## SECOND DIVISION.—OF LOCAL STIMULANTS.

UNDER this division are comprehended those remedies, the stimulant operation of which is directed to particular organs. This comprises Emetics, Cathartics, Diuretics, Sialogogues, and those various other classes that have usually been arranged under the title of Evacuants, their local operation giving rise to increased secretion, or increased evacuation.

## CHAP. VII.

### OF EMETICS.

EMETICS are defined, Medicines which excite vomiting, independent of any effect arising from the mere quantity of matter introduced into the stomach. This definition, however, requires to be still more limited; for there are many substances which occasionally induce vomiting, that are not usually ranked as emetics. All bitter and nauseous drugs have this effect, when given in large doses, or in an irritable state of the stomach; and it oc-

curs frequently as the consequence of the action of many stimulants and narcotics. The emetic operation, however, from these causes, is neither uniform nor certain: there are, on the contrary, a number of substances, many of which have no very nauseous taste, or which can have that taste concealed, but which still excite vomiting when given in a sufficient dose in every individual, and in every state of the stomach. To these substances the appellation of Emetics is exclusively applied. They may therefore be defined, Substances which excite vomiting, independent of any effect arising from the quantity of matter introduced into the stomach, of any nauseous taste or flavour, or of any narcotic or acrid power.

When an emetic has been given in a proper dose, the stomach remains for some time undisturbed. But in 10, 15, or 20 minutes an uneasy sensation, with nausea, supervenes, which continues increasing until vomiting begin. While the nausea only is present, the countenance is pale, the pulse is feeble, quick and irregular, and there is a feeling of cold; but during the action of vomiting the face becomes flushed, the pulse is quickened, though still feeble, and remains so in the interval of vomiting. The vomiting generally recurs twice or thrice, and then ceases; a degree of nausea remains, which goes off only gradually; there is a degree of languor, and often a disposition to sleep; the pulse is weak and slow, but becomes gradually fuller; the skin is usually moist.

The general theory of the operation of vomiting is suf-

ficiently evident. The vermicular or peristaltic motion of the stomach, by which the food is propelled through the pylorus, is inverted; the diaphragm and abdominal muscles are called into action by association; the pylorus is contracted, and the contents of the stomach are forcibly discharged upwards. In many cases of vomiting, especially when violent, the peristaltic motion even of the upper part of the intestinal canal is also inverted, and bile is brought into the stomach from the duodenum.

At the same sime, it is very difficult to explain how the peristaltic motion is inverted by emetics. It is a singular fact, that any substance acting as an unusual stimulus to the stomach seldom increases its motion, so as to occasion a more speedy discharge of its contents by the pylorus. The motion, instead of being increased, is more commonly inverted, and hence vomiting is the effect peculiarly resulting from such local stimulant action. Nor is it easy to assign any cause for this specific operation.

Dr Darwin gave a different explanation of the nature of vomiting. He considered it as the effect, not of increased, but of decreased action of the fibres of the stomach. When an emetic is administered, it produces, he observes, the pain of sickness, as a disagreeable taste in the mouth produces the pain of nausea: these uneasy sensations not being acutely painful, do not excite the organ into greater action, but rather repress the motions already existing. The peristaltic motion of the fibres of the stomach becomes languid from the want of the usual

stimulus of pleasurable sensation, and in consequence stops for a time, and then becomes inverted, which gives rise to the phenomena. In this theory, there is however equally a deficiency in explaining how the inversion of the motion is effected.

There is a considerable difference among individuals with regard to the facility with which vomiting is excited. This susceptibility is also liable to be altered by disease. In the greater number of febrile affections, vomiting is easily excited; while in several of the diseases of the class Neuroses, as mania, melancholia and hypochondriasis, it is excited with much more difficulty. In the case of poisons, which induce inflammation of the stomach, vomiting is almost a constant symptom; while in those which act by a narcotic power, and in which the irritability of the stomach is impaired, a very powerful emetic is required to produce any effect.

Although nausea or sickness generally accompanies vomiting, this connection is not a necessary one. Some emetics, as sulphate of zinc, act without occasioning much nausea; while others, as tobacco, excite it in a greater degree than is proportioned to their emetic power, —a circumstance sometimes requiring to be attended to in the administration of individuals of this class.

The feeble and low state of the pulse, which attends vomiting, has been ascribed either to direct association between the motions of the stomach and those of the heart; or to the nausea excited, which, like other disagreeable sensations not acutely painful, have a depressing

effect, being equivalent probably to an abstraction of stimulus.

Emetics, at least those which are mild in their operation, do not appear to waste the irritability of the stomach: they have rather an opposite effect: hence digestion is often vigorous after vomiting, and hence too gentle emetics are often serviceable in dyspepsia, and in the temporary diminished tone of the stomach occasioned by intoxication.

The state of the stomach produced by vomiting seems to be often extended to the vessels of the skin; it is therefore followed frequently by diaphoresis, and is one of the most powerful means of removing spasmodic stricture from the surface of the body.

Emetics have a remarkable power of increasing absorption: hence the benefit they afford in anasarca, and the sudden disappearance of tumors which sometimes happens after violent vomiting.

Emetics frequently occasion increased evacuation from the intestinal canal; and if they fail to excite vomiting, very generally operate as cathartics. Some are more apt to have this effect than others, as the preparations of antimony compared with ipecacuan.

From the different indications which emetics are capable of fulfilling, they are adapted to the treatment of many morbid affections.

Where disease depends on a disordered state of the stomach, arising from over-distention, the presence of acrid or indigestible matters, or any other cause, vomiting

is the easiest and most effectual mode of affording at least present relief. Hence its utility in all cases of indigestion, impaired appetite, acidity in the stomach, pyrosis, or anorexia; in the symptoms arising from intoxication, and where poisons of any kind have been swallowed.

From the strong action of the diaphragm and abdominal muscles in vomiting, the gall bladder and hepatic ducts are emptied of their contents; and hence jaundice, owing to obstruction from biliary calculi, is sometimes suddenly relieved by vomiting. A similar pressure is supposed to be exerted during vomiting on the thoracic viscera, and from this has been explained the expectorant effects of emetics, and the relief they afford in some varieties of asthma and catarrh.

In the different varieties of febrile diseases, much advantage is derived from the administration of an emetic, especially in the commencement of the disease. In synocha, where there are symptoms of highly increased action, and particularly where there is determination of blood to the head, full vomiting may be attended with some danger; and in typhus fully established, it cannot be expected to be of much benefit. In the slighter cases of pyrexia, it is often attended with marked advantage. The emetic should be given in the evening, as its operation leaves a tendency to sleep, and to diaphoresis, which it is useful to promote.

At one time, the practice of giving emetics in fever in such doses as to excite nausea without producing vomiting was common. It is more distressing to the

patient, and does not appear to be equally effectual in stopping the progress of the disease. This mode, however, of giving nauseating doses of emetics, is often useful in hæmorrhage, where full vomiting would be dangerous; the nausea excited diminishes the force of the circulation, and hence it is sometimes employed in hæmoptysis and menorrhagia.

From the powerful effects of emetics, their improper administration may be extremely hurtful, and there are various states of the system which either prohibit their use, or allow them to be employed only with caution. During the operation of vomiting, the blood returns with more difficulty from the head, owing partly to the pressure on the descending aorta, and partly to the interrupted respiration, by which the transmission of blood through the lungs is impeded; hence the redness of the countenance, and the vertigo which sometimes accompany it. From this cause it must be attended with danger in all cases where there are symptoms of determination to the head, and more especially in plethoric habits. From the strong action of the abdominal muscles exerted in vomiting, it has been considered as not without risk in visceral inflammation, in the advanced stage of pregnancy, and in hernia and prolapsus uteri. In extreme debility, there is danger of the patient sinking under the violence of the operation. The frequent repetition of emetics in chronic diseases is in general prejudicial, by weakening the tone of the stomach, and rendering its motions more liable to be inverted by slight causes.

The mode of administering emetics does not admit of many general observations. They should be given in the form of draught; as if in a solid form, the emetic might pass from the stomach into the intestines, without exciting vomiting. A common practice is to promote the action of emetics by taking large draughts of tepid water, or of an infusion of chamomile. If an emetic is given in a large dose, this is not necessary, as it will excite vomiting repeatedly at intervals; but if given in a moderate dose, it may excite vomiting only once; nausea and efforts to vomit will recur, however, at intervals, and then vomiting may be renewed by a draught of tepid water, or of a bitter infusion. We thus obtain the advantages of repeated vomiting, without the risk attending a large dose of a powerful emetic. Too large a draught ought not to be taken, as it renders the operation more difficult or painful. Some acrid emetics, however, as mustard, require always to be largely diluted.

The most natural subdivision of this class is into Emetics from the Vegetable, and from the Mineral Kingdom,

# EMETICS.

*From the Mineral Kingdom.*

Antimonium.
Zincum.
Cuprum.

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Ammonia.
Hydro-sulphuretum ammoniæ.

*From the Vegetable Kingdom.*

Callicocca ipecacuanha.
Scilla maritima.
Anthemis nobilis.
Sinapis alba.
Asarum europæum.
Nicotiana tabacum.

## *Emetics from the Mineral Kingdom.*

### Antimonium. Stibium. Antimony.

The metal to which this name is appropriated, is peculiarly distinguished as an evacuant, and under various forms of preparation furnishes some of our most powerful cathartics, diaphoretics, and expectorants. All its preparations in larger doses act as emetics, and several of them are in common use for their emetic power. It is therefore under this class that its general history may be introduced.

Antimony, in the modern chemical nomenclature, is the name applied to the pure metal. This metal is found in nature most abundantly combined with sulphur, and to this ore the name of Antimony was once generally given by chemical and medical writers; the epithet Crude being frequently added to distinguish it, when it is melted out from the impurities mingled with it. The ore in this state is now named Sulphuret of Antimony, and the simple name Antimony is appropriated to the metal itself.

The native sulphuret is of a grey or blue colour, with metallic lustre; it is opaque, and has usually a striated texture. To free it from the earthy matter with which it is mixed, when dug from the vein, it is fused. Its lustre is greater the more completely it is purified. The

proportions of its principles are various; sometimes they are nearly equal; in other specimens the quantity of metal is larger; and there are some varieties unfit for medicinal use, as containing other metals, particularly lead, and sometimes copper. These have inferior lustre, and a less distinctly striated texture.

The pure metal is usually obtained from the ore by melting the latter with iron-filings, the iron combining with the sulphur, while the antimony, being very fusible, is run out. The metal is of a bluish white colour, and plated texture, moderately hard, and very brittle; it melts easily, and is even volatilized by a heat not very intense; it is oxidated by exposure to the air at a temperature moderately increased; and in the state of oxide, it is capable of combining with the greater number of the acids.

The sulphuret of antimony has little activity, and indeed produces scarcely any sensible effect on the system. The preparations of the metal are much more active, and though of very different degrees of strength, retain the same general mode of action, and possess therefore the same medicinal virtues. They do not exert any general stimulant operation on the system, but are always directed in their action to particular parts, so as to occasion some sensible evacuation.

The principal general medicinal application of antimony in these preparations has been for the cure of febrile affections. It is given either so as to induce vomiting or purging, or sometimes in smaller doses, so as

to produce only gentle diaphoresis; and exhibited in either mode in the commencement of the disease, it has been considered as capable of cutting short its progress. The use of James's powder, which is an antimonial, has been extensive with this view, and both it, the emetic tartar, and other antimonials, are still employed. Their efficacy has usually been ascribed to the evacuation they occasion, while others have considered antimony, apparently with little reason, as exerting an action specific or peculiar in itself in the cure of fever, and not explicable on the known effects it produces. Its administration is not easily regulated with precision; in small doses it often fails in producing the favourable crisis expected from its operation; and in larger doses it is liable to act with violence, and produce evacuations under which the powers of the system have sunk. It is principally in the commencement of fever that advantage is derived; in the more advanced stages, when the state of debility is induced, more hazard attends its employment, and less advantage is to be expected from it.

Antimonials have been found to have good effects in intermittent as well as in continued fever, in several of the phlegmasiæ and exanthemata, and even in several of the profluvia, probably from their evacuating operation.

As an emetic, antimony is distinguished by the certainty, extent, and permanence of its operation. The action it excites in the stomach is both more forcible, and continues for a longer time, than that from other eme-

tics, and hence it produces more complete evacuation, and occasions in a greater degree all those effects which result from the action of vomiting. Its action is also less local. It is generally extended to the intestinal canal, so as to produce purging, and very frequently to the surface of the body, so as to occasion diaphoresis or sweat. It is used more particularly where the effects of full vomiting are required; but where these are not wished for, more gentle emetics are usually preferred.

Of the preparations of antimony, it is necessary to take only a very cursory view, as they are to be more fully noticed in another part of the work. They may be arranged under those in which the metal is combined with sulphur; those in which it is oxidated; and those in which it is brought into a saline state by combination with acids.

Of the first, the Levigated Antimony (Antimonium Præparatum), which is merely the native sulphuret reduced to a state of mechanical division, is the only preparation. It has been given as a diaphoretic, especially in chronic rheumatism, and in some cutaneous affections, in a dose from 15 grains to 1 drachm; but it is so inert and uncertain, that it is now discarded from practice.

The oxides of antimony are more active, but they are liable to the inconvenience of being uncertain in their operation, partly perhaps from their activity being dependent on the state of the stomach with regard to acidity, partly from the various degrees of oxidation in which they may exist, and which are not easily rendered uniform,

and partly too from their state of aggregation. Proust has supposed, that there are only two oxides of antimony, one at the *minimum*, containing 18.5 of oxygen in 100 parts, the other at the *maximum*, containing 23 of oxygen. This supposition rests principally, however, on the vague assumption, that metals are susceptible only of two degrees of oxidation. Thenard has, on the contrary, endeavoured to prove, that there are at least six oxides of antimony capable of being distinguished by the proportions of oxygen which they contain; the one in the lowest degree of oxidation, containing not more than 0.02 of oxygen, that in the highest degree containing 0.32; and the others containing intermediate proportions. It may be doubtful whether these degrees of oxidation can be established with perfect precision; but it is sufficiently probable, that antimony may combine with very different quantities of oxygen, and that even, like other metals, its degrees of oxidation are indeterminate, when they are not fixed by external circumstances connected with their formation. One other circumstance rendering the composition of the preparations of this class more complicated and variable, is that they are usually obtained by processes performed on the sulphuret of antimony, and hence they frequently retain a portion of sulphur in their composition.

The following oxides of antimony retain a place in one or other of the Pharmacopœias.

Oxidum Antimonii Sulphurettum. Sulphuretted Oxide of Antimony.—Of this there are two varieties, differing in the proportions of their elements, and in the

state of aggregation. The first is what used to be named Crocus of Antimony (Crocus Antimonii), what is now named by the Edinburgh College, Oxidum Antimonii per Nitratem Potassæ. It is prepared by deflagrating sulphuret of antimony with an equal part of nitrate of potash. The greater part of the sulphur is oxidated, and either dissipated in the state of sulphurous acid, or in the state of sulphuric acid remains combined with the potash of the nitre; a brown oxide of antimony remains, combined, according to Proust, with one-fourth of sulphuret of antimony, but which it is more probable is directly combined with a portion of sulphur. It acts as a diaphoretic, emetic, or cathartic, but is so uncertain in its operation that it is never prescribed. It serves for the preparation of some other antimonials, and is now employed by the Edinburgh College for the preparation of emetic tartar.

The second oxide of this family is what is named Oxidum Antimonii cum Sulphure Vitrificatum, formerly Vitrum Antimonii.—This is prepared by exposing sulphuret of antimony to the action of atmospheric air at a high temperature. The sulphur is dissipated, and the antimony oxidated, and by the intensity of the heat the oxide is vitrified. It still retains combined with it a portion of sulphur, or, according to Proust, one-ninth of sulphuret of antimony. The oxide which forms its basis, contains, according to Thenard, 16 of oxygen in 100 parts. It has always combined with it too a portion of silex, derived from the crucible in which it is melted, this earth

probably promoting its vitrification. Its operation is extremely harsh, and at the same time so uncertain, that it cannot be medicinally employed.

Oxidum Antimonii Vitrificatum cum Cera.—This is prepared by exposing the powder of the preceding preparation with an eighth part of wax to heat. It is thus rendered milder, probably by part of its oxygen being abstracted by the carbonaceous matter of the wax. It is a preparation, however, which has no advantage, and though once highly celebrated in dysentery, in a dose of from 5 to 15 grains, has been long in disuse, and might be expunged from the Pharmacopœias in which it is still retained.

Oxidum Antimonii Album, formerly named Antimonium Calcinatum.—This is prepared by deflagrating sulphuret of antimony with a large quantity of nitrate of potash, (three times its weight), so that the sulphur is entirely abstracted, and the metal is saturated with oxygen. This oxide retains also combined with it a portion of the potash of the nitre. The preparation is one comparatively inactive, and does not excite vomiting in a dose less than a scruple or half a drachm. In smaller doses, it has been used as a diaphoretic in the treatment of fever.

Oxidum Antimonii cum Phosphate Calcis, also named Pulvis Antimonialis.—This is prepared by exposing to heat sulphuret of antimony and bone-shavings, until they are converted into a grey coloured substance, which is exposed in a crucible to a more intense heat, until it become white. The animal matter of the bones is de-

composed, the sulphur of the sulphuret is dissipated, the metal is oxidated, and this oxide remains mixed or combined (part of it being also in a vitrified state,) with the phosphate of lime of the bones. The preparation is similar in composition to the celebrated James's Powder, for which it is designed as a substitute. It acts as a diaphoretic, emetic, or cathartic, according to the dose in which it is administered, and is employed principally as a remedy in fever, to arrest the progress of the disease at its commencement, or afterwards to obtain a favourable crisis. It is given in a dose from 5 to 10 grains, repeated, if necessary, after an interval of five or six hours, until sweat, purging, or vomiting, is induced. Its peculiar advantages are, that with a considerable degree of activity, it is less harsh in its operation, and more uniform than some of the other antimonial oxides, while, from its insolubility, it acts less rapidly on the stomach than emetic tartar does; it is therefore less liable to excite nausea or vomiting, and can be given so as to obtain with more certainty the general action of antimonials on the system. Its exhibition is best adapted to those forms of fever in which there is increased vascular action: in typhus, less advantage can be expected from it, and it is even hazardous from the excessive evacuations it is liable to induce.

Sulphurettum Antimonii Præcipitatum.—This name, obviously incorrect, is given by the London and Edinburgh Colleges to a preparation formerly named Sulphur Auratum Antimonii. The Dublin College have named it Sulphur Antimoniatum Fuscum. It is prepared by

boiling sulphuret of antimony with a solution of potash, and adding to the filtered liquor, sulphuric acid, while any precipitate is thrown down. This precipitate is of a reddish yellow colour; it is a combination of oxide of antimony with sulphuretted hydrogen and sulphur. In a dose from 5 to 10 grains, it produces the usual effects of antimonials, and has been employed as a remedy in fever; but from the uncertainty of its operation, it is discarded from practice.

The preparation named Kermes Mineral, and which is used on the continent, is the precipitate that subsides on cooling from the liquor formed by the boiling a solution of potash on sulphuret of antimony; it differs from the former in containing less sulphur, and appears indeed to be merely a combination of oxide of antimony with sulphuretted hydrogen. It is given in a similar dose.

Antimonii Oxidum.—Under this name, which is far from being distinctive, a preparation is inserted in the London Pharmacopœia, formed by boiling sulphuret of antimony in muriatic acid, with the addition of a little nitric acid; straining the liquor, and adding to it a solution of sub-carbonate of potash. The precipitate is probably a sub-muriate. It is designed to be employed only in the preparation of other antimonials.

By combining the oxides of antimony with an acid, the sources of uncertainty in their operation are in a great measure removed, as their degree of oxidation is rendered determinate, and their activity is not influenced by the

state of the stomach with regard to acidity. The greater number of these saline combinations, however, are too acrid to admit of internal administration, and there is one only, that in which the oxide of antimony is combined with tartaric acid, employed in practice. Of all the antimonials, this is most extensively used, and it is also the principal emetic derived from the mineral kingdom.

This preparation, the Emetic Tartar of the old nomenclature, the Tartrate of Antimony and Potash of Modern Chemistry (Tartras Antimonii et Potassæ), improperly named in the Pharmacopœias, Tartris Antimonii, and Antimonium Tartarizatum, is obtained by boiling super-tartrate of potash with oxide of antimony; the brown oxide obtained by the deflagration of sulphuret of antimony with nitre, is ordered by the Edinburgh College; the white oxide, or rather sub-muriate, obtained from the decomposition of muriate of antimony, is employed by the London and Dublin Colleges: the excess of tartaric acid in the super-tartrate, is saturated by the antimonial oxide; and by evaporation and crystallization, a triple salt, tartrate of antimony and potash, is procured. Its crystals are triedral pyramids, generally small; and it is readily soluble in water. It consists, according to Thenard's analysis of it, of 38 of oxide of antimony, 16 of potash, 34 of tartaric acid, and 8 of water of crystallization.

Tartrate of antimony and potash is superior to all the antimonials, at least as an emetic; as with a degree of activity, which admits of its being administered with safety, its operation is sufficiently certain and uniform.

As an emetic, it is established in common practice: it usually excites vomiting in the dose of a grain, or a grain and a half; but the proper mode of administering it is in divided doses, three or four grains being dissolved in four ounces of water, and an ounce of this solution being given every quarter of an hour, until it operate. It generally excites full vomiting, and is liable to be somewhat more active in its operation than the milder emetics, such as ipecacuan, evacuating not only the contents of the stomach, but inverting even the motion of the duodenum, and either by this or by the compression exerted by the action of the muscles on the abdominal viscera causing bile to be discharged: it also frequently excites purging. In many cases, however, these are advantages, and in these, as well as in all morbid affections, where the stomach is not easily affected, it is the emetic properly employed; while, when the stomach is irritable, where its contents are merely to be evacuated, or when the strength is exhausted, the milder emetics are to be preferred. In smaller doses, it has been employed as a nauseating remedy in fever,—a practice, however, now nearly relinquished. Assisted in its operation by tepid diluents, it may also be brought to operate as a diaphoretic, and to produce the effects of antimonials on the general system, though from its action being exerted at once on the stomach, owing to its solubility, it is more difficult to administer it with this intention without occasioning nausea or vomiting, than some of the less active antimonials, as the phosphate of antimony and lime.

Vinum Tartritis Antimonii.—This name is given to a solution of tartrate of antimony and potash in white wine, in the proportion of two grains to the ounce, and is intended as a substitute to what was formerly named Antimonial Wine,—a preparation obtained by digesting wine on oxide of antimony, and owing its power to the portion of oxide which the tartaric acid of the wine dissolved. A similar preparation is inserted in the London Pharmacopœia, under the name of Liquor Antimonii Tartarizati, in which the tartrate of antimony and potash is dissolved in wine diluted with water. The propriety of either is doubtful. It has no advantage over a solution of extemporaneous preparation; and there is some reason to believe, that the tartrate in this state of solution is liable to spontaneous decomposition. In the preparation of the London College, this will probably happen still more readily from the dilution of the wine. It is principally as a diaphoretic that antimonial wine has been employed, in a dose of one drachm, its operation being often promoted by combination with tincture of opium.

Murias Antimonii.—Muriate of Antimony is the only other saline preparation of this metal inserted in the Pharmacopœias; and it has a place as affording a product employed in the preparation of other antimonials. Sometimes it has been applied externally as an escharotic.

Zincum, Zinc. (Page 227.).

Sulphate of Zinc, it has already been remarked, is a

powerful emetic; and as it operates speedily, and with much force, it is sometimes employed in cases where it is difficult to excite vomiting, but where it is of importance that the contents of the stomach should be immediately evacuated, where any narcotic poison has been swallowed. Its dose is from 5 to 20 grains, according to the state of the stomach, and it should be given in a state of solution.

CUPRUM. Copper. (Page 229.).

SULPHATE of Copper acts as an emetic, and its operation taking place almost as soon as it has reached the stomach, and without inducing much nausea, it has been recommended in some cases, where the object is merely to obtain the mechanical effects from the operation of vomiting, as in incipient phthisis, in which advantage has been supposed to be derived from the compression exerted on the thoracic viscera. Its operation is, however, liable to be very harsh even in the small dose of 1 or 2 grains, in which it has been prescribed. In a larger dose, it has sometimes succeeded in producing vomiting, where the stomach, from the operation of a narcotic poison, had not been affected even by the sulphate of zinc. The acetate or sub-acetate of copper has, like the sulphate, an emetic power, and has been employed in similar cases in a dose of one or two grains. It is liable to the same disadvantages.

Ammonia.—Ammonia dissolved in water is applied to different medicinal purposes, and under some of the other classes it is to be more fully considered. When given in a pretty large dose, it is liable to excite vomiting, and it is sometimes employed to quicken the operation of other emetics where they have failed, a tea-spoonful being given in a cupful of cold water, and a draught of tepid water being swallowed after it.

Hydro-sulphuretum Ammoniæ.—The Hydro-sulphuret of Ammonia obtained by passing a current of sulphuretted hydrogen gas through a solution of ammonia in water, was introduced by Dr Rollo, and has been received into the Edinburgh Pharmacopœia. It acts with much energy on the stomach, inducing nausea in a small dose, and in a larger dose occasioning vomiting. It is scarcely used as an emetic, but rather as a nauseating remedy; and the principal application of it has been in the treatment of diabetes, with the view of reducing the morbid appetite and increased action of the stomach. It was given in a dose of from 5 to 15 drops, twice a-day, and with advantage so far as related to the reduction of the increased action of the digestive organs.

## *Emetics from the Vegetable Kingdom.*

Ipecacuanha. Ipecacuan. Callicocca Ipecacuanha. Cephaëlis Ipecacuanha of Wildenow. *Pentand. Monogyn. Aggregatæ. Radix. South America.*

The natural history of this vegetable is still somewhat obscure, and the obscurity is increased by the roots of different plants being sometimes met with in the shops as ipecacuan. Hence the plant affording it has been successively referred to different genera. It is now, by the Edinburgh and London Colleges, referred to the genus Callicocca, and distinguished as a species by the name Ipecacuanha; but it appears still uncertain, whether the two more common varieties of ipecacuan are products of the same vegetable, the Peruvian and the Brazilian. The former has been even considered as a different species. The ipecacuan of the shops is usually in small wrinkled pieces, externally grey, internally whiter; has a faint smell, and a bitter, slightly acrid taste. It contains both a resinous and gummy matter, or at least a matter principally soluble in alkohol, and another more soluble in water. It is generally stated, that its emetic power, and indeed its principal virtues, reside in the former. Dr Irving has affirmed that they depend on the latter. Its active matter is completely extracted by proof-spirit or wine. Vinegar likewise dissolves it, but

at the same time greatly weakens its power. By decoction with water, its activity is greatly impaired, though the water distilled from it has scarcely any emetic effect. It is even injured by being kept long exposed in the state of powder to the air and light.

Ipecacuan is the mildest of those emetics which are at the same time sufficiently certain in their operation. It evacuates the contents of the stomach, without exciting violent vomiting, or extending its action beyond this organ; and is hence adapted to many cases where violent vomiting would be prejudicial. The medium dose of it as an emetic is 15 grains, though 20 or 30 may be taken with perfect safety, as it only operates more speedily, and a dose rather large is even preferable to a small dose, as more certain, and producing less nausea. The ipecacuan wine acts as an emetic in the dose of an ounce. Though principally employed as an emetic, ipecacuan is occasionally prescribed with other views. It was originally introduced as a remedy in dysentery, given either in such a dose as to produce full vomiting, or in the quantity of 2 or 3 grains repeated every three or four hours, till it occasioned vomiting, diaphoresis, or purging. It has been given in a similar mode in obstinate diarrhœa. In spasmodic asthma, it is exhibited in a full dose to relieve the paroxysm; and in a dose of 3 or 4 grains continued every morning for some weeks to prevent the disease. A singular idiosyncrasy has been observed in some individuals with regard to it, difficulty of breathing being induced by the

effluvia arising from it in powder, especially when it is diffused in the air. In hæmorrhagies it is given in nauseating doses, the nausea diminishing the force of the circulation. Combined with opium, it forms a very powerful sudorific.

*Offic. Prep.*—P. Ipecac. et Opii. Vin. Ipecac. *Edin. Lond.*

Scilla maritima. Squill. *Hexand. Monog. Liliaceæ.*
*Radix. South of Europe.*

Squill is the bulbous root of a plant growing on the sandy shores of Spain and Italy. It has little smell; its taste is bitter and acrid, and it is capable of inflaming the skin; its acrimony is lessened by drying; but its bitterness and active powers as a medicine are little impaired. In drying, it loses about four-fifths of its weight. Its active matter is extracted by water, alkohol, and vinegar. The latter is the solvent commonly employed, as it best covers its nauseous taste, and it does not appear to injure its powers.

Squill, when given in a sufficient dose, excites vomiting, though it is seldom used with that intention in substance. The vinegar of squill acts as an emetic in a dose of 2 or 3 drachms, as does the syrup when given in double that quantity; and either of them is sometimes given in pertussis; the syrup, in particular, from its sweetness, being easily given to children. The dose is a drachm to a child below five years of age, and its activity is advantageously promoted by the addition of a little

ipecacuan wine. This root is, however, much more used as a diuretic and expectorant; uses of it which are afterwards to be noticed.

*Offic. Prep.*—Acet. Scill. Mar. Pil. Scill. Syr. Scill. Mar. *Ed. Lond. Dub.*—Tinct. Scill. *Lond. Dub.*

ANTHEMIS NOBILIS. Chamomile. (See p. 257.)

ALL bitter drugs are liable to excite nausea or vomiting. Chamomile has perhaps more peculiarly this effect; a strong infusion of the dried flowers in tepid water excites vomiting, and a weaker infusion is often employed to quicken the action of other emetics, a draught of it being taken instead of tepid water.

SINAPIS ALBA. Mustard. *Tetradyn. Siliq. Siloquosæ. Semen. Indigenous.*

MUSTARD-SEED, when bruised, has a very considerable degree of pungency, and in powder, given in the dose of a large tea-spoonful, mixed with water, operates as an emetic. From its stimulant quality, it has been recommended in preference to other emetics in apoplexy and paralytic affections, and in such cases has sometimes been found to excite vomiting, when these had failed. It is convenient also as an auxiliary, when the dose of an emetic has not operated, a little of the powder of mustard being taken diffused in tepid water.

ASARUM EUROPÆUM. Asarabacca. *Dodecand. Monogyn. Sarmentaceæ. Folia. Indigenous.*

THE leaves and root of this vegetable, prior to the introduction of ipecacuan, were frequently employed on account of their emetic quality; the dose of the dried leaves was 20 grains: of the dried root, 10 grains. As they were occasionally violent in their operation, and at the same time uncertain, they have fallen altogether into disuse. The plant is still retained in the Materia Medica as an errhine.

NICOTIANA TABACUM. Tobacco. (See p. 183.)

THE leaves of this plant, in a person unaccustomed to their use, by chewing, or smoking, excite even in a small dose very severe and permanent nausea and vomiting: the same effects have followed even from their external application to the region of the stomach; and this method of exciting vomiting has been proposed to be employed in cases in which emetics cannot be easily administered by the mouth. Tobacco is sometimes taken under the form of infusion by the common people, but its operation is always harsh, and accompanied with severe sickness.