CHAP. VIII.

OF CATHARTICS.

CATHARTICS are those medicines which quicken or increase the evacuation from the intestines; or which, when given in a certain dose, produce purging. They are medicines of importance, but differ from each other very considerably in their powers.

Cathartics evidently act, by stimulating the intestines so as to increase the natural peristaltic motion, and thus cause their contents to be more quickly propelled and evacuated. The greater number of them have, however, a farther effect. They stimulate the extremities of the exhalent vessels, terminating on the inner surface of the intestines: they thus cause a larger portion of fluid to be poured out, and hence the evacuations are more copious, and of a thinner consistence. Some cathartics have this power of increasing the effusion of fluids from the exhalents much more than others; such, for instance, are the Saline Purgatives. Dr Cullen has even supposed that some may act solely in this way, and without increasing directly the peristaltic motion. There is, however, no proof of this; and it seems scarcely probable that a substance should act as a stimulant on these vessels, without at the same time stimulating the moving fibres of the intestines. Some seem to produce the latter effect with scarcely any of the former; such are aloes and rhubarb; hence they merely increase the natural discharge.

The action of cathartics is not confined to the parts to which they are directly applied. Their stimulus is extended to the neighbouring organs, and hence they promote the secretion, and increase the discharge of the bile and other fluids poured into the intestinal canal. These effects are produced in very different degrees, by different cathartics, and there seems some reason for admitting an opinion adopted by the ancients, that certain cathartics have peculiar powers in this respect; some, for instance, having the power more particularly of promoting the discharge of bile, others that of the mucus of the intestines, or of the serum; and it is not improbable, as Darwin supposed, that the pancreas and spleen may be peculiarly stimulated into action, by others of this class of medicines.

There is likewise a difference in cathartics with respect to the parts of the intestinal canal on which they act. Some increase its peristaltic motion through its whole length; others, as aloes, have their action more confined to the lower intestines.

Lastly, it is to be observed, that the action of many cathartics is extended even to the stomach; its peristaltic motion is increased, either from association with the motion of the intestinal canal, or from the direct stimulant action of the cathartic applied, and its contents are therefore more quickly discharged by the pylorus. From this cause, a full dose of a saline purgative will sometimes operate in half an hour after it is given.

There are several other differences between the medicines belonging to this class: some act slowly; others more quickly: some are liable to occasion nausea and griping, and in a large dose tenesmus; others, even when they operate effectually, are free from these disagreeable effects: some produce only one evacuation, others continue to act for a considerable time.

Besides the differences between particular cathartics, a general difference in their mode of operation has been supposed to exist, from which they have been classed under two divisions. Some operate mildly, without exciting any general affection of the system, without even stimulating perceptibly the vessels of the intestines, and hence they merely evacuate the contents of the canal. Others are more powerfully stimulant: they occasion an influx of fluids from the exhalent vessels, and from the neighbouring secreting organs: they even extend their stimulant effect to the system in general, and if taken in too large a dose are liable to excite much irritation, and even inflammation on the surface of the intestines. The former are distinguished by the title of Laxatives, the latter are named Purgatives, and the stronger of them, Drastic Purgatives. The distinction is not altogether correct, since it refers merely to a difference in power; yet neither is it one to be altogether neglected.

From the indications which cathartics are capable of fulfilling, their utility in many cases of morbid affection must be obvious. In some general affections of the system, they procure a speedy, copious, and therefore useful depletion. And wherever there exists retention of the contents of the intestinal canal, where these contents are acrid, or where extraneous bodies are present, their evacuation by the operation of a cathartic is the obvious method of treatment.

The valuable observations of Dr Hamilton have established still more clearly the importance of this class of remedies, have shewn that they admit of more extensive application, and have pointed out with more precision than had before been done, the principles which regulate their administration.

In many diseases, there exists a state of the intestinal canal giving rise to retention of its contents, which is not to be obviated by the occasional administration of a cathartic, but

which requires a continuation of the operation short of that of purging, until the healthy state of the bowels be restored. By this practice the cure of diseases has been accomplished, which, previous to Dr Hamilton's publication, were treated by very different methods, and were not supposed to be so peculiarly connected with any state of the alvine evacuation.

Thus in fever, the peristaltic motion of the intestines is diminished, the fœculent matter is retained, and becomes a source of irritation; its evacuation, therefore, by the exhibition of purgatives is clearly indicated, nor has this been altogether neglected. Physicians, however, were scarcely aware of the necessity of producing it to a sufficient extent; and in fevers of the typhoid type in particular, were frequently deterred from doing so by the fear of reducing the strength of the system by an evacuation considered as debilitating. Dr Hamilton's observations establish the propriety of the freer use of purgatives in fever, so as to produce complete and regular evacuation of the bowels, through the whole progress of the disease; and the cases he has published afford striking proofs of the advantages derived from the practice. There are other forms of fever in which it is employed with equal advantage, and particularly so in scarlatina.

Several of the diseases comprehended under the class Neuroses appear to depend on, or to be very intimately connected with a torpid state of the intestines, from which an accumulation of their contents takes place, proving a source of irritation that often affects the general system. Chorea is proved by Dr Hamilton's observations to arise from this cause; and he has introduced with great success the mode of treatment, by the free use of purgatives, continued until the healthy state of the alvine evacuation has been established. The success of this method has indeed been such that scarcely any other is employed. The same practice, and with si-

milar success, applies to hysteria, and, in Dr Hamilton's opinion, to that species of tetanus, which, prevailing in warm climates and in warm seasons, appears to have its origin in disorder of the stomach and bowels. And ample evidence has established the success of the same treatment in the marasmus which attacks the young of both sexes, which is marked by loss of appetite, weakness, wasting of the body, and at length total prostration of strength; likewise in chlorosis, and in that hæmatemesis to which females are liable between eighteen and thirty years of age. In some of these diseases, the quantity of matter accumulated in the intestines is extremely great; the extent to which the exhibition of purgatives must be carried, and the length of time during which they must be continued, much exceed what would be calculated on from the usual administration of remedies of this class. The whole practice requires therefore both decision and perseverance.

Analogies from some of these diseases lead to a similar exhibition of cathartics in other fevers, particularly in the bilious remitting fever of warm climates, in measles, erysipelas, and small-pox; likewise in scrofula, in dyspepsia, whether simple or complicated with hysterical or hypochondriacal mania; in cramp of the stomach, or of the extremities; in palpitation of the heart, and in those cases of hydrophobia which are not the effect of specific contagion. With regard to several of these, experience has established the soundness of the analogy.

In cholic, and in ileus, the exhibition of cathartics is required, though there is considerable caution necessary in their application, to avoid such irritation as would excite or increase inflammation. In dysentery, similar advantages are derived from them, and the same caution is requisite in their use.

Cathartics are farther employed with other intentions than merely to evacuate the intestinal canal. From the effusion of serous fluid which they occasion, by their stimulant action on the exhalent vessels, they are supposed to produce a diminution of fluids with regard to the whole body. This is in some measure an abstraction of the usual exciting powers acting on the system, and hence purging constitutes a part of what is named the Antiphlogistic Regimen, and is employed in inflammatory affections. By a similar operation, it increases absorption. There exists a certain relation between the exhaling and absorbing powers, so that when the action of the one is increased, that of the other is augmented: the increased exhalation of serous fluid, therefore, into the intestines, which cathartics occasion, causes an increased absorption; and thus the different species of dropsy are often cured by purging. It is evident that those cathartics which stimulate the exhalent vessels of the intestines are best calculated to fulfil this indication; hence saline purgatives are in general most serviceable in dropsy.

From the serous evacuation which cathartics occasion, from the derivation which they make from the head, and partly, no doubt, by removing a source of irritation, they are of utility in preventing and removing apoplexy; in all comatose affections, in mania, phrenitis, and the different species of headach.

Cathartics, especially the more powerful ones, require to be administered with caution even in diseases where they are indicated, when there is any tendency to inflammation or to extreme debility; also during pregnancy, immediately after delivery, during the flow of the menses, and in those liable to hæmorrhoidal affections. The too frequent use of them induces wasting of the body, and sometimes renders the intestines morbidly irritable, so that purging is easily

excited, while in other habits it renders them more torpid, and induces costiveness. The saline cathartics have more peculiarly the former effect, and more quickly reduce the strength of the body, probably by the evacuation they occasion from the circulating mass.

Some cautions are requisite with respect to the mode of administering cathartics. Many of them are liable to excite nausea or vomiting,—effects which are prevented by giving them at intervals in repeated doses, or often by combining them with an aromatic. Such a combination also obviates the griping which they often occasion. The more acrid cathartics ought always to be given in divided doses: as in certain habits, even a small dose is liable to occasion unpleasant symptoms. In general also, these acrid cathartics ought to be given rather in combination, as the effect is obtained with more certainty. Colocynth, or scammony, or any other drastic purgative, may fail if given alone in such a dose as it is proper to venture on; but if smaller doses of two or three of them be mixed, their operation is more certain and easy. Another advantage derived from such a combination is, that the more peculiar effect of each, whether it be evacuating the larger intestines, or stimulating the exhalent vessels, and causing the effusion of fluid, is prevented, and the general effect, exclusive of these peculiarities, is better obtained. They irritate less when given in a liquid form: in that form too they act more speedily than when given in a solid state: hence, when it is wished that a cathartic shonld operate slowly, it is best given in the form of pill, and at bed-time, as the state of diminished susceptibility in sleep retards the operation. In general, however, it is preferable to give the dose of a cathartic in the morning, as the operation of it is less troublesome to the patient. Dr Hamilton has pointed out the common error in the exhibi-

tion of cathartics, that of their not being given to the requisite extent; and has given the general rule in all morbid affections, of repeating, and, if necessary, enlarging the dose while the evacuations are peculiarly offensive, or of an unnatural appearance, without however carrying their administration so far as to produce purging, unless this be the indication which is designed to be fulfilled.

Cathartics may be arranged in some measure according to their power, placing those first which operate mildly, and which have usually been denominated Laxatives, and proceeding to those which are more powerful, and have other effects than merely evacuating the contents of the canal. The Saline Cathartics may be placed under the latter division, though their operation, as has been already explained, is somewhat peculiar. To this class may also be added those substances which act as cathartics under the form of Enema.

CATHARTICS.

A.—*LAXATIVES.*

MANNA.
CASSIA FISTULA.
TAMARINDUS INDICA.
RICINUS COMMUNIS.
SULPHUR.
MAGNESIA.
CARBONAS MAGNESIÆ.

B.—*PURGATIVES.*

CASSIA SENNA.
RHEUM PALMATUM.
CONVOLVOLUS JALAPA.
HELLEBORUS NIGER.
BRYONIA ALBA.
CUCUMIS COLOCYNTHIS.
MOMORDICA ELATERIUM.
RHAMNUS CATHARTICUS.
ALOE PERFOLIATA.
CONVOLVOLUS SCAMMONIA.
STALAGMITIS CAMBOGIOIDES.
SUB-MURIAS HYDRARGYRI.
SULPHAS MAGNESIÆ.

SULPHAS SODÆ.
SULPHAS POTASSÆ.
SUPER-TARTRAS POTASSÆ.
TARTRAS POTASSÆ.
TARTRAS POTASSÆ ET SODÆ.
PHOSPHAS SODÆ.
MURIAS SODÆ.

TEREBINTHINA VENETA.
NICOTIANA TABACUM.

LAXATIVES.

MANNA. Manna. Fraxinus Ornus. Fraxinus Rotundifolia. *Polygam. Diœc. Ascyroid. Succus concretus. South of Europe.*

THIS substance, though afforded by several vegetables, is usually obtained from different species of the ash-tree, particularly those mentioned above, which are cultivated in Sicily and Calabria. It is procured by spontaneous exudation, but more copiously by incisions made in the bark of the trunk. The juice, which exudes, soon becomes concrete. When it exudes slowly, the manna is more dry and white, and of a texture somewhat granulated; it is collected on chips of wood or straw, and forms what is named Flake Manna. When the exudation is more copious, the juice is of a darker colour, and concretes into a soft mass, less pure than the other, and composed of fragments of a grey and white colour intermixed.

Manna has a sweet, though somewhat unpleasant taste, and possesses the general chemical properties of saccharine matter; it is entirely soluble in water and alkohol. The chemical difference between it and pure sugar is not very well established. When dissolved in alkohol, with the aid of heat, the solution on cooling deposites crystals apparently purely saccharine; and by concentration of the residual liquor, a mucilaginous extractive matter remains not crystallizable, having the peculiar taste of the manna. Although sugar in its unrefined state proves laxative, manna does so in a greater degree.

The dose of manna, as a laxative, is from one to two ounces to an adult, but it scarcely operates with sufficient effect to admit of being employed alone. Though mild in its operation, it is apt too to produce flatulence and griping, and hence it is principally used in combination with other cathartics, particularly with senna, the bitter taste of which it covers. This combination is in common use as a purgative to children.

Offic. Prep.—Syrup. Mannæ. *Dub.*

CASSIA FISTULA. Purging Cassia, or Cassia in pods. *Decand. Monog. Lomentaceæ. Fructus; Pulpa Fructus. Egypt; East and West Indies.*

THE fruit of this tree is in cylindrical pods, nearly an inch in diameter, and ten or twelve inches in length. The external membranous part is firm and hard; it is divided within by septa between which the seeds are inclosed, imbedded in a soft pulp. This pulp is of a black colour, and has a sweet taste, with a slight degree of acidity. It is extracted by boiling the bruised pods in water, and evaporating the decoction. It is soluble in water. According to Vauquelin's analysis of it, it contains, besides the fibrous part, gluten, jelly, mucilage, and saccharine matter.

The pulp of cassia proves gently laxative in a dose of four or six drachms; in the large dose necessary to occasion purging, it is apt to induce nausea or griping, and even as a laxative it has no particular advantage. The sole consumption of it is in the composition of the officinal preparation known by the name of Electuarium Sennæ. There is another electuary in the Pharmacopœias, to which, as being the principal ingredient, it gives its name, and in which it

is combined with manna and pulp of tamarinds, but this is never used.

Offic. Prep.—Elect. Cass. Fist. *Ed. Lond. Dub.*

TAMARINDUS INDICA. Tamarind. *Monadelph. Triand. Lomentaceæ. Fructus conditus. East and West Indies, America, Arabia.*

THE pod of this tree includes several large hard seeds, with a brown viscid pulp, very acid. This pulp, mixed with the seeds and small fibres, and with a quantity of unrefined sugar added to preserve it, forms the Tamarinds of the shops, the preparation of them being performed in the West Indies, by freeing the pod from its external covering, and pouring on the pulp and seeds, a strong syrup hot, so that on cooling it becomes nearly concrete. Vauquelin found this prepared fruit to contain, besides the sugar mixed with it, citric and malic acids, super-tartrate of potash, tartaric acid, jelly, mucilage, and fibrous matter. The citric acid is in largest quantity, about an ounce and a half being obtained from a pound of the pulp.

The pulp of tamarinds, besides its virtues as an acid, proves laxative, when taken to the extent of an ounce, or an ounce and a half, but is too weak to be employed alone. It is generally added to other cathartics, which are given in the form of infusion, with the view of promoting their operation, or of covering their taste. It is an ingredient in the Electuarium Sennæ, and there is an officinal infusion of it with senna, which affords a very pleasant purgative. An infusion of it in warm water forms, when cold, a grateful refrigerant beverage.

Offic. Prep.—Inf. Tam. Ind. cum Cass. Sen. *Ed.*

THERE are some other sweet fruits which have a laxative quality, as the Fig (Ficus Carica), and the Prune (Prunus Domestica). These are sometimes used in domestic practice, and they are also ingredients in the Electuary of Senna.

RICINUS COMMUNIS. Palma Christi. *Monœc. Monadelph. Tricoceæ. Oleum; Semen. West Indies.*

THE seeds of the capsules of this plant are farinaceous, with a considerable quantity of unctuous matter intermixed. They afford, by expression or by decoction, an oil which is used in medicine in this country under the name of Castor Oil. When obtained by decoction of the bruised seeds in water, it is purer and less acrimonious than when obtained by expression. It is of a yellowish colour, transparent, viscid, and has scarcely any peculiar taste or smell. It is the only example of an expressed oil having any medicinal activity.

As a laxative, castor oil acts mildly, and at the same time very effectually; it also operates in a shorter time than almost any other cathartic. Possessed of these advantages, it is a cathartic frequently employed; and is more peculiarly adapted for exhibition, where any degree of irritation is to be avoided: hence its use in colic, constipation, hæmorrhoids, and as a purge during pregnancy. Its dose is one ounce. It is taken floating on peppermint-water, mixed with any spiritous liquor, or any purgative tincture, as that of senna; or diffused in water by the medium of gum, sugar, or the yolk of an egg.

FROM the Mineral Kingdom, two laxatives are derived, Sulphur and Magnesia.

Sulphur is an inflammable substance, found in nature nearly pure, and likewise in combination with several of the metals. The greater part of the sulphur of commerce is the produce of volcanic countries. It is naturally mixed with earthy matter, from which it is freed by sublimation, forming the Ssulphur Sublimatm, Flores Sulphuris, or Flowers of Sulphur. When melted and run into cylindrical molds, it forms Roll Sulphur, which is usually less pure.

Sulphur, in its solid state, is brittle and hard, but it is capable of assuming a crystalline form; it is more generally used in the state of the loose powder in which it is obtained by the process of sublimation conducted on a large scale. It is of a light yellow colour; is insipid, or very slightly sour, from a small portion of acid adhering to it: it has a faint smell when rubbed or heated; is very fusible and volatile; and when heated in atmospheric air, burns with a blue flame, and the production of suffocating fumes. It is insoluble in water or alkohol, but is dissolved by oils, and combines with the alkalis, several of the earths, metals and metallic oxides. It was, until lately, regarded as a simple substance; there is reason to believe, however, that it contains a portion of hydrogen.

Sulphur, in a dose of 2 or 3 drachms, acts as a laxative, and so mildly, that it is often used in hæmorrhoidal affections, and in other cases where, though the operation of a purgative is indicated, any irritation would be injurious. It likewise passes off by the skin, and is hence administered internally, as well as applied externally in psora. In this disease it may be regarded as a specific. In habitual dyspnœa and in chronic cattarh, advantage has been derived from it, probably partly from its action as a laxative, and partly as a diaphoretic. The solution of it in oil has been used in these cases, but this preparation is both acrid and extremely

nauseous. Sulphur is always best given in the form of electuary. The purification of sulphur by washing, is ordered in the Pharmacopœias, but is a process altogether unnecessary. Precipitated by an acid from its solution by an alkali or lime, it is obtained of a whiter colour than in its usual state, and this precipitated sulphur is used in preference to the sublimed sulphur in forming ointments. The combination of it with potash, Sulphurettum Potassæ, has also been introduced into the Pharmacopœias, principally with the view of affording a substance which has been supposed capable, by its chemical action, of counteracting the operation of metallic preparations where these have been taken in excess.

Offic. Prep.—Sulphur Lotum. Ol. Sulph. Ung. Sulph. *Ed. Lond. Dub.*—Sulph. Præcipit. *Lond.*—Sulph. Potass. *Ed. Dub.*

MAGNESIA. Magnesia. Carbonas Magnesiæ.

THIS earth is not found pure in nature, but exists abundantly combined with certain acids, and from these saline combinations it is obtained by processes to be afterwards noticed, either pure, or in the state of Carbonate. In either state, it is used as an antacid and laxative, in a dose of a drachm or more. Its laxative effect is generally considered as owing to its forming with the acid in the stomach a saline combination, which, like its other salts, is purgative, though, as it usually produced this effect, it probably has itself a weak cathartic quality. From being insipid and mild, it is well adapted for exhibition to infants.

Purgatives.

Cassia senna. Senna. *Decand. Monog. Lomentaceæ. Folia. Egypt, Arabia.*

The dried leaves of this plant are of a yellowish-green colour; have a faint smell, and a bitter taste. Their active matter is extracted both by water and by alkohol by infusion. By decoction with water, its strength is much impaired.

Senna is a purgative very frequently employed, having a considerable degree of activity, without being liable to be harsh in its operation. It is usually given in the form of the watery infusion, 2 drachms being infused in 4 or 6 ounces of tepid water, generally with the addition of a few coriander seeds, or a little ginger, to cover its flavour, and obviate griping. It is also frequently combined with manna, with tamarinds, or with super-tartrate of potash; and as its taste can be covered by sugar or manna, it is a purgative generally given to children. There is an officinal tincture of it which operates as a purgative in the dose of an ounce; there are also officinal infusions of it; and it enters into the composition of several other preparations employed as cathartics.

Offic. Prep.—Elect. Cass. Senn. Extr. Cass. Senn. Inf. Tam. Ind. cum Cass. Sen. T. Cass. Senn. C. *Ed.*—Inf. Senn. Pulv. Senn. C. *Lond.*—Syrup. Senn. *Lond. Dub.*

Rheum palmatum. Rhubarb. *Enneand. Trigyn. Oleraceæ. Radix. Tartary.*

Besides the Rheum Palmatum, two other species, the Rheum Undulatum, and Rheum Compactum, are cultivated

with the view of obtaining their roots, to be used in medicine; nor is any considerable difference, it is said, to be observed between the root obtained from any of them when it is properly dried and preserved. The best rhubarb is that named Russian or Turkey; it is the produce of Tartary; is in small pieces, with a large hole in the middle, this perforation having been made in the recent root to admit of its drying more quickly; it is of a lively yellow colour, with streaks of white and red; has a smell peculiar, and somewhat aromatic; and a bitter slightly astringent taste. Another kind is imported from China, where it is cultivated, and is known in the shops by the name of Indian Rhubarb; it is in larger masses, more compact and hard, heavier, and less friable and less fine in the grain than the other, and having less of an aromatic flavour. Rhubarb, cultivated in this country, has been prepared equal to either of the others, but in general it is inferior, probably from less care being bestowed on its cultivation and preparation.

The active principles of rhubarb are not very well ascertained. It is somewhat mucilaginous, and yields part of its powers to water by infusion. Alkohol likewise dissolves a considerable proportion of it; and diluted alkohol appears to be its most perfect solvent, dissolving all its active matter. It appears too to contain a portion of tannin, as it gives a deep colour with the salts of iron, and a precipitate with gelatin. It has been supposed to have the combination rather singular, of an astringent with a cathartic power; it is not apparent from any analysis of it, whether these reside in different proximate principles or not. The watery infusion is said to be more purgative than the spiritous, and by applying heat to the rhubarb in substance, its purgative quality is lessened, while its astringency remains. The Chinese rhubarb is supposed to be more astringent than the Turkey.

The astringency of rhubarb is not, however, very sensible in its medicinal operation, and has perhaps rather been inferred from the effects of chemical re-agents. Every kind of it contains a quantity of earthy matter, chiefly lime, combined with sulphuric and citric acids, forming the principal part of the white streaks. This is more abundant in the Turkey rhubarb than in the others.

The dose of rhubarb as a cathartic is one scruple or half a drachm. A dose such as this appears to be necessary to produce the full purgative effect; but a much smaller quantity, that of a few grains, is sufficient to excite the action of the intestines, so as to produce merely increase of the natural evacuation, and it is with this last intention, perhaps, that it is most properly employed. It is useful in this mode in dyspepsia, hypochondriasis, jaundice, and some similar affections, obviating the costiveness which frequently attends them, and further by its operation as a bitter contributing to restore the tone of the digestive organs. From its supposed astringent property, it has likewise been considered as peculiarly adapted for exhibition in diarrhœa, any acrid matter being evacuated by its purgative effect, before it acts as an astringent. It farther enters into a number of officinal preparations, in which it is either the principal medicine, or combined with aloes, which bears a considerable resemblance to it in its mode of operation, with bitters, or aromatics.

Offic. Prep.—Inf. Rhei P. T. Rhei P. *Ed. Lond. Dub.* —Vin. Rhei. T. Rhei et Aloes. Tinct. Rhei et Gent. Pil. Rhei. C. *Ed.*—Tinct. Rhei, C. Extr. Rhei, *Lond.*

CONVOLVOLUS JALAPA. Jalap. *Pentand. Monogyn. Campanaceæ. Radix. Mexico.*

THE dried root of jalap is imported in thin transverse

slices or in round masses; it is solid, hard, and heavy; of a dark-grey colour, and striated texture. It has little smell; its taste is bitter and subacrid.

Jalap contains a resinous and a gummy matter, its purgative quality appearing to reside in the former, as it is extracted by alkohol, while its watery infusion is comparatively inert. Proof-spirit is its proper menstruum.

This root is an active purgative, producing full evacuation from the intestines; sometimes occasioning, however, nausea or griping. Its medium dose is half a drachm. Besides being given alone, it is very frequently used to quicken the action of other cathartics, of mild muriate of mercury for example; or it is combined with others, which are supposed to render it less stimulating, as with the super-tartrate of potash: This latter combination is in common use as a hydragogue cathartic; the former, that of jalap and calomel, affords a very safe active purgative, which is employed where it is difficult to excite the action of the intestinal canal. Jalap operates most mildly and effectually in snbstance, and is therefore seldom given under any form of preparation.

Offic. Prep.—T. Conv. Jal. *Ed. Lond. Dub.*—Extr. Conv. Jalap. *Ed. Dub.*—Pulv. Jalap. C. *Ed.*

HELLEBORUS NIGER. Melampodium. Black Hellebore. *Polyand. Polygn. Multisiliquæ. Radix. Austria, Italy.*

The root of this plant consists of short articulated fibres attached to one head, externally dark-coloured, internally white. Its taste is very acrid, but the acrimony is much impaired by drying and by age. Its active power seems principally to reside in its resinous part, which alkohol dissolves, the tincture affording, by evaporation, a very active extract. By decoction with water it yields half its weight

of gummy matter, with some resin; and the extract obtained by inspissation of this, is milder than the spiritous extract, and milder even than the root itself. Its distilled water, it is affirmed, is acrid, and even cathartic.

Black hellebore root is a very powerful cathartic in a dose of a few grains; so violent, indeed, and at the same time uncertain is its operation, that it is scarcely ever used in substance: the watery extract of it, which is milder, has sometimes been employed. On its cathartic power probably depends any advantage that may be derived from its administration in mania and melancholia, in which diseases it was highly celebrated by the ancients. In dropsy it has been employed as a hydragogue cathartic, principally under the form of the spiritous extract. It was likewise strongly recommended by Mead as an emmenagogue, in the form of tincture, but with others has seldom been successful.

Offic. Prep.—T. Helleb. N. *Ed. Lond. Dub.*—Extr. Helleb. *Ed. Dub.*

Bryonia alba. Bryony. *Monoec. Syngenes. Cucurbitaceæ. Radix. Indigenous.*

The root of this plant, when recent, is highly acrid; by drying it becomes milder. In a dose of 20 grains of the dried root, it acts as a strong cathartic, and generally also as a diuretic. It is, however, somewhat uncertain, and liable to be violent in its operation, and is therefore little used.

Cucumis colocynthis. Colocynth. *Monoec. Syngenes. Cucurbitaceæ. Fructus pulpa. Syria.*

The part of this plant used in medicine, is the dried spongy or medullary part of the fruit. It is white, soft, and

porous, and has the seeds, which are comparatively inert, mixed with it. Its taste is intensely bitter. Boiled in water, it gives out a large portion of mucilage, so as to form a liquor of a gelatinous consistence. This is less active than the colocynth itself. Alkohol also dissolves only part of its active matter.

Colocynth is one of the most drastic purgatives, so much so that its operation is not easily regulated. Its dose is from 3 to 6 grains, but it is so liable to occasion griping, tenesmus, and other symptoms, that it is scarcely ever given by itself, being rather used to promote the operation of other cathartics. Combinations of it with jalap, aloes, or mild muriate of mercury, are thus given in obstinate constipation, in mania, and coma; and in these combinations it operates more mildly and more effectually than if given alone. Its infusion has been recommended as an anthelmintic.

Offic. Prep.—Pil. Aloes cum Colocynth. *Ed.*—Extr. Colocynth. *Lond.*—Extr. Colocynth. Comp. *Lond. Dub.*

MOMORDICA ELATERIUM. Wild Cucumber. *Monoec. Syngenes. Cucurbitaceæ. Fecula Fructus. South of Europe.*

THE expressed juice of the fruit of this plant deposites a fecula, which, when dried, has been known by the name of Elaterium. It is a very powerful cathartic, and from the violence of its operation has been ventured to be exhibited only in the most obstinate cases. Its dose is half a grain, repeated every hour, or every second hour, till it operate. As a drastic purgative, it has sometimes been given in mania, and as a hydragogue cathartic in dropsy.

RHAMNUS CATHARTICUS. Buckthorn. *Pentand. Monogyn. Dumosæ. Baccarum succus. Indigenous.*

THE berries of this vegetable are very succulent, and the juice they afford by expression has a cathartic power. Made into a syrup by boiling with sugar, it operates in a dose of an ounce. It is disagreeable, however, in its operation, being liable to occasion thirst and griping, and is therefore seldom used.

Offic. Prep.—Syr. Rhamn. C. *Ed. Lond.*

ALOE. Aloe Socotorina. Aloe Barbadensis. Aloes Socotorine, and Barbadoes. Aloe Perfoliata, et Spicata. *Hexand. Monogyn. Liliaceæ. Succus spissatus. Africa, Asia, America.*

ALOES is a concrete resinous juice. Several varieties of it are met with in the shops, which differ in their purity, and likewise in their sensible qualities. The Socotorine, originally brought from the African island of Socotora, is considered as the purest. It is in small pieces of a reddish-brown colour, nearly black in the mass. The Barbadoes aloes is of a lighter colour, and has an odour stronger and more unpleasant than the former. It is also named Hepatic Aloes. The Cabbaline is still more impure, more fœtid, and is weaker in its power. There is still more uncertainty with regard to the species producing these varieties. The Aloe Perfoliata is that referred to by the Edinburgh College, as affording the varieties both of hepatic and socotorine aloes. The Dublin College refer to the Aloe Spicata, and it is said to be this species which is a native of the Cape of Good Hope, whence much of the aloes of the shops, sold under the name of Socotorine Aloes, is now imported. The Lon-

don College give it as that which affords the Socotorine Aloes; while the Barbadoes Aloes, on the authority of Sibthorp, they consider as the produce of a species named Aloe Vulgaris. The Socotorine Aloes is the expressed juice of the leaves of the plant, inspissated by exposure to the air and sun. The Barbadoes Aloes is prepared by cutting the plant, and boiling it in water. The liquor is evaporated to the consistence of honey, and is run into large gourd shells, in which it becomes concrete.

The taste of all the kinds of aloes is intensely bitter; their odour is disagreeable. They consist of extract and resinous matter; the former being in larger quantity; the latter, obtained by the action of alkohol, has little smell or taste. Alkohol diluted with one, or even with two parts of water, dissolves all the active matter of this concrete juice. Boiling water also dissolves it, but a portion of resin is deposited as the solution cools.

Aloes, as a cathartic, has some peculiarities. It is slower in its operation than any other purgative; it merely evacuates the contents of the intestines, and no greater effect is obtained from a large dose than from one comparatively moderate. These have been regarded as proofs, and perhaps justly, that its operation is principally on the larger intestines. Its medium dose is from 5 to 10 grains, and its usual form of exhibition that of pill. As a purgative, it is often employed to obviate habitual costiveness; and from operating simply as an evacuant, and without any irritation, it is peculiarly adapted to this. Hence its use in hypochondriasis, in jaundice, and other cases attended with torpor of the intestinal canal. It is also often combined with other cathartics to produce more complete evacuation. From the supposition of its stimulant operation being more particularly exerted on the rectum, it has been supposed to have a

tendency to occasion hæmorrhoids,—an opinion for which there does not appear much foundation. On the supposition too of its stimulating effect being extended to the uterus, it has been regarded as a purgative to be avoided during pregnancy, and on the same hypothesis it has been supposed to exert an emmenagogue power: and is not unfrequently used in amenorrhœa.

Offic. Prep.—Pil. Aloes. Pil. Al. cum Assafœt. Pil. Aloes cum Colocynth. P. Aloes cum Myrrh. T. Aloes Æth. T. Aloes cum Myrrh. Vin. Aloes Socc. *Ed.*—Pil. Aloes cum Zingib. Pulv. Al. cum Canella. Pulv. Al. cum Guaiac. *Dub.*—Pulv. Aloes Comp. T. Aloes C. Decoct. Aloes. Extract Aloes. *Lond.*

CONVOLVOLUS SCAMMONIA. Scammony. *Pentand. Monogyn. Campanaceæ. Gummi-resina. Syria.*

SCAMMONY is obtained by cutting the root of the plant obliquely, a few inches above the ground. A milky juice exudes, which is collected, and inspissated by exposure to the sun and air. It is in small fragments, of a blackish grey colour, having little smell, and a bitter sub-acrid taste. It is however variable in its qualities, and is often adulterated by the intermixture of earthy matter. It is one of what are named Gum-resins, and consists of resin and gum in general nearly in equal proportions. Water dissolves about one-fourth of it; alkohol dissolves about two-thirds; proof-spirit almost entirely, the impurities excepted.

Scammony is one of the drastic purgatives, and is employed chiefly where the less powerful substances of this class would fail. Its dose is from 5 to 10 grains, but it is generally combined in a smaller dose with other cathartics. It is also used as a hydragogue purgative in dropsy, combined

usually with super-tartrate of potash; and is frequently employed as an anthelmintic cathartic, combined with jalap and calomel.

Offic. Prep.—Pulv. Scamm. C. *Ed.*—Pulv. Scamm. C. Confect. Scamm. *Lond.*

GAMBOGIA. Gamboge. Stalagmitis Cambogiodes. *Polygam. Monoec. Tricoccæ. Gummi-resina. India.*

THIS gum-resin is obtained by exudation, from incisions made in the branches and trunk of the tree, and is afterwards inspissated. It is brittle, of a lively yellow colour and resinous fracture, has a taste bitter and acrid. Water and alkohol partially dissolve it, and its solution in alkohol becomes turbid on the addition of water; the alkalis also dissolve it. It affords one of the best examples of what is named a Gum-resin; the proportion of resin appears to exceed considerably that of gum, alkohol dissolving a much larger quantity of it than water does.

Gamboge is a very powerful cathartic, liable in large doses to excite vomiting, or to act with violence, and occasion profuse evacuations, with griping and tenesmus. Its medium dose is from 2 to 6 grains. It is seldom employed but in combination with some of the other powerful cathartics, in obstinate constipation. It is also used to expel the tape-worm, and as a powerful hydragogue cathartic in dropsy. In the latter application of it, it is frequently combined with super-tartrate of potash.

Offic. Prep.—Pil. Gambog. Comp. *Lond.*

SUB-MURIAS HYDRARGYRI. MURIAS HYDRARGYRI MITIS. CALOMELAS, Mild Muriate of Mercury. Sub-muriate of Mercury. Calomel.

THOUGH several of the preparations of mercury have a

degree of cathartic power, this is more considerable in the mild muriate than in the others, and it is in common use as a cathartic. It operates as such, when given alone in a dose of from 5 to 10 grains, but with more certainty and power when its operation is promoted by the addition of a little jalap or rhubarb. One valuable quality which it has, is that of promoting the operation of other cathartics, without exciting any additional irritation, or rendering them liable to act with violence: it is therefore, in more obstinate cases of constipation, or where it is an object to procure full evacuation, combined with colocynth, scammony, or gamboge; and such a combination affords the safest of the powerful cathartics. Calomel also appears to be adapted to answer particular indications, from its action on the liver, and its power of promoting the discharge of bile. Hence the advantage derived from it as a purgative in different forms of fever, particularly those of warm climates, and in chronic hepatitis.

A DIVISION of Cathartics remains, intermediate in their operation between the Laxatives and Purgatives, more powerful than the one, less acrid and stimulating than the other. These are the Compound Salts. They appear to act principally by stimulating the exhalent vessels on the inner surface of the intestines, so as to cause a larger proportion of serous fluid to be poured out, which dilutes the contents of the canal, and by its operation, aided by the stimulus of the saline matter, accelerates the peristaltic motion. By the watery evacuation which they thus occasion from the general system, they are particularly adapted to those cases where inflammatory action or tendency to it exists.

SULPHAS MAGNESIÆ. Sulphate of Magnesia.

THIS salt, formerly known by the names of Bitter Purg-

ing Salt, and Epsom Salt, is found in mineral waters, whence it has been extracted, but at present is principally obtained from the liquor remaining after the crystallization of muriate of soda from sea-water, which holds a quantity of it and of muriate of magnesia dissolved. This is boiled down, and when exposed to sufficient cold affords acicular crystals of sulphate of magnesia; the quantity of which is sometimes increased by previously adding to the bittern sulphate of iron, by which part of the muriate of magnesia is decomposed. The crystals procured by this process are deliquescent from the presence of a little muriate of magnesia; the sulphate, when pure, forms large regular crystals, which are rather efflorescent. They are soluble in nearly an equal weight of water at 60°. Their taste is extremely bitter.

This salt is used as a purgative, in a dose of from one to two ounces, dissolved in water. Though its taste be bitter, it has been remarked that it remains better on the stomach than many other cathartics, especially when given in small repeated doses, and in a solution largely diluted. Exhibited in this manner, it has been particularly recommended in ileus and colica pictonum. It is often an ingredient also in purgative enemas.

Sulphas Sodæ, Sulphate of Soda, long known by the name of Glauber's Salt, is prepared by various processes on a large scale. In the process given in the Pharmacopœias, it is obtained from the residuum of the decomposition of muriate of soda, by sulphuric acid, in the preparation of muriatic acid. The saline mass is dissolved in water; any excess of acid is neutralized by the addition of lime, and the pure sulphate of soda is obtained by evaporation. Its crystals are six-sided prisms; they are efflorescent, soluble in three parts of cold, and in an equal part of boiling water. The taste of

this salt is very bitter and nauseous; but operating effectually and mildly, it is one of the saline purgatives in most common use. Its medium dose is an ounce and a half, dissolved in six or eight ounces of water.

SULPHAS POTASSÆ. Sulphate of Potash, formerly named Vitriolated Tartar, is prepared either by adding dilute sulphuric acid to a solution of sub-carbonate of potash, or by neutralizing the excess of acid, in the saline mass which is the residuum of the distillation of nitric acid from sulphuric acid and nitre. It forms in small irregular crystals, which require 17 parts of cold water for their solution. In a dose of 4 or 6 drachms, it acts as a purgative, but its comparatively sparing solubility prevents it from being much employed; in one of 2 or 3 drachms, it is given as an aperient, frequently in combination with rhubarb or other vegetable cathartics.

SUPER-TARTRAS POTASSÆ. Super-Tartrate of Potash, formerly Crystals or Cream of Tartar, (Crystalli vel Cremor Tartari).

THIS salt is gradually deposited from wine, in the progress of the slow fermentation which it suffers when kept. It appears to be derived from the juice of the grape, and is probably separated by the diminution of the solvent power of the juice by the evolution of its spirituous product. The tartar, as it is named, adheres to the sides of the casks in which wine is preserved; it is of a red colour, from part of the colouring matter adhering to it: from white wines it is deposited of a lighter shade, and hence the distinctions of red and white tartar in commerce. This saline matter consists essentially of tartaric acid and potash, the acid being in

excess; it is therefore the Super-tartrate of Potash: it also usually contains a small portion of tartrate of lime. It is purified by boiling it in water with a portion of pure white clay, which appears to attract its colouring matter, and from the boiling liquor strained while hot, crystals are deposited on cooling, white and semi-transparent, of no very regular form. These used to be named Crystals of Tartar, while the crust collected from the surface of the boiling liquor was named Cream of Tartar. The crystals are reduced to powder for use, and to this powder the latter name is still frequently given. This salt consists, according to Thenard's analysis, of 57 of acid, 33 of potash, and 7 of water. Its taste is sour from its excess of acid. It is sparingly soluble in water, requiring about 60 parts of cold, or 30 of boiling water, for its solution. It operates as a purgative in a dose of 4 or 6 drachms, and being free from any unpleasant taste, it is not unfrequently used, more especially in inflammatory states of the system. It is, from its insolubility, given generally under the form of electuary; the only inconvenience attending its operation, is its being liable to occasion flatulence; and if habitually used, it is liable from its acidity to injure the tone of the stomach. It appears, at the same time, to increase the action of the absorbent system; hence, as a hydragogue and diuretic, it is employed in dropsy, and is also the cathartic most effectual in removing obesity. As a diuretic and refrigerant, it is to be afterwards noticed.

TARTRAS POTASSÆ. Tartrate of Potash. Tartarum Solubile. Soluble Tartar.

THIS salt, the neutral tartrate of potash, formerly named Soluble Tartar from its greater solubility, is prepared by saturating the excess of acid in the super-tartrate by the addi-

tion of a solution of carbonate of potash. From its affinity to water, it is not easily crystallized with regularity; when obtained by evaporation in the state of a dry powder, it is even somewhat deliquescent; its taste is bitter. It is a mild purgative, and at the same time operates effectually, given in a dose of six drachms or an ounce.

TARTRAS SODÆ ET POTASSÆ. Tartrate of Soda and Potash.

THIS salt, formerly known by the name of Rochelle Salt, is a triple one, being prepared by saturating the excess of acid in the super-tartrate of potash by adding a solution of carbonate of soda. It crystallizes in large and regular transparent rhomboidal prisms, which are permanent in the air, and soluble in about six parts of cold water. Its taste is less unpleasant than that of the greater number of the saline purgatives, and it operates in a similar manner. Its medium dose is an ounce, given usually dissolved in tepid water.

PHOSPHAS SODÆ. Phosphate of Soda.

To prepare this salt, bones are calcined to whiteness, so as to consume the animal matter, and obtain the phosphate of lime, which is their base. The calcined bone in powder is submitted to the action of suphuric acid, which combines with part of the lime, and leaves a super-phosphate of lime, which is dissolved by water. To this solution, a solution of carbonate of soda is added, till there remain a slight excess of alkali; the soda combines with the excess of phosphoric acid of the super-phosphate; the neutral phosphate of lime, which the excess of acid held in solution, is precipitated, and by evaporation the phosphate of soda is obtained crystallized. Its crystals are rhomboidal prisms. Its taste is the least

nauseous of all the saline purgatives, and is indeed perfectly mild, and its operation is equally mild and effectual. Hence it has been introduced into practice, and is peculiarly useful as a cathartic where there is any tendency to nausea. One ounce of it is given, dissolved generally in tepid water, or in soup made without salt.

Murias sodæ. Muriate of Soda.

This salt, formed of soda and muriatic acid, is the most abundant saline natural product. It exists in a fossil state, forming what is named Rock Salt; it is the principal saline ingredient in the water of the ocean, and is a common ingredient in mineral waters. It is usually procured by evaporation from sea-water in small irregular crystals: when more regularly crystallized, the form of its crystals is a cube; its taste is purely saline. Like other salts, it excites thirst, an effect probably arising from its action on the absorbents: it also operates as a grateful stimulant on the stomach, and hence its universal use as a condiment. In large doses it proves purgative; but its strongly saline taste prevents it from being employed. It forms the active ingredient, however, of the common domestic enema; from half an ounce to an ounce of it being dissolved in a pound of tepid water, and a small quantity of expressed oil added.

Murias magnesiæ. Muriate of Magnesia.

This salt is, next to muriate of soda, the principal saline ingredient in sea-water, and communicates to it its pungent quality. It frequently communicates the same quality to mineral waters, of which it is a common ingredient; but not

being easily obtained crystallized, or even solid, owing to its strong affinity to water, it is not used in its pure form.

Besides the preceding Cathartics, there are some which are employed as such only under the form of Enema.

Terebinthina veneta. Venice Turpentine. *Pinus Larix. Monœc. Monadelph. Coniferæ.*

The resinous juice of this tree, the Larch, exudes from incisions made in its trunk. It is of the consistence of honey, has the peculiar smell of the turpentines, and a bitter acrid taste. It consists of resin and essential oil; sometimes it is employed as a cathartic under the form of enema, half an ounce of it being triturated with the yolk of an egg, and suspended in a sufficient quantity of water. As it has a considerable share of acrimony, it is employed only where those of milder operation fail.

Nicotiana tabacum. Tobacco. (Page 167.)

The smoke of tobacco, introduced into the intestines, has sometimes succeeded in producing evacuation in colic and ileus, after other purgatives have failed, not improbably from its narcotic operation inducing relaxation of the muscular fibre. An infusion of one drachm of it in a pint of warm water is more convenient; but much caution is requisite in the use of either, as tobacco, from its narcotic power, is apt to induce extreme sickness and debility. It is only where other methods have been unsuccessful, that its administration can be proper.