveyed into a large copper vessel, named the *clarifier*, where it is mixed with lime, in

¹ The average importation into England and Scotland between 1787 and 1790, amounted annually to 1,952,262 cwt. *Moseley's Hist. of Sugar*, p. 154.

the proportion of one pint to 100 gallons of juice, and heated to the temperature of 140° .¹ A thick scum soon forms on the top, from under which the clear liquor is drawn off by a cock into a large copper boiler, where it is boiled till the bulk of the liquor is very considerably diminished. The boiling is successively repeated in four other coppers progressively smaller; and from the last, which is called the *teache*, it is conveyed into shallow wooden coolers, where it grains, and the concreted mass separates from the uncrystallizable matter or molasses. This mass is then put into empty hogsheads, having holes in the bottom, through each of which the stalk of a plantain-leaf is thrust; and when the molasses has drained off, the process is finished. In this state the sugar is brought home, under the name of *raw*, or *muscovado* sugar. In Europe, however, sugar undergoes another process for its purification. It is coarsely ground, dissolved in lime-water, and clarified with bullocks' blood; then boiled down to a proper consistency, the impurities being skimmed off as they rise, and poured into conical earthen vessels, where it is allowed to grain. The point of the cone is perforated; and the base covered with moist clay, the moisture of which percolates the sugar, and runs off through the perforated apex, which is placed undermost, carrying with it any uncrystallized impure syrup. In this state it is called *loaf* sugar; and requires a second purification before it is considered as completely *refined* sugar.

Qualities. — *Raw* or *muscovado* sugar is inodorous, and sweet to the taste. It is in concreted masses, consisting of small, dry, sparkling, irregular crystals of a yellowish colour. *Refined* sugar is also inodorous, and sweet to the taste. Its colour is pure white; and the mass or loaf in which it is concreted should be hard, extremely brittle, pulverulent, and persistent in the air. One hundred parts of sugar in its ordinary state contains, according to Berzelius, 5.3 of water: and it requires its own weight only of water at 48° for its solution. When united at a higher temperature with a smaller quantity of water, it remains dissolved, forming syrup. Four parts of boiling alcohol dissolve one part of sugar; but by rest a moiety of the sugar again separates in crystals. Oils also readily combine with it, and the mixture is miscible with water. Lime and the fixed alkalies unite with sugar, and form compounds, without any sweetness of taste. The concentrated strong acids dissolve and decompose sugar, but the weaker simply dissolve it; and the alkaline and earthy hydro-sulphurets, sulphurets,

¹ The lime extricates carbonic acid from the juice, and forms with the *herbaceous* or *feculent* matter an insoluble compound, which rises to the surface, and forms the scum.

and phosphurets, decompose it, and resolve it into a substance resembling gum.¹ Its ultimate constituents, according to the experiments of Lavoisier, are, 64 oxygen, 28 carbon, and 8 hydrogen, in 100 parts²: but according to Thenard and Guy Lussac, the proportions are oxygen 50.63, carbon 42.47, hydrogen 6.90, with which the last analysis of Berzelius nearly coincides.

Molasses has a peculiar odour, and a sweet empyreumatic taste. It is of a brown or black colour, thick, and viscid; and is constituted chiefly of the uncrystallizable part of the juice of the sugar cane, which Proust has denominated liquid sugar. It is more soluble in alcohol than sugar.

Medical properties and uses.—Raw sugar and molasses are laxative; and refined sugar externally applied is escharotic. All the kinds are extremely nutrient, and more generally used as articles of diet than for medicinal purposes; except it be to cover the taste of nauseous drugs. Sugar, however, is said to be a preventive of worms; and to prove useful in scurvy: but it is hurtful to those of bilious, hypochondriacal, and dyspeptic habit. But perhaps the most important use of sugar is as an antidote to the poison of verdegriis. It requires to be given in large quantities, both in the solid form and in solution in water. It appears to act chemically on the poison, and also by increasing the peristaltic action of the bowels.³

Official preparations. *Syrupi omnes.* L. E. D. *Trochisci omnes.* E. *Confectiones omnes.* L.

SAGAPENUM. Lond. Edin. Dub. Sagapenum.

Syn. Sagapenum (F.) Sagapengummi (G.) Sagapeno (I.) Sugbeenuj (Arab.) Kundel (H.)

This gum-resin which is brought to this country from Smyrna, Aleppo, and Alexandria, is the concrete juice of an unknown Persian plant. Dioscorides mentioned it as the juice of a ferula growing in Media⁴; and nothing more is known of its source at this day, although Willdenow supposes it to be the *Ferula persica*.⁵

Qualities.—Sagapenum has an alliaceous odour, and a hot, acrid, bitterish taste, not unlike that of asafetida, only weaker. It is in agglutinated drops or masses, of an olive, or brownish yellow colour, slightly translucent, and breaking with a horny fracture. It softens and is tenacious between the fingers; melts at a low heat, and burns with a crackling noise and white flame, giving out abundance of smoke, and leaving behind a

¹ Rollo on Diabetes, 452. Thomson's Chemistry, 4th ed. vol. iv. 660.

² A sugar in every respect resembling common sugar is obtained from the maple.

³ Vide *Traité des Poisons*, &c. Par M. P. Orfila, tom. i. p. 281.

⁴ Dioscorides, lib. 3. c. 95. (*Sagapenum*.)

⁵ This plant was fully described by Dr. Hope, as the plant which yields the asafetida, which, however, is the produce of another species. See *Phil. Trans.* lxxv. 36. t. 3, 4.

light spongy charcoal. Water and strong alcohol dissolve it partially; but it is almost completely soluble in proof spirit. In distillation with water it yields a little volatile oil; and impregnates the water strongly with its flavour. Its constituents appear to be gum, resin, and an essential oil, on which its virtues probably depend.

Medical properties and uses. — This gum-resin is antispasmodic, and emmenagogue; and externally discutient. It is sometimes employed in hysteria, chlorosis, and other cases in which asafetida has been found serviceable; but it is much inferior in its powers. It is usually given in substance, in doses of from grs. x. to ʒss. made into pills.

SALIX. *Spec. Plant. Willd.* iv. 703.

Cl. 22. *Ord.* 2. Dioecia Diandria. *Nat. ord.* Amentaceæ.

G. 1756. Male. *Amentum* cylindrical. *Calyx* a scale. *Corolla* none. *Gland of the base* nectariferous.

Female. *Amentum* cylindrical. *Calyx* a scale. *Corolla* none. *Style* bifid. *Capsule* one-celled, two-valved. *Seeds* downy.

* with smooth serrated leaves.

Species. 10. *S. fragilis.* Crack Willow. *Smith Flora Brit.* 1051. *Med. Bot.* 2d edit. 18. t. 8. *Hoffman Sal.* ii. 9. t. 31.

*** with villose leaves.

Species. 33. *S. alba.* White Willow. *Smith Flora Brit.* 1071. *Hoffman Sal.* i. 41. t. 7, 8.

Species 101. *S. caprea.* Great round leaved Sallow. *Smith Flora Brit.* 1067. *Hoffman Sal.* i. 25. t. 3. f. 1.

1. SALIX FRAGILIS.

Official. — CORTEX. *Dub.* Bark of the Crack Willow.

Syn. Ecorce de Saule (F.) Weidenrinde (G.) Corteccia di Salcio (I.) Corteza de sauce (S.)

This species of willow is indigenous, growing upon the banks of rivers, and flowering in April and May. It grows to a considerable height, sending off upright branches; which are covered with an even brownish yellow bark, and are very fragile at the base. The leaves are petiolate, from three to five inches in length, lanceolate, pointed, obtusely serrated, inflexed, and glandular; smooth on both surfaces, shining on the upper; and in the younger ones, ciliated at the apex. There are sometimes no stipules; but when present they are rounded, and obscurely toothed. The male catkin is pale, cylindrical, rather lax, with ovate, downy scales. The nectary is composed of two yellow glandular scales, the larger between the stamen and the receptacle, and the smaller between the stamen and the scale. The stamens are two, filiform, and smooth. The female catkin resembles the male; with the germin egg-shaped, supporting two bifid, erect stigmas. The capsule is ovate, and contains many small seeds. The bark requires to be dried in an oven moderately heated.

Qualities. — The dried bark is inodorous, bitter and austere.

2. SALIX ALBA.

Official. SALIX; CORTEX. *Dub.* Willow Bark.

The white willow is indigenous, growing in woods and moist places, and flowering in April and May. It is a large tree, with a cracked bark; and furnished with many round, spreading branches; the younger of which are silky. The leaves are alternate, on short petioles, lanceolate, pointed, acutely and regularly serrated, with the lower serratures remote and glandular: pubescent on both sides, and silky beneath: the younger ones are altogether silvery, and convoluted. There are no stipules. The catkins are terminal, cylindrical, elongated, slender, and many flowered, with elliptical, lanceolate, brown, pubescent scales. The stamens are yellow, and a little longer than the scales: the style is short; and the stigmas bipartite and thick. The capsules are nearly sessile, ovate, brownish, and smooth.

The bark of this species is easily separated all the summer. It has been used for tanning leather; and the inner part of it affords the miserable inhabitants of Kamschatka a substitute for bread.

Qualities. — The same as those of the former species.

3. SALIX CAPREA.

Official. SALICIS CORTEX. *Lond.* Willow Bark.

This species of willow is indigenous, very common in woods, flowering in April. It is a middling-sized tree, with the branches round, even, shining, and brownish; and the shoots pubescent. The leaves are alternate, petiolate, and varying in shape, being sometimes elliptical or roundish, pointed, large, undulated, waved, or serrated; smooth and dark green on the upper surface, and densely tomentose and veined on the under. The stipules are crescent-shaped or roundish, recurved, waved, and tomentose. The petioles are linear, and densely villose. The catkins appear before the leaves, are ovate, thick, many-flowered, with obovate, very hairy scales. The stamens are yellow: the stigmas nearly sessile, undivided, but at last occasionally cleft. The capsules are pedicelled, ovate, bellied at the base, and downy.

Qualities. — The bark of this species, like that of the two former, is inodorous, bitterish, and astringent.

The bark of the white willow only has been chemically examined; but as the other two species agree with it in their sensible qualities, it is probable that they agree also in other respects. Water extracts its virtues, and affords a decoction of a reddish colour, which is precipitated by a solution of isinglass, the carbonate of potash and of ammonia; and by lime-water, which throws down a precipitate at first blue, and af-

terwards buff-coloured: sulphate of iron also produces a dark green precipitate. The watery extract is reddish, brittle, has a bitter taste, and does not deliquesce. Digested in alcohol this bark affords a greenish yellow tincture, which water renders turbid. When evaporated, the extract is of a bright yellow colour, bitter, melts at a moderate heat, and emits an aromatic odour.¹ The constituents, therefore, of white willow bark, and probably of the two other species also, are tannin, bitter resin, extractive, and gluten.

Medical properties and uses. — These barks are tonic, and astringent. They have been given as a substitute for the cinchona bark; and in some cases intermittents and remittents have yielded to their use.² They have also been efficaciously administered in cases of debility, dyspepsia, and pulmonary hemorrhagies; and have apparently been more serviceable in phthisis and hectic fever than the cinchona. They may be given either in substance, or in the form of decoction. Of the powdered bark from ʒss. to ʒj. may be given for a dose, combined with aromatics, myrrh, or the cinchona bark, as circumstances direct.

SALVIA. *Spec. Plant. Willd.* i. 127.

Cl. 2. *Ord.* 1. *Diandria Monogynia. Nat. ord. Verticillatæ Linn. Labiatæ Juss.*

G. 63. *Corolla* unequal. *Filaments* affixed transversely to a pedicel. *Species* 7. *S. officinalis.*³ Garden Sage. *Med. Bot.* 2d ed. 352. t. 127.

Officinal. **SALVIE OFFICINALIS FOLIA.** *Edin. SALVIA. Dub.*

The leaves of Sage.

Syn. Sauge (F.) Salbei (G.) Salvia (L.) Salvia (S.) Says-elley (Tam.) Saulbëy (Pers.)

The common or officinal sage is a perennial plant, a native of the South of Europe, cultivated abundantly in our gardens, flowering in June. It rises about two feet in height, with a quadrangular, shrubby, branching stem: the younger branches whitish, and downy. The leaves, which stand in pairs on footstalks, are ovate-lanceolate, wrinkled, crenate, and sometimes tinged reddish or purple. The flowers are on long terminal spikes, in six-flowered distant whorls, accompanied with ovate, acute, deciduous bractes. The calyx is striated, purplish on the upper part, and notched into three acute teeth above, and two below: the corolla is tubular and bilabiate, of a beautiful blue variegated with purple and white; the upper lip obtuse, notched, and concave, the under three-lobed, the lateral

¹ *Ann. de Chimie.* liv. 290. *Thomson's Chemistry,* 4th ed. vol. v. p. 221.

² The bark of the white willow was first used by the Rev. Edmund Stone, of Chipping Norton, Oxfordshire. He gave it successfully in doses of one drachm of the powder every hour between the paroxysms, in tertians; and added one-fifth of the Peruvian bark to augment its power, in obstinate quartans. *Phil. Trans.* iii. 195.

³ *Ελισιφάγον* Dioscoridis.

lobes bent backwards. The filaments are affixed transversely at their middle to short pedicels, on a moveable axis, and are curved threads bearing a gland on the lower end, and on the upper a yellow oblong anther: the style is long, curved, purple with a bifid stigma, and rising from the centre of four naked seeds in the bottom of the calyx.

There are many varieties of common sage, but their properties are the same. It is cut when in flower, and hung up in a shady place to dry.

Qualities.—The odour of sage is fragrant, and the taste warm, bitterish, and aromatic: qualities depending on an essential oil which can be obtained separate in distillation with water. Sulphate of iron strikes a deep black colour with the infusion.

Medical properties and uses.—Sage is tonic, carminative, and slightly astringent. The estimation in which it was held by the antients is sufficiently well known; but it does not support the character it formerly acquired; and “*salvia salvatrix naturæ conciliatrix*”¹ is very little regarded by the modern practitioner. Infusions of the leaves, if strained before too much of the bitter is extracted, prove very grateful to the stomach, when nausea is troublesome in febrile complaints; and when drunk cold they are said to check hectic perspirations², and those which frequently attend convalescencies. The infusion either alone, or mixed with honey and vinegar, is a well known gargle in cases of sore throat, and relaxation of the uvula. The dose of the pulverized leaves is from grs. xv. to 3ʒs; or, of an infusion made with ʒj of the dried leaves and ʒj of boiling water, fʒij may be taken every three or four hours.

SAMBUCUS. *Spec. Plant. Willd.* i. 1494.

Cl. 5. *Ord.* 3. Pentandria Trigynia. *Nat. ord.* Dumosæ Linn. Caprifoliæ. Juss.

G. 569. Calyx five-parted. Corolla five cleft. Berry three-seeded. *Species* 3. *S. nigra*.³ Common Elder. *Med. Bot.* 2d ed. 596.

Smith Flora Brit. 336. *Engl. Bot.* 476.

Officinal. SAMBUCI FLORES. *Lond.* SAMBUCI NIGRÆ FLORES; BACCÆ CORTEX. *Edin.* SAMBUCUS; CORTEX INTERIOR, FLORES, BACCÆ. *Dub.*

The flowers, berries, and inner bark of Common Elder.

Syn. Sureau ordinaire (*F.*) Fliederblumen (*G.*) Corteccia; bacche, e fiori di Sambuco (*I.*) Sabuco (*S.*) Uktee (*Arab.*)

The common elder is a very abundant, indigenous, middle-sized shrubby tree, growing commonly in hedges; flowering in June, and ripening its berries in September. It is much branched near the top, and covered with a roughish gray bark.

¹ *Schola Saleritana*, c. 38, p. 406.

² *Van Swieten's Comment.* ii. 370.

³ *Astruc* Dioscoridis. The leaves laid in the subterraneous passages of moles are said to drive them away.

The wood is white, hard, and has a large spongy pith. The leaves are pinnate, composed of five oval, pointed, serrated leaflets, nearly equal at their base. The flowers are in terminal cymes, consisting of five principal branches, and many small ones, with some of the flowers sessile. They are cream-coloured; with the calyx superior, and permanent, and the corolla monopetalous, rotate, and somewhat convex. The berries are globular, and when ripe of a purplish black colour.

Qualities. — The flowers have a peculiar faint sickly odour and bitterish taste, which are imparted to water by infusion, and also by distillation, in which a small portion of butyraceous oil is separated. The berries are inodorous, have a sweetish taste; and yield on expression a fine purple juice, which contains saccharine matter, jelly, and the malic acid. The inner bark is inodorous, and has a faint sweetish taste, which is succeeded by a slight bitterness, and a very permanent acrimony. Both water and alcohol extract their virtues.

Medical properties and uses. — The flowers and berries are diaphoretic and aperient. The berries were formerly much used in febrile diseases, rheumatism, gout, and eruptive diseases, but they are now scarcely ever ordered. The flowers are used chiefly in fomentations and cooling ointments; and to afford their odours to water in distillation. The bark is a hydragogue purgative, and in large doses proves emetic at the same time. It is said to prove useful in dropsy; and in smaller doses to be a useful aperient and deobstruent in various chronic affections. The dose of the bark is from grs. x. to ʒss. given in wine: or ʒj may be boiled in Oj of milk or of water down to Oj, and the fourth part taken for a dose.

Official preparations. *Succus spissatus Sambuci nigrae*. E. D. *Unguentum Sambuci*. L. D.

SAPO. Soap.¹

Soap is a compound of margaritic and oleic acids² with an alkaline, or an earthy, or an oxidized metalline base. The first kind is that which is employed in medicine, and has been longest known, having been invented by the Gauls at a period antecedent to historical record. Alkaline soap is of two kinds; one made with soda, and oil either animal or vegetable, or tallow, and called *hard soap*; the other made with potash and similar oily matters, and called *soft soap*. For medical pur-

¹ The name is derived, according to Beckman, from the old German word *Sepe*. — *History of Inventions*, iii. 239.

² Chevreul, whose experiments have elucidated the nature of soap more than those of any other chemist, has ascertained that fixed oils and tallow consist of two substances, one solid, which he has named *stearin*, and the other fluid, which he has named *eläin*. These are altered by salifiable bases, and converted into the above named acids, vide *Ann. de Chimie et de Phys.*

poses it is essential that both kinds be made from the purest materials; and therefore the soap made in countries which produce olive oil, as the south of France, Italy, Tripoli and Spain, is preferable to the soap of this country, which is generally manufactured from grease, tallow, and other kinds of fat.

1. HARD SOAP.

Official. SAPO DURUS. *Lond.* SAPO DURUS; *et soda confectus.* *Edin.* SAPO; DURUS HISPANICUS. *Dub.* Hard Soap. Spanish Soap.

Syn. Savon blanc (*F.*) Spanische Seife (*G.*) Sapone duro (*I.*) Xabon (*S.*) Nat Sowerum (*Am.*) Saboon (*Dub.*)

Hard soap is manufactured in Spain in the following manner: To five parts of barilla, coarsely ground to powder, one part of quicklime rendered fluid with a small portion of water, is added; and after some time the clear liquor, which is a strong solution of caustic soda, is drawn off, and called the *first ley*; with the residue more water is then mixed, and drawn off after some time, and called the *second ley*; and a *third ley* is procured by another portion of water treated in a similar manner. This last ley is then mixed with a quantity of olive oil equal in weight to the barilla employed, and the mixture boiled in an iron vessel, the second ley and a portion of the first being added in a gradual manner during the boiling. The boiling mixture is constantly stirred with a wooden pole, and when it becomes tolerably thick, a small portion of common salt is added, and the boiling continued for half an hour. The fire is then damped, and after some hours the clear liquor, which has separated, is drawn off, and the half-made soap again boiled with a little fresh water and the residue of the first ley. After the separation of the fluid of this boiling, it is again heated with a little water, and then poured into wooden vessels called frames, where it cools, and in a few days acquires a sufficient degree of hardness. Three parts of oil and three parts of soda produce five parts of firm soap.¹ Castile soap is made in the same manner, except that the marbled appearance which it presents is produced by the addition of sulphate of iron to a part of the alkaline ley, after the soap is fully boiled, which gives the blue colour; and the stirring in red oxide of iron, when the soap is almost made, gives the red colour.

Qualities. — Well made hard soap, fit for medical use, has very little odour, and a nauseous alkaliescent taste; is white, and of a firm consistence, does not feel greasy, and is devoid of any saline efflorescence on the surface. With water it forms a milky opaque solution; and with alcohol a nearly transparent, somewhat gelatinous solution.² It is decomposed by all the

¹ *Annales de Chimie*, xix. 253.

² The alcoholic solution of soap is a convenient test for discovering earthy salts in mineral waters.

acids, and by many neutral salts; hence hard water, which contains sulphate of lime, does not properly dissolve soap. According to the experiments of Darcet, Lelievre, and Pelletier, 100 parts of newly-made soap consist of 60·94 oil, 8·56 alkali, and 30·50 water: but part of the water is lost by keeping, and the soap becomes lighter.

2. SOFT SOAP.

Offical. SAPO MOLLIS. *Lond. Edin.* Soft Soap.

Syn. Savon Mou (F.) Sapone Molle (I.)

This soap is prepared in the same manner as the former, a caustic ley of potash, however, being used instead of the soda ley. It was this variety of soap which was originally made by the Gauls and Germans, who employed wood ashes to afford their ley; and these are still used in many places.

Qualities.—Soft soap differs from hard soap chiefly in its consistence, which is never greater than that of hog's lard.

Medical properties and uses.—Soap is regarded as purgative and lithontriptic; externally applied it is stimulant and detergent. For internal use the hard soap only is employed. It is occasionally ordered in habitual costiveness, and in jaundice, combined with rhubarb, or some bitter extract; but its power as a purgative is very limited, and it cannot act in any other way in relieving jaundice. It is more useful in calculous habits, in which, however, its action is altogether confined to the stomach; for as soap is decomposed by the weakest acids, its alkaline base corrects the acidity so prevalent in the stomachs of calculous patients, and thus at least assists in checking the increase of the disease. Soap is also beneficial in decomposing some metallic poisons when taken into the stomach; and, as it is the antidote which can most readily be procured, should always be early resorted to. It is necessary, in this latter case, to give it in solution; of which a teacupful should be drunk at short intervals, till the effects expected from it be produced. In other cases it is preferable to give it in substance. As an external remedy, soap is efficaciously used in frictions to sprains and bruises; and we have seen much benefit derived from rubbing the tumid bellies of children labouring under mesenteric fever, with a strong lather of soap every morning and evening. The dose internally is from grs. v. to ʒss. made into pills.

Offical preparations. *Pilulæ Saponis cum Opio.* L. *Emplastrum Saponis.* L. E. *Ceratum Saponis.* L. *Linimentum Saponis comp.* L. *Linimentum Saponis cum Opio.* E.

SARSAPARILLÆ RA'DIX. Vide *Smilax*.

SASSAFRAS LIGNUM ET RA'DIX. Vide *Laurus*.

SCAMMONIÆ GUM'MI RESINA. Vide *Convolvulus*.

SCILLA. *Spec. Plant. Willd.* ii. 125.

Cl. 6. Ord. 1. Hexandria Monogynia. Nat. ord. Coronariæ Linn.
Asphodeli Juss.

G. 640. Corolla six-petalled, spreading, deciduous. Filaments threadlike.

Species 1. *S. Maritima*.¹ Official Squill. Med. Bot. 2d ed. 745. t. 255.

Official. SCILLÆ RA'DIX. Lond. Dub. SCILLÆ MARITIMÆ RADIX.² Edin. Squill root (bulb.)

Syn. Scille (F.) Meerzwiebel (G.) Scilla (L.) Cebolla abarruna (S.)

This species of squill is a native of Spain, Sicily, Syria, and Barbary, flowering in April and May. The bulb is large, sometimes nearly the size of the human head, of a pear shape, and formed of fleshy scales, attenuated at both edges, and closely applied one over the other. The roots are fibrous, attached to a radical plate at the bottom of the bulb. The stem is round, smooth, and succulent, rising about three feet in height, from the centre of several radical, sword-shaped, straight, pointed, long leaves of a deep green colour. The flowers are produced in a long close spike upon purplish peduncles, with a linear, twisted deciduous bracte at the base of each. The corolla consists of six white ovate spreading petals, with a reddish mark in the middle of each: the filaments are shorter than the corolla, tapering, and furnished with oblong transversely placed anthers: the germen is roundish; the style and stigma are simple; and the capsule is oblong, smooth, three-celled, and contains many roundish seeds.

There are two varieties of the official squill, one with a white bulb, and the other with a reddish bulb; but both are indiscriminately used, and do not differ in their virtues. The bulbs are brought from the Levant, generally in bulk. They are preserved fresh in sand; but as they are apt to spoil, it is preferable to keep them in the dried state. (See *Preparations*.)

Qualities.—The squill bulb is inodorous; its taste is bitter, nauseous, and acrid; and when much handled it inflames and ulcerates the skin. The expressed juice reddens slightly litmus paper. The acrimony on which its virtue depends is partially dissipated by drying and long keeping, and completely destroyed by any heat above 212°: it is extracted by water, alcohol, and vinegar. The expressed juice when diluted with water, filtered, and boiled, does not yield flakes of albumen as has been stated.³ Nitrate of mercury and superacetate of lead

¹ Σκίλλα Dioscoridis. The trivial name *maritima* has been objected to, as it does not generally grow on the sea coast.

² All the Colleges have erred in designating the root as the official part of the squill. The bulb is the part employed.

³ But when the expressed juice is boiled till one half is dissipated a white precipitate is thrown down, which, when washed with alcohol, appears to be citrate of lime. *Annales de Chimie*, vol. lxxxiii. p. 149.

separate from the juice white curdy precipitates. Gelatin throws down a copious precipitate: and in a less degree the same effect is produced by lime water and the alkaline carbonates. Infusion of galls forms in it pale brownish flakes; sulphate of iron throws down a copious green precipitate: lime evolves ammonia. When the insoluble part of dried squill is digested in muriatic acid, filtered, and ammonia added in excess, a copious precipitate is thrown down, which is citrate of lime. Ether digested on dried squill acquires a pale green hue, and when evaporated on the surface of water a thin pellicle of very bitter resinous matter is deposited; while the water acquires an intensely bitter taste, and yields copious precipitates with solutions of acetate of lead and nitrate of silver. From these imperfect experiments, squills appear to contain extractive, a small portion of resin, mucus, carbonate of ammonia, the bitter principle, and citrate of lime. Vogel, from a careful analysis of squill, gives the following as its principles: 1. Gum 6. — 2. Bitter principle (scillitena) 35. — 3. Tannin 24. — 4. Citrate of lime 0. — 5. Saccharine matter 6. — Woody fibre 30. *

Medical properties and uses. — Squill in small doses is expectorant and diuretic; in larger doses, emetic and purgative. Its medicinal powers were very early known, and it still retains its character as a remedy of great efficacy when judiciously exhibited. Although it operates powerfully as an expectorant, yet from its stimulating properties it cannot be given with propriety in pulmonary inflammations, until the fever and inflammatory action be previously greatly subdued by bleeding, and other evacuations; after which, by promoting a more copious excretion from the mucous follicles, it rapidly unloads the chest, and relieves the congestion and difficulty of breathing. It is more useful when combined with nitrate of potass, tartarized antimony, or ipecacuanha; and in asthma and dyspnoea without fever, squill combined with ammoniacum is perhaps the best remedy we can employ. In dropsies, conjoined with a mercurial and opium, the efficacy of squill is well ascertained. Its diuretic powers are much increased by this combination; perhaps depending on the absorbents being powerfully excited by the mercury, while the squill determines to the kidneys. Cullen recommends¹ the oxymuriate of mercury as the best adjunct; but I have seen every purpose answered by calomel. Squill is a very uncertain emetic, a very small dose producing the most cruel vomiting in some persons, while in others the largest doses do not even excite nausea: where, however, it readily and

¹ *Annales de Chimie*, vol. lxxxiii. p. 159.

² *Materia Medica*, ii. 558.

moderately induces vomiting, it proves more useful in whooping cough and croup, than any other emetic. To produce its expectorant and diuretic effects most effectually, squill must be given in substance; but to excite vomiting, its infusion in vinegar, or the oxymel, is more usually employed. Of the dried squill gr. j. in the form of a pill, may be given at first for a dose, morning and evening, or every six hours; gradually increasing the dose to grs. v. or grs. vj, or until some degree of nausea is induced, and its expectorant or diuretic operation obtained.

Official preparations. *Acetum Scillæ*. L. E. D. *Oxymel Scillæ*. L. D. *Pilulæ Scillæ comp.* L. E. D. *Pulvis Scillæ*. E. D. *Syrupus Scillæ maritimæ*. E. *Tinctura Scillæ*. L. D.

SCROPHULARIA. *Spec. Plant. Willd.* iii. 269.

Cl. 14. Ord. 2. Didynamia Angiospermia. Nat. ord. Personatæ Linn. Scrophulariæ Juss.

G. 1152. Cal. 5-cleft. Corolla subglobular, resupine. Capsule 2-celled.

Species 2. S. nodosa. Knobby-rooted Figwort. *Smith Flora. Brit.* 663. *Engl. Bot.* 1544.

Official. SCROPHULARIA; HERBA. Dub. Figwort herb.

This is an indigenous, perennial plant, growing in woods and about hedges, flowering in July. The root is tuberous, and granulated. The stem rises three feet in height, is erect, simple, sharply quadrangular, smooth, and leafy. The leaves are opposite, petiolate, cordate, pointed, serrated, veined, smooth, cut at the base to the lateral veins, and as if three-nerved. The flowers are in terminal bunches, erect, with the peduncles opposite, dichotomous, and bracteolated. The flowers are of a dark blood-red colour. The capsules ovate.

Qualities.—The recent leaves have a rank fetid odour, resembling that of elder, and a bitterish disagreeable taste; but, both these qualities are nearly lost by drying. They yield their virtues to water: and the infusion precipitates sulphate of iron brown.

Medical properties and uses.—Figwort is supposed to possess diuretic and sedative properties. It has been used in scrophula, whence its name; and is recommended as a fomentation to piles, malignant tumors, spreading ulcers, and cutaneous eruptions: but it is very little known in practice.

SENEGÆ RADIX. Vide *Polygala*.

SENNÆ FOLIA. Vide *Cassia*.

SERPENTARIÆ RADIX. Vide *Aristolochia*.

SEVUM. Vide *Ovis*.

SIMAROUBÆ CORTEX. Vide *Quassia*.

SINAPIS.¹ *Spec. Plant. Willd.* iii. 554.

¹ *Sinapi* Dioscoridis.

Cl. 15. Ord. 2. Tetradynamia Siliquosa. Nat. ord. Siliquosæ Linn.
Cruciferae Juss.

G. 1246. Cal. spreading. Cor. claws erect. Gland between the shorter stamens and pistil, and the longer stamens and calyx.

Species 4. *S. alba*. White mustard. *Smith Flora Brit.* 721.

Species 5. *S. nigra*. Common mustard. *Med. Bot. t.* 151. *Smith Flora Brit.* 722.

1. SINAPIS ALBA.

Officinal. SINAPIS ALBÆ SEMINA. *Edin.* SINAPI; SEMINA. *Dub.*
White Mustard-seed.

Syn. Moutarde (F.) Senfsamen (G.) Senape bianca (I.) Grano de Mostaza (S.)

This species of mustard is an indigenous annual plant, growing in the fields and by road sides; but also much cultivated; and flowering in June. The root is spindle-shaped, and the stem round, strong, branched, and rising nearly two feet in height. The lower leaves are deeply pinnatifid; the upper ones sublyrate; and the whole rough with strong hairs on both sides, toothed, and of a pale green colour. The flowers are in racemes, with striated peduncles; the leaflets of the calyx are linear, and green; the petals yellow, with the claws narrow, and the border obovate and entire. The pods are spreading, on almost horizontal peduncles, hispid, roundish, ribbed, swelling where the seeds are placed, and furnished with a very long, ensiform, keeled, greenish rough beak. The seeds are large, for the size of the pod, globular, and of a light yellow colour.

2. SINAPIS NIGRA.

Officinal. SINAPIS SEMINA. *Lond.* Mustard-seeds.

Syn. Moutarde noir (F.) Schwarzer Senf (G.) Senape (I.) Mostaza nigra (S.)

Common mustard is an indigenous annual; and although very plentiful in its wild state, yet it is cultivated for domestic and medicinal purposes. It flowers in June. The root is small. The stem, which rises three or four feet in height, is very much branched, and spreading. The leaves are petiolate, variously lobed and toothed; those nearest to the root being rugged, while those of the stem are smooth; and the uppermost narrow, quite entire, and hanging down, which distinguishes it at first sight from its congeners. The flowers are yellow, and small. The calyx is coloured. The pods erect, parallel to the stem, short, quadrangular, frequently smooth, many-seeded, and furnished with a short quadrangular beak. The seeds are small, globular, and of a deep brown colour.

Although the seeds of these two species of mustard differ in their botanical characters, yet they agree in other respects, the common being only rather more pungent; and may be indiscriminately employed. Reduced to a fine powder, they form the common condiment every day used at our tables.

Qualities. — These seeds, in the entire state, are nearly inodorous, but when bruised they have a pungent, penetrating

odour. Their taste is bitterish, acrid, and biting. Unbruised mustard seeds, when macerated in boiling water, yield only an insipid mucilage, which, like that of linseed, resides in the skin: but, when bruised, water takes up all their active matter; although it is scarcely imparted to alcohol. In distillation with water, mustard-seeds yield a very acrid volatile oil, on which their virtues are supposed to depend. It is united in the seed with fecula or starch; its force appears to be obtunded by a soft, insipid, fixed oil, which can be separated by pressure, and the cake left after the expression is considerably more pungent and acrid than the unpressed seeds. It is not dissipated by drying, nor by keeping the seeds, and is rendered considerably more active by the addition of vinegar. When the seeds are triturated with lime, and a few drops of water, ammonia is plentifully evolved. Hence their constituents appear to be starch, mucus, a bland fixed oil, an acrid volatile oil, and an ammoniacal salt.

Medical properties and uses. — Mustard-seeds are stimulant, emetic, diuretic, and rubefacient. Swallowed whole, they have been found useful in dyspepsia, chlorosis, and the torpid state of the intestines which accompanies paralysis. The bruised seeds, or the powder, to the extent of a large teaspoonful mixed with water, form an excellent emetic in paralytic, epileptic, and some apoplectic cases, often operating quickly and fully when other emetics fail. In small doses they are found to promote considerably the secretion of urine, and consequently prove beneficial in dropsies. In these affections, however, perhaps the best mode of exhibiting mustard is in the form of whey, which is made by boiling ziv . of the bruised seeds in Oj of milk, and straining to separate the curd. A fourth part of this quantity may be taken for a dose three times a day. But mustard is more frequently employed as an external remedy. The flour rubbed on the skin, or applied in the form of a cataplasm, made with crumbs of bread and vinegar, soon excites a sense of pain, considerable inflammation, and sometimes vesication. In these forms it has been found serviceable in paralysis; and applied to the soles of the feet in the delirium of typhus, and in comatose affections.

Officinal preparations. *Cataplasma Sinapis.* L. D.

SIUM. *Spec. Plant. Willd.* i. 1431.

Cl. 5. *Ord.* 2. Pentandria Digynia. *Nat. ord.* Umbellatæ.

G. 544. Fruit subovate, striated. *Invol.* many-leaved. *Pet.* cordate.

Spec. 4. *S. nodiflorum.* Procumbent Water Parsnip. *Med. Bot.*

2d edit. 139. *Smith Flora Brit.* 313. *Eng. Bot.* 639.

Officinal. *SIUM;* *HERBA.* *Dub.* Water Parsnip herb.

Syn. Berle; Ache d'eau (*F.*) Wasser-Partinake (*G.*) Sio; Gorgolestro (*I.*) Sio; Sion (*S.*)

This is an indigenous perennial plant, common in ditches

and brooks, flowering in July and August. The root is creeping. The stem procumbent or floating, branched, round, somewhat striated and leafy. The leaves are unequally pinnate, consisting of from 5 to 9 sessile, ovate, serrated leaflets. The umbels are solitary, nearly sessile, and opposite to each leaf. The umbellets are from 5 to 7, divaricated, and composed of twelve flowers. The involucre is of one piece, and often there is none. The involucre is ovate, concave, and the length of the pedicels. The calyx is scarcely visible; and the fruit ovate.

This plant has been omitted by the London College in the last edition of its Pharmacopœia; and we are inclined to believe that its pretensions even to the character of an antiscorbutic require further confirmation.

*SMILAX.*¹ *Spec. Plant. Willd.* iv. 774.

Cl. 22. *Ord.* 6. Dioecia Hexandria. *Nat. ord.* Sarmmentaceæ Linn.

Asparagi Juss.

G. 1800. Male. *Calyx* six-leaved. *Corolla* none.

Female.—*Cal.* 6-leaved. *Cor.* none. *Styles* 3. *Berry* 3-celled. *Seeds* two.

* *Stem* prickly, angular.

Spec. 9. *S. Sarsaparilla.*² *Sarsaparilla. Med. Bot.* 2d edit. 161.

Officinal. SARSAPARILLÆ RADIX. *Lond. Dub.* SMILACIS SARSAPARILLÆ RADIX. *Edin.* Sarsaparilla root.

Syn. Racine de Salsepareille (*F.*) Sarsaparilla (*G.*) Radiche della Salsapariglia (*I.*) Zarzaparilla (*S.*)

This plant is a perennial, a native of South America and Virginia, flowering in July and August. The root is divided into pedicels, which are somewhat thicker than a goose-quill, straight, externally brown, internally white, and three or four feet in length. The stems are shrubby, long, slender, scandent, and beset with spines: the leaves alternate, ovate, pointed, and petiolate, with long tendrils at the base. The flowers stand three or four together upon a common peduncle. The calyx of the male flower is bell-shaped, with the segments oblong, spreading, and reflected at their points; the filaments are six, simple, and bearing oblong anthers: the calyx of the female flower is also bell-shaped; the germen ovate, supporting three minute styles, with oblong, reflexed, hairy stigmas; and the fruit a round three-celled berry, containing two globular seeds.

The dried root is imported from the Spanish West Indies, packed in bales. It is in long slender twigs, covered with a wrinkled brown bark, white within, and having a small woody heart.

¹ Σμύλαξ Dioscoridis.

² Bauhin derives the name from *Zarsa*, which, he says, is the Spanish for red; and *parilla*, a little vine. The latter part of the derivation is correct; but we are inclined to think the first part must be referred to *Zarxa*, a briar or bush; hence *Zarsaparilla* would imply a bushy little vine.

Qualities.— This root is inodorous, and has a mucilaginous, very slightly bitter taste. It communicates to boiling water, and partially to alcohol and ether, any active matter it possesses. The watery infusion has a brown colour, reddens litmus paper, and yields a precipitate with infusion of galls, which is again dissolved when the infusion is heated. It is precipitated also by lime-water, and solution of nitrate of mercury, and superacetate of lead, but is not affected by sulphate of iron, or any other of the metallic oxides. The alcoholic tincture has a yellowish red hue, is rendered turbid by the addition of water, and yields an extract slightly bitter, and pungent. Ether takes up two parts in ten of the powdered root; and the tincture, which has a golden yellow colour, when evaporated on water, leaves a small portion of reddish yellow insipid resin, and a larger of yellowish extractive dissolved in the water.

Medical properties and uses.— Sarsaparilla is demulcent, and said to be diuretic. It was brought to Europe about the year 1530, and introduced as a medicine of great efficacy in the cure of lues venerea; but fell into disrepute and was little used, till it was again brought into esteem by Dr. William Hunter and Sir Wm. Fordyce, about the middle of the last century; not however as a remedy fitted to cure syphilis, but of much efficacy in rendering a mercurial course more certain, and after the use of mercury.¹ Experience, however, has not verified the encomiums bestowed on it; and the extensive observations of Mr. Pearson have fixed the degree of benefit which is to be expected from this root in syphilitic complaints. "The contagious matter, and the mineral specific, may," he observes, "jointly produce in certain habits of body a new series of symptoms, which, strictly speaking, are not venereal; which cannot be cured by mercury; and which are sometimes more to be dreaded than the simple and natural effects of the venereal virus. Some of the most formidable of these appearances may be removed by sarsaparilla, the venereal virus still remaining in the system; and, when the force of the poison has been completely subdued by mercury, the same vegetable is also capable of freeing the patient from what may be called the sequelæ of a mercurial course."² Sarsaparilla is also recommended in scrofula, elephantiasis, or cutaneous affections resembling it, and chronic rheumatism; but its efficacy is doubtful. The dose of the powdered root is from ʒj. to ʒj. given three or four times a day.

¹ *Medical Observations and Enquiries*, vol. i.

² The symptoms alluded to, are nocturnal pains in the limbs, painful enlargements of the knee and elbow joints, membranous nodes, and cutaneous ulcerations, arising after a full course of mercury.

³ *Pearson on Remedies for Lues Venerea*, 24.

Official preparations. *Decoctum Sarsaparillæ*. L. E. D. *Decoctum Sarsaparillæ compositum*. D. *Extractum Sarsaparillæ*. L.

SODÆ MURIAS. Lond. MURIAS SODÆ. Edin. SAL COMMUNE. *Murias Sodæ*. Dub. Muriate of Soda. Common Salt. *Syn.* Muriate de Soude (F.) Salzaures Natrum (G.) Sal commune (I.) Sal (S.) *Méih* (Arab.) *Poppoo* (Tam.) *Loon* (H.)

This salt is one of the most abundant productions of nature, being found in almost every country of every quarter of the globe; either existing in mineral springs¹ or lakes²; spread in strata under the surface of the ground³, or rising from it into mountains⁴; and to its presence also the ocean owes its saltiness.⁵ In all these situations, however, it is generally mixed with earths and other matters, and therefore must undergo several processes to bring it to the degree of purity in which it occurs as an article of commerce.

In Cheshire, where the greater part of the salt used in this country is made, the brine is pumped up from very deep wells, and evaporated in wrought iron pans, which are generally about twenty or thirty feet long and broad, and nine or twelve inches deep; strongly set upon masonry over a large furnace, from which flues proceed under every part of the pan. They are protected from the weather by light pyramidal roofs of boards, sufficiently open, however, to admit of the escape of the steam from the boiling brine. When the brine attains the temperature of 100° Fahrenheit, it grows turbid, and carbonate of lime and of iron are deposited. These are partly taken off by skimming; but much of the mass falls to the bottom, and cannot be removed until the first deposition of crystallized salt gives it a sufficient body to enable the workmen to rake it out. After this is carefully done, the evaporation is continued at a boiling heat, when the salt gradually forms, and falls to the bottom of the pan in beautifully white delicate crystals, which are fished out, as they collect, with wooden vessels,

¹ The salt spring of Luneburg yields 75,600 gallons of brine in twenty-four hours, of which one-fourth is saline matter, making the annual produce 55,000,000 lbs. of salt. *Kirwan's Geo. Essays*, 392.

² These lakes are generally dry in the summer, being formed by the small streams from the hills settling in the valleys, and dissolving the salt of the soil. There is a lake or valley of this description eighteen miles from Aleppo, called in Arabic *Subkhet al Jibool*, or Valley of Salt; in which the salt is found, in the summer, crystallized from half an inch to two inches thick. *Russell's Aleppo*, 2d edit. i. 55.

³ The stratum of rock-salt in Cheshire is 50 feet thick. The salt mine of Wiliska, near Cracow in Poland, is 6691 feet long, 1115 feet broad, and 743 feet deep. *Coxe's Travels*, i. 197.

⁴ Near Cordova in Spain is a mountain of common salt 500 feet high, and nearly three miles in circumference.

⁵ The average quantity of salt contained in sea water varies in different latitudes. Between 10° and 20° south, it amounts to rather more than one twenty-fourth; between 18° and 34° north, it is rather less than one twenty-fourth; and at the equator it is nearly one twenty-fifth. *Thomson's Chemistry*, 4th ed. vol. iv. 141.

and poured into large wooden hollow cones, having a hole at the apex, which is undermost. When the salt has sufficiently drained, the cones filled with it are taken to a large room, heated by stoves, where they remain until thoroughly dry.¹ In warm climates the sea water is evaporated in shallow ponds by the heat of the sun; and in this mode what is denominated bay salt is made; but in colder countries the evaporation is carried on by artificial heat in a way similar to the Cheshire process. The crystals of the salt procured by these means are more perfect, and purer, the more slowly the evaporation is conducted.

The common salt of commerce, however, still contains small portions of muriate of magnesia, muriate of lime, and sulphate of lime. To separate these, dissolve the salt in four times its weight of pure water, and drop into the filtered solution, first muriate of barytes, and then carbonate of soda, as long as any precipitate falls. Filter and evaporate the clear fluid slowly till the salt crystallizes, which is pure muriate of soda.²

Qualities.—Pure muriate of soda is inodorous; its taste is strictly salt, and when pure, it is perfectly devoid of any degree of bitterness. It is in regular cubes, which are not affected by exposure to the atmosphere. When it deliquesces, it contains muriate of magnesia. Its crystals decrepitate when heated; and in a red heat melt, losing about two per cent. of their weight; and in a still greater heat the salt is volatilized undecomposed in white fumes. Its specific gravity is 2.126. It is equally soluble in cold and in hot water, rather more than two and a half parts of either being required to dissolve one of salt. It consists, according to Berzelius, of 46.55 of acid, and 53.44 of soda in 100 parts.³ It is decomposed by sulphuric acid and nitric acid.

Medical properties and uses.—This salt is tonic and antheimintic in moderate doses; purgative in larger; and externally stimulant. In the ordinary mode of using it, the tonic power of salt operates in assisting the process of digestion; and consequently, taken more freely, it proves useful in dyspepsia, and in correcting the weakened state of intestines, which favours the propagation of worms. In large doses it is said to check vomiting of blood, and may be used as a purgative; although it is seldom employed.⁴ As a local stimulant, its solution in tepid water, in the proportion of ʒiſs or ʒj to Oj of water, forms the common domestic enema. It is used also as a fomentation

¹ Aikin's Dictionary of Chemistry.

² Thomson's Chemistry, 4th ed. ii. 377.

³ Other chemists have obtained different results. Berard procured from 100 parts of acid 43.57. Dr. Marcet 46.54.

⁴ The purgative property of sea water does not altogether depend on this salt, as it contains a large proportion of muriate of magnesia, which is purgative.

to sprains and bruises; and, dissolved in a large proportion of water, forms the best stimulant general bath, whether used cold, or in a tepid, or in a hot state. To answer the first intentions, the dose of muriate of soda may be from grs. x. to ʒj; but to operate by stool from ʒis to ʒj is necessary. It should be largely diluted.

Official preparation. *Murias Sodæ siccatum.* E. D.

SO'DÆ SUB-BORAS. Lond. BORAS SODÆ. Edin.

BORAX. *Sub-boras Sodæ.* Dub. Subborate of Soda.¹

Syn. Borate alcalinule de Soude (F.) Borax (G.) Borace (L.) Borrax (S.) Boorne (Arab.)
Tancāna (San.) Sohaga (H.)

This is the purified state of a natural salt found in Persia and Thibet. In the latter country it is formed in the bed of a lake situated among the mountains, fifteen days' journey from Tisoolumba, which is twenty miles in circumference, and supplied only by springs from the bottom.² The borax is dug in large masses from the edges and shallows of the lake; yet the quantity is not diminished, the cavities being gradually filled by a fresh deposition of the salt. In this state it is named *tincal*, and is brought home packed in chests, in masses of adhering crystals, of a grey yellowish, or greenish white colour, intermixed with sand and other impurities, and covered with a greasy artificial production to prevent it from efflorescing. The purification of *tincal* was first discovered by the Venetians; and afterwards long carried on by the Dutch, who kept the process secret. It is now practised in England; and although the method has not yet been made public, yet Pelletier has ascertained, that by destroying the unctuous matter by calcination, the salt may be obtained pure by solution and crystallization.³

Qualities. — Purified sub-borate of soda is inodorous, and has a styptic, cool, alkaliescent taste. It is of a white colour, and usually in irregular crystalline masses, approaching to the form of hexangular prisms, terminated by triangular pyramids. It effloresces slowly and very slightly in the air; dissolves in twelve times its weight of water at 60° of Fah., and in six times its weight of boiling water, the solution changing the vegetable blues to green. In a moderate heat it undergoes the watery infusion, loses four-tenths of its weight, and becomes a dry, white, spongy mass, without undergoing any decomposition. According to Bergman, 100 parts consist of 34 acid, 17 soda, and 49 water; the acid, however, is not sufficient to saturate the alkali, and consequently the salt is

¹ The term *borax* is a corruption of the Arabic word *buruk*, which signifies *brilliant*.
Vide Asiatic Researches, 8vo. vol. iii. p. 255.

² Saunders, *Phil. Trans.* vol. lxxix. 97.

³ *Mémoires de Chimie*, vol. i. 82.

a sub-borate. It is decomposed by the majority of the acids; by potash, and the sulphates, muriates, phosphates, and fluates of the earths, and of ammonia.

Medical properties and uses.—This salt is refrigerant and detergent. It is not given internally; and its chief employment is in aphthous affections of the mouth, and excessive salivation. It is applied either in the form of powder mixed with sugar, or dissolved in water, and united with honey as a lotion.

Official preparation. *Mel Boracis.* L. E.

SO'DÆ SULPHAS. *Lond. Edin.* Sulphate of Soda.

Syn. Sulphate de Soude (F.) Krystallisirtes Schwefelsaures Natrum, Glaubersalz (G.)

Sale Mirabile di Glaubero (I.) C'hara Nûn (H.)

This salt is found native in combination with oxide of iron, and muriate and carbonate of soda, sometimes effloresced on the surface of the soil in the neighbourhood of salt lakes, as in Hungary; and very often forming part of the contents of mineral saline springs, as those of Cheltenham and of Carlsbad. But the greater part of it used in this country is artificially prepared, and chiefly in the large way, during the manufacture of sal ammoniac from sulphate of ammonia and common salt. On this account the London College has inserted it in the list of materia medica; but as a formula is also given for its preparation, we shall defer the consideration of its qualities and uses till it comes under our notice among the Preparations.

SO'DA IMPURA. *Carbonas Sodæ impura.* *Lond.* SUB-CARBONAS SO'DÆ IMPURUS. *Barilla.* *Edin.* BARILLA. *Soda impura.* *Dub.* Impure Soda. *Carbonate of Soda.* *Barilla.*¹

Syn. Soude (F.) Kohlensaures Natrum (G.) Soda (I.) Barilla (S.) Seiji-mitti (H.) Sorjica (San.)

Carbonate of soda is found native in Hungary, Syria, Egypt, and India, on the surface of the earth, and on the margins of some lakes which become dry in summer. A large quantity is annually collected from the natron lakes of Egypt, situated in the valley Bahr-bela-ma, near the Delta. It is named *trona* by the natives; but very little of it finds its way to Europe: and the greater part of that which is employed, in this country at least, is of vegetable origin, being prepared from the ashes of some species of *Algæ*; but more abundantly from those of the *Salsola soda*, a plant which is cultivated on the shores of the Mediterranean by the Spaniards expressly for the purpose of yielding this salt. This plant is cultivated in salt marshes, chiefly in the vicinity of Alicant; and near Carthagera two hundred thousand quintals of barilla are gathered annually.

¹ *Notæ* of the ancients. It is remarkable that both the London and Dublin Colleges have fallen into the same error in naming this salt *impure soda*; the composition of the salt being well ascertained.

In September, when the seed is ripe, it is pulled up by the roots: after which it is dried, and in October is burnt in simple furnaces, the heat of which is just sufficient to cause the ashes to enter into a state of semifusion, and concrete into compact cellular masses, which form the *barilla* of commerce. That which is obtained in this country by burning the sea-wrack (chiefly the *Fucus vesiculosus* and *serratus*) is denominated *kelp*; and is the worst description of this salt.¹ Sardinia also furnishes some *barilla*, but inferior in quality to the Spanish. In Sicily *barilla* is procured at *Catania*, *Trapani*, *Marsala*, *Terranora*, and *Girgenti*. Orkney furnishes annually about three thousand tons of *kelp*.²

Vauquelin has proved that the salt exists ready formed in *Salsola soda*, and is only set free by the burning of the plant.³ He obtained from 500 parts of the plant 100 parts of ashes, besides oil, ammonia, and prussic acid. Five hundred grains of the ashes afforded 113 of muriate of soda, 68 dry subcarbonate of soda, 204 insoluble subcarbonate of magnesia, 100 of sand and oxide of iron, and 23 of water⁴; an analysis which may be regarded as exhibiting the general components of *barilla*.

There are several varieties of *barilla* brought from Spain; that which is known by the name of *sweet barilla* is the most esteemed.

Qualities.—Good *barilla* is in hard, dry, spongy, sonorous masses of a greyish blue colour, and becoming covered over with a saline efflorescence when exposed to the air. It should not emit any unpleasant odour on solution; and when applied to the tongue should impress a sharp alkaline taste.

Use.—Impure subcarbonate of soda is employed only for yielding the pure subcarbonate.⁵

Official preparation. *Sodæ Subcarbonas.* L. E. D.

¹ The inhabitants of the Canary Isles extract carbonate of soda from the ashes of the *Mesembryanthemum crystallinum*, or ice plant, which yield one-third of their weight of the salt. *Phil. Mag.* vi. 187.

² The sea-wrack is cut from the rocks in April and May chiefly, dried in the air, and then burnt in a kiln, in which they are stirred with an iron rake into a fluid state; on cooling, the ashes condense into a dark blue or whitish mass, very hard and solid. The plants about three years old, yield the largest quantity of *kelp*. The best *kelp* has an acrid, caustic taste, a sulphurous odour; is compact, and of a dark blue greenish colour. It yields about one-twentieth part of its weight of soda.

³ *Annales de Chimie*, xiii. 65.

⁴ *Annales de Chimie*, xviii. 76.

⁵ A tolerably pure subcarbonate of soda is obtained in France from sea salt, and muriate of soda. To a solution of one part of salt, three parts of finely pulverized litharge is added, and rather more than half a part of chalk. These are agitated well together, and then set apart; a double decomposition gradually takes place, muriate of lead and muriate of lime are formed, while the soda, uniting with the carbonic acid set free from the chalk, crystallizes, and is easily separated.

In Britain it is obtained in considerable quantity by decomposing sulphate of soda, either by means of subcarbonate of potash, or acetate of lime, or litharge; or by de-

SOLANUM. *Spec. Plant. Willd. i. 1025.*

Cl. 5. Ord. 1. Pentandria Monogynia. Nat. ord. Luridæ Linn.
Solaneæ Juss.

G. 383. Corolla wheel-shaped. Anthers slightly coalescing, opening by two pores at the apex. Berry two-celled.

* unarmed.

Species 15. *S. Dulcamara*. Woody Nightshade, or Bitter-Sweet.
Med. Bot. 2d ed. 240. t. 85. *Smith Flora Brit.* 256. *Eng. Bot.* 565.

Official. DULCAMARÆ CAULES. *Lond.* SOLANI DULCAMARÆ CAULES. *Edin.* DULCAMARA; STIPITES AUTUMNO COLLECTI. *Dub.* The Stalks of Bitter-Sweet.

Syn. Douce-amere (F.) Bittersusstangel (G.) Dulcamara (I.)

This species of Solanum is an indigenous shrub, growing in hedges and shaded spots; and flowering in June and July. The root is ligneous: the stem woody, roundish, branched, and climbing sometimes to the height of six or eight feet: the leaves are alternate, on footstalks, entire, smooth, soft, about two inches long and one broad, and of a dull green colour; the lowermost cordate and undivided, and the uppermost halberd-shaped: the flowers are in elegant clusters opposite to the leaves, or terminal, drooping, and having the semblance, but not the structure, of a true cyme; each consisting of a small purplish calyx with blunt segments: a corolla of five reflected, equally divided, pointed, bright violet-coloured segments, with two green dots at the base, and a longitudinal deeper purple vein through the centre of each segment; and large, erect, almost sessile, lemon-yellow anthers: the berries, which ripen in September and October, are oval, scarlet, very juicy, bitter, and poisonous.¹

The extreme twigs are the parts employed. They should be gathered in autumn, as at that season they are more powerful; depending perhaps on their being less succulent, and containing more of the peculiar secretion on which the virtues of the plant depend.

Qualities. — Both the fresh and dried twigs are inodorous. They have a slightly bitter taste, followed by a sweetness not unlike that of liquorice root, with a slight degree of acrimony. Boiling water extracts all their active matter; but their virtues are destroyed by much coction. Scheele found that they contain citric acid.

Medical properties and uses. — Bitter-sweet is diuretic and

composing the sulphuric acid of the sulphate by charcoal. The latter method is practised in the West of Scotland, and affords a very pure subcarbonate of soda. "About 500 cwt. of sulphate of soda and 100 cwt. of charcoal are ground together, and the mixture exposed in a reverberatory furnace until it becomes pasty. It is then transferred into large casks, and lixiviated. The ley is afterwards evaporated and crystallized." *Duncan's New Edinburgh Dispensatory*, 216.

¹ They excite violent vomiting and purging.

narcotic. It has been found useful in humoral asthma, dropsy, chronic rheumatism, and in lepra vulgaris and alphos, scabies, and pityriasis. Willan² remarks, that it is not applicable for the cure of lepra nigricans: we can assert that it is not of the least use in acute rheumatism; and we believe of as little in fluor albus and suppression of the menses, in which it has been strongly recommended. When given in too large doses at first, it occasions nausea, vomiting, syncope, and violent palpitation. It therefore requires to be begun with small doses; and even when it is more cautiously administered, if these symptoms occur, the dose must be lessened, and some aromatic conjoined. The usual form under which it is used is that of watery infusion or decoction; but it may be also given in substance pulverized. The dose of the powder may be from grs. x. to 3j taken in a cupful of milk.

Official preparation. *Decoctum Dulcamaræ*. L.

SOLIDAGO. *Spec. Plant. Willd.* iii. 2053.

Cl. 19. Ord. 2. Syngenesia Superflua. *Nat. ord.* Compositæ Discoideæ Linn. Corymbiferae Juss.

G. 1292. Receptacle naked. Pappus simple. Corolllets of the ray about five. Calyx scales imbricate, closed.

**** with erect racemes.

Species 35. *S. Virgaurea*. Common Golden Rod. *Smith Flora Brit.* iii. 890. *Eng. Bot.* t. 301.

Official. VIRGA AUREA; FLORES, FOLIA. *Dub.* Flowers and leaves of Common Golden Rod.

This is an indigenous perennial plant, found in woods, copses, and among furze upon heathy ground; flowering from July to September. The leaf consists of long simple fibres: the stem, which varies in height, from ten inches to three feet, is curved below, then erect, leafy, very slightly zigzag, angular, striated, rough, and a little downy: the leaves are deep green on the upper surface, and pale beneath, on winged petioles, harsh, and clothed with rigid down: the radical leaves are obovate and serrated; the stem leaves narrower, more entire, and alternate: the flowers are yellow, in terminal and axillary erect clusters, forming a dense panicle, with lanceolate, downy bractes: the scales of the calyx are membranous, with a downy border: the rays of the corolla from five to nine or ten, oblong, elliptical, and toothed at the apex: the seeds are pubescent, and the pappus rough.

Qualities.—The odour is slightly aromatic, and the taste subastringent and somewhat aromatic. Boiling water extracts the active matter of the leaves: the infusion changes slightly to green syrup of violets, and precipitates sulphate of iron black.

¹ Description and Treatment of Cutaneous Diseases, 147.

Medical properties and uses. — Golden rod is astringent, and has been regarded as lithontriptic. It may be of some use in a weak state of the viscera; and hence, like other tonics, may prove beneficial in calculous habits; but its effects are not sufficient to entitle it to much notice. The dose of the powdered leaves and flowers may be from grs. x. to ʒj or more.

SPARTIUM.¹ *Spec. Plant. Willd.* iii. 926.

Cl. 17. Ord. 4. Diadelphia Decandria. *Nat. ord.* Papilionaceæ.

G. 1832. *Stigma* longitudinal, villous above. *Filaments* adhering to the germen. *Calyx* produced downwards.

** with ternate leaves.

Species *S. scoparium*. Common Broom. *Med. Bot.* 2d ed. 413. t. 150.

Smith Flora Brit. iii. 753.

Official. SPARTII CACUMINA. *Lond.* SPARTII SCOPARII SUMMITATES. *Edin.* GENISTA; SEMINA; CACUMINA. *Dub.* The tops and seed of Broom.

¹*Syn.* Genet à balais (*F.*) Pflimenkraut (*G.*) Ginestra (*I.*) Esparto (*S.*)

This is an indigenous shrub, growing on dry common pastures; flowering in May and June. It usually rises from four to six feet in height, and sends off numerous straight, angled, green, smooth, leafy branches: the leaves are ternate, small, and smooth; the upper ones, however, are frequently simple: the flowers are papilionaceous, axillary, solitary, peduncled, nodding, large, and showy; of a golden colour, sometimes tawny on the outside, and occasionally altogether of a lemon hue: the calyx is nearly bell-shaped, bilabiate, gaping, even, and purplish, with a five-toothed lip: the stamens are all united into a tube at the base, and bear oblong saffron-coloured anthers: the germen is villous: the style bent almost to a circle: and the legume compressed, brown, ciliated; and containing several compressed shining seeds.

Qualities. — The tops, when bruised, have a disagreeable odour, and a nauseous bitter taste. Both water and alcohol extract their active matter.

Medical properties and uses. — Broom tops are diuretic and cathartic; the seeds are said to be emetic. The effects of this plant have been very long known to the common people; and both Mead and Cullen found them useful in dropsy. The usual mode of exhibiting them is in the form of decoction, made by boiling ʒj of the green tops in a pint of water down to half a pint. Speaking of this decoction, of which two table spoonfuls were given every hour till it operated by stool, Cullen says²: "It seldom fails to operate both by stool and urine, and by repeated exhibition every day, or

¹ *Σταγίριον* Dioscoridis.

² *Mat. Med.* ii. 534.

every second day, some dropsies have been cured :” Sydenham used the ashes, which contain an alkaline salt.²

Official preparation. *Extractum Cacuminum Genestæ*. D.

SPIGELIA. *Spec. Plant. Willd.* i. 824.³

Cl. 5. *Ord.* 1. Pentandria Monogynia. *Nat. ord.* Stellatæ Linn. Gentianæ Juss.

G. 308. Corolla funnel-shaped. Capsules twin, two-celled, many-seeded.

Species 2. *S. marilandica*. Perennial Worm-grass. *Med. Bot.* 2d ed. 178. t. 69. *Edin. Phil. Trans.* iii. 151. t. 1.

Official. **SPIGELIÆ RADIX.** *Lond. Dub. Edin.* Worm-grass root.

Syn. Spigelia de Maryland (*F.*) Spigelia (*L.*)

This is a perennial plant, a native of the warmer parts of North America; flowering in July and August.⁴ The stems are annual, simple, erect, rough, quadrangular, and rigid; and about seven or eight inches in height: the leaves are opposite, sessile, ovate-lanceolate, quite entire, smooth, and spreading: the flowers are in a solitary spike, with small opposite bractes: the calyx consists of five awl-shaped, persistent leaflets: the corolla is of a bright red colour on the outside, and deep orange within, pentangular above, gibbous at the throat, widening at the base; with the border five parted; the segments being lanceolate and revolute: the stamens are five, shorter than the corolla, supporting sagitate, converging anthers: the germen is superior, with a round style, jointed below, with the upper part deciduous: the seeds are angular and rugged.

Qualities.—Spigelia root has a bitter taste, which is imparted to boiling water.

Medical properties and uses.—This root is purgative and anthelmintic. Its anthelmintic virtues were discovered by the Cherokee Indians, to whom it is known under the name of *unsteetla*; and many opportunities of proving its efficacy in worm cases have occurred both in America and this country. When in the recent state, and given in small doses, it occasionally produces giddiness, dimness of sight, and even convulsions; effects which are attributed to a narcotic principle it possesses, but which its powerful cathartic property prevents from acting, when the dose is large. It is usual to administer an emetic previous to the use of it; and to aid its purgative operation by the addition of two or three grains of calomel, or eight or ten of rhubarb. It has been found most powerful in expelling lumbrici; and its vinous infusion is said to have been found useful in intermittents. Dr. Barton recommends it in the protracted remitting fever of infants, which often lays the

¹ *Materia Medica*, ii. 534.

² *Tract. de Hydropse*, Opera, 466.

³ The genus was named after Adrian Spigelius, a celebrated professor of anatomy at Padua.

⁴ It was first cultivated in England in 1694, by Bobart.

foundation of hydrocephalus. Spigelia root may be administered either in substance or in the form of aqueous infusion. The dose of the pulverized root is from grs. x. to ʒj, given every night and morning until the worms are expelled.

SPIRITUS RECTIFICATUS. *Lond. ALCOHOL FORTIUS. Edin. SPIRITUS VINOSUS RECTIFICATUS. Dub. Rectified Spirit. Alcohol.*

Syn. Eau de Vie Rectifié (F.) Rectifizirter Weingeist (G.) Acquavite zettificata (I.)
Agua ardiente (S.)

This is alcohol nearly in the highest state of concentration in which it can be easily prepared in the large way for the purposes of trade. The London and Edinburgh Colleges state its specific gravity to be to that of water as 835 to 1000; while the Dublin College states it at 840. The Edinburgh College names this spirit *alcohol*; but as directions are given both by the London and the Dublin Colleges for the preparation of a still stronger spirit, the name of *alcohol*, in their pharmacopœias, is judiciously retained for the stronger spirit, while that of *rectified spirit* is applied to the present preparation.

All substances which have undergone the vinous fermentation, and in which it is not completely over, contain alcohol ready formed, but combined with colouring matter, extractive, and other principles, and are capable of affording it by distillation. The first distillation of wines and fermented liquors afford ardent spirits, such as brandy, rum, arrack, whisky and gin.[†] These are all mixtures of alcohol, water, and a little oil or resin, which give them their characteristic flavour and colour, and the quantity and nature of which constitute the sole differences in ardent spirits. It is from the re-distillation or rectification of these that rectified spirit is produced.

The process of rectification is exceedingly simple. Any quantity of brandy, malt spirits, or rum, is diluted with an equal portion of water, and put into an alembic or still, to which a refrigeratory is united, and distilled with a very gentle heat. The first product is the strongest and purest, and, when it has come over to the amount of one-fourth of the whole contents of the still, forms the rectified spirit. If the distillation be continued, the spirit continues to come over colourless, but weaker and weaker, till at length it is so watery as not to be inflammable. What remains in the alembic is water, the colouring ingredients, and any accidental impurities. When the ardent spirits, which have been employed, contained much oil, the distillation requires to be repeated, and generally with

[†] We have no historical record of the period when the distillation of spirit was invented: the Greeks and Romans were ignorant of ardent spirits; but it is certain that spirits were very early known to the northern nations.

the addition of alkali, lime, or other articles, before the empyreumatic flavour can be completely destroyed. When alkali is used, the spirit has an urinous taste; to free it from which it is again distilled with the addition of a little alum and charcoal, the acid of the former of which attracts the small portion of alkali which the spirit held in solution. Malt spirits, when properly rectified, yield as pure and as strong rectified spirit as brandy.

The strength of spirits is ascertained in common by several methods. The taste, and the degree of frothiness or size of the bubbles formed when spirit is shaken, is the least correct method; and the burning the spirit, and observing the quantity of water which remains after the combustion, although more accurate, is liable also to error, from the impossibility of performing the experiment always under the same circumstances. Pure alcohol¹ leaves no water; rectified spirit of moderate strength, 25 per cent.; French brandy, 56; and common malt liquor, 65; and the like. Another test is the pouring a few drops of the spirit on gunpowder; but this is also very incorrect, and indicates two degrees of strength only; that which fires gunpowder, and that which cannot fire it. A more accurate test than any of these, and sufficient for common purposes, is to shake the spirit in a phial with very dry pure sub-carbonate of potash, and observe the quantity of water attracted by the alkali, which indicates its strength. But the only certain mode of ascertaining the relative strength of spirits is by determining the specific gravity of the spirit, at a given temperature. Thus at 60° Fahrenheit the specific gravity of rectified spirit is .83599, at 65° it is .83362, and at 70° the gravity of the same spirit is .83124; while the gravity of the proof spirit of the London College at the same degrees of temperature is .93002, .92794, and .92580; (see Table under the article *Alcohol* among the Preparations;) the weakest spirit having the greatest specific gravity, and this diminishing as the temperature increases. The usual mode of ascertaining the relative gravity of different spirits is by the hydrometer², of which there are different kinds in use. For ordinary purposes, the relative strength of spirits may be known by weighing the sample to be tried in a phial capable of holding exactly 500 grains of distilled water. An equal bulk of rectified spirit weighs 418 grains, and of proof spirit 465; hence the number of grains above or below these sums will indicate the relative strength of the spirit.

¹ By the term *pure alcohol* is meant alcohol of a specific gravity of 796 at 60° Fahrenheit, the strongest which can be procured.

² For a description of this instrument see Part I.

Qualities. — Pure rectified spirit has a fragrant odour, and a hot, highly pungent taste. It is colourless; always fluid; cannot be congealed at any known degree of cold; evaporates speedily at the ordinary temperature of the atmosphere; boils at 163° Fahrenheit; and is extremely inflammable, burning with a blue lambent flame, without any sensible smoke. Like alcohol it combines with water in every proportion; and, on account of its affinity for water, precipitates many of the neutral salts from their aqueous solutions. It is capable of dissolving many saline bodies, and is the proper solvent of the greater number of the proximate principles of vegetables. Its constituents are 85 of pure alcohol and 15 of water, in 100 parts, when its specific gravity is 835 at a temperature of 60° of Fahrenheit; but 83 only of pure alcohol, and 17 of water, when it is 840 as designated by the Dublin College.

Medical properties and uses. — Rectified spirit is a very powerful stimulant. In its undiluted state it is never exhibited as a remedy; and is employed only for forming the diluted spirit, and as a pharmaceutical agent.

Official preparations. *Alcohol.* L. D. *Spiritus Camphoræ.* L. E. *Spiritus Ammoniæ.* L. D. *Spiritus Lavandulæ.* L. E. D. *Tinctura Alces.* L. *Tinctura Asafetidæ.* L. E. D. *Tinctura Benzoini composita.* L. E. D. *Tinctura Castorei.* L. E. D. *Tinctura Guaiaci.* L. E. D. *Tinctura Moschi.* D. *Tinctura Ferri Muriatis.* L. *Tinctura Muriatis Ferri cum Oxydo rubro.* D. *Liquor Hydrargyri Oxymuriatis.* L.

SPIRITUS TENUIOR. *Lond.* ALCOHOL DILUTUS. *Edin.* SPIRITUS VINOSUS TENUIOR. *Dub.* Weaker Spirit. Diluted Alcohol. Proof Spirit.

This is merely rectified spirit diluted with a certain proportion of water. According to the London and Dublin Colleges, its specific gravity should be to that of distilled water as 930 to 1000; while the Edinburgh College orders it of the gravity of 935. The former may be formed by mixing four parts by measure of rectified spirit with three of water, and contains 44 parts of pure alcohol and 56 of water in 100 parts; the latter is obtained from equal parts of rectified spirit and water, and contains 42 of pure alcohol and 58 of water in 100 parts. But very frequently, instead of being formed by mixing the pure rectified spirit with water, an impure spirit of a strength nearly similar is employed. The qualities of the diluted spirit are not different from those of the rectified spirit, except in degree, and in some instances it is better fitted for taking up the principles of vegetables submitted to its action.

Medical properties and uses. — Alcohol diluted to the degree of proof spirit is still a very powerful diffusible stimulant, and

too strong for internal use. Externally applied, it is recommended in burns; to restrain bleeding in passive hæmorrhages; and as a friction or fomentation to relieve muscular pains; and in a more diluted state it forms a good collyrium in the latter stage of ophthalmia. Proof spirit diluted with water is employed as a remedy in the form of tinctures and spirits; and the ardent spirits in common use may be regarded as nearly of the same nature. These taken in moderation increase the general excitement, communicate additional energy to the muscular fibres, strengthen the stomach, and exhilarate the mind. Hence they are often and advantageously used in cases of debility and the low stage of typhoid fevers, in which the use of wine is indicated; and in habits disposed to create acidity they are even preferable to wine; some of them, particularly brandy, proving gratefully stomachic, when wine is nauseated and rejected. As an article, however, of daily or dietetical use, particularly if taken in immoderate doses or long continued, ardent spirits, besides being the source of much moral evil, and debasing the human character nearly to a level with that of brutes, occasion disease, and are commonly the origin of dyspepsia, hypochondriasis, and hepatic and visceral obstructions. The hurtful effects of ardent spirits, however, are obviated in a considerable degree, by diluting them with water, and adding lemon-juice and sugar to the mixture, so as to form what is generally known by the name of punch. Although all the varieties of ardent spirits may be regarded as diluted alcohol, yet each has a peculiarity of operation: thus brandy is simply cordial and stomachic; rum heating and sudorific; gin and whisky diuretic; and arrack styptic, heating, and narcotic, and ill adapted to European constitutions.

Official preparations. *All the tinctures except those which are prepared with rectified spirit; and all the spirits.*

SPONGIA. *Syst. Nat. Gmelin. vi. 3817.*

Cl. 6. Ord. 4. Vermes Zoophyta.

G. 343. A flexile, fixed, torpid, polymorphous animal, composed either of reticulate fibres, or masses of small spires interwoven together, and clothed with a gelatinous flesh full of small mouths on its surface, by which it absorbs and ejects water.

Sp. 8. S. *officinalis*. Official Sponge. *Phil. Trans. lv. 288. t. 10.*

Official. SPONGIA. *Lond. Dub. SPONGIA OFFICINALIS. Edin.*

Sponge.

Syn. *Eponge (F.) Meerschwamm (G.) Spagna (I.) Esponja (S.) Isfunge (Arab.)*

Mo-ahādul (H.)

This species of sponge is found chiefly in the Mediterranean and Red Seas. In some of the islands of the Archipelago, the inhabitants are trained from infancy to dive for sponges, which are generally found attached to the bottom of the rocks. Al-

though the ancients had perceived something like sensation in sponges by their shrinking, they were long supposed to be of a vegetable nature, from their texture and the branched appearance which they assume, till Mr. Ellis's observations¹ first established the fact that they are animals *sui generis*, the mouths of which are the open ends of so many branched tubes opening on the surface, through which they receive their nourishment and discharge their *fæces* like polypes. These mouths are generally guarded with minute spines or points, and the tubes are filled with a gelatinous matter, and often with minute shells and sand.

Qualities — Sponge cleaned and rendered fit for use is of a brownish yellow colour, soft, light, and very porous; absorbing rapidly by capillary attraction as much as it can contain of any fluid in which it is immersed, and again yielding it up on being compressed. When sponge is digested with boiling distilled water it yields up to it a considerable proportion of gelatin, and the sponge loses much of its flexibility, and crumbles between the fingers when dry. Boiled with potash it forms a soap. Its principal constituents, according to the analysis of Mr. Hatchett, are animal gelatin, albumen, a small portion of common salt, and some carbonate of lime.

Medical properties and uses. — Sponge, in its usual form, is never employed as a remedy; but is an exceedingly useful instrument in the practice of surgery.

Official preparations. *Spongia usta*. L. D.

STALAGMITIS. *Spec. Plant. Willd.* iv. 980.

Cl. 23. *Ord.* 1. Polygamia Monoecia. *Nat. ord.* Tricoccæ.

G. 1888. *Hermaph.* Calyx four-leaved. Corolla four-petalled. Stamens thirty, inserted into a fleshy four-angled receptacle. Style thick. Stigma four-lobed. Berry one-celled, crowned by the style, three-seeded.

Male. Calyx, Corolla, and Stamens hermaphrodite.

Sp. 1. *S. Cambogioides*. The Gamboge-tree. *Murray App. Med.* iv. 655.

Official. CAMBOGIA. *Lond.* GAMBOGIA. *Edin.* GAMBOGIA; GUMMI RESINA. *Dub.* Gamboge.

Syn. Gomme Gutte (*F.*) Gummigutt (*G.*) Gomma Gotta (*I.*) Ossîra réwûnd (*Arab.*) Gahketu (*Cingalese.*)

The tree yielding this gum-resin is a native of the kingdom of Siam, and of Ceylon, where it is known by the names *Ghokata*, or *Gohkata*, or *Gohlatha*. It is of middling stature, and moderately branching. The leaves are on short petioles, ovate, opposite, entire, even, coriaceous, rigid, and of an obscure green colour. The male flowers are either in distinct clusters, or mixed with the hermaphrodite, which are axillary. The calyx consists of four ovate leaflets, the two exterior of

¹ *Phil. Trans.* lv. 284.

which are smaller than the two interior: the petals are four, spreading, coriaceous, with ciliated margins, and of a yellow colour: the stamens are about thirty, affixed to a quadrangular fleshy receptacle, and bearing subquadrangular, club-shaped anthers; sometimes there is the rudiment of a style, and an echinated, unequal, sterile stigma. The *hermaphrodite* flowers are in axillary whorls, or on the joints of the smaller branches, sometimes mixed with the male flowers, sometimes in opposite gems. The calyx, corolla, and stamens are the same in both: the germen is globular, with a short solitary style, and a three or four-lobed stigma; with the lobes spreading, obcordate, and persistent. The fruit is a smooth globular whitish or rosaceous berry, crowned by the lobes and style of the stigma, and containing several long, triangular seeds.

In Siam the gamboge is obtained in drops by breaking the leaves and young shoots, but in Ceylon from the bark of the tree wounded with a sharp stone. It is collected first in coconut shells, and thence transferred into large earthen jars, where it remains until it is nearly dried to a cake, when it is formed into rolls and wrapped up in leaves.¹ It is brought to Europe packed in cases and boxes. It was first brought to Europe by the Dutch, about the middle of the seventeenth century.

Qualities. — Gamboge is inodorous, and nearly insipid; opaque, brittle, breaks with a vitreous fracture, and is of an orange-yellow colour. Its gravity is 1.221.² When heated it melts, and by increasing the heat burns with a white flame, and leaves a very light spongy charcoal. When wetted, it stains the fingers a brilliant yellow; and when triturated with water about two-thirds are dissolved, and a turbid yellow solution produced. Alcohol dissolves nine parts in ten, sulphuric ether six parts; and both form transparent deep golden yellow tinctures. Gamboge is also soluble in a strong solution of pure ammonia, and potash, forming deep orange-red solutions.

The watery solution of gamboge reddens tincture of litmus; is not precipitated by alcohol, but, on the contrary, is rendered transparent by it; oxysulphate of iron strikes with it a pale olive-brown hue, but is not precipitated, nor is it affected by solutions of any of the other metallic salts. The alcoholic tincture is rendered turbid and bright yellow by the addition

¹ The *Cambogia gutta* of Linnæus, several species of *Hypericum*, *Chelidonium lacinatum*, and several other plants, yield a yellow juice; but that the tree we have described affords the true gamboge, was clearly established by Kœnig, who resided many years at Tranquebar.

² Brisson.

of water, but the precipitate is long of being deposited. The ethereal tincture, when evaporated on water, leaves a pellicle of beautiful orange-coloured brittle resin, which imparts no colour to water. When water is added to the alkaline solutions they are not even rendered turbid; but, on the addition of acids, yellow precipitates are produced which are soluble in an excess of acid. These experiments confirm the analysis of Braconnet, from which he concluded that gamboge contains one part of a gum resembling cherry-tree gum, and four of a brittle resin; but they do not throw any light on the nature of its cathartic property.

Medical properties and uses.—Gamboge is a powerful drastic cathartic; and frequently excites vomiting, even in moderate doses. It is efficaciously used in obstinate costiveness, in dropsies, and for the expulsion of tæniæ; but, from the violence of its operation, and the griping it occasions, it requires to be exhibited with caution. As a hydragogue it is usually combined with squill and supertartrate of potash; and for cathartic purposes, with calomel, soap, or rhubarb. The alkaline solution of it has also been administered in dropsy, in which form it is said to operate both by stool and urine.

The dose of the alkaline solution is from m xxx m l in a cupful of water twice a day. It is, however, more usually given in substance, in the form of pills, in doses of from grs. ij. to grs. vj. variously combined.

Official preparations. *Pilulæ Cambogiæ compositiæ.* L. E.

STANNUM.* PLUMBUM ALBUM. Κασσιτερον. Tin.

Syn. Estain (F.) Zinn (G.) Stagno (I.) Estano (S.) Resass (Arab.) Ranga (H.) Tāgarum (Tam.)

This metal is not very diffusely spread over the surface of the globe; but is very abundant in the places where it occurs. It is plentifully procured in Cornwall[†]; and mines of it are also wrought in the Erzgebirge, on the borders of Bohemia; in the province of Galicia, in Spain; and in the peninsula of Malacca, in Asia. It is said also to have been found in Chili.

It occurs

A. In its metallic state:

I. United with Sulphur and copper.

Sp. 1. *Tin pyrites.*

B. Oxidized:

II. Combined with oxide of iron and silice.

2. *Tin stone.*

3. *Wood tin.*

* Beckman is of opinion that the *Stannum* of the ancients was neither our tin nor a peculiar metal; but the regulus of lead, or *werk* of the Germans, as procured by the first smelting of the ore, which always contains silver. *Hist. of Inventions*, vol. iv. p. 7.

† It is uncertain when the Cornwall mines were first wrought. The Phœnicians came to Britain for tin; and there is a tradition in Cornwall, that the very old forsaken works were those of the Jews, and are therefore called *Altal sarazin*. The Jews' cast off works. *Norden's Description of Cornwall*, 4to. 1728, 41.

The purest and best tin of Cornwall is procured from the tin stone, which is found beneath the beds of streams, particularly at Carn near Perran. The ore is found under a stratum of clay about fifty feet thick, and a layer of rounded stones; occurring loose in lumps and grains of various sizes. It is first washed, then bruised and passed through wire sieves containing 16 meshes in the square inch; and next smelted with charcoal, in a common blast furnace, through a hole in the bottom of which the reduced metallic tin flows into a pit below; to purify it, the tin in the fused state is ladled from the pit into an iron boiler placed over a fire; and pieces of charcoal plunged, by means of an iron instrument, to its bottom, which occasions an ebullition, and causes any slag it contains to rise to the surface, whence it is skimmed off. The tin is lastly cast into bars or pigs, weighing from 2 to 3 cwt. each.*

Qualities.—Tin has a very slight, somewhat disagreeable, taste, and emits a peculiar odour when rubbed. It has the colour and the brilliancy of silver; is very malleable; but has little ductility and tenacity; is easily cut with a knife; and is flexible, producing a peculiar crackling noise when bent backwards and forwards. Its specific gravity, after fusion, is 7.291; and after being hammered, 7.299.² It melts at 442 Fahr., but is not volatilized, and on cooling crystallizes in rhombs. Tin exposed to the air soon loses its lustre, and when melted it is oxidized, a gray oxide being formed on its surface, which becomes yellow if the heat be continued; and if raised to a full red heat takes fire, and acquires a pure white colour. It is also oxidized by many acids; and combines readily with sulphur.

Officinal. STANNUM: STANNI LIMATURA. *Lond. Edin. Dub.* The filings and powder of tin.

Tin melted and agitated briskly in a heated mortar with a warm pestle till it cools, or shaken in a wooden box, is reduced to a kind of powder, consisting of small rounded particles, with very little lustre; but still in the metallic state. This is the powder of the pharmacopœias.

Medical properties and uses.—Tin is anthelmintic. It was formerly used in hysteria and hypochondriasis; but its efficacy in these complaints cannot extend beyond its power of dislodging worms. It is generally supposed to operate mechanically only; but it has been suggested, that "it is not improbable, it may act by generating hydrogen gas in the intestinal canal, which proves noxious to the animal; and its efficacy has been said to be increased by combination with sulphur,

Aikin's Dictionary of Chemistry.

² Brisson.

by which sulphuretted hydrogen gas will be evolved." For the mode of exhibiting it, see *Pulvis Stanni* among the Preparations.

Official preparation. *Pulvis Stanni*. D.

STAPHISAGRIÆ SEMINA. Vide *Delphinium*.

STYRAX. *Spec. Plant. Willd.* ii. 623.

Cl. 10. Ord. 1. Decandria Monogynia. Nat. ord. Bicornes Linn. Guaiacinae Juss.

G. 874. Calyx inferior. Corolla funnel-shaped. Drupe two-seeded.

Sp. 1. *S. officinale*.¹ Official Storax. *Med. Bot.* 2d edit. 291. t. 101.

Sp. 3. *S. Benzoin*. Benjamin-tree. *Med. Bot.* 2d. ed. 294. t. 102.

Phil. Trans. lxxvii. 307.

1. STYRAX OFFICINALE.

Official. STYRACIS BALSAMUM. Lond. STYRACIS BENZOINI BALSAMUM. Edin. STYRAX CALAMITA; RESINA. Dub. Storax Balsam.

Syn. Storax (F.) Storax (G.) Storace (I.) Aznibar (S.)

The official storax-tree is a native of the south of Europe and the Levant; and flowers in July. It rises about fifteen feet in height, sends off many branches, and is covered with a rough gray bark. The leaves, which are about two inches long, an inch and a half broad, and of a bright green on the upper surface, and hoary on the under, are petiolate, alternate, elliptical, pointed, and entire. The flowers are in terminal clusters: the corolla is monopetalous, funnel-shaped, large, and of a white colour: the filaments are placed in a regular circle, and apparently adhere at the base, supporting erect oblong anthers; and the germ is oval with a slender style and simple stigma. The fruit is a juiceless drupe, of an ovate globular form, containing one or two compressed angular nuts.

From this tree storax is obtained in Asiatic Turkey. It issues from incisions made in the bark; and as it was formerly the custom to collect and export it in reeds, it was named *Styrax calamita*.² But only two kinds of storax are now found in the shops, storax in the tear, which is pure storax; and storax in the lump, or red storax, which is mixed with saw dust and other impurities. Both kinds are brought from the Levant in chests and boxes.

Qualities.—Storax has a fragrant odour, and a pleasant, subacidulous, slightly pungent, and aromatic taste. It is of a reddish brown colour, and brittle at the ordinary temperature of the air, breaking with a shining resinous fracture; but soon softens between the fingers, and melts at a low heat, exhaling

¹ Murray. *System of Materia Medica*, i. 490.

² *Erucæ* Dioscoridis.

³ The Dublin College retains this appellation, although no storax of this description is now to be met with in the shops.

a strong odour of benzoic acid. In a higher degree of heat it burns with a white flame, and leaves behind a light spongy charcoal. It is deprived of its red colour, and the little transparency it possesses by chewing; and becomes in a remarkable degree, more brittle. To water it imparts a yellow colour, and its odour and taste; but in distillation scarcely any oil is obtained. Alcohol and ether dissolve it completely, leaving only impurities, and the tincture is decomposed by the addition of water. Its constituents are resin, an empyreumatic oil, and benzoic acid.

Medical properties and uses.—Storax is stimulant, and in some degree expectorant. It was formerly much prescribed in asthma, catarrh, phthisis, and menstrual obstructions; but it is now scarcely ever employed, except as an adjunct on account of its fragrance; and, certainly, it cannot be recommended in the above complaints. The dose is from grs. x. to ʒss.

Official preparations. *Styrax purificata*. D. *Pilulæ e Styraçe*. D.

2. STYRAX BENZOIN.¹

Official. BENZOINUM. *Lon.* STYRACIS OFFICINALIS; BALSAMUM. *Edin.* BENZOE; RESINA. *Dub.* Benzoin; a balsam.

Syn. Benzoin (F.) Benzoe (G.) Belzuino (I.) Benjui (S.) Lubán (H. and Arab.)

The benzoin or benjamin tree, is a native of Sumatra. It is a tall tree sending off many round branches, which are covered with a whitish downy bark. The leaves are alternate, on round, striated, tomentose petioles, oblong, quite entire, pointed, veined, smooth above, and tomentose beneath. The flowers are in compound axillary clusters, nearly as long as the leaves; with the common peduncle tomentose; the partial alternate, spreading, and tomentose: the pedicels short; and the flowers all hanging on the same side. The calyx is bell-shaped, short, and downy; the corolla consists of five linear obtuse petals, four times longer than the calyx, connected together at the base, and externally cineritious. The filaments are ten, a little shorter than the petals, connected at the base, and supporting linear erect anthers: the germen is superior, ovate, and downy, with a slender style and double stigma.

Benzoin is obtained from this tree by wounding the bark near the origin of the lower branches. The tree is never wounded under six years of age; and cannot sustain these annual incisions above twelve years. A tree yields about three pounds of balsam annually. It is brought to this country in large masses packed in chests and casks.

¹ Benzoin was long supposed to be the produce of a species of *Laurus*, a native of Virginia, which on this account was named *L. Benzoin*: this error was detected by Linnaeus; but the real genus of the plant which yields it was first assigned by Mr. Dryander. *Phil. Trans.* lxxvii. 307.

Qualities. — Benzoin has a very agreeable fragrant odour; but scarcely any taste. Its specific gravity is 1.092. The mass is white and brownish, or yellowish, somewhat translucent, brittle, and breaks with a resinous fracture. When heated it exhales white fumes of a very fragrant, pungent odour, which are volatilized benzoic acid. Boiling it in water, lime and water, or solutions of the mixed alkalies, extracts the benzoic acid it contains, which can be afterwards separated by the addition of an acid. Sulphuric acid dissolves benzoin, and benzoic acid sublimes. Nitric acid assisted by heat dissolves it with violence, and the solution, on cooling, becomes turbid, and crystals of benzoic acid separate. In both these processes artificial tannin also is formed. Alcohol and ether readily dissolve this balsam, which is again precipitated from the tincture, in the form of a white powder, by the addition of water. According to Mr. Brande's analysis, 100 parts of benzoin distilled alone, yield of benzoic acid 9.0. Acidulous water 5.5. Butyraceous empyreumatic oil 60.0. Charcoal 22.0. Carburetted hydrogen and carbonic acid 3.5 parts.¹

Medical properties and uses. — Benzoin is regarded as expectorant; and was formerly employed in asthmas and other pulmonary affections; but it is scarcely ever ordered in modern practice; and is principally used for preparing the acid.

Official preparations. *Acidum benzoinum*. L. E. D. *Tinctura Benzoini composita*. L. E. D.

SUCCINUM.² *Lond. Edin. Dub.* Amber.

Syn. Succin (F.) Ambra (I.) Ambar (S.)

This substance is dug out of the earth in Ducal Prussia, near the sea coast; and is thrown in considerable quantity on the sea shore of Polish Prussia and Pomerania, particularly after tempestuous west or north-west winds.³ It is evidently of vegetable origin, and the lumps occasionally inclose small pieces of twigs and insects in their substance. The greater part of what is brought to this country comes from the Baltic; and a small quantity from Catania, in Sicily, packed in chests.

Qualities. — Amber is insipid, and also inodorous, except when heated, when it emits a fragrant odour. It is brittle, light, hard, and transparent; with a considerable degree of lustre; is commonly of a golden yellow or brown colour, but occasionally colourless, and is electric. Its specific gravity is 1.065. It softens when heated, and in a strong

¹ *Nicholson's Journal*, x. 86. *Thomson's Chemistry*, 4th ed. v. 129.

² *Ἡλεκτρον* Græcorum.

³ It is found in small quantities on the east coast of Britain; and small pieces of it are occasionally found in the gravel-pits round London. The largest mass of amber ever found, was met with near the surface of the ground in Lithuania. It weighs 18 lbs. and is preserved in the royal cabinet at Berlin.

heat burns, leaving few ashes. It is nearly insoluble in water, to which, however, it gives, when it is boiled with it, a sweetish odour, a yellow colour, and a bitter taste. Alcohol takes up about one-eighth part of amber, forming a tincture which is rendered milky by the addition of water, and precipitates a resin. The alcoholic solution contains a free acid. With boiling fixed alkalies it forms a soap; and even a cold weak solution of potash dissolves it, requiring, however, a considerable length of time. Sulphuric acid converts amber into a black resinous mass. Nitric acid, assisted by heat, acts violently upon it; nitrous gas is emitted, and the amber is ultimately entirely dissolved. Its constituents appear to be chiefly resin, an empyreumatic oil, and succinic acid.

Use. — Amber, although it was in high estimation among the ancients as a medicine, is now only used in pharmacy for the purpose of obtaining the oil and acid which it yields by distillation.

Official preparations. *Acidum succinicum*. E. D. *Oleum Succini*. L. E. D.

SULPHUR. *Lond.* SULPHUR SUBLIMA'TUM. *Lond. Edin. Dub.* Sulphur. Sublimed Sulphur.

Syn. Soufre (F.) Schwefel (G.) Zolfo; Solfo (I.) Azufre (S.) Kibreet (Arab.) Ghén-daguno (Tam.) Gandhaca (San.)

Sulphur is found native in the neighbourhood of volcanoes; and sometimes, although rarely, in veins traversing primitive rocks. At the Solfatara near Naples, it is dug up in a state of comparative purity, being mixed with a white earth only, from which it is separated by sublimation, and the sulphur thus freed is melted, and cast into moulds forming the roll sulphur of commerce. It is imported into this country chiefly from Sicily¹ and Naples: but a large proportion of what is used in this country is obtained from the roasting of pyrites. At the Pary's mines in Anglesea were works for this purpose on a large scale; where, in working the copper pyrites, the sulphur volatilized in the roasting, was collected in chambers which were connected with the domes of the furnaces by means of horizontal flues. Each chamber had a door, by means of which it was cleared of the sulphur once in six weeks. This is the general mode of obtaining sulphur from pyrites, and thus procured, it is in rough, pulverulent, spongy crusts, of a dirty grayish yellow colour. In order to purify it, the crusts are broken and thrown into a boiler, in which it melts; and after the impurities are separated by skimming and subsidence, it is cast into cylindrical moulds, forming roll sulphur; or

¹ In Sicily it is procured from Samatino, Gallati, Trabria, Pentellaria, Licati, Salato, Palmo, Tavera, Girgenti, and Falconara.

into cones about two feet high, which form the loaf sulphur of commerce.¹

The common English roll sulphur is said often to contain a full fifteenth part of orpiment, while the Sicilian sulphur contains seldom more than 3 per cent. of a simple earth; and therefore is justly preferred. Both of them are purified in the large way by conducting the vapour of melted sulphur into close chambers, where it concretes in the form of a fine powder: but for medicinal use, that which is sublimed by heating in a sand-bath, an earthen cucurbit, charged with roll sulphur, and conveying the vapours to be concreted into a set of aludels placed round the cucurbit is to be preferred. Prepared in either mode it is the *Sulphur sublimatum*² of the pharmacopœias.

Qualities. — Roll sulphur is a crystallized brittle solid body of a yellow colour, has a peculiar well-known odour when rubbed or heated, and is insipid. It breaks from the heat of the hand, when held in it for a short time; and becomes electrical when rubbed. Its specific gravity is 1.99. Sublimed sulphur is in the form of a very bright yellow powder, and contains a minute portion of sulphuric acid, from which it can be separated by washing it with water. Sulphur is fused at 224° Fahr.; and, what is singular, by increasing the heat to 320° it becomes thick and viscid, and the temperature augments to 550°, when copious fumes arise.³ When heated in the air it inflames at 300°, and burns with a pale blue flame, emits pungent suffocating vapours, and becomes acidified. It is insoluble in water and alcohol; but is soluble in oils, and combines with the alkalies, and many of the earths, and metallic substances. From the experiments of Davy, there is reason to believe that sulphur is a triple compound of oxygen, hydrogen, and a peculiar base.⁴

Medical properties and uses. — Sulphur is laxative, and a stimulating diaphoretic. From the gentleness of its operation on the bowels, it is one of the best means for keeping them lax in hæmorrhoidal affections; and the diaphoresis which it at the same time excites has rendered it serviceable in chronic rheumatism and catarrh, and in atonic gout, rickets, asthma, and other pulmonary affections not attended with acute inflammation. It is supposed that it combines with hydrogen in the stomach. It manifestly transpires through the skin, perhaps, however, in the state of sulphuretted hydrogen, which may be the cause of silver in the pockets of those who take sulphur being blackened. It is specific in scabies and some other cuta-

¹ The sulphur vivum of the shops is the impure dregs of this process.

² *Θειον κρυσταλλωμενον* Dioscoridis.

³ Irvine's *Chemical Essays*, 473.

⁴ Phil. Trans. 1809.

neous affections, in which it is applied externally, and taken internally at the same time.

The dose may be from ʒj to ʒiij, mixed into an electuary with syrup or treacle, or in milk. To promote its purgative power it may be combined with super-tartrate of potash; and in hæmorrhoidal cases with magnesia.

Official preparations. *Sulphur lotum*. L. E. D. *Sulphur præcipitatum*. L. *Unguentum Sulphuris*. L. E. D. *Unguentum Sulphuris compositum*. L.

SUPER-TARTRAS POTASSÆ IMPURUS. *Edin.*
TARTARUM. *Lond.* Impure Super-tartrate of potash.

Syn. Tartre (F.) Rober Weinstein (G.) Tartaro bianco (I.) Tartaro (S.)

This is a saline matter, which exists in the juice of the grape; and is deposited on the sides of casks of wine, in the form of a crust, during the continuance of the slow fermentation which goes on in wine, till it attains the greatest perfection age can give it. It is well known by the name of *tartar*, and is named red or white tartar, as it is more or less coloured, owing to the nature of the wine from which it is deposited. Besides colouring matter, it contains extractive, potash, combined with tartaric acid in excess, and tartrate of lime. It is only used for preparing the next article.*

SUPER-TARTRAS POTASSÆ. *Edin.* **POTASSÆ SUPERTARTRAS.** *Lond.* **TARTARUM CRYSTALLI.** *Dub.* Super-tartrate of potash, Crystals of tartar.

Syn. Tartrate acidule de Potasse (F.) Gereinigter Weinstein (G.) Cremore di tartaro; ossitartrato ossidulo di Potassa (I.)

This is the above-mentioned saline crust purified. It is first reduced to powder, then dissolved in boiling water in tubs, and the clear fluid poured off from the sediment. The clear solution is then allowed to remain at rest, when it deposits brown crystals of tartrate of potash, which are boiled in copper vessels with the mother liquor; and clarified by throwing in whites of eggs, and some finely sifted wood ashes. An effervescence immediately takes place, and a red scum is thrown up, which is carefully skimmed off with a perforated skimmer; and the throwing in of the wood ashes, with the subsequent skimming, are repeated for fourteen or fifteen times; after which the liquor is taken from the fire, and allowed to remain at rest for three days. On the fourth day a dirty white saline crust is removed from the surface, and two thirds of the liquor ladled out. The crystals which now form are white and clean, and require no further preparation than drying on a wicker frame. In some places, instead of wood ashes, a portion of pure clay is diffused

* A large quantity of tartar comes from Sicily: the white is procured chiefly from Palermo, Marsala, and Catania; the red from Mascali, Messina, Melazzo, and Vittoria.

through the boiling solution. The exposure of the crystals on cloths to the air and light whitens them very considerably.¹

Qualities. Super-tartrate of potash is inodorous, and when allowed to dissolve in the mouth, which it does very slowly, and feeling gritty under the teeth, has a harsh acid taste. Its crystals are small and irregular, generally run together into little masses, which are of a white colour, semi-transparent, brittle, and easily reduced to powder. Its specific gravity is 1.953. It requires for its solution 30 parts of boiling water, and 120 of cold water. The solution decomposes spontaneously by keeping; a mucous matter is deposited, and there remains a solution of carbonate of potash coloured with a little oil.² According to the analysis of Thenard, 100 parts of pure supertartrate of potash contain 57 of tartaric acid, 33 potash, and 7 of water³; but according to Berzelius, the proportions are, acid 70.45, potash 24.80, and water 4.75.

Medical properties and uses.—This salt is purgative, diuretic, and refrigerant. As a purgative it is frequently employed, on account of its taste being less unpleasant than the generality of saline cathartics; but it is apt to excite too much absorption when long used, producing emaciation, and also disordering the digestive organs. This property, however, of exciting the action of the absorbents, is taken advantage of with great effect in the cure of dropsy, particularly ascites; in which the supertartrate of potash has been found extremely efficacious. It generally occasions a considerable discharge of serous fluid into the bowels, which is thrown off in the form of watery stools, at the same time that the discharge by urine is much augmented. The water in the cavity of the abdomen is thus rapidly carried off: and the chances of a return of the disease are supposed to be fewer than when other diuretics are employed. We are of opinion, however, that in cases complicated with hepatic obstructions the effects of this remedy are very uncertain. It may be advantageously united with squill; and, owing to the exhaustion it occasions, its use should be followed by preparations of iron, and other tonics. As a refrigerant, super-tartrate of potash dissolved in water, and the solution sweetened with sugar, is a pleasant beverage in febrile diseases, when its purgative quality is not likely to prove injurious. As a purgative and hydragogue the dose is from $\mathfrak{z}\text{iv}$ to $\mathfrak{z}\text{vj}$, in the form of electuary; and this dose for the latter purpose must be repeated until the kidneys are affected; diluting freely during its use.

¹ Schaub says, it may be purified by simply boiling it with powdered recent charcoal, and very white crystals obtained. *Ann. de Chimie*, xlix. 64.

² This decomposition was first described by Berthollet, in 1782. *Mem. Par. Thomson's Chemistry*, 4th edit. vol. iii. 93.

³ *Annales de Chimie*, vol. xxxviii. p. 39.

Official preparations. *Ferrum tartarizatum*. L. D. *Potassæ Tartras*. L. E. D. *Antimonium tartarizatum*. L. E. D. *Soda tartarizata*. L. E. D.

SUS. *Syst. Nat. Gmelin*. i. 217.

Cl. 1. Ord. 6. Mammalia Belluæ.

G. 35. Fore-teeth four in the upper jaw converging, and six prominent in the lower jaw. Tusks two shorter in the upper jaw; and two in the under jaw displayed. Snout truncated, prominent, moveable. Feet cloven.

Species 1. *Sus Scrofa*.¹ The Hog. *Jonst. quadr.* 99. t. 47.

Official. ADEPS. Lond. ADEPS SUILLUS. Edin. Dub. Fat. Hog's lard.

Syn. Sain doux (F.) Schweineschmalz (G.) Lardo (I.) Pringue (S.) Pánnie Colupoo (Tam.)

The hog is too well known to require a particular description. It is an inhabitant of the greater part of the temperate regions of the globe; the wild and the domestic being varieties of the same species; and of both there are several sub-varieties. The period of gestation of the sow is four months, and the offspring numerous, occasionally exceeding twenty at a litter, which the boar sometimes devours. The hog does not shed its teeth, and seldom lives beyond twenty-five or thirty years. It is much infested with vermin; and is subject to several diseases, particularly hydatid dropsy, scrophula, and scabies. Its food is of a vegetable nature; but it is asserted that pepper kills it. As an article of diet, the flesh of the hog, when the animal has been castrated and properly fed², is very palatable, and not unwholesome; and when salted, keeps better than most other meats. But the frequent use of pork is said to favour obesity, and occasion disorders of the skin, particularly in the sedentary. The lard, which is the official part of the hog, is obtained chiefly from the flank of the animal. To free it from the membranes and vessels, it is cut in small pieces, then very well washed in water, until the water comes off colourless, and afterwards melted with a very gentle heat in a shallow vessel, continued on the fire till the whole of the water is evaporated. While melted, it is run into bladders, in which it concretes; and is thus brought to market.

Qualities. — Lard is inodorous, tasteless, and white; soft, and nearly semifluid. Exposed to a heat of 97° it melts, and concretes again when cooled. It is insoluble in water, alcohol, and ether: but is dissolved by the strong acids, being at the same time decomposed; and, like the fixed oils, it combines

¹ Tr. Aristotle.

² The qualities of the flesh depend much on the diet of the animal. Pork fed at a flour mill is always good: and Russel says, that which is fed near Aleppo on liquorice root, which grows in great abundance in the desert, is fat, delicious, and remarkably digestible.

with the alkalies and forms soap. It is oxidized, if, when melted, a little nitric acid be stirred into it; and assumes a greater degree of firmness, with a yellow colour. By destructive distillation it affords results very similar to those obtained from the analysis of fixed oil; and appears to be a compound of oxygen, hydrogen, and carbon in unknown proportions. From the experiments of Chevreul, it appears to consist of a mixture of two distinct oily substances; one of which is solid at the usual temperature, and has been named by him *stearin*; and the other liquid, which he has named *elain*. The proportion in 100 parts of lard, is, of *stearin* 38, *elain* 62 parts.* When lard is long exposed to a warm air, it becomes yellow, emits a foetid odour; and, owing to oxygen being attracted from the atmosphere, the sebatic acid is formed. This state of rancidity may, in some degree, be removed by washing it with very pure soft water; which during the operation becomes acid, and reddens litmus paper.

Medical properties and uses. — Lard is emollient; and owing to its softness and unctuousity is preferable to fat as a friction; but it is seldom used for this purpose; and is chiefly employed in the formation of ointments.

Official preparations. *Adeps preparata*. L. D.

SWIETENIA. *Spec. Plant. Willd.* ii. 557.

Cl. 10. Ord. 1. Decandria Monogynia. Nat. ord. Trihilatæ. Linn. Meliæ Juss.

G. 843. Cal. five-cleft. Pet. five. Nect. cylindric, bearing the anthers at the mouth. Capsules five-celled, woody, opening at the base. Seeds imbricate, winged.

Sp. 2. S. *Febrifuga*. Febrifuge Swietenia. Roxburgh, *Coromandel Plants*, i. 18. t. 17.

Official. SWIETENIA FEBRIFUGA; CORTEK. Dub. The bark of Febrifuge Swietenia.

Syn. *Rahena* (H.) *Shem mairum* (Tam)

This is a native of the East Indies, growing in the mountains of Rajahmundry Circar. It is a very lofty tree, with a large shady head, and covered with a gray scabrous bark. The leaves are alternate and abruptly pinnated; composed of three or four pairs of opposite, petiolated, oval, obtuse leaflets; each from three to five inches long, and from two to three broad, smooth, shining, and the lower side extending a little further down on the petiole than the upper side: the flowers are middle-sized, white, inodorous; and disposed in large, terminating, diffuse panicles, furnished with minute bracts: the calyx is inferior: the nectary scarcely half the length of the petals and bellied; the filaments are very short, and inserted just within the mouth of the nectary: the germ is con-

* *Annales de Chimie*, t. 94. p. 129.

cal, bearing a thick tapering style, supporting a large targeted stigma, which shuts up the mouth of the nectary: the capsule is large, ovate, and five-valved, with the valves gaping from the top.

Qualities. — The bark of febrifuge Swietenia is very bitter and austere, yet is not nauseous. It is brittle, compact, of a light red colour internally, and externally covered with a rough, gray, inert epidermis. Water extracts its virtues both by infusion and coction, and yields an astringent extract resembling kino; they are partially taken up by alcohol, and the aqueous and spirituous preparations do not suffer decomposition when mixed.

Medical properties and uses. — The bark of this species of Swietenia are astringent and tonic. In India, it is used for the cure of intermittents, with considerable advantage; and has also been found efficacious in most of the diseases in which the cinchona bark proves serviceable. It is very little employed in Europe, and is not found generally in the shops. The dose, in substance, pulverized, is half a drachm.

TAMARINDUS. *Spec. Plant. Willd.* iii. 577.

Cl. 16. Ord. 1. Monadelphia Triandria. Nat. ord. Lomentaceæ Linn. Leguminosæ Juss.

G. 1250. Calyx four-parted. Petals three. Nectary of two short bristles under the filaments. Legume pulpy.

Sp. 1. *T. indica*. The Tamarind tree. *Med. Bot.* 2d ed. 448. t. 161. (Balam-pulli) Rheede, *Hort. Malab.* i. 39. t. 23.

Official. TAMARINDI PULPA. *Lond.* TAMARINDI INDICÆ FRUCTUS. *Edin.* TAMARINDUS; FRUCTUS. *Dub.* The pulp, or preserved fruit of the Tamarind.

Syn. Tamerins (*F.*) Tamarinden (*G.*) Tamarindo (*I.*) Tamarindo (*S.*) Umblie (*H. & Arab.*) Amlica (*Som.*)

This tree is a native of the East and West Indies, of Arabia, and Egypt. It is a large beautiful spreading tree. The leaves are abruptly pinnate, composed of sixteen or eighteen pairs of sessile leaflets, half an inch only in length, and one-sixth of an inch broad, of a bright green colour, downy, oblong, entire, and obtuse: the flowers are in loose bunches of five or six, which come out from the sides of the branches: the calyx is of a straw yellow colour, and deciduous: the petals also yellowish, and beautifully variegated with red veins; ovate, concave, acute, indented, and plaited at the edge; and the filaments purplish, bearing incumbent brownish anthers: the pods are thick, compressed, 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; those from the East Indies are twice as long, and contain five, six, or seven seeds: the seeds in both are flat, angular, shining, and lodged in a dark pulpy matter.

In the West Indies the pods are gathered in June, July, and August, when fully ripe; and the fruit being freed from the

shelly fragments, is placed in layers in a cask, and boiling syrup poured over it, till the cask is filled: the syrup pervades every part quite down to the bottom, and when cool, the cask is headed for sale.¹ The East India tamarinds are darker coloured and drier, and are said to be preserved without sugar. When tamarinds are good, they are free from any degree of mustiness; the seeds are hard, flat, and clean; the strings tough and entire; and a clean knife thrust into them does not receive any coating of copper. They should be preserved in closely covered jars.

Qualities. — Tamarinds are inodorous, and have an agreeable acid sweetish taste. According to the analysis of Vauquelin the pulp contains, independent of the sugar with which it is mixed, supertartrate of potash, gum, jelly, citric acid, tartaric acid, malic acid, and a feculent matter. The acid taste chiefly depends on the citric acid, the quantity being greater than that of the others; 3xvj of the prepared pulp containing 3jfs of citric acid, but only 3ij of tartaric acid, 3fs of supertartrate of potash, and 3fs of malic acid.

Medical properties and uses. — Tamarind pulp is refrigerant, and gently laxative. The simple infusion of the pulp in warm water, or a whey made by boiling 3ij of it in two pints of milk, and straining, form very grateful refrigerant beverages, which are advantageously used in febrile diseases. The dose of the simple fruit required to act upon the bowels is so large that it is seldom given alone as a purgative, but is generally combined with cassia or manna, the action of which it augments; or with such of the neutral purgative salts as are not decomposed by it; which is the case with those that have potash for their base, and are therefore incompatible in mixtures with this fruit. It forms an agreeable addition to infusion of senna; but the purgative power is weakened by it.

Official preparation. *Infusum Tamarindi cum Senna.* E. D.

TANACETUM. *Spec. Plant. Wild.* iii. 1809.

Cl. 19. Ord. 2. Syngenesia Superflua. Nat. ord. Compositæ Discoidæ Linn. Corymbiferae Juss.

* *Discoid.*

G. 1472. *Receptacle* naked. *Pappus* sub-marginate. *Calyx* imbricate, hemispherical. *Calyx* rays obsolete², trifid.

Species 18. *T. vulgare*.³ Common Tansy. *Med. Bot.* 2d ed. 67. t. 27. *Smith Flor. Brit.* 862. *Eng. Bot.* 1229.

Official. TANACETI VULGARIS FLORES FOLIA. *Edin.* TANACETUM, FOLIA. *Dub.* The leaves of Common Tansy.

Syn. Tanassie (F.) Rainfern (G.) Tanaceto (I.) Atanasia (S.)

This is an indigenous perennial plant, growing on hills, and

¹ Long's Jamaica, iii. 729.

² Radius calidiore æstate prodit, Willdenow, l. c.

³ Ἀγριμίσια λισσοφύλλης Dioscoridis.

by the sides of roads and fields; flowering in July and August: but it is generally cultivated for medicinal and culinary purposes. The root is creeping; sending up stiff erect stems, about two feet in height, leafy, obscurely hexagonal, and striated; with alternate leaves, doubly pinnatifid, acutely cleft, somewhat downy on the under side, eared at the base, and embracing the stem: the flowers are in terminal corymbs, of a bright yellow colour, and flattish: the leaflets of the calyx are obtuse, with a dry scaly margin: the florets are numerous; those of the disc hermaphrodite and five-cleft, those of the margin female and trifid: the seeds are small, uniform, inversely pyramidal, pentagonal, ribbed, of an ash colour; and crowned with a narrow, marginate, membranous pappus.

Qualities. — Tansy has a strong peculiar fragrant odour, and an acrid bitterish taste, somewhat resembling that of camphor. These qualities it yields both to water and alcohol; and in distillation with water affords a greenish yellow essential oil, which has in perfection the odour of the plant, and probably contains camphor.

Medical properties and uses. — The leaves and flowers of tansy are tonic and anthelmintic. It was formerly regarded as a powerful remedy in intermittents, dropsy, hysteria, and obstructed menstruation; but experience and the knowledge of better remedies have set aside its use in these diseases. An infusion of the whole herb in boiling water has been highly extolled as a preventive of the return of gout¹; but it is now scarcely ever used, except as an anthelmintic for expelling lumbrici, to which it has certainly some pretensions. The dose of the leaves in powder is from ℥j to 3j, twice a day.

TEUCRIUM. *Spec. Plant. Willd.* iii. 13.

Cl. 14. *Ord.* 1. Didynamia Gymnospermia. *Nat. ord.* Verticillatæ.

Linn. Labiatæ *Juss.*

G. 1093. *Corolla* no upper lip, but a fissure in place of it. *Stamens* protruded.

Species 12. *T. Marum.* Common Marum. *Med. Bot.* 2d ed. 324. t. 115.

Species 36. *T. Chamædryas.* Wall Germander. *Med. Bot.* 2d ed. 358. t. 130.

1. TEUCRIUM MARUM.²

Official. MARUM SYRIACUM; HERBA. *Dub.* The herbaceous part of Common Marum.

Syn. Herbe au Chat (*F.*) Arisberkraut (*G.*) Maro (*L.*)

This plant is perennial, a native of Spain and Syria, but cultivated in our gardens.³ It has a low, shrubby stalk, sending out many woody hoary branches; and in its proper soil

¹ Clarke, *Essays Physical and Literary*, iii. 438.

² **Teucrium* Dioscoridis.

³ It appears to have been cultivated in Britain so early as 1640.

and climate rises three or four feet in height. The leaves are small, and placed opposite at each joint, pointed, and sometimes nearly three-lobed; green on the upper surface, and hoary beneath: the flowers, which are in loose terminal whorled spikes, are very downy, and of a bright red colour.

Qualities. — The leaves rubbed between the fingers have a volatile aromatic odour, which readily excites sneezing; their taste is bitterish, pungent, and acrid, depending on a volatile oil which can be obtained separate by distillation with water.

Medical properties and uses. — This plant is an useful errhine; and as it possesses no narcotic property, is in some cases preferable to tobacco. It is generally a component in sternutatory powders.

Official preparation. *Pulvis Asari compositus.* E. D.

2. TEUCRIUM CHAMÆDRYS.

Official. CHAMÆDRYS HERBA. *Dub.* Wall Germander.

Syn. Petite Chêne (F.) Camedrio (I.) Camedrey de agna (S.)

This is an indigenous perennial plant, growing on old ruins and walls; flowering in June and July. It has a creeping root: the stems are nearly erect, branched, round, leafy, and hairy: the leaves subovate, cut, crenate, hairy, veined, and attenuated at the base: the flowers are axillary: the calyx is rough, with pointed segments: the corolla of a purple colour, bilabiate, with the upper lip short and cut in the middle, and the lower separated into spreading lobes, the central of which is large and roundish.

Qualities. — The recent leaves have a slight aromatic odour, which is dissipated by drying; their taste is moderately bitter. Water extracts its active matter completely; alcohol only partially.

Medical properties and uses. — Wall germander has been accounted tonic, stomachic, diuretic, and emmenagogue; and is said to prove efficacious in uterine obstructions, agues, gout, and rheumatism¹; but it is perhaps, not improperly neglected, being scarcely ever ordered. The dose of the pulverized herb may be from grs. x to ʒj, given three or four times a day.

TOLUIFERA. *Spec. Plant. Willd.* ii. 545.

Cl. 10. *Ord.* 1. Decandria Monogynia. *Nat. ord.* Terebintaceæ *Juss.* G. 828. *Calyx* five-toothed, bell-shaped, *Petals* five, the lowest one the largest, obcordate. *Style* none.

Species 1. *T. balsamum.* Balsam of Tolu-tree. *Med. Bot.* 2d ed. 607. t. 215.

Official. BALSAMUM TOLUTANUM. *Lond. Dub.* TOLUIFERÆ BALSAMI BALSAMUM. *Edin.* Balsam of Tolu.

Syn. Beaume de Tolu (F.) Tolutanischer Balsam (G.) Balsamo Tolutano (I.)

¹ Winchelsea Castle. Walls of Norwich near Magdalen gate. *Smith.*

² Charles V. is said to have been cured of severe rheumatism by a vinous decoction of this plant, taken daily for sixty days.

The Tolu tree is a native of South America, growing behind Carthagena, in the province of Tolu. It is a large branching tree, covered with a rough gray bark: the leaves are on short petioles, alternate, elliptical, entire, pointed, and of a light green colour: the flowers are in lateral clusters, each on a slender pedicel: the calyx is bell-shaped, with one of the teeth produced beyond the others: four of the petals are equal, linear, and a little longer than the calyx; the fifth is large, inversely cordate, and with a claw the length of the calyx: the filaments are short, and support large anthers: the germen is oblong, with a sessile pointed stigma: the fruit is a round berry the size of a pea.

The balsam is obtained from incisions of the bark, from which it flows freely in hot weather; and is afterwards put into small gourd-shells, in which state it is brought to this country.

Qualities.—Balsam of Tolu has an extremely fragrant lemon odour, and a warm somewhat sweetish taste. It is of a yellow reddish brown colour, and of a thick tenacious consistence, becoming solid and brittle by age. Exposed to heat it melts, easily inflames, and disperses with its peculiar odour that of benzoic acid. In distillation with water it yields a small portion of volatile oil, impregnates the water with its odour, and by continuing the process benzoic acid sublimes. It is soluble in alcohol, forming a tincture which is rendered milky by water, but no precipitate falls. Mr. Hatchett, found that when it is dissolved in the smallest quantity of solution of potash, its own odour is lost, and it acquires a permanent fragrant smell resembling that of the clove pink. When digested in sulphuric acid, a considerable quantity of pure benzoic acid sublimes; and the same occurs during its solution in nitric acid, which also evolves traces of prussic acid.

Medical properties and uses.—Tolu balsam is a stimulating expectorant; and although less heating than the other balsams, is nevertheless improper in pulmonic affections attended with inflammation. It forms an elegant addition to more active medicines in cases of asthma and chronic catarrh: and on the whole is more employed on account of its agreeable flavour, than for any efficacy it possesses. The dose of the balsam may be from v . to ʒss , suspended in water by means of mucilage or yolk of egg.

Official preparations. *Tinctura Benzoini composita*. L. E. D. *Tinctura Toluiferæ Balsami*. E. D. *Syrupus Tolutani*. L.

TORMENTILLA. *Spec. Plant. Willd.* ii. 1112.

Cl. 12. *Ord.* 5. *Icosandria Polygynia*. *Nat. ord.* *Senticosæ* Linn.
Rosaceæ Juss.

G. 1001. *Calyx* three-cleft. *Petals* four. *Seeds* roundish, naked, affixed to a small juiceless receptacle.

Species 1. *T. erecta*. Common Tormentil, or Septfoil (*officinalis*). *Smith Flora Brit.* 552. *Eng. Bot.* t. 863. *Med. Bot.* 2d edit. 503. t. 181.

Officinal. TORMENTILLÆ RADIX. *Lond.* *Dub.* *Edin.* Tormentil Root.

Syn. Tormentille (F.) Tormentilwurzel (G.) Tormentilla (L.)

This is a very common indigenous perennial plant, growing in dry pastures and on heaths; flowering in June and July. The root is woody: the stems are erect, branched, diffuse or procumbent, round and leafy: the leaves are nearly sessile, ternate, lanceolate, serrated, and hairy, accompanied by deeply incised stipules: the flowers are on long, capillary, opposite, solitary, one-flowered peduncles: the calyx consists of ovate, hairy, alternately larger and smaller segments, the latter of which are exterior: the petals have short claws, are obcordate and of a golden yellow colour: the seeds are few, and wrinkled.

Qualities — The root has a very slightly aromatic odour, and an austere styptic taste. It is knotty: externally blackish, and internally reddish. To boiling water it yields its active matter, which appears to be chiefly tannin as the infusion is copiously precipitated by solution of isinglass, and strikes a deep black with sulphate of iron. Except galls and catechu, it contains more tannin than any other vegetable.

Medical properties and uses. — Tormentil root is a powerful astringent. It has been employed with success in intermittents, but more efficaciously in diarrhœas; particularly those attendant on phthisis, as it produces its astringent effects without increasing the general excitement. As a local remedy it may be advantageously used in the form of gargle and lotion in ulcerations of the tongue and mouth, against spongy gums, and as an application to fœtid ill-conditioned sores: but it is seldom used. It may be given in substance, or in the form of decoction. The dose of the powdered root is from ʒfs to ʒj.

TRITICUM. *Spec. Plant. Willd.* i. 476.

Cl. 3. Ord. 2. Triandria Monogynia. *Nat. ord.* Gramina.

G. 152. *Calyx* two-valved, solitary, subtriflorous. *Flower* somewhat obtuse.

* annual.

Species 2. *Triticum hybernum*, Winter Wheat. *Gærtner de Fructibus.* *Officinal.* FARINA. AMYLUM. *Lond. Edin.* TRITICUM; SEMINUM FARINA; AMYLUM. *Dub.* Wheat Flour. Starch.

Syn. Farine du froment; Amidon (F.) Weizenmehl; Kraftmehl, Staerhe (G.) Farina di Frumento l' Amido (L.) Acemite; almidon (S.)

The country whence this valuable grain originally came is unknown; but it is certain that Sicily was the part of Europe where it was first cultivated. It will not vegetate beyond the

62° degree of northern latitude. It has two sets of roots; one set proceeding directly from the seed, and the other from what is denominated the *corona* of the plant, about two inches above the first: the *coronal* roots do not shoot till spring-time, and collect more nutriment than the *seminal* roots¹; the ears or spikes are long, with the grain lodged in four rows, and imbricate: the chaff smooth, bellied, and terminated by very short awns, distinguishing it from spring wheat (*Triticum aestivum*), which has awns three inches long. Many varieties of wheat are cultivated in this country, of which the *white Dantzic* is considered the best. The grain is small and translucent, and yields flour which makes more bread than that of any other variety of wheat. After the operation of grinding, the farinaceous part of the seed is separated, by means of cloth sieves, into several distinct portions of various degrees of fineness; but the whole may be resolved into two: 1. *flour*, which constitutes more than two-thirds of the whole; and 2. *bran*, which consists chiefly of the husk of the seed.

Starch is manufactured by steeping either entire or coarsely bruised wheat in cold water, until it swells, and yields a milky juice when squeezed. It is then subjected to pressure in coarse bags placed in vats filled with water; and when all the milky juice is obtained, the bags are removed, and the fecula deposits itself. In a short time the supernatant liquor ferments, and alcohol and acetic acid are formed in it. The whole is now put into tubs called frames, in which the impure fecula is allowed to subside; and after the water is poured off, the upper part of the sediment which last subsided being dirty and discoloured, is scraped off from the starch below: this is then repeatedly well washed, pressed in cloths, and dried by a gentle heat, during which it cracks into small columnar masses, and is the finest white starch of the shops.²

Qualities.—*Flour* is inodorous and nearly insipid. Water with which it has been macerated acquires an opaline colour and a sweetish taste; affords precipitates with infusion of galls and the strong acids, and rapidly becomes sour. It appears to contain gluten, sugar, gum, albumen, and phosphate of lime; besides fecula or starch that remains insoluble. According to Vogel the constituents of flour are, in 100 parts, fecula 68, gluten 24, saccharine gum 5, albumen 1.50. The action of these principles on each other, when flour is kneaded with water, and yeast added to the mass, excites the panary fermentation, and produces bread, a little salt being added to give it

¹ Hunter's *Georgical Essays*, Essay v.

² The ordinary blue starch, which is coloured with a solution of smalt and alum in water, is unfit for medicinal uses. The Chians first made starch.

sapidity. The large proportion of gluten in wheat flour renders it fitter for this purpose than any other kind of flour. During the process a large quantity of carbonic acid gas is evolved, which swells up the mass, and gives it the sponginess and lightness that characterize well-baked bread.¹ For the purpose of baking bread a heat of 488° is required.

Starch is inodorous and insipid; in white columnar masses which are easily reduced to powder. It is insoluble in alcohol, ether and cold water; but in the latter it falls to powder. Boiling water dissolves it, forming an insipid, inodorous semi-transparent, opaline, gelatinous-like paste, which becomes brittle and opaque, when spread out in a dry air; but when exposed, without being spread out, it separates into a watery fluid, and an opaque paste; sours, and becomes mouldy. Alcohol precipitates starch white and tough from its solutions; acetate of lead and infusion of galls also throw it down, but the precipitate formed by the latter is re-dissolved by heating the liquid to 120° . Although potash dissolves starch, yet the solution of it is not altered by potash, carbonate of potash, nor ammonia: but a solution of potash in alcohol, and a solution of sulphuret of potash in alcohol, both produce precipitates. From the products obtained from distilling starch *per se*, it appears to be a ternary compound of carbon, oxygen, and hydrogen.

Medical properties and uses — The utility of bread as an article of diet requires no particular notice: as a medicinal agent it is used for forming poultices, cataplasms, and for giving bulk and form to very active medicines which require to be given in minute doses, in the solid state, or as pills. When toasted and infused in water, it gives a pleasant flavour to the fluid, and renders it more acceptable as a diluent in febrile diseases, and as the ordinary beverage of the dyspeptic. *Starch* is less nutritive than bread, but is perhaps more digestible. It forms the greater part of the nutritive matter of the different farinaceous substances which are in general use as the diet of the sick, such as sago, salep, tapioca, arrow root, and gruel, which are only different modifications of starch. The solution of starch is employed medicinally as a demulcent; but as it is very readily acted on by the stomach, it cannot be of much service in involving acrid matters in the intestines, when taken by the mouth. In the form of enema, however, it is often and advantageously used for allaying the effects of acrid

¹ The method of making leavened bread was probably invented by the Egyptians; for it appears that the Israelites were acquainted with it after they sojourned in Egypt, but not before. It was known to the Greeks during the Trojan war: but the use of yeast or *larm* was discovered by the ancient Gauls.

bile on the coats of the rectum in bilious diarrhœa and dysentery; and for sheathing the rectum in cases of abrasion, and inflammation of the gut. It is the common vehicle for the exhibition of opium per anum.

Official preparations. *Mucilago Amyli*. L. E. D.

TUSSILAGO. *Spec. Plant. Willd.* iii. 1962.

Cl. 19. *Ord.* 2. Syngenesia Superflua. *Nat. ord.* Compositæ Discoideæ Linn. Corymbiferae Juss.

G. 1483. Receptacle naked. Pappus simple. Calyx scales equal, as long as the disk, submembranaceous. Corolla female. Florets ligulate, toothless.

Species 12. *T. Farfara*.¹ Common Coltsfoot. *Med. Bot.* 2d ed. 45. t. 18. *Smith Flor. Brit.* 878. *Eng. Bot.* t. 429.

Official. **TUSSILAGO.** *Lond.* TUSILAGINIS FARFARÆ FOLIA ET FLORES. *Edin.* TUSILAGO; *Folia.* *Dub.* Coltsfoot leaves and flowers.

Syn. Tussilage; Pas d'Ane (*F.*) Hufattisch (*G.*) Farfara (*L.*) Unâ de caballo (*S.*)

Coltsfoot is an indigenous perennial plant, growing in moist, marly, and clayey soils. It flowers in March and April, and the leaves appear in May and June. The root is long and diffusely creeping, and sends up stems or scapes destitute of leaves, erect, five or six inches high, simple, unifloral, tomentose, with sparse, smooth, scale-like bractes of a brownish pink colour, lying close to the stem: the flower droops before it blows, but afterwards becomes erect, and is of a golden yellow colour: the calyx is composed of linear, trinerved, plane, smooth, purplish scales, the length of the disc equal, uniform, and finally reflex: the florets of the ray are numerous, spreading, linear, twice the length of those of the disc, with a more slender stigma: the seeds are smooth, more frequently abortive, particularly in the disc; with the seed-down sessile, rough, white, and shining: the receptacle is pitted, flat at first, but finally convex: the leaves appear after the flower, are radical, petiolate, erect, cordate, angled, and toothed; smooth, green above with reddish veins, but underneath white and woolly.

The leaves are more frequently employed than the flowers, and should be gathered and dried when they are fully expanded, before they have attained their greatest magnitude.

Qualities.—The dried leaves are inodorous, and have a rough mucilaginous taste. The mucus they contain is yielded to water by coction, and evolves by the boiling a peculiar odour.

Medical properties and uses.—Tussilago is demulcent, and has been regarded as expectorant from the earliest ages, having been smoked through a reed in the days of Dioscorides, with the view of relieving the chest from accumulated mucus in ca-

¹ *Byzios* Dioscoridis. The name is derived from *βηξ*, *tussis*, whence *tussilago*; showing the early opinion of the pectoral virtues of this plant.

tarrh, asthma, and phthisis. It is still used as a demulcent in catarrhal and phthisical affections; but very little reliance is placed on its powers. Cullen thought he perceived good effects result from the use of the expressed juice of the recent leaves in scrophula; but his observations have not been generally confirmed.*

The decoction of the leaves is the usual form of exhibiting tussilago. A handful of the leaves is boiled in Oij of water to Oj; and the decoction after being strained is sweetened with sugar-candy or syrup. The dose is a teacupful.

VALERIANA. *Spec. Plant. Willd.* i. 175.

Cl. 3. Ord. 1. Triandria Monogynia. Nat. ord. Aggregatæ Linn. Dipsacæ Juss.

G. 75. Corolla monopetalous, gibbous on one side of the base, superior. Seed one.

* valerians, with a single downy seed.

Species 6. *V. officinalis*. Officinal, or great Wild Valerian. *Med. Bot.* 2d edit. 77. t. 32. *Smith Flora Brit.* 38.

Officinal. VALERIANÆ RADIX. *Lond. Dub.* VALERIANÆ OFFICINALIS RADIX. *Edin.* Wild Valerian root.

Syn. Valeriane (F.) Wilde Baldrianwurzel (G.) Valeriana Silvestre (L.) Valerian officinal (S.)

This species of valerian is an indigenous perennial plant, flowering in June. There are two varieties of it; one growing in woods and marshy ground, the other on high pastures and heaths; and the sensible qualities of the second are considerably greater than those of the first. It has been often regarded as the ϕ of Dioscoridis; but Sibthorp has proved this opinion to be erroneous, and has described the real valerian of the ancients as a distinct species under the name of Valeriana² *Dioscoridis*. The roots of valerian are long slender fibres, issuing from heads the stems rise three or four feet in height; are round, grooved, hollow, and terminated with flowering branches disposed crosswise: the leaves are larger at the base of the stem, decreasing in size towards the summit; opposite, connate, and bearded at the base below; pinnate, with a terminal leaflet a little larger than the rest; all the leaflets deeply veined and serrated, of a dark green colour on the upper surface, and paler underneath: the flowers are small, in corymbs, odorous, and interspersed with lanceolate, connate, bearded, waved, pale bractes: the calyx is a slight margin at the top of the germen: the corolla tubular, white with a shade of pink, divided at the margin into five reflected obtuse segments: the filaments are

¹ *Mat. Med.* ii. 160.

² *Sibthorp, Flora Græca*, p. 24. t. 33. Dr. Smith, the learned editor of Sibthorp's Work, says, "Hæc est vere ϕ u *Dioscoridis*, a nemine botanicorum recentiorum ante Sibthorp detecta." Willdenow's 7th species, *V. phu*, which was supposed to be the plant of Dioscoridis, does not accord with his description, whereas that of Sibthorp corresponds with it in every particular.

spreading with the corolla, and support round yellowish anthers: the style is shorter, with a trifid stigma; and the capsule is crowned with a feathery pappus, purplish at the base, and contains one oblong, ovate, compressed seed.

The roots should be dug up in autumn when the leaves decay, or in spring, before they expand; and be preserved in a dry place. Those which grow wild on a calcareous soil are preferable to those that are cultivated. They lose three-fourths of their weight by drying. Cats are allured and delighted with the odour.

Qualities. — Valerian root has a strong peculiar unpleasant odour, and a warm bitter subacid taste. Trommsdorff has chemically examined it. Its virtues appear to depend on a very liquid greenish white-coloured volatile oil, which from its odour and taste seems to contain much camphor. Its specific gravity at 77° of Fah. is 0.9340; when exposed to light it becomes yellow; a small portion of nitric acid converts it into resin, and a larger dose into oxalic acid. The expressed juice of the root contains starch, extractive, and gum; while the roots deprived of this juice yield a portion of black-coloured resin, but consist chiefly of woody fibre.¹ The active matter of valerian root is extracted by boiling water, alcohol, and solutions of the pure alkalies.

Medical properties and uses. — Valerian root is antispasmodic, tonic, and emmenagogue. It is advantageously employed in hysteria, symptomatic epilepsy, hemicrania, and other affections depending on a morbid susceptibility of the nervous system. We have also found it exceedingly serviceable in hypochondriasis. It may be exhibited in substance combined with a small portion of mace or cinnamon; or in the forms of infusion or tincture. The extract is a bad form of preparation. The dose of the powdered root may be from ʒj to ʒj, given three or four times a day.

Official preparations. *Extractum Valerianæ.* D. *Infusum Valerianæ.* D. *Tinctura Valerianæ.* L. D. *Tinctura Valerianæ ammoniata.* L. E. D.

VERATRUM. *Spec. Plant. Willd.* iv. 895.

Cl. 23. Ord. 1. Polygamia Monœcia. *Nat. ord.* Coronariæ Linn.

Junci Juss.

G. 1859. *Hermaphrodite.* Calyx 0. Corolla six-petalled. Stamens six. Pistils three. Capsules three, many sided.

Male the same. Rudiment of a pistil.

Species 1. *V. album.* White Hellebore. *Med. Bot.* 2d ed. 753. t. 257.

Official. VERATRI RADIX. Lond. VERATRI ALBI RADIX. Edin.

HELLEBORUS ALBUS; RADIX. Dub. White Hellebore root.

Syn. Hillebore blanc (F.) Wiese Niesswurzel (G.) Elliboro blanco (L.) Veratro blanco (S.)

¹ *Annales de Chimie*, lxx. 95. *Thomson's Chem.* 3th ed. iv. 225.

Veratrum is a native of the mountainous parts of Greece Italy, Switzerland, and Russia. Those specimens which are cultivated in our gardens flower in July. The root is perennial, fleshy and fusiform, beset with strong fibres gathered into a head: the stem is thick, round, hairy, erect, three or four feet in height, and branching: the leaves are oblong-ovate, about ten inches long, and five broad in the middle; plaited longitudinally, embracing the stem at the base, and of a yellowish green colour: the flowers are in long, terminal spikes, composed of small alternate spikelets, each accompanied with a lanceolate bracte; the flower consists of six persistent petals, of a pale green colour; three of them oblong and lanceolate, with a membranous edge; and three calycinal, which enclose the other three in the bud, one half shorter and heart-shaped, with a small point at the top: the filaments closely surround the germen, diverge and bend down at the summit, and are terminated by yellow quadrangular anthers: the germens are three in each hermaphrodite flower¹, oblong, with erect, bifid, hairy styles, crowned with flat spreading stigmas. The capsules contain many compressed membranous seeds.

Although the root only is officinal, yet every part of the plant is extremely acrid and poisonous.

Qualities.—The recent root has a strong disagreeable odour, and a bitterish very acrid permanent taste; but the odour is lost by drying. The dry root, as found in the shops, is sliced, the thick part transversely, and the fibrous, longitudinally. The pieces have a dry corrugated, yellowish grey appearance, and break with a short starchy fracture. They are inodorous, and have a slightly bitter taste. When very light and spongy they must be rejected.

Medical properties and uses.—White hellebore is a violent cathartic, emetic, and sternutatory. When taken internally, even in moderate doses, its operation is violent and dangerous; producing, besides hypercatharsis, with bloody stools and excessive vomiting, great anxiety, tremors, vertigo, syncope, sinking of the pulse, cold sweats, and convulsions, terminating, if the dose be large, in death. Its external application to an ulcerated surface, also produces griping and purging. Notwithstanding these effects, veratrum has been exhibited internally, and with advantage in mania, epilepsis, scabies, lepra, and obstinate herpetic eruptions.² But the most ordinary use of white hellebore is as a local stimulant; either as an adjunct to errhine powders in lethargic cases and gutta serena; or in the form of decoction as a wash, or mixed with lard as an oint-

¹ The hermaphrodite flowers are generally on the upper erect spike.

² *Medical Communications*, i. 297.

ment, in scabies and herpetic eruptions. In every form, however, it requires to be used with caution; and even as an errhine its acrimony should always be obtunded by mixing it with some mild powder, as that of liquorice root or of starch. The dose of the powdered root should not exceed grs. ij; and for errhine purposes grs. ij or iij should be diluted with grs. xij of liquorice powder, and a pinch of it snuffed up the nose for several successive evenings.

Official preparations. *Decoctum Veratri*. L. *Tinctura Veratri albi*. E. *Unguentum Veratri*.

VERONICA. *Spec. Plant. Willd.* i. 54.

Cl. 2. Ord. 1. Diandria Monogynia. Nat. ord. Personatæ Linn. Pedicularis Juss.

G. 44. Corolla border four-cleft, with the lowest segment narrower. Capsule two-celled.

* * with corymbose racemes.

Species 30. *V. Beccabunga*. Broad leaved brooklime. *Med. Bot.* 2d ed. 363. t. 132. *Eng. Bot.* x. 655. *Smith Flora Brit.* i. 20.

Official. BECCABUNGA; HERBA. *Dub.* The herbaceous part of brooklime.

Syn. *Beccabunga*; *Veronique aquatique* (F.) *Bachbungen* (G.) *Anagalide acquatica* (L.) *Becabunga* (S.)

Beccabunga is an indigenous, perennial plant, common in rivulets and clear ditches, flowering in June. The stem, which is procumbent or floating, and gives off from the joints long, simple fibrous roots, is round, leafy, and, like every other part of the plant, smooth and shining. The leaves are opposite in pairs, on short petioles, oval, serrated, somewhat fleshy, punctured, and of a pale-green colour. The flowers are collected in opposite axillary clusters, and individually supported on delicate footstalks, accompanied by linear lanceolate bractes. The calyx is divided into four acute segments, shorter than the corolla, which is of a very beautiful sky-blue colour, with the tube white. The anthers are whitish, supported on filaments, longer than the style; and the capsule cloven, almost twin. This plant is green throughout the year, but in greatest perfection in the spring.

Qualities. — It is inodorous, and has, when much chewed, a bitterish, slightly astringent taste. The expressed juice reddens in a small degree the more delicate vegetable blues.

Medical properties and uses. — Although brook lime was formerly considered as a good antiscorbutic, yet it is properly disregarded by modern practitioners; and, as Lewis observes, if it be expected to produce any good effect, it should be used as food.

VIOLA. *Spec. Plant. Willd.* i. 1159.

Cl. 5. Ord. 1. Pentandria Monogynia. Nat. ord. Campanaceæ Linn. Cisti Juss.

G. 446. *Calyx* five-leaved. *Corolla* five-petalled, irregular, horned at the back. *Anthers* cohering. *Capsule* superior, three-valved, one-celled.

* *stemless*.

Species 12. *V. odorata*.^{*} Sweet Violet. *Med. Bot.* 2d ed. 251. t. 89. *Smith Flora Brit.* 245.

Officinal. *VIOLÆ FLORES.* *Lond. Dub. VIOLÆ ODORATÆ FLORES.* *Edin.* The recent flower of the violet.

Syn. *Violette odorante* (F.) *Blaue veilchen* (G.) *Viole Mammole* (I.) *Violeta* (S.)

This species of the violet is indigenous, growing in shady places; and flowering in April and May. It is a low creeping plant, giving out runners, which root at small intervals; and send up tufts of leaves and flowers. The roots are fibrous. The leaves heart-shaped, with crenated edges, on slender footstalks; the upper surface of a lively green colour, the under paler and downy. The flowers are supported on delicate, quadrangular, channelled flower-stalks about two inches long, furnished with two small bractes, and curved at the summit. The calyx consists of five green leaflets, the two posterior of which are separated by the spur of the corolla. The petals have a deep violet colour, are white at the base, and irregular; the two lateral ones are bearded near the base; and the posterior, which is slightly keeled, has a large spur, enclosing glandular appendices of the corresponding anthers. The anthers are nearly sessile, whitish, flat, supporting orange-coloured membranous expansions that cover the upper part of the germen; which is pyramidal, downy, and crowned with a falcated pistil.

For medicinal and chemical purposes, the sweet violet is cultivated in great abundance at Stratford-on-Avon; but the London herb-shops are supplied chiefly from Kent. As the petals only, separated from the calyx, are brought to market, it is difficult to detect the admixture of the *viola hirta*, an inodorous species, which is often practised. It is not, however, a matter of much importance.

Qualities. — Violets have an agreeable sweet odour, and a very slightly bitter taste. When chewed they tinge the saliva blue, and yield their colour and flavour to boiling water.

Medical properties and uses. — The petals of the violet are gently laxative; and were formerly regarded as anodyne and pectoral: but they are now scarcely ever used except for preparing the syrup, which is given occasionally as a purgative to infants. Their aqueous tincture, and the syrup, are useful and delicate tests of the presence of uncombined acids and alkalies; the former changing the blue colour to a red, the latter to a

^{*} ἡ ἁγία σφοδρὸν Dioscoridis.

green. The infusion is not liable to change if it be kept in a tin flask, well stopped.

Official preparation. *Syrupus Violæ*. E. D.

VITIS. *Spec. Plant. Willd.* i. 1180.

Cl. 5. Ord. 1. Pentandria Monogynia. Nat. ord. Hederaceæ Linn.
Vitis Juss.

G. 453. *Petals* cohering at the apex, shrivelling. *Berry* five-seeded; superior.

Species 1. *V. vinifera*. Common Vine. *Med. Bot.* 2d edit. 144, t. 57.

Duhamel Arb. ii. t. 1—6.

Official. UVÆ PASSÆ. Lond. VITIS VINIFERÆ FRUCTUS. Edin.

UVÆ PASSÆ SOLE SICCATÆ. Dub. Raisins, Sun Raisins.

Syn. Raisin sees (F.) Rosine (G.) Uva passa (I.) Passa (S.) Zabib (Arab.) Kishmish (H.)

The vine is a native of most of the temperate regions of the earth; and is cultivated with care wherever its fruit can be brought to perfection. Its culture is supposed to have been introduced from the East, where it was cultivated, and wine made from the fruit, in the earliest ages¹; and afterwards to have extended from Italy to Burgundy in the time of the Antonines. In Great Britain the vine was cultivated before the year 731, when Bede finished his History; but although it was at one period brought to considerable perfection², yet, from the greater value of the ground for the cultivation of corn, and the wines produced in this country having never equalled those of the continent, vineyards are now scarcely known in Britain. The vine, therefore, is cultivated here for the dessert only, no raisins are made, and scarcely any wine.

The vine has a slender twisted climbing stem, covered with a rough peeling fibrous bark. The leaves are lobed, and sinuated, serrate, and placed alternately on long footstalks. The flowers, which appear in June and July, are small, and produced in clusters, attended by tendrils. The calyx is very minute; the petals are of a greenish white colour, adherent at their apices, and soon fall off, like a little cap, from the anthers, which then spread, and shed their pollen. The fruit is a succulent globular berry, one-celled when ripe; naturally containing five seeds; but in general only two, which are hard and of an irregular form. There are many varieties of the vine: that which is called the Alexandrian Frontinac yields the most delicious grapes for eating, and the Syrian the largest bunches.³

¹ We are told that Noah, after coming out of the ark, planted a vineyard, and "drank of the vine, and was drunken." *Genesis*, chap. ix. ver. 20, 21.

² There were many vineyards in different parts of this country from which wine was made; and we are informed, that in the cellar at Arundel castle, in 1763, there were sixty pipes of excellent Burgundy, the produce of a vineyard attached to the castle. *Museum Rusticum*, i. 85.

³ This is supposed to be the sort of grape which the spies, sent by Moses to examine Canaan, cut down at the brook Eschol; "a branch with one cluster of grapes, and

Raisins are made from the varieties named the *black raisin grape*, and the *white raisin grape*. They are cured in two methods: either by cutting the stalk of the bunches half through, when the grapes are nearly ripe, and leaving them suspended on the vine till their watery part is evaporated, and the sun dries and candies them; or by gathering the grapes when they are fully ripe, and dipping them in a ley made of the ashes of the burnt tendrils; after which they are exposed to the sun to dry. Those cured in the first method are most esteemed. They are brought to this country packed in boxes with sand.

Qualities. — Grapes, when recent and fully ripe, have an agreeable, cooling, sweet, subacid taste. They contain sugar, mucilage, and jelly, albumen, gluten¹, super-tartrate of potash, and tartaric, citric, and malic acids. Raisins differ from grapes chiefly in the quantity of saccharine matter being more abundant.

Medical properties and uses. — The ripe fruit of the vine is cooling and antiseptic; and when eaten in large quantities diuretic and laxative. Grapes are very useful in febrile diseases, particularly in bilious and putrid fevers, dysentery, and all inflammatory affections. In Syria the juice of ripe grapes inspissated is used in great quantity in these diseases.² Grapes have been strongly recommended as an article of common diet in phthisis³; and they certainly contain much bland nutritious matter, well fitted for phthisical habits. Raisins are more laxative than the fresh fruit, and are apt to prove flatulent when eaten in any considerable quantity. They are used as an adjunct to some officinal preparations; but add nothing to their efficacy.

VINUM. Wine.

Officinal. VINUM. *Vinum album Hispanicum.* Lond. VINUM ALBUM HISPANUM. *Edin.* Sherry Wine.

Syn. Vins d'Espagne (*F.*) Wein (*G.*) Vino (*I.*) Vino de Xerez (*S.*) Khumr (*Arab.*) Bâde (*Pers.*) Dakh ramudh (*H.*)

Although the London and Edinburgh Colleges have designated *Sherry* only, yet all the generous wines are occasionally

they bare it between two upon a staff." *Numbers*, chap. xiii. 23. Strabo relates, that in Margana bunches of grapes were produced two cubits, or a yard long; and in some of the Archipelago islands they weigh from thirty to forty pounds. The Syrian grape, in this country, has produced bunches weighing nineteen pounds and a half. *Martyn's edition of Miller's Dictionary.*

¹ The gluten excites the vinous fermentation in the juice of the grape when expressed. Fabroni has shown that it is lodged on the membranes that separate the cells of the grape; and become mixed with the saccharine part when the juice is expressed.

² *Russel's Natural History of Aleppo*, vol. i. p. 83.

³ *Moore's View of Society, &c. in Italy*, ii. letter 62.

used as medicinal agents, and therefore we shall take a general view of the manufacture, characters, and properties of wine.

In the wine countries, when grapes are fully ripe they are gathered and immediately subjected to the press, by which the juice is separated from the skins and seeds. In some places the grapes are previously picked from the stalks, and freed from all the unsound ones with great care¹: in some they are pressed just as they are gathered from the vines; and in other places they are almost converted into raisins before they are pressed.² The expressed juice is called *must*, and contains all the principles which we enumerated above as being contained in the grape: these, when the vats holding the *must* are placed in a temperature of 70°, begin to act upon each other, the liquor becomes turbid, an intestine motion is evident in it, its temperature increases, a scum collects on its surface, and carbonic acid gas is disengaged. This is the process of vinous fermentation. In a few days its activity gradually decreases, the scum and impurities subside to the bottom; and the liquor clears, having lost its saccharine taste, and become *wine*. It is then put into barrels, and in due time into bottles, in both of which kind of vessels the fermentation is continued, although in an imperceptible degree; nor is it altogether completed till the wine attains the utmost limits of its age, and passes into the acetous fermentation. All the principles of the *must* are perhaps required for the production of wine; but the saccharine matter, the gluten, and the vegetable acid, are essential; and on the proper quantity of the first in particular, and the manner in which the fermentation is conducted, depend the strength and goodness of the wine. When the sugar is in too great quantity, and not completely decomposed, or the fermentation checked, the wine retains a sweet taste; a more proper proportion and perfect decomposition, with a brisker fermentation, render it strong and spirituous; but if the quantity of sugar be small, and at the same time there is a deficiency of tartar in the *must*, a thin and weak wine is produced. When it is bottled early it becomes brisk and sparkling; and it is rough and astringent when the fermentation has been conducted on the skins, particularly on those of the coloured grapes; which also gives colour to the wine; for when the juice only is fermented, white wines are produced from coloured grapes.

Wine, that has been too long fermented before being put into the casks, is very apt to become sour; and frequently oxidises of lead, as litharge, and white lead, are employed to cor-

¹ This is the case at Madeira; and at Epernay, where the best Champagne is made.

² The wine of Chio, which was esteemed by the ancients for its strength, sweetness, and exquisite aromatic flavour, is made from nearly dried grapes.

rect the acidity. According to Fourcroy, these form a soluble triple salt, an aceto-tartrate of lead, by uniting with the acetic and tartaric acids in the wine¹; which daily experience shows produces violent choleric, and other deleterious effects on those who drink it. The fraud may be detected by means of a solution of sulphuretted hydrogen gas, as has been already explained. (See *Plumbum*.)

Qualities.—Various circumstances, such as climate, soil, and the mode of conducting the fermentation, modify the flavour and taste of wine. The odour of *Sherry* is pleasant and aromatic; the taste warm, and slightly acidulous, with some degree of the agreeable bitterness of the peach kernel. The taste of *Port* is austere, and bitterish; *Claret* is less rough, thinner, and higher flavoured; *Hock* acidulous. Of the common white wines, *Marsala* is the strongest; *Malaga* the sweetest; and *Champagne* the most acidulous. The sparkling of *Champagne* is owing to carbonic acid gas, which it contains loosely combined. But notwithstanding these and other differences, the essential components of all wines are the following: One or more *acids*; generally the malic, but in some the carbonic predominates; and all contain some tartaric. *Extractive matter*, which in old wines is deposited with the tartar: A *volatile oil*, on which the flavor depends: *Colouring matter*; and *Alcohol*, the most important of their ingredients, and that one on which their dietetic and medical properties depend.² Mr. Brande has proved that this principle is ready formed in wine, and not, as Fabroni supposed, the result of its distillation. The following table shows the average quantity, by measure, of alcohol of the gravity 0.825, contained in different wines, according to Mr. Brande's experiments.—

Proportion of spirit per cent. by measure.		Proportion of spirit per cent. by measure.	
1	Lissa (average) - 25.41	12	Red Constantia - 18.92
2	Port (do.) - 22.18	13	Lisbon - - - 18.94
3	Raisin wine (do.) 25.12	14	Malaga (1666) - 18.94
4	Marsala (do.) - 25.9	15	Bucellas - - - 18.49
5	Madeira (do.) - 22.27	16	Red Madeira (aver.) 20.35
6	Currant wine - - 20.55	17	Cape Muschat - 18.25
7	Sherry (average) - 19.17	18	Cape Madeira (aver.) 20.51
8	Teneriffe - - - 19.79	19	Grape wine - - 18.11
9	Colares - - - 19.75	20	Calcavella (average) 18.65
10	Lachryma Christi 19.70	21	Vidonia - - - 19.25
11	White Constantia 19.75	22	Alba Flora - - 17.26

¹ *Annales de Chimie*, vol. i. p. 76.

² Neuman examined various wines, and the results, which are given in a table, (see next page), are important as they show the relative portions of spirit each wine contains.

Proportion of spirit per cent.
by measure.Proportion of spirit per cent.
by measure.

23 Malaga - - -	17.26	40 Red Hermitage -	12.32
24 White Hermitage	17.43	41 Vin de Grave (aver.)	13.37
25 Rousillon (average)	18.13	42 Frontignac - -	12.79
26 Claret (do.) - -	15.10	43 Cote Rotie - -	12.32
27 Malmsey Madeira	16.40	44 Gooseberry wine	11.84
28 Lunel - - - -	15.52	45 Tokay - - -	9.88
29 Sheraaz - - -	15.52	46 Elder wine - -	9.87
30 Syracuse - - -	15.28	47 Orange wine, average	
31 Sauterne - - -	14.22	of 6 samples, made	
32 Burgundy (average)	14.57	by a London ma-	
33 Hock (do.) - -	13.68	nufacturer - -	11.26
34 Hock (old in cask)	8.88	48 Cyder (highest aver.)	9.87
35 Nice - - - -	14.63	Do. (lowest do.) -	5.21
36 Barsac - - - -	13.86	49 Perry (aver. of 4 sam-	
37 Tent - - - -	13.30	ples) - - -	7.26
38 Champagne, white	13.30	50 Mead - - - -	7.32
39 Champagne, red -	11.93		

TABLE referred to in the preceding page.

A Quart of	Contains of			
	highly rectified Spirit.	thick, oily, unctuous, resinous Matter.	gummy & tartareous Matter.	Water.
	3. 3.	3. 3. grs.	3. 3. grs.	lb. 3. 3. grs.
Aland - - -	1 6	3 2 0	1 5 0	2 5 3 0
Alicant - -	3 6	6 0 20	0 1 40	2 2 6 0
Burgundy - -	2 2	0 4 0	0 1 40	2 9 0 20
Carcassone -	2 6	0 4 10	0 1 20	2 8 4 30
Champagne -	2 5	0 6 40	0 1 0	2 8 3 0
French - - -	3 0	0 6 40	0 1 0	2 8 0 20
Frontignac -	3 0	3 4 0	0 5 20	2 4 6 30
Vin Grave -	2 0	0 6 0	0 2 0	2 9 0 0
Hermitage - -	2 7	1 2 0	0 1 40	2 7 5 20
Madeira - - -	2 3	3 2 0	2 0 0	2 4 3 0
Malmsey - - -	4 0	4 3 0	2 3 0	2 1 2 0
Vinode Monte } Pulciano - }	2 6	0 3 0	0 2 40	2 8 0 20
Moselle - - -	2 2	0 4 20	0 1 30	2 9 0 10
Muscadine - -	3 0	2 4 0	1 0 0	2 5 4 0
Neufchatel -	3 2	4 0 0	1 7 0	2 2 7 0
Palmsec - - -	2 3	2 4 0	4 4 0	2 2 5 0
Pontac - - -	2 0	0 5 20	0 2 0	2 9 0 40
Old Rhenish -	2 0	1 0 0	0 2 20	2 8 5 40
Rhenish - - -	2 2	0 3 20	0 1 34	2 9 1 6
Salamanca - -	3 0	3 4 0	2 0 0	2 3 4 0
Sherry - - -	3 0	6 0 0	2 2 0	2 0 6 0
Spanish - - -	1 2	2 4 0	9 4 0	1 10 6 0
Vino Tinto - -	3 0	6 4 0	1 6 0	2 0 6 0
Tokay - - - -	2 2	4 3 0	5 0 0	2 0 8 0
Tyrol, red - -	1 4	1 2 0	0 4 0	2 8 6 0
Red wine - - -	1 6	0 4 40	0 2 20	2 9 3 20
White - - - -	2 0	0 7 0	0 3 0	2 7 0 0

* Journ. of Science and the Arts, vol. iv. p. 289. On the same principle Mr. Brande

Medical properties and uses. — Wine when good, and of a proper age, is cordial and tonic; but when new it is flatulent, debilitating, and purgative, and intoxicates sooner than old wine. In a dietetical point of view, the temperate use of it promotes digestion, and gives additional energy to the action of the heart and arteries, strengthens the animal functions, exhilarates the spirits, sharpens the wit, and calls into action all the intellectual powers: but when taken in excess, it intoxicates, producing sickness, head-ach, vertigo, and diarrhoea, with nervous tremors, which continue for two or three days; and, like ardent spirit, its habitual excessive use extinguishes the faculties of both body and mind, producing dyspepsia, emaciation, and debility, hepatic and pulmonary inflammation, palsy, gout, dropsy, and a long train of diseases and wretchedness.

As a remedy, wine is stimulant, antiseptic, tonic, and antispasmodic. Its stimulating properties are less diffusible, but more permanent than alcohol; and hence its dose is more easily regulated, and its effects are more certain. In all diseases accompanied with much debility, as typhoid fevers, and in cases of extensive ulceration or gangrene, wine is not only the best addition to cinchona bark and opium, but is a remedy on which alone there is much reliance; in some convulsive affections, as symptomatic tetanus, and chorea, much benefit has been derived from its use; and in the convalescencies from all severe diseases it is the most efficacious and the quickest mean we can employ for restoring the exhausted strength and vigour. Wine operates less powerfully on the system in a state of disease than in health: the quantity, however, to be given, and the proper period of exhibiting it, require to be regulated with much judgment. The skin being open, and not dry or hot, the strength sinking, and the ulcerations, if any exist, assuming a gangrenous appearance, indicate the use of wine: and when, in the event of the pulse being low and fluttering, wine restores its firmness without increasing delirium, and induces sleep, it may be given with a confidence of the greatest benefit. But if on the contrary it renders the pulse quicker, increases heat, thirst, delirium, or watchfulness, its exhibition ought immediately to be discontinued. The quantity to be given depends entirely on the nature of the disease, and the intentions for which it is administered. In typhus the proper rule is to give it till the pulse fills, the delirium abates, and the extremities warm; and it should be repeated on the smallest appearance of stupor,

has stated the following as the proportion of spirit contained in malt liquor. Burton ale 8.88; Edinburgh ale 6.20; Dorchester ale 5.56; Brown stout 6.80; London porter (average) 4.20; London small beer (average) 1.28.

quick and sinking pulse, or tremor.¹ A few glasses, and these even diluted with water, given in the space of twenty-four hours, will often produce all that is required from wine: but sometimes very large quantities are necessary. In a case of symptomatic tetanus, mentioned by Currie², five bottles of Madeira wine were taken every day for some time, without producing the least symptoms of ebriety, or morbidly exciting the pulse; but on the contrary, with the utmost advantage in allaying irritation, and relieving the patient. In ordinary cases of fevers, however, wine is, perhaps, in general too freely given, so as to occasion exhaustion instead of supporting strength.

ULMUS. *Spec. Plant. Willd.* i. 1324.

Cl. 5. Ord. 2. Pentandria Digynia. Nat. ord. Scabridæ Linn. Amentaceæ Juss.

G. 505. Calyx five-cleft. Corolla none. Capsule (samara) compressed, membranaceous.

Species 1. *U. campestris*. Common Elm. *Med. Bot.* 2d edit. 710. t. 242. *Smith Flora Brit.* i. 281.

Officinal. ULMI CORTEX. Lond. ULMI CAMPESTRIS CORTEX. Edin.

ULMUS; CORTEX INTERIOR. Dub. Elm bark.

Syn. Orme (F.) Ulminde (G.) Olmo (I.) Olmo (S.)

The elm-tree is indigenous, and very abundantly cultivated, flowering early in April, before the leaves are unfolded. It grows to a considerable height, sending off strong, spreading, lateral branches; with the bark of the trunk very rough and cracked, but that of the younger branches smooth and tough. The leaves are rough on both sides, villose beneath along the veins, serrate, longer on one side of the midrib than on the other, about three inches long, two broad, and of a dark-green colour. The flowers are in distinct gems, clustered, scarcely peduncled, numerous, small, of a brownish flesh colour, and have a violet odour. The capsules are oblong.

The inner part of the bark of the younger branches, which is of a yellowish colour, is the part officinally used, and is sold freed from the epidermis.

Qualities.—Elm-bark is inodorous, and has a slightly bitter slimy taste. When boiled in a small quantity of water it forms a thick dark-brown coloured decoction, which gelatinizes as it cools; and when evaporated leaves a brittle semi-transparent substance, soluble in water, but insoluble in alcohol and ether, to which, however, it imparts a brownish colour. The brittle residue, when treated in the same manner as Klaproth treated the gum-like exudation from the *Ulmus nigra*, afforded nearly

¹ Moore's Medical Sketches.

² Reports on Water, i. 174.

³ Πιττα Græcorum.

the same results¹; but from the effects of some re-agents (see *Decoction*,) I am inclined to regard it as a peculiar modification of mucus, combined with extractive, gallic acid², and super-tartrate of potash, which Scheele detected in elm-bark.

Medical properties and uses. — This bark operates as a diuretic. It has been given with seeming benefit in herpetic eruptions; and Dr. Lettsom³ attributes the cure of a severe case of lepra ichthyosis, in which other remedies failed, to the use of this bark. Other practitioners have also related cases of its efficacy; but Dr. Willan⁴ thinks it is of little use. It is generally given in the form of decoction.

Official preparation. *Decoctum Ulmi*. L. D.

UVÆ PASSÆ. Vide *Vitis*.

UVÆ URSI FOLIA. Vide *Arbutus*.

WINTERA. *Spec. Plant. Willd.* ii. 1239.

Cl. 13. Ord. 4. Polyandria Tetragynia. Nat. Ord. Magnoliæ Juss. G. 1063. *Calyx* three-lobed. *Petals* six or twelve. *Germens* club-shaped. *Style* none. *Berries* four or eight, obovate.

Species 1. *W. aromatica*. Winter's Bark-tree. *Med. Bot.* 2d edit. 647. t. 226. *Phil. Trans.* xvii. 923. t. 1. f. 1, 2.

Official. WINTERÆ AROMATICÆ CORTEX. Edin. Winter's Bark.

Syn. Cannelles de Winter (F.) Winteraia (L.)

The tree is a native of the Straits of Magellan, growing in valleys which are exposed to the sun. It is a large ever-green tree; covered on the trunk with a grey wrinkled bark, which on the branches is green and smooth. The leaves are petiolate, elliptical, obtuse, smooth, an inch and a half in length, an inch broad in the middle, and of a light-green colour. The flowers are axillary, two, three, or more together, on short peduncles of a milk white colour, with the odour of jasmine; the petals are unequal, oval, obtuse, concave, and erect: the filaments shorter than the petals, supporting large, oval anthers, and the germens turbinated, with sessile, divided, flat stigmas. The berries are of a light-green colour spotted with black, and contain several black aromatic seeds.

This tree was discovered in 1577, by captain Winter, the crew of whose ship used the bark as spice. It is not often found in the shops; and is frequently confounded with the *canella alba*, from which it may be distinguished by being in larger pieces, and having more of a cinnamon hue.

Qualities.—Winter's bark has an aromatic odour; and a pungent hot spicy taste, slowly imparted but very permanent. These qualities depend on a volatile oil, which can be obtained separate, in distillation with water.

¹ Thomson's Chemistry, 4th ed. iv. 695.

² Very little tannin is present, as it scarcely effects a solution of gelatine.

³ Medical Memoirs, 152.

⁴ Description, &c. of Cutaneous Diseases, i. 139.

Medical properties and uses.—This bark is stomachic and carminative. It has been found efficacious in scurvy, and may be used as an adjunct to simple bitters in dyspepsia; but it does not appear to be superior to *canella alba*, and is very little used.

ZINCUM. Zinc.

Syn. Zinc (F.) Zink (G.) Zinco (I.) Tootanāgum (Tam.)

Zinc is a semiductile metal procured in great abundance in Britain, particularly in Derbyshire; and in most of the mining countries of Europe. It occurs in

A. The metallic state:

- i. combined with sulphur and iron. *Sf. 1. Blende.*
 - Var. a. Yellow blende.
 - b. Brown blende.
 - c. Black blende.

B. Oxidized:

- ii. combined with silica.
- iii. acidified by carbonic acid.
2. *Red Zinc ore.*
3. *Electric calamine.*
4. *Common calamine.*
 - Var. a. crystallized.
 - b. compact.
 - c. earthy.

As the fourth species of these ores is an article of the materia medica, we shall describe its characters and properties before we notice those of metallic zinc.

1. COMMON CALAMINE.

Officinal. CALAMINA. *Carbonas Zinci impura.* Lond. CARBONAS ZINCI IMPURUS. *Edin.* CALAMINARIS. *Dub.* Calamine, Impure Carbonate of Zinc.

Syn. Pierre Calaminaire (F.) Galmey (G.) Pietra Calaminare (I.) Calamina (S.) Madal tootum (Tam.)

This ore of zinc is found abundantly in Derbyshire, Somersetshire, Cumberland, and Flintshire, occurring in veins in secondary limestone, generally accompanied by galena, calcareous spar, quartz, and other ores of zinc. The three varieties are indiscriminately used; and consist, according to an analysis by Mr. Smithson¹, of the following components: *var. a.* 65.2 oxide of zinc, 34.8 carbonic acid; *var. b.* 64.8 oxide of zinc, 35.2 carbonic acid; *var. c.* 71.4 oxide of zinc, 13.5 carbonic acid, 15.1 water, — in 100 parts of each variety. They are, however, generally calcined in a moderate heat, by which part of their carbonic acid is dissipated, before they are brought to the shops.

Qualities.—Calamine is usually in the form of grayish yellow or reddish yellow friable lumps, without lustre, opaque, and breaking with an irregular earthy fracture. The specific

¹ *Phil. Trans.* 1803. 17.

gravity of the two first varieties is 4.334; that of the last 3.584. Before the blowpipe calamine becomes yellow; and when exposed to its utmost heat is sublimed. It dissolves in sulphuric acid with effervescence, but does not gelatinize. It is not used as a remedy till after it is prepared.

Official preparation. *Calamina preparata*. L. E. D.

2. METALLIC ZINC.

Official. ZINCUM. Lond. Edin. Dub. Zinc.

Although the method of extracting zinc from its ores had been long known and practised in India and China, yet it was not known in Europe till about 1742, when Von Swab first obtained it by distillation. At present it is well understood, and conducted in the following manner:—The sulphuret or blende, which is the ore usually employed, is first broken to pieces, and the galena and pyrites separated by hand; and is then roasted in a reverberatory furnace, by which the carbonic acid and part of the sulphur are driven off. The roasted ore being washed, to separate the metallic particles from the lighter parts, is now ground in a mill with one-eighth of its weight of charcoal; and put into large earthen jars placed in a circular furnace, and through the bottom of each of which passes an iron tube that goes through the floor of the furnace into a vessel of water placed beneath. The cover of each jar is firmly and accurately luted on, so that the reduced zinc, as it is elevated by the strong heat of the furnace, not finding a vent to escape by the top, descends through the iron tube into the water, and is there condensed in small metallic drops, that are afterwards melted and cast into ingots, in which state it is brought to market¹, under the name of *speltre*.

Qualities.—Zinc when rubbed between the fingers emits a very perceptible odour and has a peculiar taste. Its colour is brilliant white with a shade of blue; its fracture shining and lamellated; hard, yet staining the fingers black when rubbed upon them. Its specific gravity varies from 6.861 to 7.1. In any temperature between 212° to 400° it is very malleable; but at a higher temperature it can be pulverized in a mortar. It may be drawn into wire, but its ductility is not great. Zinc melts at 680° of Fahrenheit; if in contact with air it is rapidly oxidized; and at the temperature of ignition burns with a white dazzling flame, and is volatilized in the state of a flocculent white oxide. It is oxidized and soluble in all the acids; and decomposes water when aided by a small portion of sulphuric or of muriatic acid. It is used only for pharmaceutical purposes.

¹ The principal works are near Bristol, and at Swansea.

Official preparations. *Zinci Oxydum*. L. E. D. *Zinci Sulphas*. L. E. D.

3. IMPURE OXIDE OF ZINC.

Official. *OXIDUM ZINCI IMPURUM*. Edin. *TUTIA*. Dub. Impure Oxide of Zinc. Tutty.

Syn. Tutie (F.) Tutia (G.) Tuzia (I.) Atutia (S.)

This substance is supposed to be an artificial compound of the sublimed oxide of zinc that collects in the chimneys of the furnaces in which the ores of this metal are roasted, mixed with clay and water, and baked.

Qualities.—Tutty is inodorous and insipid, of a brownish colour on the outside, moderately hard and ponderous, and breaks with a smooth fracture. The internal colour is yellowish; and the pieces sometimes contain small globules of zinc. The oxide it contains consists of 85 zinc, 15 oxygen,—in 100 parts. It is not employed as a remedy until it is levigated and prepared.

Official preparations. *Oxidum Zinci impurum preparatum*. E. *Unguentum Oxidi Zinci impuri*. E. D.

ZINGIBER. *Trans. Linn. Society*, viii. 347.

Cl. 1. Ord. 1. Monandria Monogynia. Nat. ord. Scitamineæ Linn. Cannæ Juss.

G. novum. Anther double. Filament lengthened beyond the anther with a furrowed awl-shaped apex. Style received in the furrow of the anther.

Sp. 1. *Z. officinale*.¹ Official Ginger. *Jacquin Hortus Vindobonensis*, i. 31. t. 75. (*Amomum Zingiber*) Willd. *Spec. Plant.* i. 6. *Med. Bot.* 2d edit. 731. t. 250. *Rumph. Amb.* ii. t. 12.

Official. *ZINGIBERIS RADIX*. Lond. *AMOMI ZINGIBERIS RADIX*. Edin. *ZINGIBER*; *RADIX CONDITA*. Dub. Ginger root dried and preserved.

Syn. Gengembre (F.) Ingwer; Imber (G.) Zenzero (I.) Gengibre (S.) Sont'h (H.) Sont'hi (San.)

The ginger plant is a native of the East Indies², and is particularly abundant in the mountainous district of *Gingi*, to the east of Pondicherry, whence it derived its name. It is now naturalized to the West Indies, where it flowers in September. The root is perennial, creeping, of a compressed roundish form, or tuberosc, fleshy, and sending off many long fibres and offsets: the stem is annual, rises about three feet in height, is an annual culm, solid, upright, round, and enclosed in an imbricate membranous sheathing: the leaves are alternate, linear-lanceolate, six inches long, smooth, and on short embracing petioles: the flowers are in a dense spike close to the stem, composed of

¹ *Zingiberis* Dioscoridis. The similarity between the Greek name of the plant, and the Sanscrit *Stringavera* (horn-shaped) is remarkable. *Asiatic Researches*, vol. xi. p. 346.

² It is named *ziz* by the Brahmans.

large upright, ovate, subacuminate, coloured scales, half closing the flowers: the calyx is a small double spathe of a dingy yellow colour, tubular, with the segments of the border conical, and nearly equal: the anther-bearing filament is extended beyond the anther, has an awl-shaped appendage with a groove to receive the style after it has passed between the lobes of the anthers, and is terminated with the stigma a little beyond the extremity of the filament: the capsule is smooth, containing many oblong seeds.

The herbaceous part of the plant withers in December, and the roots are dug up in January; but when the root is intended to be preserved in syrup, it is dug up when the shoots do not exceed five or six inches in height. For preparing the dried ginger, after the roots are dug, the best pieces are selected, scraped, then washed, and dried in the sun with great care. This is called *white ginger*; in contradistinction to which the roots that are scalded in boiling water before being dried are denominated *black ginger*. The confected or preserved ginger is prepared by scalding the green roots till they are tender; then peeling them in cold water, and putting them into a thin syrup, from which in a few days they are shifted into the jars in which they come home, and a very rich syrup poured over them.

Dried ginger is imported in bags, each containing about one hundred weight. The white kind brings the highest price, being more pungent and better flavoured. The external characters of goodness in either are soundness, or the being free from worm holes; heaviness, and firmness: the pieces that are light and soft, or very friable and fibrous, should be rejected. The confected ginger is nearly translucent when good.

Qualities.—Dried ginger has a pungent aromatic odour, and a hot biting taste. Its odour appears to depend on a volatile oil, which can be obtained separate in distillation with water, and has all the flavour but none of the pungency of the root. Water, alcohol, and ether extract its virtues. The greater part of ginger root, however, is starch. To separate it, triturate the root with water, and strain through cloths; then after the fecula suspended in the water has subsided, separate it by decanting off the water, and macerate in alcohol; what remains undissolved is a tolerably pure insipid starch. The pungency resides in a resino-extractive matter, which is combined with the fecula, but may be obtained separate by evaporating the ethereal tincture on the surface of water.

Medical properties and uses.—Ginger is stimulant, carminative, and sialogogue. It has been found useful in flatulent

cholic, dyspepsia, and tympanitis; and in gout when it attacks the stomach. It is less frequently used alone than as an adjunct to other remedies to promote their efficacy, and give them warmth. The local stimulus of ginger when chewed excites the salivary glands, and provokes a considerable flow of saliva: hence it has been found useful as a sialogogue in relaxations of the uvula and tonsils, and in paralysis of the muscles of the tongue and fauces.

The dose of powdered ginger may be from grs. x. to ʒj.

Official preparations. *Syrupus Zingiberis*, L. E. D. *Tinctura Zingiberis*. L. D.

