

“ This is a middle-sized, or rather a large tree, not common in the low lands of this coast, but very common among the mountains; casts its leaves during the cold season, which come out again with the flowers about the months of March or April; seed ripe in June and July.

“ From natural fissures and wounds made in the bark of this tree during the hot season, there issues a most beautiful red juice, which soon hardens into a ruby-coloured, brittle, astringent gum; but it soon loses its beautiful colour if exposed to the air. To preserve the colour, the gum must be gathered as soon as it becomes hard, and closely corked up in a bottle. This gum held in the flame of a candle swells, and burns away slowly, without smell or the least flame, into a coal, and then into fine light ashes; held in the mouth it soon dissolves; it tastes strongly, but simply astringent; heat does not soften it, but rather renders it more brittle. Pure water dissolves it perfectly, and the solution is of a deep, clear, red colour. It is in a great measure soluble in spirits, but the solution is paler, and a little turbid; the watery solution also becomes turbid when spirit is added, and the spiritous more clear by the addition of water: diluted vitriolic acid renders both solutions turbid; mild caustic (?) vegetable alkali changes the colour of the watery solution to a clear, deep, fiery blood red; the spiritous it also deepens, but in a less degree; *sal martis* changes the watery solution into a good durable ink.”

“ These are, I think, proofs that it contains a very small proportion of resin; in which it differs from the gum resin called *kino*, or *gummi rubrum astringens Gambiense*, which the Edinburgh College has taken into their materia medica. I have used the recent gum in making my experiments, which may make some difference; but as this can be most perfectly dissolved in a watery menstruum, it may prove of use, where a spiritous solution of *kino* (being the most complete) cannot be properly admitted: consequently it may prove a valuable acquisition.”

The *butea superba*, a very large twining shrub, yields a similar juice.

CALX, recens usta. *Dub.*

CALX; calx viva.

a. Ex lapide calcareo.

b. Ex testis conchyliorum. *Ed.*

Quicklime recently burnt.

THE properties of lime have been already enumerated. It is scarcely found in nature uncombined, but is easily prepared from any of its carbonates, either mineral or animal, by the

action of fire, which first expels the water, then destroys any animal matters which may be present, and, lastly, expels the carbonic acid. This process is improperly termed the burning of lime. The product is lime, or, as it is commonly called, quicklime.

If about half its weight of water be poured upon lime, a great increase of temperature takes place, steam is produced, and the lime crumbles down into a dry powder, somewhat increased in weight by the presence of part of the water, which has been solidified by the lime: and to the caloric of fluidity, which is expelled during the conversion of the water into a solid, the great increase of the temperature is owing. Lime in this state is said to be slacked. If more water be poured upon slacked lime, there is no new evolution of caloric; but if the water amount to 700 times the weight of the lime, the lime is completely dissolved. The solution is termed Lime-water.

As lime quickly attracts moisture and carbonic acid from the atmosphere, it should be always recently prepared; and it should be preserved in very close bottles. Lime should not effervesce with acids, and should be entirely soluble in water.

*Medical use.*—On the living body lime acts as an escharotic, and as such it was formerly applied to ill-conditioned and obstinate sores. Dissolved in water, it is sometimes given internally as a tonic or astringent in scrofula and various fluxes, and formerly it enjoyed considerable reputation as a lithontriptic. It is extremely useful in removing the scabby crusts in tinea capitis.

#### CANCER.

The crab, a genus of crustaceous insects.

*Sp.* CANCER ASTACUS. *Ed.*

The craw-fish.

*Off.*—Crabs stones, vulgarly called Crabs eyes.

CANCRI ASTACI LAPILLI, *vulgo* Cancrorum oculi. *Ed.*

CANCRI CALCULI; oculi dicti. *Dub.*

CRABS stones are generally about the size of peas, or larger; somewhat hemispherical in their shape, and laminated in their texture; of a white colour, but sometimes reddish or bluish.

These concretions are found in the stomach, one on each side, at the time when the crab changes its shell, and renews the inner membrane of the stomach, which commonly happens in the month of August. The stones afterwards gra-

dually disappear, and none are found after the new shell has acquired its full degree of firmness. They therefore seem to furnish the materials for the induration of the new shell. They are brought in great numbers from Poland and Russia, especially from the province of Astracan, where the craw-fish are either bruised with wooden mallets, or laid up in heaps to putrefy, when the flesh is washed away with water, and the stones picked out.

They consist of carbonate of lime, combined with a little phosphate of lime and gelatine. The quantity of the two last is too small, and their action on the living body too inconsiderable, to make any considerable difference in medical properties, between these concretions and soft carbonate of lime, as it occurs in the mineral kingdom.

Crab stones are said by most writers on the materia medica to be frequently counterfeited with tobacco-pipe clay, or compositions of chalk with mucilaginous substances. This piece of fraud, if really practised, may be very easily discovered: the counterfeits wanting the leafy texture which is observed upon breaking the genuine; more readily imbibing water; adhering to the tongue; and dissolving in vinegar, or the stronger acids, diluted with water, either entirely or not at all, or by piece-meal; whilst the true crab stones, digested in these liquors, become soft and transparent, their original form remaining the same, as the organization of the gelatine is not altered by the acid.

*Sp.* CANCER PAGURUS. *Ed.* Dub.

The black-clawed crab.

*Off.*—The claws.

CANCRI PAGURI CHELÆ. *Ed.*

CANCRI CHELÆ. *Dub.*

THIS species of crab inhabits the sea, and is found especially in the North Sea. Its claws are yellow, tipped with black; and they resemble the former article in every respect as medicines.

CANELLA ALBA. *Lond.* *Ed.* Dub.

*Willd.* g. 942, sp. 1. *Dodecandria Monogynia.*—*Nat. ord.* Oleraceæ.

Canelle alba.

*Off.*—The bark.

CANELLÆ ALBÆ CORTEX. *Ed.*

CANELLÆ CORTEX. *Lond.*

CANELLA ALBA. *Dub.*

THE canella alba is a tall tree, which is very common in Jamaica, and other West-India islands.

The canella is the interior bark, freed from the epidermis, which is thin and rough, and dried in the shade. There are two sorts of canella in the shops, differing from each other in the length and thickness of the quills; they are both the bark of the same tree, the thicker being taken from the trunk, and the thinner from the branches.

It was introduced into Europe, according to Clusius, in 1605, and is brought to us rolled up in long quills, or flat pieces, thicker than cinnamon, and both outwardly and inwardly of a whitish colour, slightly inclining to yellow. It is a warm pungent aromatic, and in distillation with water it yields a large proportion of a very active volatile oil, of a yellow or rather reddish colour, and of a sweet odour, approaching to that of cinnamon. It must not be confounded with the bark of the *Wintera aromatica*.

*Medical use.*—Canella alba is sometimes employed where a warm stimulant to the stomach is necessary. In America it is considered to be a powerful antiscorbutic. It is also added as a corrigent to other medicines.

CAPSICUM ANNUM. *Ed. Dub. Lond.*

*Willd. g. 384, sp. 1. Pentandria Monogynia.*—Nat. ord. *Solanaceæ*.

Cockspur pepper.

*Off.*—The fruit or berry.

CAPSICI ANNUI FRUCTUS. *Ed.*

CAPSICI FRUCTUS. *Dub.*

CAPSICI BACCÆ. *Lond.*

THIS is an annual plant, a native of South America, cultivated in large quantities in our West-India islands, and even frequently in our gardens, for the beauty of its pods.

The pods of this species are long, pointed, and pendulous, at first of a green colour, and, when ripe, of a bright orange red. They are filled with a dry loose pulp, and contain many small, flat, kidney-shaped seeds. The taste of Capsicum is extremely pungent and acrimonious, setting the mouth, as it were, on fire.

The principle on which its pungency depends, I find, is soluble in water and in alcohol, is not volatile, reddens infusions of turnsole, and is precipitated by infusion of galls, nitrate of mercury, muriate of mercury, nitrate of silver, sulphate of copper, sulphate of zinc, red sulphate of iron, (but the precipitate is neither blue nor green), ammonia, carbonate of

potass, and alum, but not by sulphuric, nitric, or muriatic acid, or silicized potass.

Cayenne pepper is an indiscriminate mixture of the powder of the dried pods of many species of capsicum, but especially of the capsicum frutescens, or bird pepper, which is the hottest of all. Cayenne pepper, as it comes to us in powder from the West Indies, changes infusion of turnsole to a beautiful green, probably owing to the muriate of soda, which is always added to it, and to red oxide of lead, with which it is said to be adulterated.

*Medical use.*—These peppers have been chiefly used as a condiment. They prevent flatulence from vegetable food, and have a warm and kindly effect on the stomach, possessing all the virtues of the oriental spices, without, according to Dr Wright, producing those complaints in the head which the latter are apt to occasion. An abuse of them, however, is supposed to occasion visceral obstructions, especially of the liver. In the practice of medicine, they constitute one of the simplest and strongest stimulants which can be introduced into the stomach: their action not being followed by any narcotic effects. Dr Wright says, that in dropsical and other complaints, where chalybeates are indicated, a minute portion of powdered capsicum forms an excellent addition; and he recommends its use in lethargic affections. It has also been successfully employed as a gargle in cynanche maligna, when it has resisted the use of cinchona, wine, and the other remedies commonly employed. Coma and delirium are common attendants of tropical fevers; and in such cases, cataplasms of capsicum have a speedy and happy effect. They redden the parts, but seldom blister, unless when kept on too long. In ophthalmia from relaxation, the diluted juice of capsicum is a sovereign remedy. Dr Adair gave in cachexia Africana six or eight grains for a dose, made into pills; or he prepared a tincture, by digesting half an ounce of the pepper in a pound of alcohol, the dose of which was one or two drachms diluted with water.

CARBO LIGNI RECENS, s. s. *Carbo ligni.* Lond.

CARBO LIGNI. *Ed. Dub.*

Charcoal of wood.

CHARCOAL, as it is commonly prepared, is not a pure carbon, but contains also a notable proportion of hydrogen, from which it may be purified by exposing it for some time to a strong heat. Munch directs, that for medical use it be reduced to fine powder, and heated in a covered crucible, as

long as any flame appears on removing the cover, and until it be fully red. It is then to be allowed to cool in the furnace, the upper layer of the powder to be removed, and the remainder to be sealed accurately up in ounce vials.

*Medical use.*—When the pneumatic pathology was in fashion, and phthisis and similar diseases were ascribed to hyper-oxygenation of the system, charcoal was strongly recommended as a powerful disoxygenizing remedy, and cases of its successful employment are even recorded.

In this place it will not be superfluous to notice the power ascribed to charcoal of purifying various fetid or discoloured fluids. Lowitz found that it destroyed the adventitious colour and smell of vinegar, carbonate of ammonia, tartaric acid, alcohol, super-tartrate of potass, and other salts, and that it prevented water from becoming putrid at sea, especially when assisted by a little sulphuric acid. Meat which has acquired a *maukish*, or even putrid smell, is also said to be rendered perfectly sweet by rubbing it with powdered charcoal.

From its acknowledged effects in correcting the putridity of animal substances, it is probable that the virtues ascribed to it of preventing the putrid eructations which take place in some kinds of dyspepsia are not unfounded. Ten grains may be given for a dose. A table spoonful taken two or three times a-day, with syrup of roses, is said to remove habitual costiveness. In the additions to the German translation of the third edition of this dispensatory, we are informed that Hahnemann and Juch found that charcoal taken to the extent of two drachms daily, completely took away the fetor of the stools of dysenteric patients. It is also said to be useful in the itch, worms, florid phthisis, scrofula, and other atrophys. The latest extension of the use of charcoal as a remedy, is for the cure of intermittent fevers, by Dr Calcagno of Palermo, and his success has been corroborated by Dr Calvert, and other army practitioners on that station. A scruple of the powder was given as a dose three times a-day, or every three hours, and the patients generally recovered before they had taken two ounces. It was also used with advantage in dysentery. Dr Calvert says, its general effects seemed to be “to take away bitter and disagreeable tastes in the mouth, to allay sickness, wherever there is a tendency to vomit, and sometimes to stop the vomiting when it has occurred, to promote appetite, and to assist digestion. It has some tendency, however, to constipate the bowels, but it neither produces griping, nor any other unpleasant symptom.” As an external application, powdered charcoal has been recommended in the cure of inflammation from external causes, gangrene, and all descriptions of fetid

ulcers. The good effects of charcoal, or burnt bread, used as a tooth powder, in correcting the bad smell which the breath sometimes acquires from carious teeth, are well known. It is applied in powder to tinea capitis.

#### CARBONAS.

CARBONATE is a generic name for the combinations of the carbonic acid with earths, alkalies, and metallic oxides.

The nature of these substances was totally unknown, until the year 1756, when the discoveries of Dr Black laid the foundation for the present state of chemical knowledge.

Before the brilliant epoch we have mentioned, the carbonates were supposed to be simple bodies; and the fact of their acquiring new and caustic properties by the action of fire, was explained by supposing that the particles of the fire combined with them. Dr Black, however, demonstrated, that these bodies in their caustic state are simple, and that their mildness is owing to their being combined with an acid, to which the name of carbonic is now given.

The most general character of the carbonates is, their effervescing when any of the stronger acids are poured upon them. This phenomenon is owing to these acids displacing, by their greater affinity, the carbonic acid, which flies off in the form of a gas.

The carbonates may be also deprived of their carbonic acid, either by the action of heat alone, or by heating them when mixed with charcoal, which decomposes the carbonic acid by combining with part of its oxygen, so that both the acid and the charcoal are converted into carbonic oxide gas.

The carbonates may be divided into three great families, the alkaline, the earthy, and the metallic.

*Family 1.* The alkaline carbonates have an urinous taste, tinge vegetable blues green, and are soluble in water, and insoluble in alcohol.

*Family 2.* The earthy carbonates are insipid, and insoluble in water, but soluble in water saturated with carbonic acid.

*Family 3.* The metallic carbonates scarcely differ in appearance from the metallic oxides.

We shall have immediately occasion to notice some individuals of each of these families.

CARBONAS BARYTÆ, v. s. *Barytes. Terra ponderosa.* Ed.  
Carbonate of baryta, Barytes. Heavy spar.

CARBONATED BARYTA is rarely found in nature; and as it was first discovered by Dr Withering, Mr Werner gave it

the name of Witherite. Its colour is greyish-white, sometimes inclining to milk white, and sometimes with a slight tinge of yellow, from a mixture of iron, seldom greenish, often invested with a red ochry crust. It is found in solid masses, sometimes filling an entire vein, sometimes interspersed with sulphated baryta, frequently rounded, or affecting that form, seldom crystallized. Texture fibrous; fracture conchoidal; fragments, long splinters; specific gravity 4.3 to 4.338. Although it has no sensible taste, it is poisonous. In medicine it is only used for preparing the muriate of baryta. It is found in Lancashire, Cumberland, Scotland, and Sweden, but is not common.

#### CARBONAS CALCIS.

Carbonated lime.

This is the most common of all minerals, is found under a great variety of forms, and has various names, as chalk, limestone, marble, spar. In form it is either amorphous, stalactical, or crystallized. When amorphous, its texture is either foliated, striated, granular, or earthy. The primitive form of its crystals is a rhomboidal parallelepiped. Hardness, lustre, and transparency, various: when transparent, it causes double refraction; specific gravity from 2.315 to 2.78; colour, when pure, white; effervesces violently with muriatic acid, and dissolves in it entirely, or nearly so, forming a colourless solution.

Its officinal varieties are,

a) CRETA ALBA. Ed.

CRETA, s. s. *Carbonas calcis friabilis.* Lond.

CRETA, s. s. *Carbonas calcis.* Dub.

Soft carbonate of lime. Chalk.

b) MARMOR ALBUM. Ed.

LAPIS CALCAREUS, s. s. *Carbonas calcis dura.* Lond.

Indurated carbonate of lime. Marble.

They contain about 45 parts of carbonic acid, and 55 of lime.

In medicine it is given to correct acidity in the primæ viæ, especially when accompanied with looseness. Powdered chalk has been externally applied with success to scalds and burns.

CARBONAS POTASSÆ IMPURUS, v. s. *Alkali fixum vegetabile;*  
*Lixiva; Cineris clavellati.* Ed.

POTASSA IMPURA, s. s. *Subcarbonas potassæ impura.* Lond.

CINERES CLAVELLATI, s. s. *Kali impurum.* Dub.



Pearl ashes. Potashes. Impure carbonate of potass. Fixed vegetable alkali.

THE potashes of commerce are sent to us from the shores of the Baltic and from America. They are prepared by lixiviating the ashes of vegetables in barrels, first with cold, and then with hot water, filtering the ley, and evaporating it to dryness in an iron pot. In this state, they still contain some vegetable matter, not perfectly incinerated, which gives them a brown or black colour. To destroy this, and render their colour purer, they are put into a crucible and liquefied in an intense heat. The melted matter is poured out on iron plates where it hardens. It now gets the name of pearl ashes; but even yet they are very impure, and often contain the sulphates of potass and of lime, and the muriate of potass. It is also frequently adulterated with vegetable ashes, sand, and sulphate of potass. The ashes are detected by their difficult and imperfect solution; the sand, by the precipitation of silica in a gelatinous form on the addition of an acid, and the sulphate of potass by its crystallization. All vegetables which grow at a distance from the sea afford potashes by incineration: herbs, especially wormwood, give the largest proportion, then the leaves of trees, then shrubs; and woods the least. The alkali thus obtained, formerly had the name of Fixed Vegetable Alkali; but it is also found, though much more sparingly, both in the animal and mineral kingdoms. The potash of commerce is much more caustic and impure than pearl ash, and yields by solution and evaporation a salt of a much darker colour.

Vauquelin has given a table of the quantity of pure potass, and of heterogeneous matters, contained in 1152 parts of the different potashes of commerce.

	Potass.	Sulphate of potass.	Muriate of potass.	Insoluble residuum.	Carb. acid and water.
Pearl ashes,	754	80	4	6	308
Russian potashes,	772	60	5	56	254
Dantzic ashes,	603	152	14	79	204
American potashes,	857	145	20	2	119
Potashes of Treves,	720	165	44	24	199
Potashes of Vosges,	444	148	510	34	304

The potass was estimated by the quantity of diluted nitrous acid saturated by it; the sulphate of potass by the precipitate formed with nitrate of baryta; and the muriate of potass by that formed with nitrate of silver.

All these different potashes, except the last, which seems

not to be sufficiently burnt, may be purified sufficiently for pharmaceutical purposes, by lixiviating them with a small proportion of cold water, and evaporating the ley to dryness in an iron pot.

*Medical use.*—Carbonate of potass is useful in all diseases depending upon the presence of an acid in the primæ viæ, by neutralizing it, and forming with it an aperient salt. Hence Dr Mitchell strongly recommends the use of potash cakes to infants, in order to counteract the acidity of their bowels. Alkalies are by many supposed to attenuate the fluids, remove obstructions, and promote the natural secretions. Weak solutions of alkalies prove diuretic, or, if assisted by warmth, diaphoretic. In large doses, potash has been given as a lithontriptic, but its long continued use necessary in calculous complaints, seldom fails to injure the intestinal canal and constitution. Conformably to his theory, that all pestilential fevers depend upon an *acid*, which he denominates *septic*, Dr Mitchell strongly recommends alkalies in fevers and dysenteries. Administered by the mouth, they are supposed to neutralize the septic acid in their passage through the bowels. Injected in clysters, they are said to allay tenesmus like a charm, and in both cases to mitigate pain, moderate spasmodic action, and restore and equalize the peristaltic motion; moreover, effectually to destroy the fetor and infection of the stools. The effects of alkalies upon irritability, in galvanic experiments, led to their use, alternated with the free exhibition of opium, in tetanic and other spasmodic diseases; but experience has not confirmed the truth of the hypothesis. Externally, alkalies are used in form of lotion, in rachitic and some cutaneous diseases, and as a stimulant to the inactive state of the vessels in certain ulcers.

CARBONAS SODÆ IMPURUS, v. s. Barilla. *Ed.*

BARILLA, s. s. Soda impura. *Dub.*

SODA IMPURA. Subcarbonas sodæ impura. *Lond.*

Impure carbonate of soda. Barilla. Fixed mineral alkali.

SODA is a very common mineral production. It is the basis of sea-salt; and combined with carbonic acid, it is found on the surface of the earth in Egypt, Syria, Barbary, Hungary, &c. and is obtained by the incineration of marine vegetables, especially the *salsola soda* and *kali*, the *salicornia herbacea*, &c. The Spaniards even cultivate these in salt marshes for the sake of the soda. After being cut down, they are dried like hay. A deep pit is then prepared, and a bundle or

two of the dried vegetables set on fire are thrown into it. After being well kindled, other bundles are thrown in until the pit is filled. When the incineration is completed, the barilla is found in the bottom, caked into a solid mass, which is worked like a stony substance. Good barilla is firm, hard, heavy, dry, sonorous, spongy, and internally of a blue colour mixed with white spots, does not deliquesce, emits no unpleasant smell on solution, and does not leave a large proportion of insoluble matter. Incinerated soda is mixed with potash, muriate of soda, and other saline matters; mineral soda with clay and other earthy substances. The Egyptian-soda was reckoned the best, then the Spanish (barilla), afterwards the Carthaginian, and that prepared from different species of fuci (kelp) is the worst.

But all these carbonated sodas are inferior in purity to those now manufactured in Britain, by decomposing the sulphate of soda.

That commonly used is obtained by the bleachers as a residuum in their method of preparing oxygenized muriatic acid, by decomposing muriate of soda with sulphuric acid and the black oxide of manganese.

The sulphate of soda is decomposed,

1. By carbonate of potash. Mr Accum has described the manipulations of this mode. A boiling concentrated solution of about 560 pounds of American potashes is ladled into a boiling solution of 500 pounds of sulphate of soda, agitated together, and the whole quickly heated to ebullition. It is then drawn off into leaden cisterns, lined with thick sheet-lead, and allowed to cool in a temperature which should not exceed  $55^{\circ}$ .

The fluid is then drawn off, and the mass of salt washed with cold water, to free it from impurities, and again put into the boiler with clean water. This second solution is also evaporated at a low heat, as long as any pellicles of sulphate of potass form on its surface, and fall to the bottom of the fluid. The fire is then withdrawn, and the fluid ladled out into the cistern to crystallize. Unless the fluid be allowed to cool pretty low before it is removed to crystallize, the salt obtained will contain sulphate of potass.

2. By acetate of lime. The acetic acid for this purpose is obtained by distillation from wood, during its conversion into charcoal.

3. By litharge or subcarbonate of lead. Very pure carbonate of soda is prepared by this process in the vicinity of Edinburgh.

4. By decomposing the sulphuric acid by charcoal. 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. By this, or a similar process, very pure carbonate of soda is manufactured in the west of Scotland.

On the continent, muriate of soda is sometimes decomposed by potass, and sometimes by lime.

Carbonate of soda is an article of the greatest importance in many manufactures.

*Medical use.*—Carbonate of soda is now much used in medicine. Its primary effect is to correct acidity in the *primæ viæ*. It also acts as a tonic, and in many instances gives great relief in calculous complaints, although there can be little reliance placed upon it as a lithontriptic. Being an efflorescent salt, it is conveniently given in the form of powder, or made up into pills.

CARDAMINE PRATENSIS. *Ed. Dub. Lond.*

*Willd. g. 1257, sp. 19. Smith, Flor. Brit. g. 304, sp. 4. Tetradymania Siliquosa.*—Nat. ord. *Siliquosæ*.

Meadow ladies smock. Cuckow flower.

*Off.*—The flowers.

CARDAMINES FLORES. *Lond.*

CARDAMINES FLOS. *Dub.*

LADIES SMOCK is a perennial plant, which grows in meadow grounds, produces purplish flowers in the spring. In its sensible qualities it resembles the *sisymbrium nasturtium*.

*Medical use.*—Long ago it was employed as a diuretic; and it has been again introduced in nervous diseases, as epilepsy, hysteria, chorea, asthma, &c. A drachm or two of the powder is given twice or thrice a-day. It has little sensible operation, except that it sometimes acts as a diaphoretic.

CARUM CARUI. *Ed. Dub. Lond.*

*Willd. g. 561, sp. 1.—Smith, Flor. Brit. g. 152, sp. 1. Pentandria Digynia.*—Nat. ord. *Umbellatæ*.

Common caraway.

*Officinal.*—The seeds.

CARUI SEMINA. *Dub. Lond.*

CARI CARUI SEMINA. *Ed.*

CARAWAY is a biennial umbelliferous plant, cultivated in

our gardens, both for culinary and medicinal use. The seeds have an aromatic smell, and warm pungent taste, and yield much essential oil.

*Med. use.*—They are employed as stomachic and carminative in flatulent colics.

CARYOPHILLUS AROMATICUS. See EUGENIA.

CASSIA.

*Willd. g.* 813. *Decandria Monogynia.*—Nat. ord. *Lomentaceae.*

*Sp.* 18. CASSIA FISTULA. *Ed. Dub. Lond.*

Cassia tree.

*Off.*—The fruit and its pulp.

CASSIÆ PULPA. *Lomentorum pulpa. Lond.*

CASSIÆ FISTULARIS FRUCTUS PULPA. *Dub.*

CASSIÆ FISTULÆ FRUCTUS. *Ed.*

THIS tree is indigenous in India and Egypt, and is cultivated in Jamaica. It rises to about thirty feet high, and has long flower spikes, with yellow papilionaceous blossoms.

Its fruit is a cylindrical pod, scarcely an inch in diameter, a foot or more in length: the outside is a hard, brown bark; the inside is divided by thin transverse woody plates, covered with a soft black pulp, of a sweetish taste, with some degree of acrimony. There are two sorts of this drug in the shops; one brought from the East Indies, the other from the West (Cassia Javanica?) The canes or pods of the latter are generally large, rough, thick-rinded, and the pulp nauseous; those of the former are smaller, smoother, the pulp blacker, and of a sweeter taste: this sort is preferred to the other. Such pods should be chosen as are heavy and new, and do not make a rattling noise, from the seeds being loose within them, when shaken. The pulp should be of a bright, shining, black colour, and have a sweet taste, neither harsh, which happens from the fruit being gathered before it has grown fully ripe, nor sourish, which it is apt to become upon keeping, nor at all mouldy, which is frequently the case from its being kept in damp cellars, or moistened, in order to increase its weight. Greatest part of the pulp dissolves both in water and in alcohol, and may be extracted from the pod by either. The shops boil the bruised pod in water, and afterwards evaporate the solution to a due consistence.

Vauquelin has analyzed this pulp, and found it to consist of parenchyma, gluten, gelatin, gum, extractive and sugar.

*Med. use.*—The pulp of cassia, from its saccharine and ex-

tractive constituents, is a gentle laxative medicine, and is frequently given, in a dose of some drachms, in costive habits. Some direct a dose of two ounces, or more, as a cathartic, in inflammatory cases, where the more acrid purgatives are improper; but in these large quantities it generally excites nausea, produces flatulence, and sometimes gripings of the bowels, especially if the cassia be not of a very good kind: these effects may be prevented by the addition of aromatics, and by exhibiting it in a liquid form.

*Sp. 24. CASSIA SENNA. Ed. Lond. Dub.*

Senna.

*Off.*—The leaves.

*CASSIÆ SENNA FOLIA. Ed.*

*SENNÆ FOLIA. Lond. Dub.*

This species of cassia is annual, although in its mode of growth it resembles a shrub, and sends out hollow woody stems, to the height of four feet. It grows principally in Upper Egypt, from whence the leaves are brought, dried, and pickled from the stalks, to Alexandria in Egypt, and thence imported into Europe. They are of an oblong figure, sharp-pointed at the ends, about a quarter of an inch broad, and not a full inch in length, of a lively yellowish green colour, a faint, not very disagreeable smell, and a sub-acrid, bitterish, nauseous taste. Some inferior sorts are brought from other places: these may be easily distinguished by their being either narrower, longer, and sharper pointed, from Mocha; or larger, broader, and round pointed, with small prominent veins, from Italy; or large and obtuse, of a fresh green colour, without any yellow cast, from Tripoli.

It has been customary to reject the pedicles of the leaves of senna, as causing gripes and pains in the bowels; but this is a mere prejudice, for both leaves and pedicles act in the very same way. Neumann, from 480 parts of senna, got 143 alcoholic extract, and afterwards 149 watery; and inversely, 245 watery, and only 20 alcoholic, so that it seems to consist chiefly of mucilage and extractive.

*Medical use.*—Senna is a very useful cathartic, operating mildly, and yet effectually; and, if judiciously dosed and managed, rarely occasioning the bad consequences which too frequently follow the exhibition of the stronger purges. The only inconveniences complained of in this drug are, its being apt to gripe, and its nauseous flavour.

These are best obviated by adding to the senna some aromatic substance, as ginger, cinnamon, &c. and by facilitating its operation by drinking plentifully of any mild diluent.

Senna may be given in substance to the extent of about a drachm, but this is rather too bulky, and it is therefore better to divide it into two doses, and to take one half at night, and the other in the morning. It is more conveniently given in the form of infusion, which is generally made by pouring about six ounces of boiling water upon from two to six drachms of senna leaves in a tea-pot, and letting it stand about an hour. Senna ought never to be ordered in decoction, Gren says, because it becomes perfectly inert, from the total dissipation of the nauseous and volatile principle on which its purgative effects depend. The tincture, on account of the menstruum, cannot be given in doses large enough to purge.

CASTOR FIBER. *Ed. Dub. Lond.*

*Mammalia Rodentia*, Cuvier.

The beaver.

*Off.*—Castor, a substance collected in follicles near the anus.

CASTOREUM, materia in folliculis prope anum collecta. *Ed.*

a) CASTOREUM ROSSICUM. *Dub.*

CASTOREUM, concretum sui generis. *Lond.*

b) CASTOREUM CANADENSE. *Dub.*

THE beaver is an amphibious quadruped, strongly characterized by its flat, horizontal, scaly tail. It is found in the northern parts of Europe, Asia, and America, on the banks of lakes and rivers. In inhabited countries it is a solitary slothful animal, but in desert regions it lives in society; their remarkable manners in this state, and the immense works effected by the united labours of the individuals of their republic, have rendered the natural history of this animal familiar to every one. In both sexes, between the anus and pudendum, there are four follicles, of an oblong shape, smaller above, and larger below, formed of a tough membrane, almost resembling leather. The two largest and undermost of these, which are also connected, and lie parallel and close to each other, contain an oily fluid secretion, which is the substance known by the name of Castor. It is preserved by cutting out the entire bags, and drying them in the smoke.

The best castor comes from Russia, Prussia, and Poland. The cods should be dry, gibbous, roundish, heavy, solid, and filled with a solid substance contained in membranous cells, somewhat tough, but brittle, of a dark-brown colour, of a peculiar disagreeable, narcotic smell, and a nauseous, bitter, acrid taste. The Canadian castor is of an inferior quality; the cods are smaller, thin, oblong, and much corrugated, and the castor itself has much less smell and taste: what is very old, quite black, and almost destitute of smell and taste, is unfit for use,

as well as the counterfeited castor, which is a mixture of various gummy resins and other substances, with a little real castor, artificially interspersed with membranes, and stuffed into the scrotum of a goat. This imposition is easily detected, by the weaker degree of its smell and taste, by chemical analysis, and even by mere external examination; for to the real bags, the two smaller and upper follicles, filled with a fatty matter, are always attached.

Neumann got from 480 parts of castor, 140 alcoholic extract, and afterwards 80 watery; and inversely, 140 watery, and 20 alcoholic. The first alcoholic extract retained the whole flavour of the castor, as none of it rose in distillation with the alcohol. The distilled water, on the contrary, contained the whole flavour, and the watery extract was merely bitter. Cartheuser obtained from it a volatile oil by distillation. Bouillon Lagrange says it is composed of a resin, adipocere, volatile oil and extractive, and Laugier has discovered benzoic acid in it.

*Med. use.*—Castor is an excellent antispasmodic. It is very little heating, and acts particularly on the uterine system.

It is given with advantage,

1. In typhoid fevers.
2. In spasmodic diseases, especially in hysteria and epilepsy, and in cases of difficult parturition, from a spasmodic contraction of the mouth of the uterus after the membranes have burst.
3. In amenorrhœa.

It is exhibited most advantageously in the form of powder, in doses of from 10 to 20 grains, and in clysters, to a drachm. Diluted alcohol extracts its virtues; therefore it may be also given in the form of tincture. But its exhibition in the form of extract or decoction is improper.

CENTAUREA BENEDICTA. *Ed. Dub.*

*Willd. g. 1548, sp. 89. Syngenesia Polygamia frustanea.*—  
Nat. ord. *Compositæ capitata.*

Blessed Thistle.

*Off.*—The leaves or plant.

CENTAUREE BENEDICTE HERBA. *Ed.*

CARDUI BENEDICTI FOLIA. *Dub.*

THIS is an annual plant, indigenous in the Grecian islands, and cultivated in our gardens. It flowers in June and July, and perfects its seeds in the autumn. The herb should be gathered when in flower, quickly dried, and kept in a very dry airy place to counteract its tendency to rot, or grow.



mouldy. The leaves have a penetrating bitter taste, not very strong or very durable, accompanied with an ungrateful flavour, from which they are in a great measure freed by keeping. Water extracts, in a little time, even without heat, the lighter and more grateful parts of this plant; but if the digestion be continued for some hours, the disagreeable parts are taken up. A strong decoction is very nauseous and offensive to the stomach. Rectified spirits acquire a very pleasant bitter taste, which remains uninjured in the extract.

Neumann got from 1920 parts 270 alcoholic, and afterwards 390 watery extract; and inversely, 600 watery, and 60 alcoholic.

*Med. use.*—The virtues of this plant seem to be little known in the present practice. The nauseous decoction is sometimes used to provoke vomiting, and a strong infusion to promote the operation of other emetics. But this elegant bitter, when freed from the offensive parts of the herb, may be advantageously applied to other purposes. Excellent effects have been frequently experienced from a slight infusion of carduus, in loss of appetite, where the stomach was injured by irregularities. A stronger infusion, made in cold or warm water, if drunk freely, and the patient kept warm, occasions a plentiful sweat, and promotes the secretions in general.

The extract prepared by evaporating the expressed juice, with the addition of a little alcohol, to prevent it from becoming mouldy, has been strongly recommended in the catarrh of children.

The seeds of this plant are also considerably bitter, and have been sometimes used with the same intention as the leaves.

CEPHAELIS IPECACUANHA.

*Willd. g. 356, species nova. Pentandria Monogynia.*—Nat. ord. *Aggregatæ.*

CALLICOCCA IPECACUANHA. *Lond. Ed. Dub. Brotero, Linnæan Transactions, vol. vi. Ipecacuan.*

*Off.*—The root.

IPECACUANHÆ RADIX. *Ed. Lond. Dub.*

IPECACUAN, in the language of South America, means vomiting root, and is applied to various vegetables which possess that property in any remarkable degree; hence the confusion and contradictions which have long prevailed concerning the plant which furnishes our officinal Ipecacuan: and this confu-

sion is increased by several varieties of Ipecacuan being found in the shops.

1st, The ash-coloured or Peruvian ipecacuan is a small wrinkled root, bent and contorted into a great variety of figures, brought over in short pieces, full of wrinkles and deep circular fissures, quite down to a small white woody fibre that runs in the middle of each piece: the cortical part is compact, brittle, looks smooth and resinous upon breaking: it has very little smell; the taste is bitterish and subacid, covering the tongue as it were with a kind of mucilage. This, according to Mutis, is obtained from the *Psycotria emetica*, and is that commonly used.

2d, The brown ipecacuan is small, and somewhat more wrinkled than the foregoing; its bark is of a brown or blackish colour without, and white within; this is brought from Brazil, and is the root of a *cephaëlis*, which is perennial, and grows in moist shadowy situations. A complete monography of it, and an excellent plate, were published, in the sixth volume of the Transactions of the Linnæan Society, by Professor Brotero, who calls it the *Callicocca Ipecacuanha*; but the genus *Callicocca* has been united by Willdenow with that of *Cephaëlis*, to which we have therefore referred it. The plate of Brotero corresponds with that published in Woodville's Medical Botany, vol. iii. from a plant sent in spirits from Brazil by Governor Philips to Sir Joseph Banks, but which unfortunately was not in flower, and also with the rude draught of Piso, who first examined it. It has been sometimes observed, even in a small dose, to produce violent effects.

3d, The white sort is woody, has no wrinkles, and no perceptible bitterness in taste. It is probably the root of a *viola*. Though taken in a large dose, it has scarcely any effect at all.

Besides these, the name of Ipecacuan is given to various species of *Cynanchum*, *Asclepias*, *Euphorbia*, *Dorstenia*, and *Ruellia*. With regard to their comparative strengths, De-candolle says, that vomiting is produced by 22 grains of the *Cynanchum Ipecacuanha*, 24 of the *Psycotria emetica*, 60 to 72 of the *Viola calceolaria*, and one to three drachms of the *Viola Ipecacuanha*.

Ipecacuan was first brought into Europe about the middle of last century, and an account of it published about the same time by Piso; but it did not come into general use till about the year 1686, when Helvetius, under the patronage of Lewis XIV. introduced it into practice.

Neumann got from 7680 parts, 1440 alcoholic, and afterwards 1880 watery extract; and inversely, 2400 watery, and

600 alcoholic. It has also been analysed by Mr Henry, who supposes it to contain a free acid decomposable by heat, salts of lime, and a matter resembling caoutchouc; and by M. Massonfour, who found in it gallic acid, gum or mucilage, extractive and resin. On the contrary, I find that the tincture of ipecacuan dose not redden infusion of litmus, or precipitate solution of gelatine; that it is precipitated by water, by red sulphate of iron, readily acquiring a green colour from excess of the chalybeate, and by infusion of nut-galls. According to Dr Irving, the watery solution is more emetic than the alcoholic, the decoction than the distilled water, and the cortical, than the ligneous part. Others have found, that the resinous part is more apt to act upon the intestinal canal, and to operate by stool. By long-continued-boiling, it becomes almost inert; and the emetic property of ipecacuan is most effectually counteracted by means of the acetic acid, insomuch that thirty grains of the powder, taken in two ounces of vinegar, produced only some loose stools.

From these experiments it evidently appears, that ipecacuan contains cinchonin and a resin, and that its emetic property does not depend upon the latter, although we can scarcely attribute it to the former, as in other substances it does not manifest any emetic property. It is, therefore, probably owing to some other principle, soluble in water and alcohol.

*Med. usc.*—The primary effect of ipecacuan is that of stimulating the stomach. If the dose be sufficiently large, it excites vomiting, by inverting the peristaltic motion of the stomach and duodenum; in a smaller dose it only produces nausea, and operates by stool; and in a still smaller dose it gently stimulates the stomach, increases the appetite, and facilitates digestion. Its secondary effects depend on the sympathy of other parts with the stomach; and in this way only can we explain its action as an antispasmodic, diaphoretic, expectorant, and in checking hæmorrhagies. Its beneficial effects, in some cases, also seem to be owing to the general concussion given to the whole system during the action of vomiting.

Ipecacuan, properly administered, often proves serviceable,

1. In intermittent fevers. It has frequently succeeded in stopping these, when given about an hour before an accession was expected, and also when given so as to produce vomiting at the time of an accession, or at the end of the cold stage.

2. In continued fevers. We have never seen more decidedly beneficial effects from the use of any medicine whatever, than from the exhibition of ipecacuan in the commencement

of typhus fever. An emetic, succeeded by a diaphoretic regimen, when administered sufficiently early in the disease, very frequently cuts it short at once; and when it fails in this desirable object, it always has a beneficial influence on the progress of the fever.

3. In inflammatory diseases, rheumatism, bubo, swelled testicle.

4. In exanthematous diseases, when the eruption is disposed to recede.

5. In hæmorrhagies, when given in nauseating doses.

6. In profluvia, especially in dysentery, so much so, that it was formerly esteemed a specific against that disease. But Cullen attributes its good effects, in this instance, to its producing a steady determination of the peristaltic motion of the intestine downwards, when given in repeated small doses.

7. In many spasmodic diseases; in epilepsy, asthma, dyspnoea, pertussis, chronic diarrhoea, hysteria, melancholy, mania.

8. In cachectic diseases, as in some kinds of dropsy.

9. In impetiginous diseases; in jaundice.

10. In local diseases; in amaurosis, and several of the dysorexiæ.

11. Lastly, In every instance when we wish to evacuate the stomach, as when it is overloaded with food, or when poison, especially opium, has been swallowed.

The use of ipecacuan, as an emetic, is contra-indicated,

1. Where there is a disposition to hæmorrhagy.

2. Where there is an increased flow of blood towards the head.

3. In very irritable subjects.

4. In pregnant women, and persons afflicted with hernia.

Ipecacuan is exhibited,

1. In substance, in powder. Full vomiting will generally be produced in an adult by a scruple or half a drachm; and though less might answer the purpose, fortunately an overdose is scarcely attended with any inconvenience, as the whole of it is vomited with the contents of the stomach as soon as it operates. The vomiting is promoted and facilitated by drinking copiously of warm watery fluids. On the contrary, when vomiting is not intended, liquids must be rather drunk sparingly, and the dose must be diminished to a grain or less. In such small doses it is conveniently combined with any proper adjunct, in the form of powder, pill, or bolus.

2. In infusion. One drachm may be infused in four ounces of water, and taken in repeated doses till it operate.

3. Infused in wine.

Ipecacuan not only checks the narcotic effects of opium, and is therefore one of the best antidotes for its poison, but reciprocally the emetic powers of ipecacuan are checked by the addition of opium, and the combination operates by increasing the cuticular discharge.

*CEREVISIÆ FERMENTUM. Lond.*

Barm or yeast.

BARM or yeast has lately been much extolled as an antiseptic remedy in putrid fevers. A table spoonful is recommended to be given as a dose, in porter, or wine and water. It is also applied externally, in the form of a poultice, to foul and putrid sores.

*CERA FLAVA. Ed. Lond. Dub.*

Yellow wax.

For this useful substance we are indebted to the common honey bee (*apis mellifica*), an insect belonging to the class of *Hymenoptera mellita* of Cuvier. It is, however, a vegetable production, and is collected by the bees from the surface of leaves, and the antheræ of flowers. They employ it to form the combs in which the honey and larvæ are deposited.

It is found in the shops in round cakes, which are formed by melting the combs in hot water, after all the honey has been expressed from them. The wax swims above, and the impurities either sink to the bottom, or are dissolved in the water. When recent, it is tenacious, but brittle, of a yellow colour, and sweet honey-like smell; dry, not greasy, to the feel; insoluble in water, and in cold alcohol, or ether; soluble in boiling alcohol and ether, in the fat oils and alkalies; fusible and inflammable. In selecting it, we should observe that the cakes be brittle, have a pleasant yellow colour, and agreeable smell, no taste, do not adhere to the teeth when chewed, and burn entirely away. When adulterated with resin, the fraud is detected by its taste, and the action of alcohol, which dissolves the resin. When mixed with pease-meal or earthy substances, it is more brittle, of a paler colour, and may be separated from them by liquefaction and straining. When combined with tallow, it becomes less brittle, and softer, and has an unpleasant smell.

*CERA ALBA. Lond. Ed. Dub.*

White wax,

THE yellow colour of bees wax, and its peculiar smell, may be destroyed by the combined action of water, air, and the sun's rays. In the process of bleaching wax, we therefore extend its surface as much as possible, by melting it, and forming it into thin plates, which are fully exposed to the sun's rays, upon linen stretched in frames, and repeatedly moistened, until they acquire the whiteness desired. It is then usually melted into thin discs. White wax is more brittle, less fusible, and heavier than yellow wax. It is sometimes mixed with white oxide of lead, or with tallow. For medical use, it has no advantage over yellow wax.

*Medical use.*—When taken internally, wax agrees in its effects with the fat oils, and though less frequently prescribed in this way, it is preferable, being less apt to become rancid. Poerner recommends it as an excellent remedy in diseases of the intestines, attended with pain, excoriation, and obstinate diarrhoea. He gave a scruple, or half a drachm of wax, three or four times a-day, in the form of an emulsion, by melting it first with some fixed oil, and then mixing it with a decoction of groats, by trituration with the yolk of an egg. But its principal use is in the formation of cerates, ointments, plasters, &c.

CERVUS ELAPHUS. *Ed. Dub. Lond.*

*Mammalia ruminantia.*

The stag, or hart. ♀

*Off.*—The horns.

CORNU CERVI ELAPHI. *Ed.*

CORNU CERVINUM. *Dub.*

CORNUA. *Lond.*

THE male has two round solid horns on his forehead, with several conical branches, the number of which ascertains the age of the animal to which they belong. These horns fall off, and are renewed every year. When first produced, they are soft, full of blood-vessels, and covered with velvety skin; but they soon lose their covering, and become hard, compact, and bony.

In their nature, they do not seem to differ from bone, except in containing a larger proportion of cartilage. They afford a very considerable quantity of gelatine, by decoction with water, and hartshorn shavings are still employed in domestic economy, for furnishing a nutritious and demulcent jelly. By the action of fire, their products are the same with those of animal substances in general; and they were formerly so much used for the preparation of ammonia, that it was

commonly called Salt or Spirit of Hartshorn. By burning, they are totally converted into phosphate of lime.

CHIRONIA CENTAURIUM. *Ed. Dub. Lond.*  
*Willd. g. 394, sp. 9. Smith Flor. Brit. g. 102, sp. 1. Pentandria Monogynia.*—Nat. ord. *Rotaceæ*.  
 Smaller centaury.

*Off.*—The flowering heads.

CHIRONIÆ CENTAURII SUMMITAS FLORENS. *Ed.*

CENTAURII CACUMINA. *Lond.*

CENTAURII MINORIS CACUMINA FLORENTIA. *Dub.*

THIS plant is annual, and grows wild in many parts of England on barren pastures. It flowers between June and August. The corolla is said to have no taste; and therefore the herb, which is intensely bitter, should be preferred to the flowering tops, which derive their virtues only from the stalks connected with them. It agrees in every respect with other pure bitters.

Neumann got from 480 parts 210 alcoholic, and 140 watery extract, and inversely 320 watery, and 40 alcoholic.

CINCHONA.

*Willd. g. 346. Pentandria Monogynia.*—Nat. ord. *Corticæ*.

*Sp. 1. CINCHONA OFFICINALIS. Ed. Dub.*

*Sp. CINCHONA CORDIFOLIA. Lond.*

*Sp. CINCHONA LANCIFOLIA. Lond.*

*Sp. CINCHONA OBLONGIFOLIA. Lond.*

*Off.*—The bark, commonly called *Peruvian bark*, of which there are three varieties, the *pale*, the *yellow* and the *red*.

CORTEX PERUVIANUS. *Dub.*

a) CINCHONÆ OFFICINALIS CORTEX COMMUNIS. *Ed.*

CINCHONÆ LANCIFOLIÆ CORTEX. *Lond.*

b) CINCHONÆ OFFICINALIS CORTEX FLAVUS. *Ed.*

CINCHONÆ CORDIFOLIÆ CORTEX. *Lond.*

c) CINCHONÆ OFFICINALIS CORTEX RUBER. *Ed.*

CINCHONÆ OBLONGIFOLIÆ CORTEX. *Lond.*

By the recent observations of the Spanish botanists, it is now ascertained, that the different varieties of Peruvian bark are not only the barks of distinct species of cinchona, but that probably each of them is indiscriminately taken from several different species. The first and most esteemed species was described in 1738 by Condamine. Ruiz and Pavon have described fifteen species, natives of Peru and Chili;

and if to them we add those of Tafalla and Vahl, twenty-five distinct species have been described, independently of any additions which we may owe to the zeal of Humboldt and Bonpland, of which seven have been found in the neighbourhood of Santa Fé de Bagota, by Mutis. *Cinchona*, considered as a genus, is a mountainous tree, never found in the plains, and growing between the height of 1282 and 975 toises above the level of the sea. It grows to a great height, and formerly its trunk was often thicker than a man's body. But since its bark has come into such general use, few trees are to be seen thicker than the arm. Indeed, there is reason to fear that it will become still more scarce, as no attention is paid to its cultivation, and the trees always die after being stripped of their bark. This operation is performed in the dry season from September to November. The bark is then carefully dried in the sun, and packed in skins, which contain from 100 to 150 pounds, and are called by the Spaniards *zeronne*. In these, coarse and fine pieces of the same kind of bark are promiscuously mixed, but they are afterwards sorted. Humboldt says, that from 12 to 14,000 quintals are annually exported. 2000 are exported from Carthagena, and come from the kingdom of Santa Fé. Loxa furnished, previous to 1779, 4000 quintals, but now only 110, which are sent to Spain on account of the king. The rest is furnished by the provinces of Huamanga, Cuença, Braccamoros, &c. and are exported from Lima and the other parts of the Pacific Ocean.

1. Pale Bark. *Cascarilla fina*. *Quina amarilla*. This is the bark of the *Cinchona lancifolia* of Mutis, which is the *C. officinalis* of Condamine, Act. Paris 1738; of Linnaeus, Spec. Plant. edit. 2. p. 244; Syst. Veget. edit. 10. p. 929; Mat. Med. p. 66; Lamark, Encyclop. p. 164, f. 1; Lambert, A description of the genus *Cinchona*, fig. 1; Willd. Spec. Plant. p. 957; *C. condaminea* of Humboldt and Bonpland; Plant. Aequinoct. p. 33. t. 10. To the same species, Zea, according to Fabbroni, refers the *glabra* or *lanceolata*, *fusca* or *rosea*, *angustifolia* or *tumita*, and the *nitida*; but Ruiz, as well as Humboldt and Bonpland, consider the *nitida* to be a distinct species; and these last botanists refer to the same species the *C. officinalis* of Ruiz. Quinologia, Art. 2. p. 56. They also inform us, that the greatest part of the bark of commerce is produced in the province of Jean de Braccamoros, and that the most esteemed is obtained from a species to which they have given the name of *Cinchona scrobiculata*, the young bark of which can scarcely be distinguished from that of their *C. condaminea*. The *Cinchona lancifolia* grows near Loxa, and also near Guancabamba and Ayavaca in Peru, at a height be-



tween 75 and 82 toises above the level of the sea, and always upon micaceous schistus.

In commerce, we have several varieties of the common pale bark, the most remarkable of which are, the quilled bark, which comes from Loxa, and the flat bark, from Guanaco.

The bark which comes from Loxa consists of thin, singly or doubly rolled pieces, four or five inches long, and scarcely a line in thickness; externally rough, of a greyish brown colour, and generally covered with a kind of lichen; internally of a cinnamon colour. Its fracture should not be fibrous or powdery, but even and shining. It has a peculiar aromatic smell, and a pleasant bitter, astringent taste.

The bark which comes from Guanaco consists of much thicker, coarser, and flatter pieces; externally of a dark brown, or almost black colour, but internally it has the same cinnamon colour; and in its resinous fracture, smell, and taste, it exactly resembles the former. When genuine, both varieties are excellent remedies, although the former be generally preferred on the continent, and the latter in Britain.

2. Yellow Bark. *Quina naranjada*. *Callisaya*. This is the bark of the *Cinchona cordifolia* of Mutis, under which Zea, according to Fabbroni, includes the *hirsuta*, *ovata*, *purpurea* and *micrantha* of the Flora Peruviana, the *pubescens* of Vahl. Humboldt and Bonpland give as synonymes of the *C. pubescens* of Vahl, Act. Soc. Hist. Nat. Half. 1. p. 19. t. 2. and Symb. Bot. p. 2. p. 37; Lambert, p. 21. t. 2. Willd. Sp. Pl. p. 958; the *C. officinalis* Linn. Syst. Nat. edit. 12. p. 164; Syst. Veget. edit. 13. p. 178; Suppl. p. 144; Gaertner de fruct. et sem. t. 1. p. 169. t. 33. f. 4. But Drs Powell and A. T. Thomson also include under the *C. cordifolia* of Mutis, the *C. macrocarpa* of Willdenow, misled probably by the confusion among the synonymes cited; for Ruiz, Flor. Peruv. vol. 3. p. 3. t. 198. has referred it to a new genus under the title of *Cosmibuena obtusifolia*, of which Humboldt and Bonpland have given the following synonymes: *Cinchona macrocarpa*, Vahl, Act. Soc. Hist. Nat. Half. 1. p. 20. t. 3. without the synonymes; Lambert, p. 22. t. 3. Willd. Sp. Pl. p. 598. without the synonymes: *Cinch. ovalifolia* of Mutis, and *grandiflora* of Ruiz and Pavon. Flor. Peruv. p. 54. f. 198; and Fabbroni says it is the *White* bark of the English.

The *Cinchona cordifolia* grows in the province of Cuença, where there is also immense quantities of another species, called *Cascarilla peluda*, which Humboldt has described under the name of *Cinchona ovalifolia*, and of which the bark is not much esteemed, although a great quantity of it was cut about twenty years ago.

Yellow bark consists of pieces about six inches in length, thicker, and less rolled up than the common bark. Its internal surface is of a deeper red. It sometimes wants the epidermis, which is often as thick as the bark itself. It is lighter and more friable than the former variety; its fracture is fibrous; and when reduced to powder, its colour is paler. Its taste is much more bitter, astringent, and stronger; but its smell is weaker. Its decoction, when hot, is redder; but when cold, paler. Its solution strikes a deeper colour with sulphate of iron. It contains more of the active constituents than either of the others, but less gum than the common, and less resin than the red. It is much more powerful than the preceding species; according to Mutis, it is the only one which is directly febrifuge; and we are informed by Humboldt, it is that which is most esteemed at Loxa, and known by the name of *Casquilla fina*.

3. Red Peruvian bark is obtained from the *Cinchona magnifolia* of Ruiz and Pavon, the *oblongifolia* of Mutis. It occurs generally in much larger, thicker, flatter pieces, but sometimes also in the form of quills. It is heavy, firm, sound, and dry; friable between the teeth; does not separate into fibres; and breaks, not shivery but short, close, and smooth. It has three layers: the outer is thin, rugged, of a reddish brown colour, but frequently covered with mossy matter; the middle is thicker, more compact, darker coloured, very resinous, brittle, and yields first to the pestle: the inmost is more woody, fibrous, and of a brighter red. Its powder is reddish, like that of Armenian bole.

Its astringency and bitterness are more intense, and it contains more resin than the pale bark. It is not, however, allowed by Mutis to be, like the yellow bark, directly febrifuge. It is said to be more frequently adulterated.

The great price of cinchona bark has sometimes tempted dishonest men to adulterate it with other similar and less powerful barks, and, what is still more blameable, with genuine bark, from which the active constituents have been entirely extracted, by decoction with water.

In selecting Cinchona bark, we must therefore take care, that besides the characteristics already noticed, it be dense, heavy, and dry, not musty, or spoiled by moisture, and that a decoction made of it have a reddish colour when warm, but when cold become paler, and deposite a brownish red sediment. Those pieces whose taste is simply intensely bitter or very astringent, or nauseous, or merely mucilaginous, whose surface is smooth, or polished, of a dark colour, or pale yellow, or red, which are tough or spongy, whose fracture is fi-

brous, woody, or powdery, and their internal colour white or grey, are to be rejected.

There are few vegetable substances which have been subjected to analysis more frequently, and by abler chemists, than the Cinchona bark. But from the difficulty of the subject, and from essential differences in the chemical properties of several varieties confounded under one denomination, contradictory results have arisen, and our knowledge of the subject is still imperfect.

I shall begin by recapitulating the earlier experiments. Neumann got from 7680 parts of common cinchona 640 alcoholic, and afterwards 300 watery extract; and inversely 350 watery and 600 alcoholic; from which it might be inferred, that there were about 600 parts soluble in alcohol only, 300 in water only, and 30 or 40 in both; but the proportion of the last is certainly too small. Fourcroy extracted from 576 parts of red bark, 38 by water, and afterwards 24 by alcohol. Marabelli got from a pound of yellow bark 464 grains of gum, 470 of extractive mucous matter, 292 of extractive resinous matter, and 125 of resin, besides saline matters, &c. Lewis observed, that the decoction became turbid on cooling, and that the precipitate was soluble in alcohol. He also pointed out the deep green colour which decoctions of cinchona acquire from the addition of chalybeates. Dr Irvine afterwards found, that recent decoctions gave a black colour, while those which had been kept some time gave a green. I may add, that the tincture gives a black, while the cold infusion gives a green; and that, in all cases where an excess of the chalybeate is used, a green colour is produced. These effects have been ascribed to the presence of tannin; but they have little resemblance to the intensity and durability of the blue colour produced in infusions of gall-nuts, and other powerful astringents. They, however, shew, that the principle on which the colour depends is more soluble in alcohol and in boiling water, than in cold water, and that it is very destructible. It was long believed that cinchona was a powerful astringent; but after Seguin's discovery of gelatine as a test of the principle of astringency, Dr Maton found that cinchona contained very little tannin. In my experiments, solution of gelatine did not affect the cold infusion, but precipitated the tincture, diluted with water and filtered, slightly, and the filtered decoction copiously. The precipitate in the last case was filamentous, and exactly resembled that produced by gelatine in infusion of galls. Hence it appears that the tannin in cinchona is much less soluble in alcohol and in cold water, than in hot. Dr Maton discovered, that infusion of cinchona was precipi-

tated by infusion of nut-galls. Seguin, who afterwards made the same observation, concluded from it that cinchona contained gelatine, but erroneously, as I soon after proved. Infusion of galls is precipitated copiously, not only by the filtered decoction of cinchona, but also by the infusion and tincture diluted and filtered; and as these phenomena are inconsistent with the properties of gelatine or starch, (the only other principles which, so far as I know, precipitate infusion of galls), I conceived myself authorised to ascribe them to a vegetable principle, not hitherto examined, soluble in alcohol and in water, and called it Cinchonin. Seguin supposed that it was the tannin of the infusion of galls which formed the precipitate in infusion of cinchona; but this is extremely doubtful; for, as I have stated in Nicolson's Journal, vol. vii, a decoction of cinchona is precipitated both by gelatine and galls, and when saturated by either of these re-agents, is still acted upon by the other; but an infusion of galls, after being saturated with gelatine, does not act on a decoction of cinchona. "Now, if gelatine deprived the infusion of galls of no other principle but tannin, it would follow, that a decoction of cinchona contains both tannin and a principle precipitable by tannin, which can scarcely be the case; and indeed we do not at present see any way of accounting for the facts, but by supposing that the galls and cinchona contain each of them tannin, and another principle, of a different nature in each, not precipitable by tannin, but by each other." It is satisfactory to find that great master of analysis, Vauquelin, drawing nearly the same conclusion from his observations. "It would seem that it is to the tannin of the oak bark and galls that this principle (cinchonin) unites to form the precipitates observed in the infusions of these substances; but as this principle exists in some species which at the same time precipitate glue, it is doubtful that it really unites to the tannin of the oak bark, or that the principle in the other species of cinchona which precipitate glue, is actually tannin. But the one or the other of these suppositions must be correct, as the infusions of the two species precipitate each other."

Following up my experiments, Dr Gomes, in the Transactions of the Royal Academy of Lisbon, has published an Essay on Cinchonin, and has described its properties when obtained in a state of purity. Dr Irving obtained from cinchona, a small portion of volatile oil, on which its aroma depends; and Fourcroy and other chemists have observed, that during the evaporation of an infusion or decoction of cinchona, exposed to the air, an insoluble pellicle is formed on the surface. Fabbroni observed, that cinchona loses its solubility

by long exposure to the air, and even by being reduced to very fine powder; 100 parts of cinchona, when bruised, yielding from 12 to 16 of extract, and when finely powdered only 6 or 7; and that cinchona destroys the emetic property of tartrate of antimony, without losing its febrifuge virtues.

Vauquelin has lately done much to lessen this confusion, by showing that there are three, if not four classes of Cinchona bark, differing essentially in chemical constitution; but unfortunately he has not been able to designate, with botanical accuracy, the individuals he found to belong to each.

The first class precipitate astringents, but not gelatine.

The second precipitate gelatine, but not astringents.

The third precipitate both astringents and gelatine. And,

Lastly, some barks confounded with these precipitate neither astringents nor gelatine; but these Vauquelin, viewing the genus chemically, does not consider as Cinchonas.

Individuals in each of the three first classes are capable of curing intermittents, which shows how insufficient our analysis, in its present state, is for explaining the connection between the medical virtues and chemical properties of this remarkable genus. Besides these principal differences, on which Vauquelin founds his classification, Cinchona barks vary in the effects of many chemical agents. The infusions of some kinds reddens turnsole, others do not affect it; some impart a deep colour to water, others very little; some affect certain metallic solutions, which others do not; and the decoctions of some kinds remain transparent after becoming cold, others grow turbid as they cool, and deposit a copious precipitate. The following mode of analysis, however, will give an idea of the composition of the second class:—The cold infusion has a red colour, more or less brown or yellow; bitter taste, with more or less astringency; becoming, in a few days, covered with a green mould. On evaporating the infusion, if it be permitted to cool repeatedly during the process, it becomes turbid, and deposits a precipitate for several times. If these precipitates be separated, and the supernatant fluid, after it ceases to become turbid on cooling, be evaporated to the consistence of a soft extract, and treated with alcohol, there remains only a viscid substance, of a brown colour, almost without bitter taste, insoluble in alcohol, perfectly soluble in water, not rendering it turbid on cooling, and which, by spontaneous evaporation, is analysed into a saline mass, consisting of reddish brown crystals, hexahedral, rhomboidal, or square, and a mucilaginous matter, which remains dissolved in the mother-water.

The precipitate which is deposited on the cooling of the concentrated infusion, when dried, has a red brown colour

and an intensely bitter taste. It is readily soluble in alcohol, especially when heated. The tincture is decomposed by water, and yields crystals on spontaneous evaporation. It is sparingly and only partially soluble in cold water, more copiously and completely in boiling water, which, however, again becomes turbid on cooling. Its solution reddens tincture of turnsole, grows mouldy in a few days, does not precipitate tartar emetic, or solution of gelatine; is not visibly acted upon by acids, but with alkalis is coagulated into a thick whitish matter, becoming brown and somewhat hard by exposure to the air, softening with heat, and acquiring the ductility and silky gloss of turpentine.

The saline mass which crystallizes from the mother-water, on being purified by repeated solutions and crystallizations, is obtained in the form of white square or rhomboidal plates, often grouped, with almost no taste, soluble in about five waters at 50°, insoluble in alcohol, destructible by fire, not decomposed by ammonia, acetate of lead, or nitrate of silver, but by the fixed alkalis, and the oxalic and sulphuric acids, and by infusion of tan, and of some varieties of cinchona. This salt M. Vauquelin discovered to consist of lime, and a new acid, which crystallizes in plates, has a very acid taste, forms soluble and crystallizable combinations with the alkalis and earths, and does not precipitate the nitrates of silver, mercury, or lead. M. Vauquelin has given it the name of Kinic acid; but as this would lead us to suppose that it was obtained from Kino, it appears to me that it ought to be named the Cinchonic acid, from the systematic name of the tree from whose bark it has been first obtained.

M. Vauquelin has also analysed the barks of the cinchona pubescens and officinalis, which he refers to the first class. In almost every respect the analysis agrees with that now detailed, except in the chemical properties of the deposit from the concentrated infusion, which in the present instance produces a copious precipitate in the infusion of nut-galls, as well as in tartar emetic and nitrate of mercury. These deposits, he observes, differ from resins in being soluble in water, in acids and in alkalis, in acting as a dye, in decomposing metallic solutions, and in their watery solution becoming mouldy. He is inclined to consider them as a peculiar vegetable principle, not yet sufficiently examined.

How little the analysis has hitherto accounted for the virtues of cinchona, is evident from three of the latest writers referring its virtues to totally different principles: Deschamps to the cinchonate of lime, two doses of which, of 36 grains each, according to him, cure every intermittent; Westring to

the tanning principle; and Seguin, on the contrary, to the principle which precipitates tannin, and which he at first mistook for gelatine; and upon the faith of this mistake, he and other French and Italian physicians gave clarified glue in intermittents, and it is said with success. M. Seguin, it appears, however, has now seen his error, though without retracting it, and has lately published two memoirs upon cinchona, which we proceed to abridge. He says, that hitherto apothecaries had only the external appearance, fracture, taste, and smell, to enable them to judge of the quality of cinchona; but that these characters are insufficient, and that it is only by means of chemical tests that we can ascertain the presence or proportion of the febrifuge principle. He gives with confidence the following criterions:

1. Cinchona, if good, precipitates the solution of tannin, but not those of gelatine or of sulphate of iron.

2. The precipitate which the febrifuge principle forms with the solution of tan, is reddish, slightly flocculent, and heavy. If the precipitate be considerable and sink quickly, it is a proof that the febrifuge principle is abundant and of good quality. If it be not very decided, and remain suspended in the liquor, only disturbing its transparency, it is a proof that it is scanty and of bad quality.

3. If it does not precipitate the solution of tannin, it is a proof that it does not contain any febrifuge principle.

4. If it only precipitate the solutions of tannin and of sulphate of iron, it is a proof that it contains an astringent substance not capable of tanning, which is foreign to it.

5. If it precipitate solutions of tannin, sulphate of iron and gelatine, it is a proof that it contains an astringent substance analogous to that of the oak.

The application of these tests he describes as easy. He powders a drachm of cinchona, infuses it for half an hour in two ounces of boiling water, decants and filters the infusion. The solution of tannin is prepared by mixing two ounces with three ounces of cold water, and filtering it. A solution of nut-galls may be substituted, but it is rather too delicate. The solution of gelatine is made by dissolving an ounce of fine glue in three ounces of water in a sand bath, and filtering it through fine linen; the solution of sulphate of iron, by dissolving an ounce in two ounces of water. A little of the infusion of cinchona is put into a glass, and the re-agents added drop by drop.

He tried by these tests, &c. 600 different specimens of cinchona in Paris and Versailles, and he found very few genuine

or good, but there was very little difference between the good, whether red, yellow, or pale.

Following these principles, Seguin makes six classes of cinchona.

Class 1. precipitate neither tannin nor gelatine, but form with sulphate of iron a precipitate soluble in acids and insoluble in alkalies; properties common to astringents. False cinchona, having no febrifuge property.

Class 2. precipitate neither tan, gelatine, nor sulphate of iron.

Class 3. precipitate neither gelatine nor sulphate of iron, but act slightly on solution of tan. These act only in large and inconvenient doses.

Class 4. precipitate neither gelatine nor sulphate of iron, but solution of tan abundantly. The best cinchona of commerce, as well as the genuine specimens sent by Mutis, are of this class.

Class 5. precipitate solutions of tan and sulphate of iron, but not gelatine. The chalybeate precipitate was ferruginous, yellow and abundant, and soluble in alkalies. He found these properties to belong to a specimen of a bark sold as angustura.

Class 6. precipitate tannin and gelatine, but not sulphate of iron. M. Seguin rarely met with this kind, but he thinks favourably of it. He also notices, as I had previously done, the co-existence of the febrifuge principle and tannin in the same solution.

*Medical use.*—On dead animal matter cinchona acts as an antiseptic, and on the living body it acts moreover as a stimulant, tonic, and antispasmodic. The discovery of its medical virtues was, in all probability, the result of accident. In fact, according to some, the Peruvians learned its use by observing certain animals affected with intermittents instinctively led to it; or, according to others, a Peruvian having an ague was cured by accidentally drinking of a pool which, from some trees having fallen into it, tasted of cinchona: and its use in gangrene is said to have originated from its curing one in an aguish patient. It has had various appellations. About the year 1640, from curing the lady of the Spanish viceroy, the Comitissa del Cinchon, it was called Cortex or Pulvis Comitissæ, Cinchona, &c.; from the interest which Cardinal de Lugo, and the Jesuit fathers took in its distribution, Cortex or Pulvis Cardinalis de Lugo, Jesuiticus, Patrum, &c.; from the place where it was originally found, Peruvian bark, or simply, from its pre-eminence, Bark.



On its first introduction into Europe, it was reprobated by many eminent physicians; and at different periods long after, it was considered as a dangerous remedy; but its character, in process of time, became universally established.

It was first introduced for the cure of intermittent fevers; and these, when it is properly exhibited, it rarely fails to cure. But there have been considerable differences of opinion with regard to the best mode of exhibition; some prefer giving it just before the fit, some during the fit, others immediately after it. Some, again, order repeated doses between the fits, and this mode of exhibition, although it may perhaps sometimes lead to the employment of more bark than is necessary, upon the whole appears preferable, from being best suited to most stomachs. The requisite quantity is very different in different cases; and in many vernal intermittents, cinchona seems even hardly necessary.

It is now given from the very commencement of the disease, without previous evacuations, which, by retarding the cure, often seem to induce abdominal inflammations, scirrhus, jaundice, hectic, dropsy, &c.; symptoms formerly imputed to the premature or immoderate use of the bark, but which are best obviated by its early and liberal use. It is to be continued not only till the paroxysms cease, but till the natural appetite, strength, and complexion return. It is then to be gradually left off, and repeated at proper intervals to secure against a relapse; to which there often seems to be a peculiar disposition, especially when the wind blows from the east. Although, however, evacuations rather counteract the effects of cinchona in the cure of intermittents, yet, previous to its use, it is advisable to empty the alimentary canal, particularly the stomach; and on this account good effects are often obtained from premising an emetic.

It is a medicine which seems not only suited to both formed and latent intermittents, but to that state of fibre on which all periodical diseases seem to depend; as periodical pain, inflammation, hæmorrhagy, spasm, cough, loss of external sense, &c.

Cinchona is now used by some in all continued fevers; at the same time attention is paid to keep the bowels clean, and to promote when necessary the evacuation of redundant bile, always, however, so as to weaken the patient as little as possible.

In confluent small-pox, it promotes languid eruption and suppuration, diminishes the fever, and prevents or corrects putrescence and gangrene.

Dr Haygarth has lately extolled its use in acute rheuma-

tism, from the very commencement, even without premising venesection.

In gangrenous sore throats, and indeed in every species of gangrene, it is much used, both externally and internally.

In contagious dysentery, after due evacuation, it has been used, taken internally and by injection, with and without opium.

In all those hæmorrhagies called passive, and likewise in other increased discharges, it is much used; and in certain undefined cases of hæmoptysis, some allege that it is remarkably effectual when joined with an absorbent.

It is used for obviating the disposition to nervous and convulsive diseases; and some have great confidence in it, joined with sulphuric acid, in cases of phthisis, scrofula, ill-conditioned ulcers, rickets, scurvy, and in states of convalescence.

In these cases, it is proper to conjoin it with a milk diet.

In dropsy, not depending on any particular local affection, it is often alternated or conjoined with diuretics or other evacnants; and by its early exhibition after the water is once drawn off, or even begins to be freely discharged, a fresh accumulation is prevented, and a radical cure obtained.

Mr Pearson of the Lock Hospital praises very highly the powers of this remedy in different forms of the venereal disease; in reducing incipient bubo, in cleansing and healing ulcers of the tonsils, and in curing gangrenous ulcers from a venereal cause. But in all these cases mercury must also be given to eradicate the venereal virus from the system.

Peruvian bark may be exhibited,

1. In substance.

The best form of exhibiting this valuable remedy is in the state of a very fine powder, in doses of from ten grains to two drachms and upwards. Mutis and Zea say, that two drachms of true yellow bark in powder are sufficient to prevent the access of an intermittent, while, to produce the same effect, it requires the decoction of two ounces. Nay, even the residuum of an infusion is capable of curing agues, provided it be given in a larger dose than the entire powder. As it cannot be swallowed in the form of a dry powder, it must either be diffused in some liquid, as water, wine, or milk, or mixed with some viscid substance, as currant jelly. Its taste, which is disagreeable to many people, is best avoided by taking it immediately after it is mixed with the vehicle. In this respect, therefore, it is better for the patients to mix it up themselves, than to receive it from the apothecary already made up, into a draught with some simple distilled water, or into an electuary with a syrup. A much more important objection to gi-

ving cinchona in substance is, that some stomachs will not bear it, from the oppression, and even vomiting, which in these cases it excites. We must endeavour to obviate this inconvenience by the addition of some aromatic, and by giving it in small doses more frequently repeated. If we are unable to succeed by these means, we must extract the most active constituents of the bark by means of some menstruum. It has therefore long been a pharmaceutical problem to discover which menstruum extracts the virtues of cinchona most completely. But it would be contrary to analogy to suppose, that its constituent principles should subsist so intimately mixed as they must be in an organic product, without exerting upon each other some degree of chemical affinity, and forming combinations possessed of new properties. Accordingly, we find, whether it arise from this cause, or merely from the state of aggregation, that neither water nor alcohol extract these constituents from cinchona bark in the same quantity in which they are able to dissolve them separately, and that we must have recourse to direct experiment to determine the degree of action possessed by each menstruum upon it. With this view, many experiments have been made, and by very able chemists. But most of them were performed when the science of chemistry was but in its infancy; and even at this time that branch of it which relates to these substances is so little understood, that the results of the latest experiments are far from conclusive.

2. In infusion.

To those whose stomachs will not bear the powder, this is the best form of exhibiting cinchona bark. Water, at a given temperature, seems capable of dissolving only a certain quantity of its active constituents, and therefore we are not able to increase the strength of an infusion, either by employing a larger quantity of the bark, or allowing them to remain longer in contact. One part of bark is sufficient to saturate sixteen of water in the course of an hour or two. To accelerate the action of the water, it is usual to pour it boiling hot upon the bark, to cover it up, and allow it to cool slowly. After standing a sufficient length of time, the infusion is decanted off for use. The propriety of this process may, however, be doubted; for if a cold infusion be boiled, or even gently heated, it acquires a deeper colour, and lets fall a deposite, in part insoluble in alcohol and in water. The infusion in water is however liable to one very great objection, that it cannot be kept even a very short time without being decomposed and spoiled. Therefore, in some instances, we prepare the infusion with wine; and it fortunately happens that very often the

use of the menstruum is as much indicated as that of the solvent. Cinchona also prevents wine from becoming acid, but in the course of a few days throws down its colouring matter, as nut-galls and charcoal do.

3. In tincture.

The great activity of the menstruum in this preparation, prevents the bark from being given in sufficiently large doses to exert its peculiar virtues. It is, however, a powerful stimulant.

4. In decoction.

Water of the temperature of  $212^{\circ}$  is capable of dissolving a much larger proportion of the soluble parts of cinchona bark than water at  $60^{\circ}$ . But the solvent powers even of boiling water have their limits, and by protracting the decoction we do not increase its strength, but rather, by diminishing the quantity of the menstruum, we lessen the quantity of matter dissolved. Besides, at a boiling temperature, some of the active constituents are dissipated, while others absorb oxygen rapidly from the atmosphere, and are converted into what seems to be an insoluble and inert resinous substance.

5. In extract.

In this preparation, we might expect to possess the virtues of cinchona bark in a very concentrated state. The principal objections to its use are its great expence, and the decomposition and destruction of the active constituents of the bark during the preparation, even when most carefully conducted. Not above half the weight of the dry extract is again soluble in water. It is convenient for the formation of pills and boluses, but we would always prefer a fresh infusion or decoction to any mixture in which the extract is redissolved.

Externally, cinchona bark is used in substance, as an application to ill-conditioned, carious, or gangrenous ulcers.

In the form of clyster it may be given in substance, decoction, or extract. The powder is used as a tooth-powder for spongy and bleeding gums, and the decoction is an excellent astringent gargle or wash.

To increase the power of cinchona bark, or to direct its efficacy to a particular purpose, or to correct some inconveniences occasionally produced by it, it is frequently combined with other remedies. When it produces vomiting, carbonic acid forms a useful addition; when it purges, opium; when it oppresses the stomach, aromatics; and when it induces costiveness, rhubarb. But we are afraid that many additions are made, chiefly saline substances, of which the effects are not at all understood. Sulphuric acid, super-sulphate of alumina and potass (alum), muriate of ammonia, carbonate of

potass, tartrate of potass, tartrate of antimony and potass (tartar emetic), iron, lime-water, astringents, &c. have been frequently prescribed with it; but we know that in many of these mixtures decomposition occurs, which renders the whole either inactive, or completely deceives us with regard to the expected effects.

*Sp. 4. CINCHONA CARIBÆA. Ed.*

Caribæan Cinchona.

*Off.* - The bark.

*CINCHONÆ CARIBÆÆ CORTEX. Ed.*

THIS tree is found in the Caribæan islands. It grows to a very large size. Dr Wright, to whom we are indebted for all our knowledge of it, found some in the parish of St James's, Jamaica, fifty feet high, and proportionally thick. The wood is hard, clouded, and takes a fine polish. The bark of the large trees is rough, the cuticle thick and inert, and the inner bark thinner than that of the young trees, but more fibrous. The bark is brought to us in pieces about a span in length, rolled together, and a line or half a line in thickness, of a brown colour on the surface, which is most commonly covered with white lichens: internally it is of a dark brown colour, and very fibrous in its fracture. It has at first a sweetish taste, but after being chewed some time, it becomes extremely nauseous and bitter. Dr Wright says he made use of this bark in all cases where Peruvian bark was indicated, and with the greatest success. It has often been confounded with the cinchona floribunda (Willdenow's 7th species,) so excellently analysed by Fourcroy, under the title of the Cinchona of St Domingo, and which, taken internally, is apt to excite vomiting and purging.

*CITRUS.*

*Willd. g. 1391. Polyadelphia Icosandria.*—*Nat. ord. Pomaceæ.*

*Sp. 2. CITRUS AURANTIUM. Var. Hispalense. Lond. Dub. Seville orange.*

*Off.*—The fruit, juice and rind of the fruit, unripe fruit and distilled water of the flowers.

*a) AURANTII BACCÆ. Lond.*

*CITRI AURANTII FRUCTUS SUCCUS. Ed.*

*AURANTII HISPALENSIS FRUCTUS SUCCUS. Dub.*

*b) CITRI AURANTII FRUCTUS CORTEX EXTERIOR. Ed.*

*AURANTII CORTEX; baccarum cortex exterior. Lond.*

*AURANTII HISPALENSIS EPIDERMIS FRUCTUS. Dub.*

c) AURANTH HISPALENSIS FRUCTUS IMMATURUS. *Dub.*

d) AURANTH HISPALENSIS FLORUM AQUA STILLATITIA. *Dub.*

THE orange tree is a beautiful evergreen, a native of Asia, but now abundantly cultivated in the southern parts of Europe, and in the West India islands. There are several varieties of this species, but they may be all referred to the bitter or Seville orange, and the sweet or China orange.

The leaves are neither so aromatic nor so bitter as the rind of the fruit.

The flowers (*flores naphæ*) are highly odoriferous, and have been long in great esteem as a perfume; their taste is somewhat warm, accompanied with a degree of bitterness. They yield their flavour by infusion to rectified spirits, and in distillation both to spirit and water (*aqua florum naphæ*): the bitter matter is dissolved by water, and on evaporating the decoction, remains entire in the extract.

A very fragrant red-coloured oil, distilled from these flowers, is brought from Italy, under the name of *Oleum*, or *Essentia Neroli*; but oil of behen, in which orange flowers have been digested, is frequently substituted for it: the fraud, however, is easily detected, as the real oil is entirely volatile, and the adulterated is not.

The juice of oranges is a grateful acid liquor, consisting principally of citric acid, syrup, extractive, and mucilage.

The outer yellow rind of the fruit is a grateful aromatic bitter.

The unripe fruit dried are called Curaçoa oranges. They vary from the size of a pea to that of a cherry. They are bitterer than the rind of ripe oranges, but not so aromatic, and are used as a stomachic.

*Medical use.*—The leaves have been celebrated by some eminent physicians as a powerful antispasmodic in convulsive disorders, and especially in epilepsy; with others, they have entirely failed. Orange flowers were at one time said to be an useful remedy in convulsive and epileptic cases; but experience has not confirmed the virtues attributed to them. As by drying they lose their virtues, they may be preserved for medical use by packing them closely in earthen vessels, with half their weight of muriate of soda. The juice of the fruit is of considerable use in febrile or inflammatory distempers, for allaying heat, quenching thirst, and promoting the salutary excretions: it is likewise of use in genuine scorbutus, or sea-scurvy. Although the Seville, or *bitter orange*, as it is called, has alone a place in our Pharmacopœias, yet the China, or sweet orange, is much more employed. Its juice is milder,

and less acid; and is very frequently used in its most simple state with great advantage. Dr Wright applied the roasted pulp as a poultice to fetid stores, in the West Indies, with very great success.

The rind proves an excellent stomachic and carminative, promoting appetite, warming the habit, and strengthening the tone of the viscera. Orange-peel appears to be considerably warmer than lemon-peel, and to abound more with essential oil; to this circumstance, therefore, due regard ought to be had in the use of these medicines. The flavour of the former is likewise supposed to be less perishable than that of the latter.

*Sp. 1. CITRUS MEDICA. Ed. Lond. Dub.*

Lemon tree.

*Off.*—The juice and the outer rind of the fruit, and the volatile oil of the outer rind.

a) CITRI MEDICÆ FRUCTUS. *Ed.*

LIMONES. *Lond.*

LIMONIS FRUCTUS SUCCUS. *Dub.*

b) CITRI MEDICÆ CORTEX FRUCTUS. *Ed.*

LIMONUM CORTEX. *Lond.*

LIMONIS FRUCTUS EPIDERMIS. *Dub.*

c) CITRI MEDICÆ CORTICIS FRUCTUS OLEUM VOLATILE. *Ed.*

LIMONIS FRUCTUS EPIDERMIDIS OLEUM ESSENTIALE. *Dub.*

LIMONUM OLEUM. *Lond.*

THE juice of lemons is analogous to that of oranges, from which it only differs in containing more citric acid and less syrup. The quantity of the former is indeed so great, that the acid has been named from the fruit, Acid of Lemons, and is commonly prepared from it. The simple expressed juice will not keep, on account of the syrup, extractive, mucilage, and water, which cause it to ferment.

The yellow peel is an elegant aromatic, and is frequently employed in stomachic tinctures and infusions: it is considerably less hot than orange peel, and yields in distillation with water a small quantity of essential oil: its flavour is nevertheless more perishable, yet does not arise so readily with spirit of wine; for a spiritous extract made from lemon peel possesses its aromatic taste and smell in much greater perfection than an extract prepared in the same manner from the orange peel.

*Med. use.*—Lemon juice is a powerful and agreeable antiseptic. Its powers are much increased, according to Dr Wright, by saturating it with muriate of soda. This mixture

he recommends as possessing very great efficacy in dysentery, remittent fever, the bellyach, putrid sore throat, and as being perfectly specific in diabetes and lienteria. Citric acid is often used with great success for allaying vomiting: with this intention it is mixed with carbonate of potass, from which it expels the carbonic acid with effervescence. This mixture should be drunk as soon as it is made; or the carbonic acid gas, on which the anti-emetic power of this mixture chiefly depends, may be extricated in the stomach itself, by first swallowing the carbonate of potass dissolved in water, and drinking immediately afterwards the citric acid properly sweetened. The doses are about a scruple of the carbonate dissolved in eight or ten drachms of water, and an ounce of lemon juice, or an equivalent quantity of citric acid.

Lemon juice is also an ingredient in many pleasant refrigerant drinks, which are of very great use in allaying febrile heat and thirst. Of these, the most generally useful is lemonade, or diluted lemon juice, sweetened. Lemonade, with the addition of a certain quantity of any good ardent spirit, forms the well-known beverage, Punch, which is sometimes given as a cordial to the sick. The German writers order it to be made with arrack, as rum and brandy, they say, are apt to occasion headach. But the fact is directly the reverse; for of all spirits, arrack is most apt to produce headach. The lightest and safest spirits are those which contain least essential oil, or other foreign matters, and which have been kept the longest time after their distillation.

*COCCUS CACTI*, v. s. *Coccinella*. *Ed.*

*COCCUS*, s. s. *Coccus cacti*. *Lond.*

*COCCINELLA*, s. s. *Coccus cacti*. *Dub.*

*Cochineal*.

*COCHINEAL* is the dried body of the female of a hemipterous insect. It is found only in Mexico, chiefly in the province of Oaxaia, on the leaves of a non-descript cactus, according to Humboldt. There are two kinds of the cochineal insect, which live on different species of cactus. The wild cochineal, *grana sylvester*, which is covered with a silky or cottony envelope, and is found in many places, New Granada, Quito, Peru, Mexico, is less valuable than the cultivated or powdery cochineal, which is without that covering, grows to a larger size, and furnishes a finer and more permanent colour. The Spaniards endeavour to confine both the insect and the plant on which it feeds to Mexico. But this attempt at monopoly will, we hope, be frustrated, by the exertions of some gen-



tlemen in the East Indies, whither the insect was carried from Rio Janeiro in 1795 by Captain Nelson. The male only is furnished with wings; the female has none, and remains constantly attached to the leaf of the cactus. During the rainy season, the Mexicans preserve these insects, with the succulent leaves to which they are attached, in their houses; and after the rainy season is over, they are transferred to the living plants, and in a few days they lay innumerable eggs, and die. Or the pregnant mothers are rapidly conveyed to the neighbouring mountains, where they are kept till October, when the rains cease in the plains and commence in the mountains. They are collected three times in the year; first, the dead mothers are gathered, as soon as they have laid their eggs, *grana de pastel*: in three or four months, the young, which have grown to a sufficient size, are collected; and in three or four months more, all the young are collected, large and small indiscriminately, except those which they preserve for breeding next year. They are killed by throwing them into hot water, or by turning them over in heaps in the sun, or by placing them on mats in their furnaces; which last method though least common, preserves upon the insect that whitish powder, which enhances their price at Vera Cruz and Cadiz. Good cochineal loses but  $\frac{2}{3}$  of its weight by being dried. From a very distant period, laws have existed against the adulteration of cochineal, and it is ordered to be exposed for sale in separate grains, not in agglutinated masses. 800,000 pounds are brought annually to Europe; and each pound contains at least 70,000 insects; Humboldt says, 32,000 arobas of 32 pounds each. From their appearance, when brought to us, they were long supposed to be the seed of some plant. They are small, irregular, roundish bodies, of a blackish red colour on the outside, and a bright purple red within. Their taste is acrid, bitterish, and astringent. They are used chiefly for the sake of the fine colour which they produce, and they are principally consumed by the scarlet dyers. It is worthy of notice, that not only the fruit, but even the green joints of several species of cactus, dye cotton purple or red. In pharmacy, they are employed to give a beautiful red to some tinctures. Their colour is easily extracted, both by alcohol, water, and water of ammonia; and in the dried insect it is not impaired by keeping for any length of time.

Neumann got from 1920 grains, 1440 watery extract; and in another experiment, from the same quantity, 1430 alcoholic. The former was extremely gelatinous.

*Medical use.*—They have been lately recommended as an anodyne, and antispasmodic in whooping cough.

## COCHLEARIA.

*Willd. g.* 1228. *Smith, Flor. Brit. g.* 297. *Tetradynamia Siliculosa.*—Nat. ord. *Siliquosæ.*

*Sp. 1. Willd. et Smith.* COCHLEARIA OFFICINALIS. *Ed. Dub.*

Common scurvy-grass.

*Off.*—The plant.

COCHLEARIE OFFICINALIS HERBA. *Ed.*

COCHLEARIE HERBA. *Dub.*

THIS is an annual plant, which grows on the sea-shore of the northern countries of Europe, and is sometimes cultivated in gardens. When fresh, it has a peculiar smell, especially when bruised, and a kind of bitter acrid taste, which it loses completely by drying, but which it imparts, by distillation, to water or alcohol. It also furnishes an essential oil, the smell of which is extremely pungent.

*Medical use.*—The fresh plant is a gentle stimulant and diuretic, and is chiefly used for the cure of sea-scurvy. It may be eaten in substance, in any quantity, or the juice may be expressed from it, or it may be infused in wine or water, or its virtues may be extracted by distillation. The juice is employed as a gargle in sore throat, and scorbutic affections of the gums and mouth.

*Sp. 8. Willd. p. 4. Smith.* COCHLEARIA ARMORACIA. *Ed. Lond. Dub.*

Horse radish.

*Off.*—The root.

COCHLEARIE ARMORACIÆ RADIX. *Ed.*

ARMORACIÆ RADIX. *Lond.*

RAPHANI RUSTICANI RADIX. *Dub.*

HORSE-RADISH is perennial, and sometimes found about river sides, and other moist places; for medicinal and culinary uses, it is cultivated in gardens. It flowers in June, but rarely perfects its seed in this country. The root has a pungent smell, and a penetrating acrid taste; but it also contains a sweet juice, which sometimes exudes upon the surface. Both water and alcohol extract its virtues by infusion. By drying, it loses all its acrimony, becoming first sweetish, and afterwards almost insipid: if kept in a cool place, covered with sand, it retains its pungency for a considerable time.

3840 parts, according to Neumann, were reduced, by drying, to 1000, and gave of watery extract 480, and 15 of alcoholic; and inversely, 420 alcoholic, and 480 watery; all these extracts were sweetish, without pungency. About 15 of volatile oil, extremely pungent, and heavier than water, arose in distillation with water.

*Medical use.*—This root is an extremely penetrating stimulus. It excites the solids, and promotes the fluid secretions. It has frequently been of service in some kinds of scurvies, and other chronic disorders, supposed to proceed from a viscosity of the juices, or obstructions of the excretory ducts. Sydenham recommends it likewise in dropsies, particularly those which sometimes follow intermittent fevers.

COCOS BUTYRACEA. *Ed.*

*Palmæ*—Nat. ord. *Palmæ*.

The mackaw tree.

*Off.*—The fixed oil of the nut, called Palm oil.

COCI BUTYRACEÆ NUCIS OLEUM FIXUM. *Ed.*

THIS tree is a native of South America. The fruit is triangular, yellow, and as big as a plum. The nut or kernel yields the *oleum palmæ* of the shops. It is first slightly roasted and cleaned, and then ground to a paste, first in a mill, and then on a levigating stone. This paste is gently heated, and mixed with  $\frac{1}{6}$  its weight of boiling water, put into a bag, and the oil expressed between two heated plates of iron. It yields  $\frac{7}{10}$  or  $\frac{8}{10}$  of oil. If coloured, this oil may be purified by filtration, when melted. It then has the consistence of butter, a golden yellow colour, the smell of violets, and a sweetish taste. When well preserved, it keeps several years without becoming rancid. When spoiled, it loses its yellow colour and pleasant smell. It is said to be often imitated with axunge, coloured with turmeric, and scented with Florentine iris root. It is rarely used in medicine, and only externally as an emollient ointment.

COLCHICUM AUTUMNALE. *Ed. Lond. Dub.*

*Willd. g. 707, sp. 1. Smith, Flor. Brit. g. 187, sp. 1. Hexandria Trigynia.*—Nat. ord. *Liliaceæ*.

Meadow saffron.

*Off.*—The root in the spring, when the leaves appear.

COLCHICI AUTUMNALIS RADIX. *Ed.*

COLCHICI RADIX; radix recens. *Lond.*

COLCHICI RADIX, primo vere, foliis jam apparentibus. *Dub.*

MEADOW SAFFRON is a perennial bulbous-rooted plant, which

grows in wet meadows in the temperate countries of Europe. It flowers in the beginning of autumn, at which time the old bulb begins to decay, and a new bulb to be formed. In the following May, the new bulb is perfected, and the old one wasted and corrugated. It is dug up for medical use in the beginning of summer. The sensible qualities of the fresh root are very various, according to the place of growth and season of the year. In autumn it is inert; in the beginning of summer, highly acrid. Some have found it to be a corrosive poison; others have eaten it in considerable quantity, without experiencing any effect. When it is possessed of acrimony, this is of the same nature with that of garlic, and is entirely destroyed by drying.

*Medical use.*—Stork, Collin, and Plenck, have celebrated its virtues as a diuretic in hydrothorax, and other dropsies; but it is, at best, a very uncertain remedy. The expressed juice is used in Alsace to destroy vermin in the hair.

COLOMBA, a non-descript plant.

*Off.*—The root.

COLOMBÆ RADIX. *Ed.*

CALUMBÆ RADIX. *Lond.*

COLOMBO RADIX. *Dub.*

THIS is the root of an unknown plant, which, however, is conjectured by Willdenow to be a species of bryonia. In the garden at Madras a plant of it has at last been raised from the root. As it has not yet produced female flowers, its genus has not been ascertained, but it appears to belong to the natural order of *Monosperma*. It was erroneously supposed to have its name from a city in Ceylon, from which it is sent over all India. But we now know that it is produced in Africa, in the country of the Caffres, and that it forms an important article of commerce with the Portuguese at Mozambique, in the province of Tranquebar. It is generally brought in transverse sections, from half an inch to three inches in diameter, rarely divided horizontally. This is evidently done to facilitate its drying; for the large pieces are all perforated with holes. The bark is wrinkled and thick, of a dark brown colour on the outside, and bright yellow within. The pith in the centre is spongy, yellowish, and slightly striped. Its smell is faintly aromatic, and readily lost when not preserved in close vessels; its taste is unpleasant, bitter, and somewhat acrid; the bark has the strongest taste; the pith is almost mucilaginous. Its essential constituents are cinchonin, and a great deal of mucilage. It is ac-

cordingly more soluble in water than in alcohol. The tincture is not precipitated by water, and does not affect the colour of infusion of turnsole, or solution of red sulphate of iron. Planche says it contains one-fourth of its weight of starch.

*Medical use.*—In India it is much used in diseases attended with bilious symptoms, particularly in cholera; and it is said to be sometimes very effectual in other cases of vomiting. It often produces excellent effects in dyspepsia. Half a drachm of the powder is given repeatedly in the day.

CONIUM MACULATUM. *Ed. Lond. Dub.*  
*Willd. g. 533, sp. 1. Smith, Flor. Brit. g. 130, sp. 1. Pentandria Digynia.*—*Nat. ord. Umbellatae.*  
 Hemlock.

*Off.*—The leaf, flower, and seed.

a) CONII MACULATI FOLIUM. *Ed.*

CONII FOLIA. *Lond.*

CICUTÆ FOLIA. *Dub.*

b) CONII MACULATI SEMEN. *Ed.*

CICUTÆ SEMINA NONDUM MATURA. *Dub.*

THIS is a large biennial umbelliferous plant, which grows very commonly about the sides of fields under hedges, and in moist shady places. As it may be easily confounded with other plants of the same natural order, which are either more virulent, or less active, we shall give a full description of its botanical characters. The root is white, long, of the thickness of a finger, contains, when it is young, a milky juice, and resembles both in size and form the carrot. In spring it is very poisonous, in harvest less so. The stalk is often three, four, and even six feet high, hollow, smooth, not beset with hairs, but marked with red or brown spots. The leaves are large, and have long and thick footstalks; which at the lower end assume the form of a groove, and surround the stem.—From each side of the footstalk, other footstalks arise, and from these a still smaller order, on which there are sessile, dark-green, shining, lancet-shaped, notched leaflets. The umbels are terminal and compound. The flowers consist of five white heart-shaped leaves. The seeds are flat on the one side, and hemispherical on the other, with five serrated ribs. This last circumstance, with the spots on the stalks, and the peculiar very nauseous smell of the plant, somewhat resembling the urine of a cat, serve to distinguish it from all other plants. We must not be misled by its officinal name *Cicuta* to confound it with the *Cicuta virosa* of Linnæus, which is

one of the most virulent plants produced in this country, and readily distinguishable from the conium, by having its hollow roots always immersed in water, which those of the conium never are. The possibility of this mistake shews the propriety of denominating all vegetables by their systematic names, as the Edinburgh college now do. The other plants which have been mistaken for the conium maculatum are, the *æthusa cynapium*, *caucalis anthriscus*, and several species of *chærophyllyum*, especially the *bulbosum*, which, however, is not a native of this country.

Hemlock should not be gathered unless its peculiar smell be strong. Planche has observed, that hemlock in spring contains little vegetable albumen, while it is very abundant in the latter end of July and beginning of August, especially if the season have been warm and dry. The leaves should be collected in the month of June, when the plant is in flower. The leaflets are to be picked off, and the footstalks thrown away. The leaflets are then to be dried quickly in a hot sun, or rather on tin plates before a fire, and preserved in bags of strong brown paper, or powdered and kept in close vessels, excluded from the light; for the light soon dissipates their green colour, and with it the virtues of the medicine.

*Med. use.*—Fresh hemlock contains not only the narcotic, but also the acrid principle; of the latter much, and of the former little is lost by drying. The whole plant is a virulent poison, but varying very much in strength, according to circumstances. When taken in an over-dose, it produces vertigo, dimness of sight, difficulty of speech, nausea, putrid eructations, anxiety, tremors, and paralysis of the limbs. But Dr Stoerk found, that in small doses it may be taken with great safety; and that, without at all disordering the constitution, or even producing any sensible operation, it sometimes proves a powerful remedy in many obstinate disorders. In scirrhus, the internal and external use of hemlock has been found useful, but then mercury has been generally used at the same time. In open cancer it often abates the pain, and is free from the constipating effects of opium. It is likewise used in scrofulous tumours and ulcers, and in other ill-conditioned ulcers. It is also recommended by some in chincough, and various other diseases. Its most common, and best form, is that of the powdered leaves, in the dose at first of two or three grains a-day, which in some cases has been gradually increased to upwards of two ounces a-day. An extract from the seeds is said to produce giddiness sooner, than that from the leaves.

*Remarks.*—The seeds of hemlock are not to be used, as they are not so virulent as the leaves, and are not so easily dissolved in water.

## CONVOLVULUS.

*Willd. g. 323. Pentandria Monogynia.*—Nat. ord. *Campanaceæ.*

*Sp. 4. CONVULVULUS SCAMMONIA. Ed. Lond. Dub.*

Scammony.

*Off.*—The gum-resin.

CONVOIVULI SCAMMONIÆ GUMMI-RESINA. *Ed.*

SCAMMONIÆ GUMMI RESINA. *Lond.*

SCAMMONIUM. *Dub.*

THE scammony convolvulus is a climbing perennial plant, which grows in Syria, Mysia, and Cappadocia. The roots, which are very long and thick, when fresh, contain a milky juice. This is obtained by removing the earth from the upper part of the roots, and cutting off the tops obliquely. The milky juice which flows out, is collected in a small vessel sunk in the earth at the lower end of the cut. Each root furnishes only a few drachms, but the produce of several roots is added together, and dried in the sun. This is the true and unadulterated scammony. It is light, of a dark-grey colour, but becomes of a whitish yellow when touched with the wet finger, is shining in its fracture, has a peculiar nauseous smell, and bitter acrid taste, and forms with water a greenish milky fluid, without any remarkable sediment. In this state of purity it seldom reaches us, but is commonly mixed with the expressed juice of the root, and even of the stalks and leaves, and often with flour, sand, or earth. The best to be met with in the shops comes from Aleppo, in light spongy masses, having a heavy disagreeable smell, friable, and easily powdered, of a shining ash colour verging to black; when powdered, of a light grey or whitish colour. An inferior sort is brought from Smyrna in more compact ponderous pieces, with less smell, not so friable, and less easily powdered, of a darker colour, not so resinous, and full of sand and other impurities.

Resin is the principal constituent of scammony. Sixteen ounces of good Aleppo scammony give eleven ounces of resin, and three and a half of watery extract. Bouillon La Grange and Vogel obtained from 100 parts 60 of resin, 3 of gum, 2 of extract, and 35 of insoluble matter.

*Medical use.*—Scammony is an efficacious and strong purgative. Some have condemned it as unsafe and uncertain, a full dose proving sometimes ineffectual, whilst at others a much smaller dose occasions dangerous hypercatharsis. This difference, however, is owing entirely to the different circumstances of the patient, and not to any hurtful quality, or irregularity of operation, of the medicine; where the intestines are

lined with an excessive load of mucus, the scammony passes through, without acting upon them; but where the natural mucus is deficient, a small dose of this or any other resinous cathartic, irritates and inflames. Many have endeavoured to diminish the activity of this drug, and to correct its imaginary virulence, by exposing it to the fumes of sulphur, dissolving it in acids, and the like; but these only destroy a part of the medicine, without making any alteration in the rest. Scammony in substance, judiciously managed, stands not in need of any corrector: if triturated with sugar, or with almonds, it becomes sufficiently safe and mild in its operation. It may likewise be conveniently dissolved, by trituration, in a strong decoction of liquorice, and the solution then poured off from the feces. The common dose of scammony is from three to twelve grains.

*Sp. 61. CONVULVULUS JALAPA. Ed. Lond. Dub.*  
Jalap.

*Off*—The root.

CONVOLVULI JALAPÆ RADIX. *Ed.*

JALAPÆ RADIX. *Lond. Dub.*

JALAP is another climbing perennial species of convolvulus. It is an inhabitant of Mexico and Vera Cruz, from which it was first imported in 1710. It is now cultivated in the botanical garden of Charlestown, and even grows in the stoves at Paris. When recent, the root is white and lactescent; but it is brought to us in thin transverse slices, which are covered with a blackish wrinkled bark, and are of a dark grey colour internally, marked with darker or blackish stripes. It has a nauseous smell and taste; and when swallowed it affects the throat with a sense of heat, and occasions a plentiful discharge of saliva. When powdered it has a yellowish grey colour.

Such pieces should be chosen as are most compact, hard, weighty, dark-coloured, and abound most with dark circular striæ and shining points; the light, whitish, friable, worm-eaten pieces must be rejected.

Slices of briony root are said to be sometimes mixed with those of jalap; but these may be easily distinguished by their whiter colour, and less compact texture.

Neumann got from 7680 parts, 2480 alcoholic, and then by water, 1200; and inversely, 2160 watery, besides 360 which precipitated during the evaporation, and 1440 alcoholic: the tincture extracted from 7680 parts, gave by precipitation with water, 1910.



M. Henry, who analyzed several of the varieties of jalap found in commerce in France, obtained the following results :

	Extract.	Resin.	Residuum.
Jalap leger,	75	60	270
— sain,	140	48	210
— piqué,	125	72	200

Besides the gummy extract and the resin, jalap contains amylaceous fæculum, which is preyed on by worms according to Henry, so that it is wrong to suppose that it was only the extractive which was destroyed by them. Jalap also contains several alkaline and earthy salts.

*Medical use.*—Jalap in substance, taken in a dose of about half a drachm, proves an effectual, and in general a safe, purgative, performing the office mildly, seldom occasioning nausea or gripes except in hypochondriacal disorders, and hot bilious temperaments, when it gripes violently, if the jalap be good ; but rarely takes due effect as a purge. An extract originally made by water purges almost universally, but weakly ; and at the same time has a considerable effect by urine : what remains after this process gripes severely. The pure resin, prepared by alcohol, occasions most violent gripings, and other distressing symptoms, but scarcely proves at all cathartic ; triturated with sugar, or with almonds, into the form of an emulsion, or dissolved in spirit, and mixed with syrups, it purges plentifully in a small dose, without occasioning much disorder ; the part of the jalap remaining after the separation of the resin yields to water an extract, which has no effect as a cathartic, but operates powerfully by urine.

*COPAIFERA OFFICINALIS.* Ed. Lond. Dub.

*Willd. g. 880, sp. 1. Decandria Monogynia.*— Nat. ord. *Dumosa.*

Copaiva tree.

*Officinal.*—The resin called Balsam of copaiva.

*COPAIFERÆ OFFICINALIS RESINA LIQUIDA.* Ed.

*COPAIBA ; resina liquida.* Lond.

*BALSAMUM COPAIVÆ.* Dub.

THE tree which produces this resin is a native of the Spanish West-India islands, and of some parts of South America. It grows to a large size, and the resinous juice flows in considerable quantities from incisions made in the trunk.

The juice is clear and transparent, of a whitish or pale yellowish colour, an agreeable smell, and a bitterish pungent

taste. It is usually about the consistence of oil, or a little thicker; when long kept, it becomes nearly as thick as honey, retaining its clearness: but it has not been observed to grow dry or solid, as most of the other resinous juices do. The best resin of copaiva comes from Brazil; but we sometimes meet with a thick sort, scarcely or not at all transparent, and generally having a portion of turbid watery liquor at the bottom. This is probably either adulterated by the mixture of other substances, or has been extracted by decoction from the bark and branches of the tree: its smell and taste are much less pleasant than those of the genuine resin.

Pure resin of copaiva dissolves entirely in alcohol: the solution has a very fragrant smell. Distilled with water, it yields a large quantity of a limpid essential oil, but no benzoic acid; it is therefore not a balsam, but a combination of resin and volatile oil. Neumann says that it effervesces with liquid ammonia.

*Medical use.*—The resin of copaiva is an useful corroborating detergent medicine, but in some degree irritating. It strengthens the nervous system, tends to loosen the belly; in large doses it proves purgative, promotes urine, and is supposed to clean and heal exulcerations in the urinary passages more effectually than any of the other resinous fluids. Fuller observes that it gives the urine an intensely bitter taste, but not a violet smell, as the turpentine do.

This resin has been principally celebrated in gleet, and the fluor albus, and externally as a vulnerary.

The dose of this medicine rarely exceeds 20 or 30 drops, though some authors direct 60, or upwards. It may be conveniently taken in the form of an oleosaccharum, or in that of an emulsion, into which it may be reduced, by triturating it with almonds, with a thick mucilage of gum arabic, or with the yolk of eggs, till they are well incorporated, and then gradually adding a proper quantity of water.

CORIANDRUM SATIVUM. *Ed. Lond. Dub.*

*Willd. g. 552, sp. 1. Smith, Flor. Brit. g. 142, sp. 1. Pentandria Digynia.*—Nat. ord. Umbellatæ.

Coriander.

*Off.*—The seeds.

CORIANDRI SATIVI SEMEN. *Ed.*

CORIANDRI SEMINA. *Lond. Dub.*

CORIANDER is an annual umbelliferous plant, a native of the south of Europe, found wild about Ipswich, and in some parts of Essex, though Dr Smith does not consider it as indi-

genous. It differs from all other plants of its order, in producing *spherical* seeds. Their smell, when fresh, is strong and disagreeable, but by drying becomes sufficiently grateful. They are recommended as carminative and stomachic.

CROCUS SATIVUS. *Ed. Dub.*

CROCUS SATIVUS (ANGLICUS). *Lond.*

*Willd. g. 92, sp. 1. Smith, Flor. Brit. g. 16, sp. 1. Triandria Monogynia.*—Nat. ord. *Liliaceæ.*

Saffron crocus.

*Off.*—The summits of the pistils, called Saffron.

CROCI STIGMATA. *Lond.*

CROCUS; floris stigma. *Ed. Dub.*

CROCUS is a bulbous-rooted perennial plant, probably a native of the East, although it is now found wild in England, and other temperate countries of Europe. It is very generally cultivated as an ornament to our gardens, and in some places for the saffron, which is formed of the dried summits of the pistil. Each flower has one pistil, the summit of which is deeply divided into three slips, which are of a dark orange-red colour, verging to white at the base, and are smooth and shining. Their smell is pleasant and aromatic, but narcotic; their taste a fine aromatic bitter, and they immediately give a deep yellow colour to the saliva when chewed. The flowers are gathered early in the morning, just before they open; the summits of the pistils are picked out, very carefully dried by the heat of a stove, and compressed into firm cakes. The English saffron is superior to what is imported from other countries, and may be distinguished by its blades being broader. On the continent, they reckon the Austrian and the French from Gatinois the best. The Spanish is rendered useless by being dipt in oil with the intention of preserving it. Saffron should be chosen fresh, not above a year old, in close cakes, neither dry, nor yet very moist; tough and firm in tearing; difficultly pulverizable; of a fiery orange-red colour, within as well as without; of a strong, acrid, diffusive smell; and capable of colouring a very large proportion of water or alcohol. Saffron which does not colour the fingers when rubbed between them, or stains them with oil, has little smell or taste, or a musty or foreign flavour, is too tender, and has a whitish, yellow, or blackish colour, is bad. It is said, that it is sometimes adulterated with the fibres of smoked beef, and with the flowers of the *carthamus tinctorius*, *calendula officinalis*, &c. The imposition may be detected by the absence of the white ends, which may be observed in the rea

saffron, by the inferior colouring power, and by the want of smell, or by an unpleasant smell, when thrown on live coals.

By distillation with water, saffron furnishes a small proportion of essential oil, of a golden yellow colour, heavier than water, and possessing the characteristic smell in an eminent degree. According to Hermbstædt, the soluble matter of saffron is extractive nearly pure. Neumann obtained from 480 dried saffron, 360 grains of watery extract which was soluble in alcohol, except 24 of a colourless matter like sand, and afterwards 20 of alcoholic; and inversely, 320 of alcoholic extract entirely soluble in water, and then 90 of watery.

On account of the great volatility of the aromatic part of the saffron, it should be wrapped up in bladder, and preserved in a box or tin case.

*Medical use.*—Saffron is a very elegant aromatic: besides the virtues which it has in common with all the bodies of that class, it has been alleged that it raises the spirits, and in large doses occasions immoderate mirth, involuntary laughter, and the other effects which follow from the abuse of spiritous liquors. It is said to be particularly serviceable in hysteric depressions, or obstructions of the uterine secretions, where other aromatics, even those of the more generous kind, have little effect. But the experiments of Dr Alexander, and Dr H. Cullen shew, that it is much less powerful than was once imagined, so that of late the estimation in which it was held as a medicine has been on the decline.

CROTON ELEUTHERIA. Swartz. *prod.* Ed.

CROTON CASCARILLA. Dub. Lond.

Willd. g. 1713, sp. 2. *Monoecia Monadelphia.*—Nat. ord. *Tricocca.*

Eleutheria, or Cascarilla.

*Off.*—The bark.

CROTONIS ELEUTHERIÆ CORTEX. Ed.

CASCARILLÆ CORTEX. Lond. Dub.

THIS bark is imported into Europe from the Bahama islands, and particularly from one of them of the name of Eleutheria; from which its trivial name is derived. But Dr Wright also found the tree on the sea-shore in Jamaica, where it is common, and rises to about twenty feet in height. It is the *Clutia Eluteria* of Linnæus: the bark of whose *Croton cascarrilla* has none of the sensible qualities of the cascarrilla of the shops.

This bark is in general imported either in curled pieces, or rolled up into short quills, about an inch in width, somewhat

resembling in appearance the Peruvian bark. Its fracture is smooth, and close, of a dark brown colour. It is covered with a rough whitish epidermis; and in the inside it is of a brownish cast.

It has a light agreeable smell, and a moderately bitter taste, with some aromatic warmth. It burns readily, and yields, when burning, a very fragrant smell, resembling that of musk; a property which distinguishes the cascarilla from all other barks.

Tromsdorff got from eight ounces, 720 grains of mucilage and bitter principle; 580 of resin; 68 of volatile oil; 2520 of fibrous matter; and 48 of water. Its virtues are partially extracted by water, and totally by alcohol; but it is most effectual when given in substance.

*Medical use.*— It produces a sense of heat, and excites the action of the stomach; and it is therefore a good and pleasant stomachic, and may be employed with advantage in flatulent colics, internal hæmorrhagies, dysenteries, diarrhœas, and similar disorders.

As the essential oil is dissipated in making the extract, this preparation acts as a simple bitter. It was much employed by the Stablians in intermittent fever, from their fear of using Cinchona bark, to which, however, it is much inferior in efficacy.

CUCUMIS COLOCYNTHIS. *Ed. Dub. Lond.*

*Willd. g. 1741, sp. 1. Monoecia Syngenesia.*—Nat. ord. *Cucurbitaceæ.*

Coloquintida, or bitter apple.

*Off.*—The medullary part of the fruit.

CUCUMERIS COLOCYNTHIDIS FRUCTUS, cortice seminibusque abjectis. *Ed.*

COLOCYNTHIDIS PULPA, pomorum pulpa. *Lond.*

COLOCYNTHIS, fructus medulla. *Dub.*

THIS is an annual plant of the gourd kind, a native of Turkey. The fruit is about the size of an orange; its medullary part, freed from the rind and seeds, is alone made use of in medicine; this is very light, white, spongy, composed of membranous leaves, of an extremely bitter, nauseous, acrimonious taste. It is gathered in autumn when it begins to turn yellow, and is then peeled and dried quickly, either in a stove or in the sun. In the latter case it should be covered with paper.

Neumann got from 7680 parts 1680 alcoholic extract, and then 2160 watery; and inversely, 3600 watery, and 224 alcoholic.

*Medical use.*—Colocynth is one of the most powerful and most violent cathartics. Many eminent physicians condemn it as dangerous, and even deleterious: others recommend it not only as an efficacious purgative, but likewise as alterative in obstinate chronical disorders. It is certain that colocynth, in the dose of a few grains, acts with great vehemence, disorders the body, and sometimes occasions a discharge of blood. Many attempts have been made to correct its virulence by the addition of acids, astringents, and the like: these may lessen the force of the colocynth, but no otherwise than might be equally done by a reduction of the dose. The best method of abating its virulence, without diminishing its purgative virtue, seems to be by triturating it with gummy farinaceous substances, or the oily seeds.

CUMINUM CYMINUM. *Lond.*

*Willd. g. 547, sp. 1. Pentandria Monogynia.*—*Nat. ord. Umbellatæ.*

Cummin.

*Off.*—The seeds.

CUMINI SEMINA.

THE cummin is an annual umbelliferous plant, in appearance resembling fennel, but much smaller. It is a native of Egypt; but the seeds used in Britain are brought chiefly from Sicily and Malta. Cummin seeds have a bitterish warm taste, accompanied with an aromatic flavour, not of the most agreeable kind, residing in a volatile oil.

CUPRUM. *Lond. Ed. Dub.*

Copper.

COPPER is found in many countries.

*a.* In its metallic state:

1. Crystallized.
2. Alloyed with arsenic and iron.
3. Sulphuretted.

*b.* Oxidized:

4. Uncombined.
5. Combined with carbonic acid,
6. ————— sulphuric acid.
7. ————— arsenic acid.

The general properties of copper have been already enumerated.

Copper has more smell and taste than almost any other metal. Its effects, when taken into the stomach, are highly

deleterious, and often fatal. It particularly affects the primæ viæ, exciting excessive nausea, vomiting, colic pains, and purging, sometimes of blood, or, though more rarely, obstinate constipation. It also produces agitation of the mind, headach, vertigo, delirium; renders the pulse small and weak, the countenance pale, and causes fainting, convulsions, paralysis; and apoplexy. When any of these symptoms occur, we must endeavour to obviate the action of the poison by large and copious draughts of oily and mucilaginous liquors, or to destroy its virulence by solutions of potass, or sulphuret of potass.

Poisoning from copper is most commonly the effect of ignorance, accident, or carelessness; and too many examples are met with of fatal consequences ensuing from eating food which had been dressed in copper vessels not well cleaned from the rust which they had contracted by being exposed to the action of air and moisture; or pickles, to which a beautiful green colour had been given, according to the homicidal directions of the most popular cookery books, by boiling them with halfpence, or allowing them to stand in a brass pan until a sufficient quantity of verdigris be formed.

Great care ought to be taken that acid liquors, or even water, designed for internal use, be not suffered to stand long in vessels made of copper, otherwise they will dissolve so much of the metal as will give them dangerous properties. - But the sure preventive of these accidents is to banish copper utensils from the kitchen and laboratory. The presence of copper in any suspected liquor is easily detected by inserting into it a piece of polished steel, which will soon be coated with copper, or by dropping into it some carbonate of ammonia, which will produce a beautiful blue colour if any copper be present.

But although copper be thus dangerous, some preparations of it are in certain cases used with great advantage, both externally and internally.

The chief of these are.

1. The sub-acetate of copper.
2. The sulphate of copper.
3. The sub-sulphate of copper and ammonia.
4. The muriate of copper and ammonia.
5. A solution of the sulphate of copper and super-sulphate of alumina in sulphuric acid.

As the two first of these are never prepared by the apothecary, but bought by him from the manufacturer, they are inserted in the list of materia medica.

SUB-ACETAS CUPRI, v. s. *Ærugo*. *Ed.*

*ÆRUGO*, s. s. Sub-acetas cupri impura. *Lond.*

*ÆRUGO*, s. s. Sub-acetas cupri. *Dub.*

Sub-acetate of copper. Verdigris.

THE preparation of this substance was almost confined to Montpellier in France, owing chiefly to an excellent regulation which existed, that no verdigris could be sold until it had been examined and found of sufficiently good quality. For since that regulation has been abolished, Chaptal informs us, that so many abuses have crept into the manufacture, that the Montpellier verdigris has lost its decided superiority of character. It is prepared by stratifying copper-plates with the husks and stalks of the grape, which have been made to ferment after the wine has been expressed from them. In from ten to twenty days, when the husks become white, the plates of copper are taken out, and their surfaces are found to be covered with detached and silky crystals. They are now placed on edge, with their surfaces in contact, in the corner of a cellar, and alternately dipt in water, and replaced to dry every seven or eight days, for six or eight times. By this management the plates swell, and are every where covered with a coat of verdigris, which is easily separated with a knife. In this state it is only a paste, and is sold by the manufacturers to commissioners, who beat it well with wooden mallets, and pack it up in bags of white leather, a foot high, and ten inches wide, in which it is dried by exposing it to the air and sun, until the loaf of verdigris cannot be pierced with the point of a knife.

Sub-acetate of copper should be of a bluish green colour, dry and difficult to break, and should neither deliquesce, have a salt taste, contain any black or white spots, nor be adulterated with earth or gypsum. Its purity may be tried by diluted sulphuric acid, in which the sub-acetate dissolves entirely, and the impurities remain behind.

Verdigris, as it comes to us, is generally mingled with stalks of the grape; they may be separated, in pulverization, by discontinuing the operation, as soon as what remains seems to be almost entirely composed of them.

*Medical use.*—Verdigris is seldom or never used internally. Some writers highly extol it as an emetic, and say, that a grain or two act as soon as received into the stomach; but its use has been too often followed by dangerous consequences to allow of its employment. Verdigris, applied externally, proves a gentle detergent and escharotic, and is employed to destroy callous edges, or fungous flesh in wounds. It is also advan-



tageously applied to scorbutic ulcers of the mouth, tongue, or fauces, and deserves to be carefully tried in cancerous sores.

SULPHAS CUPRI, v. s. Cuprum vitriolatum; vitrioleum cœruleum. *Ed.*

SULPHAS CUPRI, v. s. Vitrioleum cœruleum. *Dub.*

CUPRI SULPHAS, s. s. Sulphas cupri. *Lond.*

Sulphate of copper. Blue vitriol.

THIS metallic salt is rarely formed by combining directly its component parts; but it is obtained, either by evaporating mineral waters which contain it, or by acidifying native sulphuretted copper, by exposing it to the action of air and moisture, or by burning its sulphur.

When pure it has a deep blue colour, and is crystallized generally in long rhomboids. It effloresces slightly in the air, is soluble in four parts of water at 60°, and in two at 212°, and is insoluble in alcohol. By heat it loses, first its water of crystallization, and afterwards all its acid. It is decomposed by the alkalies and earths, and some of the metals, the alkaline carbonates, borates, and phosphates, and some metallic salts.

It is composed of,

Copper,	24	} 42 hydro-oxide of copper.
Oxygen,	8	
Water,	10	
		33 sulphuric acid.
		25 water of crystallization.

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*Medical use.*—The sulphate of copper has a strong, styptic, metallic taste, and is chiefly used externally as an escharotic for destroying warts, callous edges, and fungous excrescences, as a stimulant application to ill-conditioned ulcers, and as a styptic to bleeding surfaces. Taken internally, it operates, in very small doses, as a very powerful emetic. It has, however, been exhibited in incipient phthisis pulmonalis, intermittent fever, and epilepsy; but its use is not free from danger.

CYNARA SCOLYMUS. *Ed.*

*Willd. g.* 1436, *sp.* 2. *Syngenesia Polygamia æqualis.*—  
Nat. ord. *Compositæ capitatae.*

Artichoke.

*Officinal.*—Folium. The leaves.

THE artichoke is a perennial plant, indigenous in the south of Europe, but very frequently cultivated in our gardens, for culinary purposes.

The leaves are bitter, and afford, by expression, a considerable quantity of juice, which is said to be diuretic, and to have been successfully used in dropsy.

DAPHNE MEZEREUM. *Ed. Lond. Dub.*

*Willd. g. 773, sp. 1. Smith, Flor. Brit. g. 194, sp. 1. Octandria Monogynia.*—Nat. ord. *Vepriculæ.*

Mezereon, spurge olive.

*Off.*—The bark of the root.

DAPHNES MEZEREI RADICIS CORTEX. *Ed.*

MEZEREI CORTEX. *Lond. Dub.*

MEZEREON is a shrub which grows in woody situations in the northern parts of Europe, and is admitted into our gardens from its flowering in winter. The bark, which is taken from the trunk, larger branches, and root, is thin, striped, reddish, commonly covered with a brown cuticle, has no smell, and when chewed, excites an insupportable sensation of burning in the mouth and throat. When applied to the skin in its recent state, or infused in vinegar, it raises blisters. Its acrid principle is said by M. Lartique of Bourdeaux to be soluble in ether.

*Medical use.*—The root was long used in the Lisbon diet-drink, for venereal complaints, particularly nodes, and other symptoms resisting the use of mercury. The bark of the root contains most acrimony, though some prefer the woody part. Mezereon has also been used with good effects in tumours and cutaneous eruptions not venereal.

Dr Cullen says that it acts upon the urine, sometimes giving it a filamentous appearance, and upon the perspiration, without diminishing the strength remarkably; and that, in irritable habits, it quickens the pulse, and increases the heat of the whole body. But Mr Pearson of the Lock Hospital asserts, that excepting a case or two of lepra, in which a decoction of this plant conferred temporary benefit, he very seldom found it possessed of medical virtues, either in syphilis, or in the sequelæ of that disease. In scrofula, or in cutaneous affections, it is employed chiefly under the form of decoction; but it has also been used in powder; and as it is apt to occasion vomiting and purging, it must be begun in grain doses, and gradually increased. It is often combined with mercury.

The berries are still more acrid than the bark, and they have even been known to produce fatal effects on children, who have been tempted by their beauty to eat them. It is said that they are sometimes infused in vinegar, to make it more pungent and appear stronger.