
APPENDIX

TO

VOLUME SECOND.

MINERAL Waters are complicated in their composition, and, according to the substances with which they are impregnated, produce different effects on the system, and are hence employed to answer different indications. At the same time, they have certain common medicinal relations. They are therefore not easily arranged under the classes of the *Materia Medica*, when these are established on analogies in medicinal operation. It is also of advantage to give a connected view of their chemical analysis. I have therefore thought it preferable to place them together, and have accordingly referred them to this appendix. The Elastic Fluids that have been employed medicinally, require a similar arrangement, as there is the same difficulty in placing them under the respective classes of medicines; and from the peculiarities in their preparation and mode of operation, the same advantage in giving their history in connection. I have added a few observations on the medical employment of Electricity and Galvanism, to complete the view of what properly belongs to *Materia Medica*. And, lastly, as connected with the subject, I have subjoined the heads of a lecture, which I have been accustomed to deliver on the doses of medicines, and the rules that regulate extemporaneous prescription.

I.—OF MINERAL WATERS.

WATERS, which flow at the surface of the earth, are frequently impregnated with foreign matter, so far as to acquire peculiar taste or odour, to be capable of exerting specific chemical actions, or to produce changes in the state of the living system. Such waters are denominated Mineral, it being usually matter belonging to the mineral kingdom which communicates these powers.

Important medicinal effects are frequently obtained from mineral waters, arising primarily from the operation of the substances which they hold dissolved, though this is no doubt aided by the state of dilution in which they are administered, the action of the water itself as a diluent, and by other external circumstances. The chemical analysis, therefore, of these waters is of importance, as determining the principles in which their active powers reside, and thus enabling the physician to employ them with more advantage and discrimination.

Mineral waters, both in a chemical classification, and considered in relation to their medicinal use, may be arranged under four orders: **CARBONATED MINERAL WATERS**, or those impregnated with carbonic acid gas; **SULPHUREOUS MINERAL WATERS**, or those impregnated with sulphuretted hydrogen; **SALINE MINERAL WATERS**, or those which hold certain neutral salts in solution; and

CHALYBEATE MINERAL WATERS, or those, the properties of which depend on an impregnation of iron. These indeed are not perfectly insulated, but, in general, those of one division have a certain relation to those of the others, by being likewise impregnated with one or other of the ingredients which these contain. But still each may be classed according to its predominant ingredient, or that which gives it its most characteristic chemical and medicinal powers.

It would be foreign to the object of this outline, to give the minute details connected with the analysis of mineral waters. This properly belongs to a System of Chemistry. It will be sufficient to point out the general modes of analysis, or rather of discovering their principles, and to add to this chemical view, a brief account of their medicinal applications.

I. CARBONATED MINERAL WATERS.—The waters referred to this class are those which contain carbonic acid gas; and to bring them under the appellation of mineral waters, this must be present in such quantity as to communicate certain sensible qualities. Waters impregnated with free carbonic acid gas, sparkle when drawn from the spring, or poured into a glass; they have a taste more or less pungent and acidulous, but become vapid from exposure to the air. Along with the carbonic acid there may be present, and, indeed, generally are present, portions of saline earthy or metallic matter, chiefly carbonates of lime, magnesia, and iron. But the car-

bonic acid in excess still communicates the same sensible qualities, modified, particularly with regard to medicinal powers, by these impregnations.

Carbonic acid in excess, in a mineral water, is discovered, when present in any considerable proportion, by the qualities above enumerated, communicated to the water. It is also easily distinguished, even when in more minute quantity, by chemical tests. Infusion of litmus receives from the addition of the water a red tint, which is evanescent, disappearing from exposure to the air, and more quickly when heat is applied. And lime water produces a milkiness or precipitation; the lime, when the lime water is added in due proportion, forming with the carbonic acid, carbonate of lime, which is insoluble. But the turbid appearance is removed, and the transparency restored, either by adding an additional quantity of the mineral water, the excess of carbonic acid thus communicated rendering the carbonate soluble, or by adding a few drops of nitric or muriatic acid, either of which decomposes the carbonate, and dissolves the lime. By the evanescent redness, carbonic acid is discriminated from any other free acid that a mineral water might hold dissolved; and by the precipitate formed by lime disappearing from the addition of a larger quantity of the mineral water, or of a little muriatic or nitric acid, the fallacy is guarded against that might arise from any precipitation produced by sulphates that the water might contain.

The quantity of carbonic acid contained in the mineral waters is very various. Under a common pressure,

pure water can absorb its own volume of the gas, but the quantity in any mineral water is generally much inferior to this. The quantity is discovered by expelling the gas from a given quantity of the water, by heating it gradually in a retort nearly filled to the neck, receiving the elastic fluid in a graduated jar, over quicksilver, and observing the diminution of volume it sustains, by the introduction of a solution of potash, this giving the volume of carbonic acid gas.

Waters highly impregnated with carbonic acid gas are grateful from their pungency, sit light on the stomach, and in a large dose produce even sensibly a degree of exhilaration; they increase the appetite, and generally have a diuretic effect. They prove useful in dyspeptic affections, from the grateful and moderate stimulus exerted by the carbonic acid on the stomach, aided by the diluent operation of the water, and hence the advantage derived from them in the numerous chronic affections connected with impaired power of the digestive organs. They generally also contain some saline substances, which communicate additional powers, and the operation of these is usually promoted, or at least they are rendered more grateful, by the carbonic acid. Those which contain carbonate of soda, as Seltzer water, prove more powerfully diuretic, and are employed with advantage, as palliatives in urinary calculus, and in the painful discharge of urine from other affections of the urinary organs. Those impregnated with iron are more particularly employed in those diseases in which that metal is

beneficial. Some of the most celebrated mineral waters of Europe belong to this class, such as the Spa, Pymont, and Seltzer Water. The Pymont contains very nearly its own volume of the gas; the Seltzer, more than half its volume; the Spa, rather less than half the volume: they besides hold dissolved carbonates of soda, lime, and magnesia; and the Spa and Pymont have a considerable impregnation of carbonate of iron. Their more minute analysis will be found in the table at the end of this article. None of the mineral springs of this country are much impregnated with carbonic acid; and those which contain any sensible quantity, as the waters of Bristol and Cheltenham, derive more activity from the presence of other substances.

II. SULPHUREOUS MINERAL WATERS.—These waters owe their distinguishing character to an impregnation of sulphuretted hydrogen, and they are at once recognised by their peculiar fœtid smell. They are transparent when drawn from the spring, but become turbid from exposure to the air, and gradually lose their odour. When strongly impregnated, they redden infusion of litmus, and even in their weakest state give a dark precipitate with solution of nitrate of silver, or acetate of lead, or tarnish the metals.

To estimate the quantity of sulphuretted hydrogen gas contained in these waters, various methods have been employed. The gas is not easily expelled entirely by heat, nor is it easily collected, so as to measure it accu-

rately, water absorbing it, and quicksilver decomposing it : it may also have an intermixture of carbonic acid gas, and the proportion of this is not easily ascertained, both gases being absorbed by the same liquids. The mode which has been followed is to decompose the sulphuretted hydrogen, by adding to the water, either highly fuming nitrous acid, as long as there is any precipitation of sulphur, (this precipitation being occasioned by the oxygen of the acid combining with the hydrogen of the sulphuretted hydrogen), or, according to a method preferred by Kirwan, mixing nitric oxide gas with atmospheric air, in a jar over the water, when nitrous acid is formed, and produces a similar decomposition. The precipitated sulphur is collected on a filter, and from its quantity, the quantity of sulphuretted hydrogen is inferred, 30 grains of sulphur being supposed to be contained in 100 cubic inches of the gas. This estimate, however, of the proportion of sulphur in sulphuretted hydrogen is somewhat uncertain, and the method is liable to fallacy, from the action of the acid becoming weak by its dilution, so as not to precipitate the whole of the sulphur, or, if it be used in excess, from its communicating oxygen, and converting it partially into sulphuric acid.

The sulphurous mineral waters almost uniformly contain saline substances, which modify their powers. From the action of the sulphuretted hydrogen, they are employed more particularly in cutaneous affections ; and from the combined action of this and the saline matter, which generally has a purgative effect, they are farther used in

diseases of the digestive organs, dyspepsia, hypochondriasis, torpor of the intestines, and visceral obstructions; and also in scrofulous affections. They are also applied locally in cutaneous eruptions, and the warm sulphurous baths have been in particular celebrated for their efficacy under this form of application. The principal sulphurous mineral waters of this country are those of Harrogate and Moffat: the former have a large proportion of saline matter, muriates and carbonates. Those celebrated on the Continent are chiefly the warm sulphurous springs of Aix la Chapelle, and Barege.

III. SALINE MINERAL WATERS.—Under this class are comprised those waters in which, without any large proportion of aerial matter, various saline compounds, generally neutral, exist. The salts most usually present are sulphates, muriates and carbonates; and the bases with which the acids forming these are combined are soda, magnesia and lime. Their analysis is accomplished, first, by detecting, by the employment of tests, the acids present and the bases by which these are neutralized; and, secondly, obtaining the entire salts by evaporation, or by the action of certain re-agents.

In these waters, there is often an impregnation of elastic fluid, particularly of carbonic acid, which would modify the results from the application of tests. This, after its nature has been determined by experiment, is expelled by heat, in order to facilitate the farther analysis; and in general also, it is of advantage to reduce the volume

of the water by evaporation, as the operation of tests becomes then much more sensible than under a state of great dilution.

Sulphuric acid, in any state of combination in a mineral water, is discovered with great delicacy by muriate of barytes, the barytes attracting it, and forming a compound not sensibly soluble, the production of which, therefore, gives rise to a turbid appearance, and precipitation. The only fallacy that requires to be guarded against is, that the same apparent results may be produced by carbonic acid present in the mineral water, either in a free or combined state; but this is easily discovered by the precipitation or turbid appearance being removed, by the addition of a few drops of nitric acid, or not appearing if this has been added to the mineral water previous to the addition of the muriate of barytes. Other tests of sulphuric acid have been employed, such as superacetate of lead, and nitrate of mercury; but these are both less delicate and less accurate.

Muriatic acid is detected by nitrate of silver, the oxide of silver combining with the muriatic acid, and forming an insoluble compound, which gives to the water first a bluish white turbid appearance, and ultimately precipitates. This test is extremely delicate, or detects the most minute quantity of muriatic acid, and in any state of combination whatever. But it is liable to fallacies, against which it is necessary to guard. The principal of these arise from the presence of carbonic acid or sulphuric acid, either of these giving rise likewise to milki-

ness and precipitation on the addition of the solution of silver. The operation of carbonic acid is prevented by previously adding a little pure nitric acid to decompose any carbonate: that of sulphuric acid can be obviated only by removing it by the previous addition of nitrate of barytes, as long as any precipitation is induced. If, on adding to the transparent fluid, after these preliminary experiments, the nitrate of silver, any milkiness is produced, this indicates the presence of muriatic acid. Sulphuretted hydrogen gives a precipitate with this test; but the nature of this is, from its dark colour, sufficiently evident.

Carbonic acid, in a combined state, is detected by muriate of barytes producing a turbid appearance, and a precipitation, which are removed by the addition of a few drops of nitric acid. Waters containing any considerable impregnation, either of alkaline or earthy carbonates, sensibly affect the vegetable colours, changing, when there is no excess of carbonic acid, or when this is removed by ebullition, the colour of Brazil wood, which is red, to a tint of blue, or restoring the blue tint of litmus which had been reddened by the addition of a little vinegar. When the water is considerably reduced by evaporation, a sensible effervescence is excited on the addition of an acid; and during the evaporation, the earthy carbonates are precipitated, while the alkaline carbonates remain dissolved, and are discovered by their power of changing the yellow colour of turmeric to a brown.

These acids are usually combined with soda, lime or

magnesia; and to complete the analysis by the application of tests, these bases must be discriminated.

Lime is detected, with the greatest delicacy of effect, by oxalic acid. The acid indeed with which the lime is combined in the water, when evolved by the action of the oxalic acid, is liable to re-act on the precipitate, and retain it in part dissolved; but this may be guarded against by using oxalate of potash. Magnesia is precipitated by the same acid; but this can scarcely give rise to any fallacy, as this precipitation takes place very slowly, while that with lime is immediate.

Magnesia is precipitated by ammonia partially, and by lime water entirely; the principal fallacy to which both tests are liable is, that argil is also precipitated by them, and though this earth is not of very common occurrence in mineral waters, it is occasionally found. The best method of distinguishing them is to dry the precipitate, and boil gently a solution of potash on it, this dissolving argil, but leaving magnesia undissolved. Succinate of ammonia, it has lately been discovered, precipitates argil, but not magnesia. In using lime water as the precipitant, it is necessary to guard against the fallacy that may arise from the presence of carbonic acid free or combined, with which the lime may unite, and form a precipitate: this may be avoided by removing any carbonic acid by the previous addition of a little nitric acid. Any sulphuric acid also that may be present ought to be removed by nitrate of barytes, as it might unite with the lime, and give rise to a precipitate of sulphate of lime.

Soda, which is the alkaline base almost exclusively found in mineral waters, cannot be discovered by any test, such as that by which we discriminate the preceding ingredients. The presence of it, therefore, is inferred, when the analysis discovers acids in the water, which are not uncombined, and which, at the same time, cannot be inferred from the application of tests to be in combination with earthy bases. It is also discovered in its state of combination with any of the usual acids by evaporation, carried so far, that its salts are obtained crystallized. By the same method the other compound salts, those having lime, magnesia, or argil, for their base, are discovered, and hence evaporation is always employed in combination with the use of tests in conducting the analysis of a mineral water. Different substances separate at different stages of the evaporation, according to their degrees of solubility: the earthy carbonates are usually first precipitated, afterwards the earthy sulphates, at least the sulphate of lime: the clear liquor poured off and allowed to cool, affords the alkaline neutral salts and sulphate of magnesia by crystallization; the muriates of magnesia and lime usually remain dissolved in the residual liquor, and by these separations the analysis is facilitated.

Advantage is also taken of the powers of alcohol, both as a solvent and as a precipitant, to separate these substances. When the water is reduced to a concentrated state by evaporation, the addition of alcohol throws down certain salts, while others remain dissolved; and of those which are precipitated, some are thrown down by a small

quantity of alkohol, or when the evaporation has not been carried far; while others are separated only when the alkohol is added in larger proportion, or when the water is farther evaporated. Thus, sulphate of lime is first precipitated, then carbonate of lime and carbonate of magnesia, afterwards sulphate of soda and sulphate of magnesia, while the muriates in general remain dissolved. In applying the solvent power of alkohol to facilitate the analysis, the water is evaporated to dryness, and this dry matter is submitted to the action of alkohol; the muriates which are present are in general dissolved, while the sulphates and carbonates remain undissolved.

By these operations, too, the quantities of the respective salts contained in a water are determined; the substances separated being either brought to a certain state of dryness, or being dissolved separately in water and crystallized. The quantities are sometimes inferred, too, by estimation from the precipitates afforded by re-agents; the quantity of sulphuric acid, for example, being determined from the weight of the precipitate of sulphate of barytes, obtained by the addition of muriate of barytes; that of muriatic acid from the weight of the precipitate of muriate of silver, obtained by the addition of nitrate of silver; and that of lime from the weight of the precipitate of oxalate of lime; these quantities being inferred according to the composition of these compounds, as they have been determined by the most accurate experiments. In general, these methods require to be combined to insure accuracy, especially with regard to the determination of proportions.

At the same time, it may be doubted, whether the view, which has usually been given with regard to the state in which these substances exist in mineral waters, is just. It has been supposed, that they are dissolved in the water in those forms of binary combination in which they are obtained by evaporation or precipitation; that if muriate of soda, for example, sulphate of magnesia, and carbonate of lime are obtained by these methods, the mineral water held these salts dissolved. Of this, however, there is no proof, and the most correct views of chemical affinity rather lead to the conclusion, that the different acids and different bases exist with their affinities balanced, contributing to mutual neutralization, in simultaneous combination, and that these binary compounds are established only by the exertion of the force of cohesion, and are therefore actually formed by the processes by which they are obtained. If this view be just, the only conclusion that can strictly be drawn from the analysis is, that certain acids and certain bases exist in the mineral water, and it may appear to be superfluous to attempt to determine the quantities of the binary compounds. Still, as reducing the estimation to a standard, this is as useful as any other mode: it corresponds more directly with the results of the experiments which have been hitherto made, and we can, if necessary, infer from the quantities thus determined of the secondary compounds, the proportions of the primary principles.

Saline Mineral Waters are usually aperient, the substances which they hold dissolved being either so far as

can be determined inert, such as the sulphate and carbonate of lime, or being cathartic, as the greater number of the other compound salts. It has always been remarked, too, with regard to them, that their cathartic power is greater than could be supposed from the extent of their saline impregnation, as determined by analysis;—a proof of the influence of dilution in the operation of mineral waters. They are usually employed in diseases where it is of advantage to stimulate the digestive system, the intestinal canal, and the secreting organs connected with it, or where advantage is derived from moderate and continued evacuations. Hence their celebrity in the treatment of some forms of dyspepsia and hypochondriasis, chlorosis, chronic hepatitis, jaundice, and in scrofula. The most noted saline water is that of Sedlitz: that of Seltzer, along with a portion of saline matter, has a large impregnation of carbonic acid, and that of Cheltenham, an impregnation both of carbonic acid and iron.

When these waters are impregnated with carbonic acid, which they frequently are, they become more grateful, and sit easier on the stomach. When they have an impregnation of iron, they acquire tonic powers, and more efficacy as remedies in amenorrhœa, and the other chronic diseases in which this metal is employed.

Sea Water, in strict chemical arrangement, must be regarded as belonging to the class of saline mineral waters, as it holds dissolved merely various neutral salts, chiefly muriate of soda and of magnesia, and sulphate of soda and magnesia, with a little sulphate of lime. It

much exceeds, however, in the extent of impregnation, any common mineral water: the proportion of saline matter varies in different latitudes, according to the temperature, producing greater or less evaporation, and it is liable to be varied by the discharge of large rivers into the ocean. But, on an average, the quantity appears to be about $\frac{1}{10}$, of which, from the experiments of Bergman and Lavoisier, it appears, that about 20 are muriate of soda, 5 muriate of magnesia, 3 sulphates of magnesia and soda, and 1 sulphate of lime. Its medicinal powers are similar to those of the saline mineral waters; from the extent of its saline impregnation, it is more active as a cathartic, and this renders it more stimulating than fresh water as a bath.

IV. CHALYBEATE MINERAL WATERS.—These owe their characteristic properties, chemical and medicinal, to an impregnation of *Iron*. The oxide of iron is almost uniformly held dissolved by carbonic acid, the acid being usually in excess; in a few mineral waters, sulphate of iron is present; but these are rare, and are in general too active to be well adapted to medicinal use.

Chalybeate waters have a peculiar styptic taste; they are transparent when taken from the spring, but when exposed for some time to the air, a pellicle forms on the surface, and a quantity, generally minute, of ochry sediment subsides, the water at the same time losing its taste; this change is accelerated by heat.

Iron is discovered, with great facility, by chemical

tests. Prussiate of potash detects it by the blue colour to which it gives rise ; infusion of galls by the purple colour which it strikes. The latter test is more delicate than the former, and it is much more accurate ; the prussiate of potash being always liable to fallacy, from the difficulty of obtaining it free from iron ; hence the infusion of galls, or rather the tincture of galls, ought always to be preferred. The principal circumstance to be remarked with regard to its operation, is, that the purple colour which it strikes, by the gallic acid and tannin of the infusion combining with the oxide of iron, is liable to be altered in its tint by the presence of other substances: alkaline and earthy carbonates in particular render it violet : neutral alkaline salts appear to deepen the purple colour, and sulphate of lime renders the precipitate at first whitish, and afterwards black. Carbonate of lime has a singular effect : if the iron is in a low state of oxidation, it heightens the colour ; but when the oxidation is greater, it has the opposite effect ; and if the quantity of iron be small, the colour may even not appear on the addition of the test. This fact, discovered by Mr Phillips, enabled him to explain a singular circumstance with regard to the Bath Mineral Water,—that when newly taken from the spring, and while still warm, it gives a purple colour with galls, indicating the presence of iron ; while, after exposure for a little time to the air, no colour appears, though no oxide of iron has been precipitated.

By applying the test of galls before and after boiling the mineral water, we are enabled to discover whether

the iron is held dissolved by carbonic or sulphuric acid; the carbonic acid being expelled by the ebullition, and the oxide of iron precipitated, so that after filtration of the liquor when cold, the purple colour does not appear; while the sulphate, though likewise partially decomposed by the ebullition, still so far remains, that a colour not much fainter will be produced. The presence of carbonic or sulphuric acid may also be determined by their usual tests, and sulphate of iron may be obtained by evaporation.

The quantity of oxide of iron may be determined from its precipitation, on exposure to the air; the whole or very nearly the whole of it, when it is combined with carbonic acid, being precipitated, in consequence partly of the escape of the acid, and partly of the iron passing to a higher state of oxidation, so that its attraction to the acid becomes weaker. It has also been estimated from the weight of the precipitate, formed by the addition of prussiate of potash; or, by a more recent and less exceptionable mode, precipitating it by the addition of succinate of soda, and afterwards decomposing the precipitate of succinate of iron, by exposing it to a red heat with a little carbonaceous matter, 100 parts of the oxide obtained by the calcination containing about 70 of iron.

Chalybeate mineral waters are remedies of considerable activity and power. They act as tonics, increasing the strength of the system, raising the force of the circulation, giving tone to the digestive organs, augmenting muscular vigour, and promoting the excretions. They

are of course employed in those diseases in which iron is principally used, amenorrhœa, chlorosis, some states of menorrhagia, leucorrhœa, dyspepsia, scrofula, and various forms of chronic debility. And as iron always succeeds best when given in small doses, and in a state of considerable dilution, the chalybeate waters afford the best form under which it can be prescribed, that which is at once attended with least irritation, and from which the greatest benefit is obtained. The powers of these waters, too, are often aided by the presence of other ingredients. The impregnation of carbonic acid, when it is present in excess, gives them a grateful stimulant quality, which is exerted on the stomach; and saline substances communicate to them an aperient power.

One of the purest chalybeate waters, as will be perceived from the annexed table, is that of Tunbridge. In the celebrated Spa and Pymont waters, the impregnation of carbonic acid is so great, as very materially to modify the action of the iron; and in the Cheltenham water, the quantity of active saline matter is such, that it can scarcely be regarded as a chalybeate.

Besides the substances which have been enumerated as forming the preceding classes of mineral waters, there are some principles common to all of them, so as to be occasionally found in those of each class; and there are some also, which are of very rare occurrence, either of which scarcely require more than a concise enumeration.

Atmospheric air is contained in all water that flows at

the surface of the earth, and renders it more grateful and light as drink. It scarcely in its entire state appears to be contained in more than the usual proportion in any mineral water, while in those in which other elastic fluids are present in large quantity, it is probably deficient. Neither does it appear that *Oxygen* gas is ever present in a proportion larger than that in which it exists, as a constituent of the atmospheric air in water. The fact, rather singular, has been established, however, that *Nitrogen* gas is afforded by mineral springs. It had often been observed, that, in the mineral spring at Buxton, a quantity of elastic fluid was discharged with the water, and a portion escaped on exposure from the water itself. This was supposed to be carbonic acid; but Dr Pearson discovered it to be nitrogen gas, mixed with a little atmospheric air, the volume of air amounting to about $\frac{1}{84}$ of the water. It was afterwards discovered by Dr Garnet in the mineral waters of Harrowgate.

Sulphurous acid gas has been found in some hot mineral waters in the neighbourhood of volcanoes, but is scarcely to be looked for in any other situation. The *Mineral acids* have likewise, though rarely, been found uncombined, or at least in excess. *Sulphate of Argil* and *Sulphate of Iron* sometimes occur, arising probably from the oxygenation of aluminous slate impregnated with sulphuret of iron, through which the water has passed. *Muriate of Manganese* has been detected in minute quantity. Lastly, *Silex* exists in solution, especially in hot springs. It is deposited abundantly from the water of the Geyser fountain in Iceland. It is dissolved in the water of the hot

springs of Carlsbad, and Dr Gibbes found it in the Bath waters.

THE temperature of mineral waters gives rise to a very important distinction among them. The greater number are at the average annual temperature of the place where the spring is situated; others are considerably superior to this, or are positively warm. This modifies their powers. The warmth of the tepid waters renders them rather more stimulating when swallowed, a glow of warmth being felt in the stomach, and sometimes the head is slightly affected. Externally applied under the form of the bath, the temperature has even a more important influence on their operation, than any impregnation they may have. In some celebrated mineral springs, the salutary powers appear to depend principally or entirely on the temperature, and on the water acting as a diluent, as in the warm mineral waters of Bristol, Matlock, and Buxton, and in the cold spring of Malvern.

In the following table is presented the results of the analysis of the most celebrated mineral waters. I have arranged them as nearly as possible according to the preceding classes, though there is considerable difficulty with regard to some of them, which, from the substances they hold dissolved, belong to one class as well as to another. Thus the Spa and Pymont waters belong both to the classes of carbonated and chalybeate waters. I have placed them under the former, as the impregnation of carbonic acid is so very considerable, and gives them perhaps their most important properties. Cheltenham wa-

ter may be placed either as a saline or as a chalybeate water. I have given it the former rank, as the saline matter appears to give it its principal activity. To the four established classes I have added a fifth, those of Pure Waters, or waters so free from any foreign matter that their operation must be ascribed to the fluid acting partly by its temperature, and partly as a diluent. In some of these the analysis indicates a certain portion of foreign matter. But the substances are in general not different from those in common spring water, and are in smaller quantity. I have therefore supposed that they may be arranged under this class, nor have they any of the active powers of the others. There is some difficulty in assigning the place of one of the most celebrated mineral waters, the Bath Water. I have placed it, however, at the head of the pure waters, and immediately after the chalybeate waters, as the impregnation of active matter is inconsiderable, and its operation seems principally dependent on dilution and temperature, modified a little perhaps by the tonic quality of the small portion of carbonate of iron. I have inserted the latest analysis of it, that by Mr Phillips. With regard to the temperature, I have thought it sufficient to add the epithet cold, where the temperature is not above that of the external atmosphere; where it exceeds this, I have added the precise degrees. The proportions of the ingredients are those contained in a wine gallon of the water.

oxide
Muriate
Muriate
Muriate
Sulphate
Sulphate
Carbo-
Carbo-
Sulphu-
Carbonic
gen

The practicability of imitating the mineral waters has engaged the attention of Chemists. With regard to the active saline waters, it is easily done, by dissolving the due proportions of the compound salts in water corresponding to the analysis of the water designed to be imitated. We may also impregnate the solution with carbonic acid gas, and even with sulphuretted hydrogen; and by the medium of carbonic acid, it might receive an impregnation of iron. Directions for conducting these processes have been given by Bergman. But in all these cases, there will be wanting the confidence on the part of the patient in the efficacy of the artificial water, which, if not necessary to its success, is at least requisite to its continued and regular use: the external advantages too, attending the visit to a mineral spring, may not always be obtained. Hence these artificial waters, designed as substitutes for the natural ones, have never been established in use. Water, impregnated with carbonic acid, with the addition of an alkaline carbonate, which is now in general use, may be considered as operating on a similar principle; and to this super-carbonated soda, or super-carbonated potash water, a small quantity of any of the purgative salts is often added with advantage, communicating to the water an aperient quality, while the taste of the salt is covered, and it is rendered more grateful to the stomach.

III. OF THE GASES EMPLOYED AS REMEDIES.
SUBSTANCES existing in the aërial form might *a priori* be supposed capable of producing important effects on the system, as by respiration they are brought to act directly on the mass of blood, and induce in it chemical changes. They occasion too immediate and important alterations in the functions of life, some of them producing the highest excitement, others occasioning depression and exhaustion of power.

Though the expectations that were at one time formed, with regard to their medicinal efficacy, have not been realized, and the use of them has now been nearly relinquished; yet since they are capable of producing such changes in the state of the functions, and of the general system, and since the proposition must be admitted, that every substance possessed of these powers may be capable of producing medicinal effects, they ought not to be entirely lost sight of, or be discarded from the *Materia Medica*. In the aërial kingdom, we have actually the two extremes of Stimulant and Sedative Power, in the examples of nitrous oxide and carburetted hydrogen.

The modes of preparing these gases are, in a great measure, peculiar to each of them. The manner of administering them is nearly the same. They may be breathed from a jar placed in water; but this is laborious,

from the effort required to sustain the column of water within the jar. This may be partly remedied, by poisoning the jar in water, or, more completely, by breathing from the gazometer. But the easiest mode is, for the patient to breathe the gas from a silk bag, to which a tube with a stop-cock is affixed.

The gases that have been employed in medicine, may be considered under the divisions of those which *excite*, and those which *depress* the functions of life. To the former order belong,

GAS OXYGENIUM. Oxygen Gas.

GAS OXIDUM NITROSUM. Nitrous Oxide Gas.

Oxygen gas is procured from black oxide of manganese by heat. A quantity of the oxide is put into an iron retort, connected by a tube with a gas holder, or a large jar filled with water, inverted and placed on the shelf of the pneumatic trough. The retort is exposed to a full red heat; at this temperature the affinity of the oxygen to the manganese is so far weakened by the repulsive agency of the caloric, that a large portion of it is separated from the combination, and assumes the elastic form: the gas is transmitted through water, and is allowed to stand over it for some hours before it is breathed.

As oxygen is so immediately necessary to the support of life, it might be supposed, that when afforded in a more pure and concentrated state than that in which we breathe it in atmospheric air, it would prove a salutary agent of no inconsiderable power. To this inference,

however, independent of any experience, an objection occurs, founded on some experiments made by Lavoisier, and repeated by Davy, which appear to prove, that when animals are supplied with pure oxygen, or with oxygen mixed with a portion of atmospheric air, less of it is actually consumed than in ordinary respiration. This result appears, however, to have arisen from some fallacy in the experiments. Seguin, in subsequent experiments, found that the consumption of oxygen gas, when it is breathed pure, is at least equal to its consumption in ordinary respiration. And more lately, Messrs Allen and Pepys have found that in breathing pure oxygen gas, more of it is consumed in a given time, and more carbonic acid formed, than in breathing atmospheric air; they also observed a diminution in the volume of air, or the disappearance of a portion of it; whence they inferred, that, when oxygen is breathed pure, a quantity of it is absorbed by the blood. The positive action of oxygen, in the respiration of it, in its undiluted form, is also shewn by the effects which result from its inspiration, and still more unequivocally by the fact ascertained by Priestley, Lavoisier, and Davy, that animals confined in air, with an increased proportion of oxygen, die before it is exhausted, and even while the air which they breathe contains more oxygen than common air, and can enable another animal to live. It is obvious, therefore, that the animal dies not from deprivation of oxygen, but from some positive power the gas exerts, and probably, as may

be inferred, from some appearances which present themselves, from its too highly stimulating power.

Oxygen, when respired, acts partly by communicating a stimulating quality to the blood, by which the left side of the heart and the arterial system are excited to action: hence, when its supply by respiration is suspended, the contractions of the heart become feeble, and at length cease, as Goodwyn demonstrated. The phenomena of asphyxia from its abstraction, prove that it likewise exerts some other operation more immediately subservient to the functions of life; for in that disease the functions of life are suspended, while the contractions of the heart still continue, to a certain extent, as the experiments of Coleman have shewn.

The diseases in which oxygen gas has been administered, are principally those of chronic debility,—chlorosis, asthma, scrofula, dropsy, paralysis, and some cutaneous affections. It requires to be diluted with from ten to twenty or more parts of atmospheric air, increasing the proportion of oxygen according to the effects produced. From one to two quarts of oxygen are given, by breathing it in its diluted state, at intervals, in the course of the day. It generally increases the force and velocity of the pulse.

NITROUS OXIDE GAS.—This gas, a compound of oxygen and azote, in the proportion of 37 of the former to 63 of the latter, is most economically obtained, and in greatest purity, from the decomposition of nitrate of am-

monia by heat. When this salt is exposed to a temperature about 400° of Fahrenheit's scale, its principles react on each other, and enter into new combinations. The hydrogen of the ammonia attracts part of the oxygen of the nitric acid and forms water; and the remaining oxygen combining with the azote, both of the acid and of the ammonia, forms this particular compound, nitrous oxide, which is disengaged in the gaseous form. After its production it requires to stand some hours, to deposite a small portion of saline matter, before it is fit to be breathed.

The effects of nitrous oxide gas on the system, when it is respired, are scarcely analogous to those of any other agent. The excitement which it produces is extended to the functions of body and mind with more rapidity and force than that arising from the action of the most powerful stimulants. It is accompanied, too, with effects as various as they are peculiar; it excites usually a peculiar thrilling of the body, with feelings of pleasure not easily described: muscular vigour is increased, so that unusual exertions are made with alacrity and ease, and there is even an irresistible propensity to strong muscular exertion; the mind is also affected: there is usually a high degree of exhilaration, yet even when this is greatest, perfect consciousness remains. What still more marks the singularity of its operation, this high excitement of the functions of life and exhilaration of mind are not followed by proportional languor or debility; the state of the system gradually returns to the healthy standard,

without any apparent waste of power. A substance capable of acting in such a manner, we might suppose, would prove one of our most valuable remedies. The transient nature of its operation must undoubtedly limit its medicinal efficacy; but still, in diseases of extreme debility, we seem justified in expecting from its administration the most beneficial effects. It has not, however, been very extensively employed. In paralysis it has been used with advantage. In diseases of increased sensibility, it may prove hurtful; and when breathed by delicate females, it has, in more than one case, induced hysterical affections. The dose which is requisite to produce its peculiar effects varies from four to nine quarts, which may be breathed pure or diluted with an equal part of atmospheric air. It cannot be breathed undiluted for more than four minutes and a half, insensibility being induced. And it requires to be attended to in its administration, that its effects are considerably different in different individuals. On some, its operation has even been productive of unpleasant consequences, — palpitation, fainting, and convulsions.

Nothing satisfactory can be said as to its mode of action, since we know so little of the connection which subsists between the phenomena of life and the chemical changes which are carried on in the system. The experiments of Mr Davy appear to prove, that it is absorbed by the blood when respired; but, admitting this, we can discover nothing connected with its composition or chemical agency which can lead us to any explanation of its

peculiar effects. We can therefore only mark the dissimilarity of its operation to that of any other physical agent.

UNDER the second subdivision of the Gases,—those which depress the functions of life, might probably be placed all the substances existing in the aërial form, oxygen and nitrous oxide excepted. The following are those which have been medicinally employed :

GAS HYDROGENIUM. Hydrogen Gas.

GAS NITROGENIUM. Nitrogen gas.

GAS ACIDUM CARBONICUM. Carbonic Acid Gas.

GAS HYDROGENIUM CARBURETUM. Carburetted Hydrogen Gas.

HYDROGEN GAS is most easily procured by the action of diluted sulphuric acid on iron or zinc ; but as a little acid vapour might be diffused through it, it has been supposed preferable to obtain it, when it is designed to be breathed, by passing water in vapour over pure iron heated to the temperature of ignition. The iron attracts the oxygen of the water, and the hydrogen assumes the aërial form.

Hydrogen gas received into the lungs does not appear to exert any positive deleterious power : all its effects seem referable merely to the exclusion of oxygen. The respiration of it can accordingly be continued for some time, if it is mixed with a portion of atmospheric air,

without any deleterious effect. In a pure state, however, if the lungs have been previously emptied as much as possible of atmospheric air, it cannot be breathed but for a very short time. It quickly occasions a giddiness and sense of suffocation; the countenance becomes livid, and the pulse sinks rapidly, and a state of insensibility is soon induced. When diluted with two-thirds or an equal part of atmospheric air, it can be safely breathed; nor does it appear to produce any very important effect. It occasions some diminution of muscular power and sensibility, and a reduction of the force of the circulation. It has been respired, diluted usually with four or five parts of atmospheric air, in catarrh, hæmoptysis, and phthisis; but its powers seem merely those of a palliative, dependent on the partial exclusion of the stimulating power of oxygen.

NITROGEN.—What has been said of hydrogen applies likewise to nitrogen. It seems to exert no positive action on the system, but to produce any effects arising from its inspiration merely by excluding oxygen. As it is not so easily obtained pure as hydrogen gas, it has scarcely, if at all, been employed.

CARBONIC ACID GAS.—This gas is easily procured from the action of diluted sulphuric or muriatic acid on carbonate of lime (chalk or marble); but to obtain it in a proper state of purity for breathing, it is preferable to decompose the carbonate of lime by exposure to a strong

red heat in an iron bottle. The carbonic acid which is disengaged is collected over water, as it is not immediately largely absorbed by that fluid, and any vapour diffused through it is speedily condensed.

This acid gas, when it is inspired, proves more speedily fatal than nitrogen or hydrogen. It appears, from Mr Davy's experiments on its respiration, to excite spasmodic contraction of the epiglottis, so as to induce suffocation; and it has this effect, even when diluted with nearly an equal part of atmospheric air. Yet the operation of it is more speedily fatal than that of any other agent that acts by occasioning merely suffocation, which would lead to the supposition that it acts by some positive power,—a supposition confirmed too by the fact, that in animals, in whom the symptoms of life have been suspended by its respiration, the irritability of the heart is entirely destroyed.

The respiration of carbonic acid gas was employed at an earlier period than that of the other gases, and sanguine expectations were formed of it as a remedy in phthisis. In the many cases, however, in which it has been tried, though it frequently proved useful for a time, by lessening the expectoration, diminishing the hectic fever, and acting as an anodyne, there is little evidence of its having ultimately effected a cure. The difficulty, indeed, of employing this and all the other gases, is, that of obtaining their continued operation. In that state of disease existing in the lungs, in the earlier stages of phthisis, much advantage, for example, might probably be derived

from the continued respiration of a reduced atmosphere, while little can be expected merely from its occasional operation. Carbonic acid gas, when employed, was respired diluted with four or six parts of atmospheric air.

Carbonic acid has likewise been employed as a local application to cancer and painful ulceration, and has at least been serviceable as a palliative. A stream of it is directed on the part by means of a flexible tube, taking care to transmit the gas previously through water, if it has been obtained by the action of an acid of carbonate of lime, and confining it for some time over the sore by a funnel connected with the tube. A cataplasm, formed of substances in a state of fermentation, has, in some measure, a similar effect, and is more convenient in its application. A formula for this preparation has now a place in the London Pharmacopœia.

CARBURETTED HYDROGEN GAS.—The gas which has been used in medicine under this name is obtained by passing the vapour of water over charcoal at the temperature of ignition, in an iron tube. The oxygen of the water unites with one part of the charcoal, forming carbonic acid; the hydrogen combines with another part of it, and forms this species of carburetted hydrogen. The carbonic acid is abstracted by agitating the gas in lime water.

This is the most active of those gases which operate by depressing the functions of life, and is perhaps the most powerful agent of this kind. Even when largely diluted

with atmospheric air, it occasions immediate vertigo, sickness, diminution of the force and velocity of the pulse, reduction of muscular vigour, and in general every symptom of diminished power. It can scarcely be breathed in an undiluted state. Mr Davy found, that at the third inspiration, total insensibility was induced, and symptoms of extreme debility continued for a considerable time. These effects prove its positive deleterious agency.

As a medicinal agent, it is the gas of which the evidence in favour of its efficacy is greatest. In phthisis, in many cases, it unequivocally relieved the symptoms, and at least arrested the progress of the disease; and in diseases of increased action or increased power, much benefit might, from its known operation, be expected from its use. Much caution was found to be requisite in the trials that were made of it, with regard to the dose. At first, one pint of the carburetted hydrogen gas, diluted with twenty parts of atmospheric air, may be respired; the quantity may be slowly increased, and with less dilution, taking care to avoid the production of great vertigo or muscular debility. Not more than from two to four quarts can be taken in the day, even when the patient has been accustomed to it for some time. It is always more powerful when recently prepared, than when it has been kept for some days, a circumstance requiring to be attended to in the regulation of its dose.

AN application of the aërial fluids connected with medicine, is that of neutralizing or destroying noxious or contagious effluvia. These effluvia are probably evolved by chemical processes, and must consist of principles in forms of combination subject to chemical agency. It has accordingly been found, that the air of places offensive from the presence of such effluvia is corrected, and its freshness restored, by the diffusion of those acid gases, the operation of which, in changing the chemical constitution of compound elastic fluids, is most powerful. These are Oxy-muriatic Acid Gas and Nitric Oxide Gas. The power of the former in producing these effects appears, from the evidence brought forward by Guyton, to be unquestionable: considerable benefit appears, likewise, from the reports of Dr Carmichael Smyth, to be derived from the latter. It is however probably inferior to the oxy-muriatic acid gas in activity; but it has the advantage, that fumigation with it in the wards of an hospital, or in similar instances, may be had recourse to without the removal of the sick. The one is disengaged from a mixture of muriate of soda, black oxide of manganese, and sulphuric acid; the other from nitre and sulphuric acid, the mixture being put in small earthen cups, and a moderate heat applied to favour the disengagement of the gas.

ELECTRICITY.

THE medicinal operation of electricity may be referred to its stimulating power. It produces forcible contractions in the muscular fibre; excites therefore to action, if duly applied, and, when in excess, immediately exhausts irritability. It possesses the important advantages of being easily brought to act locally, and of being confined to the part to which it is applied, without at all affecting the general system, while it can also be employed in every degree of force.

Electricity is applied medicinally under the form of the stream or continued discharge of the fluid, under that of sparks, and under that of a shock; the first being the most gentle, the second being more active, and the last being much more powerful than either of the others. The stream is applied by connecting a pointed piece of wood, or a metal wire, with the prime conductor of the electrical machine, and holding it by an insulated rod one or two inches distant from the part to which it is to be directed. A very moderate stimulant operation is thus excited, which is better adapted to some particular cases than the more powerful spark or shock. The spark is drawn either by applying a metallic knob connected with

a rod in communication with the machine, the operator holding it by a glass handle ; or by placing the patient on an insulated stool connected with the prime conductor, and, while the machine is worked, bringing a metal knob within a short distance of the part from which the spark is to be taken ; a sensation somewhat pungent is excited, and slight muscular contractions may be produced ; these effects being greater or less, according as the spark is more powerful, this being regulated by the distance at which the knob is held, if the machine be sufficiently in action. The shock is given by discharging the Leyden phial, making the part of the body through which it is intended to be transmitted part of the circuit. The shock is of course stronger as the phial is large, and as it is fully or partially charged ; the sensation it excites is unpleasant, and the muscular contractions considerable, if it is of moderate intensity.

At the first introduction of electricity as a remedy, it was very highly celebrated for its efficacy in a number of diseases ; its use is now confined to a few. In paralysis it is not unfrequently had recourse to, to excite muscular contraction, and perhaps with some advantage. It is usually applied under the form of sparks, the application of it requiring to be continued daily for a considerable time. Sometimes moderate shocks are also employed ; but the propriety of this practice is somewhat doubtful. In amenorrhœa, as the stimulant operation can be excited, in some measure, in the vessels which are affected, advantage may be derived from electricity ; and it is oc-

asionally used, both under the form of sparks taken from the pelvis, and that of moderate shocks transmitted thro' it. Ophthalmia, and some other varieties of inflammation, have been removed by the electric stream; it has also sometimes succeeded in dissolving tumors, and relieving pain. The general rule for the medical employment of electricity is to apply it at first under the milder forms, and gradually to raise it, if necessary, to the more powerful, taking care only not to employ it in too high a state of intensity, but in the greater number of cases rather to expect advantage from its continued and moderate use. In the treatment of paralysis, for example, by the application of electricity, the only rational indication is to excite moderate muscular action with the view of increasing the muscular power; to this, sparks of sufficient strength are adequate, and in employing shocks, there is always some risk of exhausting the irritability of the part through which they are transmitted.

GALVANISM.

THE peculiar power which is generated when two metals moistened or acted on by certain chemical liquids are in contact, at first named Animal Electricity, since Galvanism, has been applied as a remedy in various morbid affections. Its effects on the animal system are such as warrant this application. Its activity is shewn by its exciting, when applied in sufficient intensity, strong sensations in sensible parts, and powerful contractions in parts endowed with irritability.

Between galvanism and electricity there are so many points of resemblance, that they have been considered as ultimately the same power, and there is every reason to admit their identity. Still from the different states in which they exist, their effects on living matter are not precisely similar. The sensation which galvanism excites, though somewhat analogous to that produced by electricity, is still dissimilar; and the action of galvanism appears to be more extended, both to the nervous and muscular systems, than that of electricity, which is more local in its action. The galvanic excitation produces sensations and contractions in parts, which, from disease, or temporary suspension of power, are not sensible to electrical impressions; and the stimulant power which

both exert, appears in galvanism to be greater in proportion to its intensity than in electricity; or the sensations and muscular contractions which the galvanic discharge excites, are more than proportional to its power of producing electrical phenomena. Hence it is the most delicate test by which the presence of irritability can be detected.

The diseases in which galvanism has hitherto been employed, are principally those of the nervous kind. In paralysis, it has been affirmed to have restored the capability of muscular contraction, and consequently the power of motion. Cases of chorea, tetanus, and some other spasmodic affections, have been related, in which perfect cures were accomplished by its application. It appears, in several instances, to have relieved deafness, particularly that species of it arising from torpor of the auditory nerve; and it has been successful in discussing indolent tumors. The transient nature of the operation is, with regard to it, as well as electricity, an obstacle to their advantageous application.

Galvanism is applied by connecting two metallic wires with the two extremities of a galvanic battery, and bringing them in contact with the part affected, so that it shall form part of the circuit of the galvanic discharge: the one wire is kept in contact with the part it touches; the other is alternately applied for a moment, and removed, and this is continued for some time. If the skin is moistened, the galvanic influence is communicated more readily and effectually; and still more so if a small piece

of metallic leaf, as tinfoil, be laid on the parts to which the wires are applied. Sometimes even the cuticle has been previously removed by a blister, but the application of the galvanism is then attended with pain, and this is altogether unnecessary, if a galvanic apparatus of sufficient power be employed. One constructed of plates of zinc and copper, four inches square, and including from 25 to 50 of each metal, is sufficient for the greater number of purposes, a greater or less number of the plates being included in the circuit, according to the strength of the application required. The liquid best adapted to excite it is a solution of muriate in soda, with a little muriatic acid; diluted nitric acid, though rather more powerful, having its power sooner exhausted.

ON MEDICAL PRESCRIPTIONS.

THE principal objects designed to be attained by the Composition of Medicines, are, to communicate an agreeable taste or flavour; to give a convenient form; to correct the operation of the principal medicine, or obviate some unpleasant symptom it is liable to produce; to promote its action, by the substance combined with it exerting one of a similar kind; to obtain the joint operation of two remedies, which have different powers, but which may be required to obviate different morbid symptoms present together; or, lastly, to change their usual effects, and obtain a remedy different from either, by the power which one may have of modifying the action of another.

A prescription has been usually divided into four parts, which compose it,—the *basis*, or principal ingredient of the prescription; the *adjuvans*, or that which is designed to promote the action of the former; the *corrigen*s, or that intended to correct its operation, or obviate any unpleasant symptom which it may be apt to produce; and the *constituens*, or the substance which gives to the other ingredients consistence or form. These are not necessarily present in every formula, as some of these purposes may not require to be attained; nor is the division of

much importance, except perhaps as affording the best general rule for regulating the order in which the ingredients of a prescription should be enumerated, the order being conformable to that which corresponds with this arrangement.

The following are the principal circumstances to be attended to in forming a prescription.

1st, Simplicity should be attained, so far as is consistent with the objects of the prescription. Nothing ought to enter into the composition which does not add to its virtue, render it less ungrateful, give it a convenient form, or which is not necessary to conceal any particular ingredient; and, in general, the practice of accumulating a number of articles in one prescription is to be avoided, as there is always the risk of one counteracting or modifying the action of another, and the addition of less active substances can do little more than add to the bulk of the medicine, or cause it to sit uneasy on the stomach.

2dly, Substances, it is evident, ought not to be mixed together, which are capable of entering into chemical combination, or of decomposing each other, unless it be with the view of obtaining the product of the combination, or decomposition, as a remedy.

3dly, Those mixtures are also to be avoided, in which one medicine, by its peculiar action on the stomach or general system, modifies and changes the action usually exerted by another, unless where the object is to obtain the effects of that modified operation.

4thly, The error of contra-indication is to be guarded against, or those medicines ought not to be combined, the virtues of which are not merely different, but are, in some measure, opposed to each other,—an error not very likely to occur with regard to the principal ingredients of a prescription, but which may happen with regard to those of inferior importance.

5thly, The ingredients which are to be mixed, must be such as will mix properly together, so that the form in which the remedy is designed to be exhibited may be easily obtained and preserved.

Lastly, The form under which a medicine is prescribed must be adapted to certain circumstances; principally to the nature of the disease, the nature of the remedy itself, and, as far as can be conveniently attained, to the taste of the patient. Those medicines which are nauseous, which operate in a small dose, or which are designed to operate slowly, are usually given under the form of pill, or sometimes of bolus. Those which are less ungrateful, or the operation of which is designed to be immediately obtained, are given under some liquid form. Tinctures always require to be diluted: infusions or decoctions may in general be given in the state in which they are prepared.

THE Doses of Medicines are not reducible to any general rules, from their general similarity of operation, or any other circumstance, and are therefore specific with regard to each substance. But there are certain general circumstances by which their operation is influenced, which require to be attended to in apportioning the dose. These are, Age, Sex, Temperament, Idiosyncrasy, Habit, and Disease.

Age.—From infancy to manhood, a larger dose of any medicine is requisite to produce its effect, in proportion to the advance in life. From manhood to old age, there is a similar gradation with regard to diminution of dose, though in a much less proportion than that which regulates the increase. The following table given by Gaubius has been supposed to shew these proportions.

TABLE.

Let the dose for a person of middle age be 1 or 1 drachm.

For one from xiv to xxi years, it will be	—	—	$\frac{2}{3}$ or 2 scruples.
_____ vii to xiv,	—	$\frac{1}{2}$ or half a dr.	
_____ iv to vii,	—	$\frac{1}{3}$ or 1 scruple.	
_____ of iv years of age,	—	$\frac{1}{4}$ or 15 grains.	
_____ iii _____	—	$\frac{1}{6}$ or half a scr.	
_____ ii _____	—	$\frac{1}{8}$ or 8 grains.	
_____ i _____	—	$\frac{1}{12}$ or 5 grains.	

Sex.—Women, in general, require smaller doses of any medicine than men,—a difference which is probably owing principally to their greater sensibility from their habits of life.

Temperament.—By temperament is understood a predisposition, derived from original conformation, to be affected in a more peculiar manner by external causes acting on the system; and much laborious investigation has been bestowed in distinguishing the different temperaments, and the diversities to which they give rise. Those of the sanguine temperament are supposed to be more affected by medicines, and therefore to require smaller doses than those of the phlegmatic or melancholic; but in what has been said on this subject there is so much uncertainty and hypothesis, that little reliance can be placed on it.

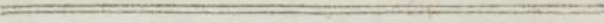
Idiosyncrasy.—This denotes that disposition in individuals, unconnected with general temperament, to be affected by certain causes, in a manner different from the generality of mankind. Such idiosyncrasies are observed with regard to medicines, as well as to other agents, and, where they are known, may require to be attended to by the prescriber.

Habit.—This has an important influence on the operation of medicines. In general, they lose part of their power by having been long continued, and the doses of them, therefore, require to be enlarged under their protracted use. This is particularly the case with all strong stimulants and narcotics, and is even observed, to a certain extent, in some of the other classes of the Materia

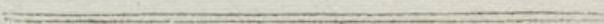
Medica. In a few instances, the reverse has been supposed to hold true, as for example with regard to the saline cathartics.

Disease.—This has an influence on the doses of medicines not less important; the susceptibility to external impressions, and to action, being much varied in morbid affections, and the operations of remedies of course being modified by such variations. The state of susceptibility being in general apparent, when it varies much from the healthy standard, the doses of the medicines administered are regulated accordingly, and this, it is obvious, admits of no general observations, as being entirely dependent on the nature and state of disease.

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TABLES
OF
CHANGED NAMES.



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TABLES
OF
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IN
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PHARMACOPOEIAS.

In drawing up these Tables, it has not been thought necessary to insert the names of the Simple Medicines, as both the proper names of the articles, according to the nomenclature of natural history, and their common or trivial names, are inserted in the index to the work; and thus the old or the new name of any simple substance may be easily found. In these Tables, therefore, the names of the Compound Medicines only are inserted, and the catalogue of them has been extended so far as to include not only the synonyms inserted in the present editions of the London and Edinburgh Pharmacopœias, but a number of older names, once generally established, and still occasionally used. I ought, in the body of the work, to have referred to the very just and forcible observations of Dr Bostock, (Remarks on Pharmaceutical Nomenclature), on the inconvenience attending the innovations in the established language of *Materia Medica* and Pharmacy, as well as the impropriety of too strict an adherence to the nomenclature of chemistry, and of the adoption of the language of natural history, in the extent to which this has been carried by the Colleges in the late editions of their Pharmacopœias.

TABLE I.

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Acetum distillatum	Acidum acetosum distillatum	Acidum aceticum
Acidum vitriolicum	— sulphuricum	— sulphuricum
Ærugo æris	Sub-acetis cupri	Sub-acetas cupri impura
Æthiops mineralis	Sulphuretum hydrargyri nigrum	Æther sulphuricus
Æther vitriolicus	Æther sulphuricus	Soda
Alkali fixum fossile	Soda	Potassa
— — — — — vegetabile	Potassa	Ammonia
— — — — — volatile	Ammonia	Super-sulphas aluminae et potassae
Alumen	Sulphas aluminae	Ammoniae carbonas
Ammonia præparata	Carbonas ammoniæ	Antimonii sulphuretum
Antimonium	Sulphuretum antimonii	Pulvis antimonialis
— — — — — præparatum	— — — — — præparatum	
Antimonium calcareo-phosphora- tum	Oxidum antimonii cum phosphate calcis	
— — — — — muriatum	Murias antimonii	Antimonium tartarizatum
— — — — — tartarisatum	Tartris antimonii	Liquor acetatis ammoniæ
— — — — — vitrificatum	Oxidum antimonii cum sulphure	— — — — — ammoniæ
Aqua ammoniæ acetatæ	Aqua acetitis ammoniæ	Acidum nitrosum dilutum
— — — — — causticæ	— — — — — ammoniæ	
— — — — — cupri vitriolati composita	Solutio sulphatis cupri composita	
— — — — — fortis	Acidum nitrosum dilutum	

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Aqua lixivia caustica	Aqua potassæ	Liquor potassæ
— lithargyri acetati		— plumbi acetatis
— sapharina		— dilutus
— styptica		Liquor cupri ammoniati
Argentum nitratum	Solutio sulphatis cupri composita vitrificatum	Argenti nitras
Balsamum canadense	Resina liquida pini balsamæ	Teribinthina canadensis
— anodynum	Tinctura saponis cum opio	Linimentum saponis compositum
— saponaceum	— saponis	Oleum sulphuratum
— sulphuris	Oleum sulphuratum	Tinctura benzoini composita
— traumaticum	Tinctura benzoes composita	
Butyrum antimonii	Murias antimonii	
Calaminaris lapis	Carbonas zinci impurus	Calamina
Calomelas	Sub-murias hydrargyri	Hydrargyri sub-murias
Calx hydrargyri alba		Hydrargyri præcipitatus albus
Causticum commune acerrimum	Potassa	Potassa fusa
— mitius	Potassa cum calce	Potassa cum calce
Cancrorum lapilli	Carbonas calcis durior	Argenti nitras
Causticum lunare	Nitras argenti	Plumbi carbonas
Cerussa	Oxidum plumbi album	— super-acetas
Cerussa acetata	Acetis plumbi	

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Cinnabaris factitia	Sulphuretum hydiargyri rubrum	Hydiargyri sulphuretum rubrum
Confectio cardiaca	Electuarium aromaticum	Confectio aromatica
----- japonica	----- catechu	
Crocus antimonii, vel crocus me- tallorum	Oxidum antimonii cum sulphure per nitratem potasse	
Creta preparata	Carbonas calcis mollior	
Cuprum ammoniacum	Ammoniacretum cupri	Cuprum ammoniatum
----- vitriolatum	Sulphas cupri	Cupri sulphas
Crystalli tartari	Super-tartris potasse	Potasse super-tartras
Decoctum album		Mistura cornu usti
----- chamaemeli, vel con- mune	Decoctum anthemidis nobilis	
----- lignorum	----- guaiaci compositus.	
----- pro enemate		----- malvæ compositum
----- fomento		----- papaveris
Elaterium	Succus spissatus momordicæ elaterii	Confectio sennæ
Electuarium lenitivum	Electuarium cassiæ sennæ	----- opii
----- thebaicum	----- opiatum	Camphoræ composita
Elixir paregoricum	Tinctura opii ammoniata	Tinctura aloes composita
----- proprietatis	----- aloes cum myrrha	
----- vitriolicum	----- aloes ætherea	
----- sacrum	----- rhei et aloes	

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Elixir salutis	Tinctura cassiæ sennæ composita	Tinctura sennæ
stomachicum	gentianæ composita	gentianæ composita
vitrioli acidum	Acidum sulphuricum aromaticum	
Emplastrum adhæsivum	Emplastrum resinosum	Emplastrum resinæ
atrahens	simplex	ceræ
cantharidum	meloes vesicatorii	lyttæ
cereum	simplex	ceræ
commune	oxidi plumbi semivitrei	plumbi
lithargyri	oxidi plumbi semivitrei	plumbi
roborans	ferri rubri	
vesicatorium	meloes vesicatorii	cantharidis
Emulsio communis	Emulsio amygdalæ communis	Mistura amygdalæ
Extractum catharticum		Extractum colocynthidis compositum
Ferri rubigo	Carbonas ferri præparatus	
squamæ	Ferri oxidum nigrum	
Ferrum ammoniatum	Murias ammoniæ et ferri	Ferrum ammoniatum
vitriolatum	Sulphas ferri	Ferri sulphas
ustum	Oxidum ferri rubrum	
Flores benzoini	Acidum benzoicum	Acidum benzoicum
martiales	Murias ammoniæ et ferri	Ferrum ammoniatum
sulphuris	Sulphur sublimatum	Sulphur sublimatum
zinci	Oxidum zinci	Zinci oxydum

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Hepar sulphuris	Sulphuretum potassæ	Potassæ sulphuretum
Hiera picra	Acetis hydrargyri	Pulvis aloes cum canella
Hydrargyrus acetatus	Murias hydrargyri	Hydrargyri oxydum rubrum
_____ calcinatus	Sub-murias hydrargyri	_____ oxymurias
_____ muriatus corrosivus	_____ præcipita-	_____ sub-murias
_____ mitis	tus	
_____ præcipitatus	Oxidum hydrargyri per acidum	_____ nitrico-oxydum
_____ nitratus ruber	nitricum	
_____ præcipitatus cinereus	Oxidum hydrargyri cinereum	_____ oxydum cinereum
_____ sulphuratus niger	Sulphuretum hydrargyri nigrum	
_____ sulphuratus ruber	Sub-sulphas hydrargyri flavus	_____ sulphuretum rubrum
_____ vitriolatus flavus		
Infusum amarum	Infusum gentianæ compositum	Infusum gentianæ compositum
_____ rosarum	_____ rosæ gallicæ	_____ rosæ
Julepum e camphora		Mistura camphoræ
Kali	Potassa	Potassa
Lac sulphuris	Emulsio amygdalæ	Sulphur præcipitatum
_____ amygdalæ		Mistura amygdalæ
_____ ammoniaci		_____ ammoniaci

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Lac assafoetidae		Mistura assafoetidae
--- guaiaci		Mistura guaiaci
Landanum liquidum	Tinctura opii	Tinctura opii
Linimentum anodynum	Tinctura saponis cum opio	
--- aque calcis	Oleum lini cum calce	
--- opiatum	Tinctura saponis cum opio	
--- saponaceum	--- saponis	Linimentum saponis compositum
--- volatile	Oleum ammoniatum	--- ammoniae sub-carbonatis
Lithargyrus	Oxidum plumbi semivitreum	Plumbi oxydum semivitreum
Lixiva	Potassa	Potassa
Lixivium causticum	Aqua potassae	Liquor potassae
--- tartari		--- sub-carbonatis
Magnesia alba	Carbonas magnesiae	Magnesiae carbonas
--- usta	Magnesia	Magnesia
--- vitriolata	Sulphas magnesiae	Magnesiae sulphas
Mel Ægyptiacum		Linimentum æuginis
--- rosaceum		Mel rosae
--- acetatum		Oxymel
Mercurius	Hydrargyrus	Hydrargyrus
--- calcinatus		Hydrargyri oxidum rubrum
--- corrosivus sublimatus	Murias hydrargyri	--- oxymurias
--- ruber	Oxidum hydrargyri rubrum per	--- nitrico-oxydum
--- præcipitatus ruber }	acidum nitricum	

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Mercurius dulcis sublimatus	Sub-murias hydrargyri	Hydrargyri sub-murias
----- emeticus flavus	Sub-sulphas hydrargyri	
----- præcipitatus albus	Oxidum plumbi rubrum	Hydrargyrus præcipitatus albus
Minium		
Natron	Soda	Soda
Nitrum	Nitras potasæ	Potasæ nitras
Oleum teribinthinæ	Oleum volatile pini	Oleum teribinthinæ
Oxymel æuginis		Linimentum æuginis
Philonium Londinense		Confectio opii
Pilulæ cupri	Pilulæ ammoniaretæ cupri	Pilulæ galbani composita
----- gummosæ	----- aloes cum myrrha	----- aloes cum myrrha
----- rufi	----- opiatæ	----- saponis cum opio
----- thebaicæ	Potio carbonatis calcis	Mistura cretæ
Potio cretacea	Oxidum antimonii cum phosphate calcis.	Pulvis antimonialis
Pulvis antimonialis		
Pulvis e bolo compositus cum opio	Pulvis carbonatis calcis compositus	Pulvis cretæ compositus cum opio
----- cretaceus	----- ipecacuanhæ et opii	----- cretæ compositus
----- doveri		----- ipecacuanhæ compositus

NAMES IN THE LOND. PH.

NAMES IN THE ED. PH.

OLD NAMES.

Pulvis sternutatorius	Pulvis asari compositus	Pulvis sternutatorius
— stypticus	— sulphatis aluminae compositus	— stypticus
Resina alba	Carbonas ferri præparatus	Resina alba
Rubigo ferri præparata	Acetis plumbi	
Saccharum saturni	Carbonas potassæ	Plumbi super-acetas
Sal absinthii	— sodæ	Potassæ sub-carbonas
— alkalinus fixus fossilis	— potassæ	Sodæ sub-carbonas
— alkalinus fixus vegetabilis	Murias ammoniæ	Potassæ sub-carbonas
— ammoniacus	Carbonas ammoniæ	Ammoniaë murias
— — — — — volatilis	Sulphas magnesiæ	— carbonas
— catharticus amarus	— sodæ	Magnesiæ sulphas
— — — — — glauberi	Carbonas ammoniæ	Sodæ sulphas
— cornu cervi	Acetis potassæ	Ammoniaë carbonas
— diureticus	Sulphas sodæ	Potassæ acetas
— glauberi	Murias sodæ	Sodæ sulphas
— marinus	Sulphas ferri	— murias
— martis	Sulphas potassæ cum sulphure	Ferri sulphas
— polycrestus	Tartaris potassæ et sodæ	Soda tartarizata
— rupellensis	Carbonas potassæ	Potassæ sub-carbonas
— tartari		Liquor plumbi acetatis
Saturni extractum		

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Soda purificata	Carbonas sodæ	Sodæ sub-carbonas
---- muriata	Murias sodæ	---- murias
---- phosphorata	Phosphas sodæ	Soda tartarizata
---- tartarisata	Tartaris potassæ et sodæ	Sodæ sulphas
---- vitriolata	Sulphas sodæ	Spiritus ætheris sulphurici
Spiritus ætheris vitriolici	Æther sulphuricus cum alcoholo	---- ammoniæ
---- ammoniæ	Alcohol ammoniatum	---- aromaticus
---- aromaticus	---- aromaticum	---- fetidus
---- fetidus	---- fetidum	---- camphoræ
camphoratus	Tinctura camphoræ	Liquor ammoniæ carbonatis
cornu cervi	Aqua carbonatis ammoniæ	---- acetatis
mindereri	---- acetitis ammoniæ	Spiritus ætheris nitrici
nitri dulcis	Spiritus ætheris nitrosi	
---- glauberi	Acidum nitrosum	Liquor ammoniæ
salis ammoniaci	Aqua ammoniæ	Acidum muriaticum
---- marini glauberi	Acidum muriaticum	Spiritus camphoræ
vinosus camphoratus	Tinctura camphoræ	---- rectificatus
---- rectificatus	Alcohol	---- tenuior
---- tenuior	---- dilutum	---- ætheris sulphurici
vitrioli dulcis	Æther sulphuricus cum alcoholo	---- ammoniæ aromaticus
volatilis aromaticus	Alcohol ammoniatum aromaticum	---- fetidus
---- fetidus	---- fetidum	
Succi ad scorbuticos	Succus cochleariæ compositus	

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Sulphur antimonii præcipitatum } aratum antimonii }	Sulphuretum antimonii præcipi- -tatum	Antimonii sulphuretum præcipita- tum
Sulphuris flores	Sulphur sublimatum	Sulphur sublimatum
Syrupus balsamicus	Syrupus toluiferæ balsami	Syrupus toluanus
e meconio	papaveris somniferi	papaveris
Tartarus crudus	Super-tartris potassæ impurus	Potassæ super-tartras
Tartari crystalli	potassæ	Antimonium tartarizatum
Tartarus emeticus	Tartris antimonii	Potassæ tartras
Tartarum solubile	potassæ	sulphas
vitriolatum	Sulphas potassæ	Tinctura gentianæ composita
Tinctura aloes vitriolata	Tinctura aloes ætherea	cinnamomi composita
amara	gentianæ composita	lytta
aromatica	cinnamomi composita	ferri muriatis
cantharidum	meloes vesicatorii	assaefetide
ferri	muriatis ferri	guaiaci ammoniata
foetida	ferulæ assaefetidæ	catechu
guaiacina volatilis	guaiaci ammoniata	ferri muriatis
japonica	mimosæ catechu	hellebori nigri
martis	muriatis ferri	camphoræ composita
melampodii	hellebori nigri	
opii camphorata	rhei et gentiana	
rhei amari		

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
Tinctura rosarum	Infusum rosarum	Infusum rosæ
----- sacra	Vinum albes socotorinæ	Vinum aloes
----- thebaica	Tinctura opii	Tinctura opii
----- tolutana	----- toluifera balsami	----- valerianæ ammoniata
----- valerianæ volatilis	Trochisci gummosi	
Trochisci arabici	Sub-sulphas hydrargyri flavus	
Turpethum minerale	Oxidum zinci impurum	
Tutia		
Unguentum album	Unguentum oxidi plumbi albi	
----- basilicum flavum	----- resinosum	Ceratum resinæ flavæ
----- cœruleum	----- hydrargyri	Unguentum hydrargyri
----- citrinum	----- nitratis hydrargyri	----- nitratis
----- epispasticum fortius	----- pulveris meloes vesicatorii	Ceratum lyttæ
----- mitius	----- infusi mel. vesicat.	
----- saturninum	----- acetis plumbi	Ceratum plumbi super-acetatis
Vinum amarum	Vinum gentianæ compositum	
----- antimoniale	----- tartritis antimonii	Liquor antimonii tartarizati
----- chalybeatum		Vinum ferri
Vitriolum album	Sulphas zinci	Zinci sulphas

OLD NAMES.	NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.
<p>Vitriolum cœruleum — viride Vitrum antimonii</p>	<p>Sulphas cupri — ferri Oxidum antimonii cum sulphure vitrificatum</p>	<p>Cupri sulphas Ferri sulphas</p>
<p>Zincum ustum — vitriolatum</p>	<p>Oxidum zinci Sulphas zinci</p>	<p>Zinci oxidum — sulphas</p>

TABLE

H h 2

TABLE II.

NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.	OLD NAMES.
Acetis plumbi — potassæ	Plumbi super-acetas Potassæ acetas	Saccharum saturni { Sal diureticus Lixiva acetata
Acidum benzoicum — nitrosum dilutum — sulphuricum — — aromaticum	Acidum benzoicum Acidum nitricum dilutum — sulphuricum	Flores benzoini Aqua fortis Acidum vitriolicum { Acidum vitrioli aromaticum Elixir vitrioli acidum
Æther sulphuricus Alcohol Alcohol ammoniatum — aromaticum — foetidum Ammonia	Æther sulphuricus Alcohol Spiritus ammoniæ — aromaticus — foetidus Ammonia	Æther vitriolicus Spiritus vinosus rectificatus Spiritus ammoniæ — aromaticus — foetidus Alkali volatile

NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.	OLD NAMES.
Ammonia retum cupri	Cuprum ammoniatum	Cuprum ammoniacum
Aqua acetitis ammoniacæ	Liquor ammoniacæ acetatis	Spiritus mindeneri
— ammoniacæ	— ammoniacæ carbonatis.	Aqua ammoniacæ causticæ
— carbonatis ammoniacæ	— potassæ	{ Spiritus cornu cervi
— potassæ	— potassæ	{ Aqua ammoniacæ
Carbonas ammoniacæ	Ammoniacæ carbonas	{ — lixivii causticæ
— calcis.	Creta preparata.	{ Lixivium causticum
— ferri preparatus	Magnesiæ carbonas	{ Sal ammoniacus volatilis
— magnesiæ	Potassæ sub-carbonas	{ — cornu cervi
— potassæ	Sodæ sub-carbonas	{ Creta alba
— sodæ	Calamina preparata	{ Lapilli cancerorum
— zinci impurus	Confectio aromatica.	{ Rubigo ferri preparata
Decoctum guaiaci compositus	— sennæ	{ Magnesiæ alba
Electuarium aromaticum	Confectio aromatica.	{ Sal alkalinus fixus vegetabilis
— cassiæ sennæ	— sennæ	{ — tartari
— catechu	Confectio japonica.	{ Sal alkalinus fixus fossilis
		{ Soda purificata
		Lapis calaminaris
		Decoctum lignorum
		Confectio cardiaca.
		Electuarium lenitivum.
		Confectio japonica.

TABLE OF CHANGED NAMES:

NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.	OLD NAMES.
Electuarium opiatum	Confectio opii	Electuarium thebaicum
Emplastrum meloes vesicatorii	Emplastrum lyttæ	Emplastrum vesicatorium
_____ oxidi ferri rubri	_____ plumbi	_____ roborans
_____ resinorum	_____ resinæ	_____ commune
_____ simplex	_____ ceræ	_____ adhaesivum
Emulsio amygdalæ communis	Mistura amygdalæ	_____ ceræum
Murias ammoniæ	Ammoniæ murias	Emulsio communis
_____ et ferri	Ferrum ammoniatum	Sal ammoniacus
_____ antimonii	Hydrargyri oxymurias	Flores martiales
_____ hydrargyri	Sodæ murias	Butyrum antimonii
_____ sodæ	Argentii nitras	Hydrargyri muriatus corrosivus
Nitras argenti	Potassæ nitras	Sal marinus
_____ potassæ	Linimentum ammoniæ	Causticum lunare
Oleum ammoniatum	Oleum sulphuratum	Nitrum
_____ lini cum calce	Pulvis antimonialis	Linimentum volatile
_____ sulphuratum	_____ calcis	_____ aquæ calcis
Oxidum antimonii cum phosphate	_____ calcis	Balsamum sulphuris
_____ calcis	_____ antimonialis	Antimonium calcareo-phosphoratum
Oxidum antimonii cum sulphure	_____ antimonialis	Crocus antimonii, vel crocus me-
per nitratem potassæ	_____ antimonialis	tallorum

NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.	OLD NAMES.
Oxidum antimonii cum sulphure vitrificatum	Hydrargyri nitrico-oxidum	Vitrum antimonii
Oxidum ferri nigrum	----- oxidum cinereum	Ferri squamæ
----- rubrum	Plumbi sub-carbonas	Ferrum vitriolatum ustum
----- hydrargyri per acidum nitricum	----- oxidum semivitreum	Hydrargyrus nitratus ruber
----- hydrargyri cinereum	Zinci oxydum.	----- præcipitatus cinereus
----- plumbi album	Pix arida	Cerussa
----- rubrum	Terebinthina canadensis	Minium
----- semivitreum	Oleum terebinthinae	Lithargyrus
----- zinci	Potassa	Flores zinci
----- impurum	Potassa cum calce	Tutia
Phosphas sodæ	Mistura cretæ	Soda phosphorata
Pini abietis resina	Pulvis cretæ compositus	Pix Burgundica
----- balsamæe resina	Soda	Balsamum canadense
----- laricis oleum		Oleum terebinthinae
Potassa		{ Alkali fixum vegetabile
----- cum calce		{ Cauticum commune acerrimum
Potio carbonatis calcis		Cauticum commune mitius
Pulvis carbonatis calcis compositus		Potio cretacea
Soda		Pulvis cretaceus
		Alkali fixum fossile.

NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.	OLD NAMES.
Solutio sulphatis cupri composita		Aqua styptica
Spiritus ætheris nitrosi	Spiritus ætheris nitrici	Spiritus nitri dulcis
Sub-acetas cupri	Ærugo	Ærugo æris
Sub-murias hydrargyri	Hydrargyri sub-murias	Calomelas Hydrargyrus muriatus mitis
Sub-sulphas hydrargyri flavus		Turpethum minerale
Succus spissatus momordicæ elaterii		Elatarium
Sulphas aluminæ	Alumen	Alumen
— cupri	Cupri sulphas	Vitriolum cœruleum
— ferri	Ferri sulphas	Sal martis Vitriolum viride
— magnesicæ	Magnesicæ sulphas	Sal catharticus amarus
— potassæ	Potassæ sulphas	Tartarum vitriolatum
— potassæ cum sulphure		Sal polychrestus
— sodæ	Sodæ sulphas	— glauberi
— zinci	Zinci sulphas	Vitriolum album
Sulphur sublimatum	Sulphur sublimatum	Flores sulphuris
Sulphuretum antimonii	Antimonii sulphuretum	Antimonium
— antimonii præcipita- tum	— sulphuretum præcipita- tum	Sulphur antimonii præcipitatum — auratum antimonii
— hydrargyri nigrum		Æthiops mineralis
— rubrum	Hydrargyri sulphuretum rubrum	Cinnabaris factitia
— potassæ	Potassæ sulphuretum	Hepar sulphuris

NAMES IN THE ED. PH.	NAMES IN THE LOND. PH.	OLD NAMES.
_____ potassæ	Syrupus toluiferæ balsami	Syrupus balsamicus
_____ potassæ	Super-tartris potassæ	Tartari crystalli
Tartris antimonii	Antimonium tartarisatum	Tartarus emeticus
_____ potassæ	Potassæ tartras	Tartarum solubile
_____ potassæ et sodæ	Soda tartarizata	Sal rupellensis
Tinctura benzoes composita	Tinctura benzoini composita	Balsamum traumaticum
_____ camphoræ	Spiritus camphoræ	Spiritus vinosus camphoratus
_____ muriatis ferri	_____ ferri muriatis	Tinctura martis
_____ opii ammoniata	_____ camphoræ composita	Elixir paregoricum
_____ saponis	Linimentum saponis	Linimentum saponaceum
_____ saponis cum opio		{ _____ opiatum
		{ _____ anodynum
Unguentum nitratis hydrargyri	Unguentum hydrargyri nitratis	Unguentum citrinum
_____ acetitis plumbi	Ceratum plumbi super-acetatis	_____ saturninum
_____ pulveris meloes vesti-	_____ lyttæ	_____ epispasticum fortius
_____ catorii	_____ resinæ	_____ basilicum flavum
_____ resinosum		

ENGLISH

Acetic
Acetite
— of
— of
— of
— of
Acetou
—
—
Acids
Aconit
Acrid
Adhesi
Æther
Affinit
Album
Alkoho
Alkali
Alkan
Almon
—
Aloes
Aloeti
—
Althae
Alum
—
Ambe
Ammo
Ammo
Ammo

ENGLISH INDEX.

A		Page	
Acetic acid	i. 70, ii. 162	Ammoniated alcohol	ii. 283
Acetite of ammonia	i. 406, ii. 236	oil	ii. 450
of lead	i. 290, ii. 341	Ammoniac	i. 425
of potash	i. 380, ii. 214	Analysis	i. 7
of quicksilver	ii. 304	Angelica	i. 271
of zinc	i. 286, ii. 349	Angustura	i. 253
Acetous acid	i. 461, ii. 160	Animal analysis	i. 83
distilled	ii. 160	oil	i. 197
strong	ii. 162	Anise	i. 270
Acids	i. 31	Anodynes	i. 135
Aconite	i. 174	Antacids	i. 465
Acrid principle	i. 73	Anthelmintics	i. 487
Adhesive plaster	ii. 410	Antimonial powder	ii. 267
Ætherial oil	ii. 197	wine	ii. 283
Affinity	i. 87	Antimony	i. 315, 409, 422
Albumen vegetabile	i. 52	prepared	ii. 265
Alcohol	i. 75, 144, ii. 144	preparations of	i. 318, ii. 265
Alkalis	i. 25	Antispasmodics	i. 191
Alkanet	i. 298	Arabic emulsion	ii. 30
Almond	i. 504	Argil	i. 22
emulsion	ii. 29	Aroma	i. 72
Aloes	i. 357, 371	Aromatic ammoniated al-	
Aloetic pills	ii. 273	kohol	ii. 234
wine	ii. 81	electuary	} ii. 366
Althæa	i. 499	confection	
Alum	i. 283, 482	powder	ii. 355
dried	ii. 231	sulphuric acid	ii. 187
Amber oil and salt of	i. 197, ii. 152	tincture	ii. 96
Ammonia	i. 29, 328, 467, ii. 231	Arrow-root powder	i. 501
Ammoniuret of copper	ii. 285	Arsenic	i. 231, 485
Ammoniacal iron	ii. 296	oxide prepared	ii. 351
		solution	ii. 352

	Page		Page
Arseniate of potash	i. 233, ii. 353	Camphorated emulsion	ii. 30
Asarabacca	i. 333, 441	————— liniment	ii. 94
Assafoetida	i. 199, 370	————— oil	ii. 157
Astringents	i. 273	————— spirit	ii. 93
Attraction, chemical	i. 87	Canella	i. 262
Azote	i. 11	Cantharides	i. 397, 447
B			
Balsam	i. 61	Capsicum	i. 265
Balsam of Canada	ii. 394	Caraway	i. 269
———— of Copaiva	i. 394	Carbon	i. 15
———— of Gilead	i. 430	Carbonate of ammonia	i. 407, ii. 227
———— of Peru	i. 427	———— of iron precipitated	ii. 289
———— of Tolu	i. 428	———— prepared	ii. 3, 289
Barbadoes tar	i. 198	———— of lime	i. 284, 468
Bark, Peruvian	i. 241	———— prepared	ii. 243
Barytes	i. 23, 235	———— of magnesia	ii. 247
Benzoic acid	i. 69, ii. 165	———— of potash	ii. 208
Benzoin	i. 428	———— of soda	ii. 223
Bismuth	i. 234	———— of zinc prepared	ii. 345
Bistort	i. 298	Carbonic acid	i. 34, ii. 452
Bitter apple	i. 356	Carburetted hydrogen gas	ii. 454
———— principle	i. 73	Cardamom, smaller	i. 268
Blessed thistle	i. 259	Cascarilla	i. 253
Blistering plaster	ii. 415	Cassia bark	i. 261
Bole, Armenian	i. 282	———— buds	i. 261
Boracic acid	i. 35	———— purging	i. 346
Borax	i. 464	Castor	i. 196, 370
Broom	i. 393	———— oil	i. 348
Bryony	i. 355	Cathartics	i. 334
Buckthorn	i. 357	Cataplasms	ii. 419
Burgundy pitch	i. 449	Catechu	i. 300
———— ——— plaster	ii. 417	Caustic, common	i. 483, ii. 213
C			
Cabbage tree bark	i. 492	———— lunar	i. 483, ii. 264
Cajeput oil	i. 203	Centaury	i. 259
Calamine prepared	ii. 345	Cerates	ii. 388
———— cerate	ii. 402	Ceruse	i. 289
Calcination	i. 100	Chalk, prepared	ii. 263
Calomel	i. 361, 409, ii. 311	———— potion	ii. 34
Caloric	i. 92	Chamomile	i. 257, 332
Camphor	i. 57, 154, 412	Cherry-tree laurel	i. 189
———— mixture	ii. 32	Cinnabar	ii. 339
Camphorated acetous acid	ii. 86	Cinnamon	i. 261
		———— water	ii. 135
		Citric acid	i. 68, 458, ii. 168
		Citrate of ammonia	i. 407

Cloves
Colocyn
Colomba
Combina
Concent
Confeci
Conserv
Contray
Copaiba
Copper
Coriand
Cowhag
Crabs c
———— s
Cream
Crocus
Crystal
Cubeba
Cucurb
Cumin
———— I
Decoct
Decoct
Decom
Deflag
Demul
Dephle
Diapho
Digest
Dill-se
Diluen
Distill
Distill
Diuret
Diuret
Dover
Doses
Drago

Page		Page		Page
ii. 30	Cloves	i. 264		
ii. 94	Colocynth	i. 356	Earths	i. 21
ii. 157	Colomba	i. 255	Elaterium	i. 356
ii. 93	Combination	i. 87	Elder rob	ii. 25
i. 262	Concentration	i. 102	— ointment	ii. 405
97, 447	Confections	ii. 370	Electricity	ii. 457
i. 265	Conserves	ii. 17.	Electuaries	ii. 365
i. 269	Contrayerva	i. 252	Elutriation	i. 95
i. 15	Copaiba balsam	i. 394	Emetics	i. 306
7, ii. 227	Copper	i. 229, 287, 327	Emmenagogues	i. 367
ii. 289	— preparations of	ii. 285	Emollients	i. 508
. 3, 289	Coriander	i. 269	Emulsions	ii. 29
84, 468	Cowhage	i. 489	Escharotics	i. 481
ii. 243	Crabs claws, prepared	i. 468	Epispastics	i. 443
ii. 247	— stones	ii. 243	Epsom salt	i. 362
ii. 208	Cream of tartar	i. 363, 381	Errhines	i. 438
ii. 223	Crocus of antimony	ii. 265	Ether sulphuric	i. 76, 152, ii. 188
ii. 345	Crystallization	i. 104	— nitric	ii. 198
ii. 452	Cubeb	i. 266	Euphorbium	i. 444, 449
ii. 454	Cucurbit	i. 103	Evaporation	i. 100
i. 268	Cumin	i. 271	Expectorants	i. 417
i. 253	— plaster	ii. 416	Extracts	i. 80, ii. 115
i. 261			Extraction	i. 99
i. 261	D		Extractive matter	i. 62
i. 346	Decoction	i. 79, 99		
96, 370	Decoctions	ii. 51	F	
i. 348	Decomposition	i. 93	Fecula	i. 50
i. 334	Deflagration	i. 100	Fennel, sweet	i. 270
ii. 419	Demulcents	i. 494	Fermented liquors	i. 149
i. 300	Dephlegmation	i. 102	Fern, male	i. 492
ii. 213	Diaphoretics	i. 399	Fixed oils	i. 52, ii. 27
ii. 264	Digestion	i. 99	Flowers of benzoin	ii. 165
i. 259	Dill-seed	i. 270	Fluoric acid	i. 35
ii. 388	Diluents	i. 507	Foxglove	i. 177, 386, 423
i. 289	Distillation	i. 101	Fusion	i. 99
ii. 263	Distilled waters	ii. 132		
ii. 34	— spirits	ii. 138	G	
57, 332	Diuretic salt	ii. 380	Galbanum	i. 200
i. 189	Diuretics	i. 374	Gallic acid	i. 66
ii. 339	Dover's powder	i. 411, ii. 358	Galls	i. 297
i. 261	Doses of medicines	ii. 466	Galvanism	ii. 460
ii. 135	Dragons blood	i. 304	Gamboge	i. 360, 493
ii. 168			Garlic	i. 424, 449
i. 407				

	Page		Page
Gentian	i. 257		
Ginger	i. 267		
Glass of antimony	ii. 265		
Glaubers salt	i. 362, ii. 226		
Gluten	i. 51		
Granulation	i. 96		
Guaiac	i. 412		
Gum	i. 48		
Gum ammoniac	i. 425		
— arabic	i. 497		
— plaster	ii. 411		
— resins	i. 61		
— tragacanth	i. 498		
— troches	ii. 386		
— resins, preparation of	i. 29		
H			
Hartshorn	i. 503		
— burnt	ii. 11		
— oil of	i. 155		
— spirit of	ii. 220		
Hedge hyssop	i. 392		
Hellebore, black	i. 354		
— white	i. 441		
Hemlock	i. 175		
Hepaticized ammonia	i. 328, ii. 237		
Henbane, black	i. 171		
Honey of borax	ii. 77		
— of colchicum	ii. 78		
— clarified	ii. 77		
— of rose	ii. 78		
— of squill	ii. 78		
Hop	i. 188		
Horehound	i. 259		
Horse chesnut,	i. 441		
— radish	i. 436		
Hydrogen gas	i. 13, ii. 451		
— carbonated	ii. 454		
Hydro-sulphuret of ammo-			
nia	i. 328, ii. 237		
Hyper-oxygenated muriat			
of potash	i. 238, ii. 175		
Hyssop	i. 272		
		I	
Indian pink	i. 491		
Infusion	i. 78, 99		
Infusions	ii. 37		
Ipecacuan	i. 329, 422		
Iron	i. 223, 285, 370, 490		
—, preparations of	ii. 287		
Isinglass	i. 503		
J			
Jalap	i. 354		
Japonic confection	ii. 368		
— infusion	ii. 41		
Juices	ii. 19		
— inspissated	ii. 21		
Juniper	i. 393		
K			
Kermes, mineral	ii. 272		
Kino	i. 302		
L			
Laudanum	ii. 103		
Lavender	i. 441		
Lead	i. 287		
—, acetate of	ii. 341		
Lemon	i. 260, 458		
Lenitive electuary	ii. 367		
Leopard's-bane	i. 186		
Lettuce, strong-scented	i. 185		
	392		
Levigation	i. 95		
Ley	i. 99		
— caustic	ii. 211		
Ligneous fibre	i. 71		
Lime	i. 23, 235, 284, 468, 480		
— water	ii. 245		
Liniment of ammonia	ii. 156		
Liniments	ii. 388		
Lintseed	i. 498		
— oil with lime	ii. 389		
Liquorice	i. 499		

Liqu

Litha

Lith

Live

Liviv

Logv

Mac

Mac

Mad

Mag

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Min

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Mix

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Muc

Mur

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Mur

Mus

—

Mus

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Myr

Page	Page	Page
i. 491	ii. 118	N
78, 99	i. 289	Narcotic principle i. 74
ii. 37	ii. 410	Narcotics i. 134
29, 422	i. 471	Nightshade, deadly i. 173
70, 490	i. 502	----- woody i. 391
ii. 287	i. 99	Nitrate of potash i. 382, 463
i. 503	i. 299	----- silver ii. 264
		Nitre i. 382, 403
	M	Nitric acid i. 33, 237, ii. 182
	i. 263	Nitrogen i. 11
i. 354	i. 99	Nitrous acid ii. 180
ii. 368	i. 372	----- diluted ii. 182
ii. 41	i. 22, 350, 468	----- oxide ii. 448
ii. 19	ii. 249	Nutmeg 263
ii. 21	i. 255	O
i. 393	i. 67	Oak bark i. 296
	i. 345	Oil, expressed i. 54, ii. 27
	i. 440	----- volatile i. 55, ii. 146
	i. 499	Oily preparations ii. 156
ii. 272	i. 305	Ointments ii. 388
i. 302	i. 106	Olive oil i. 504, 491
	i. 212, 371	Opiate electuary ii. 369
	i. 217, ii. 394	----- powder ii. 379
ii. 103	ii. 377	Opium i. 158, 410
i. 441	ii. 250	----- preparation of ii. 9
i. 287	i. 106	Orange i. 259, 461
ii. 341	i. 289	Orris i. 440
0, 458	i. 174	Oxalic acid i. 68
ii. 367	ii. 31	Oxides i. 39
i. 186	i. 48	Oxide of antimony with
i. 185	ii. 49	phosphate of lime ii. 267
392	i. 408	----- of antimony with
i. 95	ii. 296	sulphur by nitrate of pot-
i. 99	i. 484, ii. 275	ash, i. 274 ii. 274
ii. 211	ii. 240	----- of antimony with
i. 71	i. 483, ii.	sulphur vitrified ii. 265
8, 480	306	----- of arsenic i. 485
ii. 245	i. 365	----- of iron purified ii. 288, 292
ii. 156	i. 33, ii. 170	----- of quicksilver grey ii. 322
ii. 388	i. 195	----- by nitric
i. 498	ii. 36	acid ii. 327
i. 389	i. 332, 449	----- of zinc ii. 346
i. 499	ii. 419	Oxygen gas i. 9, ii. 446
	i. 427	Oxymels ii. 77

	Page		Page
Oxy-muriatic acid	ii. 174	Quicksilver sub-muriate of	ii. 311
Oxy-muriate of potash	i. 238, ii. 175	———— sub-nitrate	i. 485, ii. 327
		———— sulphurets of	ii. 332, 339
		———— acetate of	304
		———— grey oxide of	322
		———— red oxide of	335
		———— yellow sub-sulphate	330
P			
Paregoric elixir	ii. 104, 109		
Pellitory	i. 435		
Peppermint	i. 271		
Pennyroyal	i. 272		
Pepper, black	i. 266		
———— Guinea	i. 265		
———— Jamaica	i. 267		
———— long	i. 266		
Peruvian bark	i. 241		
Phosphate of soda	i. 365, ii. 224		
Pills	ii. 372		
Pimento	i. 267		
Pink, Indian	i. 491		
Plasters	ii. 409		
Poison oak	i. 187		
Poppy, white	i. 158		
Potash	i. 27, 380, 466, 478 ii. 213		
————, water of	ii. 211		
———— with lime	i. 483 ii. 213		
Potassium	i. 27		
Powders	ii. 355		
Precipitation	i. 103		
Proof spirit	ii. 145		
Prussic acid	i. 71		
Pulps, extraction of	ii. 6		
Pulverization	i. 95		
Q			
Quassia	i. 256		
Quicksilver	i. 212, 271, 432		
———— calcined	ii. 835		
———— purified	ii. 303		
———— with chalk	ii. 833		
———— sulphur	ii. 332		
———— red precipitate	327		
———— white precipitate	i. 337		
———— muriate of	i. 485, 220 ii. 306		
		Rectification	i. 102
		Refrigerants	i. 451
		Resin	i. 57
		———— white and yellow .	i. 396
		Resinous ointment	ii. 391
		———— plaster	ii. 410
		Rhododendron	ii. 187
		Rhubarb	i. 352
		Roehelle salt	ii. 224
		Rose, red	i. 299
		Rosemary	i. 440
		Rubefacients	i. 443
		Rue	i. 373
		Rust of iron, prepared	ii. 288
		S	
		Sacred elixir	ii. 105
		———— tincture	ii. 81
		Saffron, English	i. 202
		———— meadow	i. 392
		Sagapenum	i. 201
		Sage	i. 415
		Sago	i. 501
		Sal-ammoniac	i. 408
		———— polychrest	ii. 216
		Saline preparations	ii. 158
		Salop	i. 501
		Salt of amber	ii. 152
		———— of harsthorn	i. 199, ii. 230
		———— of tartar	ii. 207
		Salts, neutral	i. 36
		Sarsaparilla	i. 500
		Sassafras	i. 415
		Saturnine ointment	ii. 480
		Savipe	i. 373, 486

Scan
Sea
Seda
Sene
Senn
Sialo
Siles
Silve
Sima
Sina
Snal
Soap

Soda

Sodi
Solu
Solu

pe
Spar
Spea
Sper
Spir

Spir
Spir
Spor
Squi

Star
Stor
V

Page		Page.		Page.
311	Scammony	i. 359	Storax purified	ii. 9
317	Sea oak	ii. 13	Strontites	i. 24
327	Sedatives	i. 135	Sub-acetite of copper	484
339	Seneka	425	Sub-muriate of mercury	ii. 311
304	Senna	351	_____ and	
322	Sialogogues	431	ammonia	337
335	Silex	22	Sub-nitrate of mercury	i. 485
330	Silver, nitrate of	i. 211, ii. 264	_____	ii. 237
	Simarouba	i. 256	Sub-sulphate of mercury	330
102	Sinapism	i. 449, ii. 280	Sublimation	i. 102
451	Snake-root, Virginian	i. 251	Sugar	53
i. 57	Soap	479	Sugar of lead	ii. 341
396	liniment	ii. 106	Sulphate of alumine	i. 283
391	plaster	413	_____ dried	ii. 239
410	Soda	28, 467, 479	copper	i. 484
187	carbonate of	ii. 221, 223	iron	ii. 291
352	Sodium	i. 29	dried	292
224	Soluble tartar	ii. 218	magnesia	i. 362
299	Solution	i. 96	potash	i. 363 ii. 215
440	of acetite of zinc	ii. 349	with sulphur	ii. 216
443	muriate of barytes	242	soda	i. 362 ii. 226
373	muriate of lime	246	zinc	347
288	sulphate of zinc	349	Sulphur	i. 16, 349, 410
	sulphate of cop-		ointment	ii. 403
105	per, compound	287	precipitated	14
i. 81	Spanish fly	i. 397, 447	sublimed, washed	14
202	Spearmint	271	Sulphurated oil,	157
392	Spermaceti	505	Sulphuret of antimony pre-	
201	Spirit of ammonia	ii. 233	pared	265
415	aromatic	234	Sulphuret of antimony preci-	
501	fetid	235	pitated	271
408	mindererus	i. 406 ii. 236	Sulphuret of potash	219
216	of nitrous ether	i. 384	quicksilver,	332
158	_____	ii. 202	red	339
501	of vitriolic ether	196	Sulphuric acid	i. 32, 280
152	Spirit, ardent	i. 144 ii. 144	aromatic	ii. 187
230	Spirits, distilled	138	diluted	185
207	Sponge, burnt	12	ether	188
i. 36	Squill	i. 331, 385, 423	Super-carbonate of potash	i. 478
500	dried	ii. 6	soda	ii. 209
415	pills	381	_____	i. 479
480	vinegar	86	_____	ii. 223
486	Starch	i. 502	Super-sulphate of argil and	
	Storax	429	potash	i. 283, 484

	Page.		Page.
Super-tartrate of potash	i. 363, 381, 463	Vitriolic acid	i. 280
Synthesis	i. 9	———— diluted	ii. 185
Syrups	ii. 66	———— ether	188
T			
Tamarind	i. 347, 461	Volatile liniment	i. 450, 156
Tannin	64	———— oils	ii. 146
Tansy	492	Vomica nut	i. 188
Tar ointment	ii. 403	W.	
—— mineral	i. 198	Wake robin	435
Tartar, crystals of,	363, 381, 463	Water distilled	ii. 134
—— emetic	ii. 279	—— of acetite of ammonia	i. 406, 234
Tartaric acid	i. 69	—— — ammonia	ii. 231
Tartrate of antimony	ii. 279	—— — ammoniated cop-	
—— — potash & soda	i. 364, ii. 224	per	286
—— — potash	i. 364 ii. 218	—— — carbonate of ammo-	
Thorn-apple	186	nia	229
Tin	490	—— — potash	211
—— powder	ii. 351	—— — sulphuret of pot-	
Tinctures	89	ash	226
Tobacco	i. 183, 333, 366, 391, 423, 437, 441	—— — — — — ammo-	
Tonics	205	nia	238
Tormentil	298	—— — super-carbonate of	
Trefoil	259	potash,	ii. 209
Trituration	95	of	
Troches	ii. 384	soda	228
Turpeth mineral	330	Wax	i. 59. 505
Turpentine	i. 366, 395	—— ointment	ii. 391
—— Cyprus	397	—— plaster	409
—— oil of	396, ii. 154	Weights	i. 105
Tutty, prepared	346	Whortleberry	300
V			
Valerian, wild	i. 201	Wine	149
Vegetable analysis	40	—— of tartarised antimony	ii. 283
Vegetables, preparation of	ii. 8	Wines, medicated	80
Verdigris	i. 327, 484	Wolfsbane	174
Vinegar	i. 461	Wormseed	491
—— distilled	ii. 160	Wormwood	258
Vinegars medicated	85	Z	
Vitriol, blue	i. 484	Zedoary	267
—— green	ii. 291	Zinc	i. 227, 285, 326
—— white	347	—— oxide of	ii. 346
		—— carbonate of	345
		—— sulphate of	347
		—— acetate of	349

LATIN INDEX.

A		Page	Page	
ABSINTHIUM vulgare	i.	258	Ærugo	i. 327, 484
Acetis ammonia	i.	406, ii. 236	Æsculus hippocastanum	i. 440
hydrargyri		304	Æther nitrosus	ii. 198
plumbi	i.	290 ii. 341	sulphuricus	i. 152, ii. 183
potassæ		380 214	cum alkohole	196
zinci	i.	286, ii. 349	alco-	
Acetum		461	hole aromaticus	196
aromaticum	ii.	85	Æthiops mineralis	332
distillatum		160	Alcohol	i. 144, ii. 144
scillæ maritimæ		86	ammoniatum	233
colchici		87	aromaticum	234
Acidum acetosum	i.	358,	fætidum	235
campho-			dilutum	145
ratum	ii.	86	Allium sativum	i. 424, 450
Acidum acetosum distilla-			Aloe perfoliata	357, 371
tum		160	Althæa officinalis	499
forte		162	Alumen	283
benzoicum		165	ustum	ii. 239
citricum	i.	458, ii. 168	Ammonia	i. 328, 450, 467
aceticum		162	Ammoniaretum cupri	ii. 285
muriaticum		170	Amomum repens	i. 268
nitricum	i.	237, 182	zingiber	267
nitrosum		180	zedoaria	ib.
dilutum		182	Ammoniacum	425
oxy-muriaticum		175	Amygdalus communis	504
succini	i.	197, ii. 152	Amylum	502
sulphuricum	i.	280	Amyris Gileadensis	430
aromaticum	ii.	187	Anchusa tinctoria	298
dilutum		185	Anethum graveolens	270
vitriolicum	i.	280	fœniculum	270
Aconitum napellus		174		

	Page		Page
Angelica archangelica	i. 271	Aristolochia serpentaria	i. 251
Angustura	253	Arnica montana	i. 186
Anisum	270	Arsenicum	231, 485
Anthemis nobilis	257, 332	Arsenici oxidum præpara-	
pyrethrum	435	tum	ii. 351
Antimonium	318, 409, 422	solutio	352
Antimonii oxidum	ii. 265, 276	Artemisia absinthium	i. 258
urias	275	santonica	491
tartris	279	Arum maculatum	435
sulphuretum præ-		Assa fœtida	199, 370
cipitatum	271	Asarum Europæum	333, 441
Aqua acetitis ammoniæ	i. 406	Astragalus tragacantha	498
	ii. 236	Atropa belladonna	173
ammoniæ	i. 467, ii. 231	Aurantium Hispalense	259
anethi	137		
carui	137	B	
calcis	244	Balsamum Canadense	i. 394
carbonatis ammoniæ		Copaiba	394
i. 407, 229		Gileadense	430
cinnamomi	135	Peruvianum	427
citri aurantii	135	myroxyli Peruiferi	427
medicæ	135	styracis benzoini	428
cupri ammoniati	286	Toluiferæ balsami	428
distillata	134	Tolutanum	428
fœniculi	137	Barytes	235
lauri cassiæ	135	Belladonna	173
menthæ piperitæ	136	Benzoinum	428
pulegii	136	Bismuthum	234
viridis	136	Bistorta	298
potassæ	211	Bitumen petroleum	198
pulegii	136	Bolus armena	282
rosæ centifoliæ	137	Borax	464
styptica	287	Bryonia alba	355
stillatitiæ	132	Bubon galbanum	200
super-carbonatis potas-			
sæ	i. 478, ii. 209	C	
sodæ	i. 479, ii. 223	Callicocca ipecacuanha	329
sulphureti kali	ii. 220	Cancrorum chelæ	468
ammoniæ	238	lapilli	468
Arbutus uva ursi	i. 300	Calx f. 235, 284, 468, 480, ii. 244	
Argentum nitratum	210	Calomelas	i. 361, 409, 311
vivum	212	Calamina præparata	345
Argilla	282		

	Page		Page
Camphora	i. 154, 412	Chamæmelum	i. 257, 332
Canella alba	262	Chelæ cancerorum præparatæ	ii. 243
Cantharis	i. 397, 447	Chironia centaurium	i. 259
Capsicum annuum	265	Cicuta	i. 175
Carbonas ammoniæ	407, ii. 227	Cinchona Caribæa	251
- calcis	i. 284, 468	- officinalis	241
- præparatus	ii. 242	Cinnabaris factitia	ii. 339
- ferri præcipitatus	ii. 289	Cinnamomum	i. 261
- præparatus	288	Citras ammoniæ	407
- magnesiæ	i. 469, ii. 247	Citrus aurantium	259, 461
- potassæ	205, 208	- medica	260, 458
- purissimus	207	Cochlearia armoracia	436
- sodæ	221, 223	Colchicum autumnale	392
- zinci præparatus	345	Colocynthis	356
Cardamomum minus	i. 268	Colomba	255
Carum carui	269	Confectio aromatica	ii. 366
Caryophyllus aromaticus	264	- japonica	368
Cascarilla	253	- opiata	368
Cassia	261	- amygdalæ	370
- fistula	346	- rutæ	371
- senna	351	- scammoniæ	371
Castor fiber	196	Conium maculatum	i. 175
Castoreum	196, 370	Conserva	ii. 16
Cataplasma fermenti	ii. 419	- citri aurantii	17
- sinapeos	419	- rosæ gallicæ	18
Catechu	i. 300	- caninæ	17
Causticum commune	483	Contrayerva	i. 252
- lunare	483, ii. 264	Convolvulus jalapa	354
Centaurea benedicta	i. 259	- scammonia	359
Cera	506	Copatiera officinalis	394
Ceratum	ii. 390	Coriandrum sativum	269
- carbonatis zinci im-		Cornu cervi	503
- puri	402	- ustum	ii. 11
- cetacei	391	Cortex Peruvianus	i. 241
- lapidis calaminaris	402	Cremor tartari	363, 381
- lyttæ	391	Crocus antimonii	ii. 274
- plumbi	400	- sativus	i. 202
- resinæ flavæ	391	Croton eleutheria	253
- saponis	406	Creta præparata	ii. 243
- simplex	390	Crystalli tartari	i. 363, 381
Cerussa	i. 289	Cubeba	266
- acetata	ii. 341	Cucumis colocynthis	356
		Cuminum cyminum	271

	Page.		Page.
Cuprum	i. 229, 287	Electuarium lenitivum	ii. 367
ammoniacum	ii. 285	opiatum	369
vitriolatum	i. 484	scammonii	371
Cusparia febrifuga	253	thebaicum	369
Cycas circinalis	501	Elixir paregoricum	104, 109
		sacrum	105
D			
Daphne mezereum	i. 414, 436	Emplastrum adhæsivum	410
Datura stramonium	186	ammoniaci	415
Decoctum althææ officinalis	ii. 54	ammoniaci cum	
aloes	61	hydrargyro	416
anthemidis nobilis	55	aromaticum	418
chamæmeli	55	assæfætidæ	411
cinchonæ officinalis	56	calefaciens	418
commune	55	cantharidis	414
cydoniæ	62	ceræ	409
daphnes mezerei	57	commune	410
dulcamaræ	62	cumini	416
digitalis	65	gummosum	411
geoffrææ inermis	57	galbani	412
guaiaçi compositum	58	hydrargyri	412
hellebori albi	65	lithargyri	410
hordei distichi	58	meloes vesicatorii	414
lichenis	62	compositum	415
lignorum	58	oppi	417
malvæ	63	oxidi ferri rubri	411
papaveris	63	plumbi semi vitrei	410
polygalæ senegæ	56	picis	417
quercus	63	resinosum	410
sarsaparillæ	60	roborans	411
ulmi compositum	64	saponaceum	413
Digitalis purpurea	i. 177, 386, 422	simplex	409
Dolichos pruriens	489	vesicatorium	414
Dorstenia contrayerva	252	Emulsio amygdalis communis	29
Dulcamara	391	arabica	30
		camphorata	30
E			
Elaterium	i. 356, 225	Emulsiones	ii. 229
Electuarium aromaticum	366	Eugenia caryophyllata	i. 264
cassiæ fistulæ	367	Extracta	ii. 115
sennæ	367	Extractum anthemidis nobilis	118
catechu	368	aloes	120
		absinthii	127
		quercus	128
		cascarillæ	130

	Page.		Page.
Extractum cassiæ sennæ	ii. 118	Gambogia	360
— catharticum	122	Gas acidum carbonicum	ii. 453
— chamæmeli	118	— hydrogenium	451
— cinchonæ	121, 129	— carbonatum	454
— colocynthidis com-		— oxidum nitrosum	448
positum	122	— oxygenium	446
— convolvuli jalapi	130	Genista	i. 393
— corticis Peruviani	121	Gentiana lutea	257
— cum resina	129	Geoffiæa inermis	492
— genistæ	127	Glycyrrhiza glabra	500
— gentianæ luteæ	117	Gratiola officinalis	392
— glycyrrhizæ	118	Guaiacum officinale	412
— hellebori nigri	119	Gummi Arabicum	i. 497
— hæmatoxyli Campe-		— astragali tragacanthæ	498
chensis	119	— mimosæ niloticæ	497
— humuli	123	H	
— jalapæ	128, 130	Hæmatoxylon Campechia-	
— opii	124	num	i. 299
— papaveris somniferi	119	Helleborus albus	441
— rhei	125	— niger	354, 372
— rutæ graveolentis	120	Hepar sulphuris	ii. 219
— sabinæ	128	Heracleum gummiferum	i. 425
— sarsaparillæ	125	Humulus lupulus	188
— sennæ	118	Hydrargyrus	212, 371, 432
— taraxaci	126	— calcinatus	ii. 335
— valeriani	126	— cum creta	333
F		— magnesia	334
Ferri limatura purificata	ii. 287	— muriatus corrosivus	306
— oxidum	288, 292	— mitis	311
— carbonas	288	— præcipitatus ruber	327
— sulphas	291	— albus	337
— murias	293, 296	— purificatus	303
— tartarum	297	— sulphuratus niger	ii. 332
— acetas	299	— ruber	339
Ferrum	i. 223, 285, 370, 490	Hydrargyri acetas	304
— ammoniatum	ii. 296	— murias i. 220, 485 ii. 306	
— tartarisatum	297	— sub-murias ii. 311, 317	
Ferula assafœtida	i. 199, 370	— sub-murias ammo-	
Filix mas	492	niatum	ii. 337
Fraxinus ornus	345	— sub-nitras i. 485 ii. 327	
G		— oxymurias	ii. 306
Galbanum	i. 200	— oxidum cinereum	ii. 322
Gallæ	297	— rubrum	335

	Page.		Page:
Manna	i. 345	Myroxolon peruiferum	i. 427
Maranta arundinacea	502	Myrrha	426
Marrubium vulgare	259	Myrtus pimenta	267
Mastiche	305		
Mel boracis	ii. 77		
— colchici	78		
— despumatum	77		
— rosæ	78		
— scillæ	78		
Melaleuca cajuputa	i. 203	Nicotiana tabacum	i. 183, 366, 391, 428, 437, 441
Melampodium	354	Nitras argenti	483 ii. 264
Meloe vesicatorius	397, 447	— potassæ	382, 463
Mentha piperita	271	Nitrum	i. 382, 463
— pulegium	272	Nux moschata	263
— sativa	271	— vomica	189
— viridis	271		
Menyanthes trifoliata	259		
Mercurius	212	O	
Mezereum	414, 436	Oculi cancerorum præparati	ii. 242
Mimosa catechu	300	Olea Europæa	i. 491
— nilotica	497	— distillata vel volatilia	55
Minium	289	— fixa sive expressa	i. 54 ii. 27
Misturæ	ii. 31	Oleum animale	i. 197
Mistura ammoniaci	31	— anthemidis	ii. 151
— assafoetidæ	23	— ammoniatum	156
— cornu usti	33	— amygdalæ communis	28
— ferri composita	34	— cajuputæ	i. 203
— guaiaci	35	— camphoratum	ii. 157
— camphoræ	32	— cornu cervi	155
— cretæ	34	— æthereum	197
— moschi	36	— lini cum calce	389
Momordica elaterium	i. 356	— usitatissimi	28
Moschus	195	— olivarum	i. 491
Mucilago amyli	ii. 49	— pini	ii. 154
— gummi Arabici	50	— ricini	i. 348 ii. 28
— tragacanthæ	50	— succini	i. 197 ii. 152
Murias ammoniæ	i. 408	— sulphuratum	ii. 157
— ammoniæ et ferri	ii. 296	— terebinthinæ	i. 396
— antimonii	i. 484 ii. 275	— — rectificatum	ii. 154
— barytæ	ii. 240	— volatile anisi	150
— hydrargyri	i. 220, 485 ii. 306	— — carui	151
— sodæ	i. 365	— — juniperi communis	149
Myristica moschata	i. 263	— — sabinæ	149
		— — lauri sassafras	150
		— — lavandulæ spicæ	150

	Page.		Page.
Oleum volatile melaleucæ		Oxymurias potassæ i.	238 ii. 175
leucadendri	ii. 203		
— menthæ piperitæ	ii. 150		
— — viridis	151	Papaver somniferum	i. 158
— — myrti pimentæ	150	Petroleum Barbadense	198
— — origani	151	Phosphas hydrargyri	i. 222
— — pimpinellæ anisi	150	— sodæ	i. 365 ii. 224
— — pulegii	151	Pilulæ aloes	373
— — rorismarini	151	— — cum assafœtida	374
— — rutæ	152	— — colocynthide	374
— — sabinæ	149	— — myrrha	375
— — sassafras	150	— — zingibere	374
Opium	i. 158, 410	— ammoniaretii cupri	376
— purificatum	ii. 131	— assafœtidæ compositæ	376
Opobalsamum	i. 430	— galbani compositæ	377
Origanum majorana	440	— hydrargyri	377
Orchis mascula	501	— myrrhæ compositæ	377
Oxidum antimonii cum		— opiatæ	379
phosphate calcis	ii. 267	— rhei compositæ	380
— antimonii cum sul-		— scillæ	381
phure per nitratem po-		— thebaicæ	379
tassæ	274	— saponis cum opio	380
— antimonii cum sul-		— e styrace	380
phure vitrificatum	265	— cambogiæ	382
— antimonii vitrifica-		— ferri cum myrrha	382
tum cum cera	267	— hydrargyri sub-muria-	
— arsenici	i. 485 ii. 351	tis	383
— ferri purificatum	ii. 288	Pimento	i. 267
— rubrum	292	Pimpinella anisum	270
— hydrargyri cinere-		Pinus abies	307, 350
um	ii. 322	— balsamea	394
— hydrargyri rubrum		— larix	395
per acidum nitricum		Piper cubeba	266
	i. 485 ii. 327	— Indicum	266
— plumbi semivitre-		— longum	266
um	i. 288	— nigrum	266
— zinci	ii. 346	Pistacia lentiscus	305
— impurum præ-		— terebinthinum	397
paratum	ii. 346	Pix Burgundica	449
Oxymel	78	Plumbum	287
— colchici	78	Plumbi acetas	ii. 341
— scillæ	78	Polygala senega	i. 425
— æruginis	79	Polygonum bistorta	298

Polypo
PotassPotio
Prunus
Pteroc
Pulegi
Pulvis

Pyretl

Quass

Querc

	Page.		Page.
Polypodium filix mas	i. 492		
Potassa	i. 380, 466, 478, 483	R	
—————	ii. 213	Raphanus rusticanus	i. 436
————— cum calce	i. 483 ii. 213	Resina alba	396
Potio carbonatis calcis	ii. 244	————— copaiiferae officinalis	394
Prunus lauro-cerasus	i. 189	————— flava	396
Pterocarpus draco	304	————— laricis	395
Pulegium	272	Rhabarbarum	352
Pulvis aloes cum canella	ii. 362	Rhamnus catharticus	357
————— guaiaco	361	Rheum palmatum	352
————— antimonialis	267	Rhododendron crysanthum	187
————— aromaticus	355	Rhus toxicodendron	187
————— asari compositus	356	Ricinus communis	348
————— carbonatis calcis com-		Rob sambuci	ii. 25
————— positus	356	Rosa gallica	i. 299
————— cretaceus	356	Rosmarinus officinalis	440
————— cretae compositus	357	Rubia tinctorum	372
————— cum opio	357	Rubigo ferri praeparata	ii. 288
————— contrayervae composi-		Ruta graveolens	i. 373
————— tus	362	S	
————— cornu usti cum opio	ii. 359	Sabina	i. 373, 486
————— doveri	i. 411 ii. 358,	Saccharum saturni	ii. 341
————— ipecacuanhae et opii	i. 411	Sagapenum	i. 201
—————	ii. 358	Sago	501
————— jalapae compositus	358	Salina	ii. 158
————— kino compositus	363	Sal ammoniacus	i. 408
————— opiatus	359	————— cornu cervi	i. 199 ii. 230
————— scammonii compositus	360	————— diureticus	i. 380 ii. 214
————— cum aloe	234	————— glauberi	i. 362, 226
————— cum calomelane	234	————— marinus	i. 365
————— sennae compositus	363	————— martis	i. 225 ii. 291
————— stypticus	361	————— polychrestus	216
————— sulphatis aluminæ com-		————— rupellensis	i. 364 ii. 224
————— positus	361	————— sodae	221
————— tragacanthae composi-		————— succini	152
————— tus	364	————— tartari	207
Pyrethrum	i. 435	Salop	i. 501
Q		Salvia officinalis	415
Quassia excelsa	i. 256	Sanguis draconis	304
————— simarouba	i. 256	Santonium	491
Quercus robur	296	Sapo albus	479
————— cerris	297	Sarsaparilla	500
————— marinus	ii. 13	Sassafra	415

	Page.		Page.
Scammonium	359	Spiritus pulegii	ii. 140
Scilla maritima	331, 385, 423	— rorismarini officinalis	143
— exsiccata	ii. 6	— vinosus rectificatus	143
Seneka	i. 425	— vinosus camphoratus	93
Senna	351	Spongia usta	12
Serpentaria Virginiana	251	Squamæ ferri purificatæ	288
Sevum cæti	505	Stalagmitis cambogiodes	i. 360
Simarouba	256		493
Sinapis alba	332, 372, 449	Stannum	490
Smilax sarsaparilla	500	Stanni pulvis	ii. 351
Soda	467, 479	Stramonium	i. 186
Solanum dulcamara	391	Strychnis nux vomica	189
Solutio acetitis zinci	ii. 349	Styrax benzoin	428
— muriatis barytæ	242	— officinale	429 ii. 9
— muriatis calcis	246	Sub-acetis cupri	i. 484
— sulphatis cupri com-		Sub-boras sodæ	464
— posita	287	Succi	ii. 19
— sulphatis zinci	349	Succi spissati	21
Spartium scoparium	i. 393	Succus cochleariæ compositus	20
Spermaceti	505	Succus spissatus aconiti na-	
Spigelia Marilandica	491	— pelli	22
Spiritus stillatitii	ii. 138	— atropæ bel-	
Spiritus ætheris nitrosi	i. 384	— ladonæ	23
	ii. 202	— conii macu-	
— ætheris vitriolici	196	— lati	23
— ammoniæ	233	— hyoscyami	
— aromaticus	234	— nigri	24
— fœtidus	235	— lactucæ vi-	
— succinatus	235	— rosæ	25
— anisi	140	— momordicæ	
— armoraciæ compositus	141	— elaterii	25
— camphoratus	93	— sambuci ni-	
— cari carui	139	— gri	25
— cinnamomi	140	Sulphas aluminæ	i. 282
— juniperi compositus	141	— aluminæ exsiccatæ	ii. 6
— lavandulæ spicæ	142	— cupri	i. 229, 327, 484
— composita	142	— ferri	225. ii. 291
— menthæ	140	— exsiccatæ	292
— mindereri	i. 406, 236	— magnesiæ	i. 362
— myristicæ moschatæ	ii. 140	— potassæ	i. 363 ii. 215
— myrti pimentæ	140	— potassæ cum sulphu-	
— nitri dulcis	i. 384. ii. 202	— re	216
— pimentæ	140	— sodæ	i. 362 ii. 226

	Page.		Page.
Sulphas zinci	228, 251, ii. 347	Syrupus violæ odoratæ	ii. 73
Sulphur	i. 394, 410	zingiberis	68
antimonii præcipita-			
tum	ii. 271		
præcipitatum	14	Tamarindus Indica	i. 347, 461
sublimatum lotum	14	Tanacetum vulgare	492
Sulphuretum antimonii	i. 315	Tartari crystalli	343, 381, 463
præ-		Tartarus emeticus	ii. 279
paratum	ii. 265	Tartarum solubile	218
præ-		vitriolatum	215
cipitatum	271	Tartris antimonii	279
hydrargyri ni-		potassæ	i. 364, ii. 218
grum	332	et sodæ	i. 365,
rub-			ii. 224
rum	339	Terebinthina Veneta	i. 366
potassæ	219	Testæ præparatæ	ii. 13
Super-sulphas aluminæ et po-		Tinctura aloes ætherea	91
tassæ	i. 280, 482	aloes socotorinæ	90
Super-tartris potassæ	363, 381	cum myrrha	91
	463	aloes composita	91
Swietenia febrifuga	254	amomi repentis	92
mahagoni	255	angusturæ	113
Syrupus acidi acetosi	ii. 67	aristolochiæ serpen-	
alii	76	tarixæ	92
althææ officinalis	67	aromatica	96
amomi zingiberis	68	assæ fetidæ	98
citri aurantii	68	aurantii	108
citri medicæ	69	balsami Tolutani	108
colchici autumnalis	69	benzoin composita	93
communis	66	camphoræ	93
croci	74	camphoræ composita	109
dianthi caryophyll.	69	cantharidum	101
mori	75	cardamomi composita	110
opii	76	capsici	110
papaveris somniferi	70	castorei	94
rhamni cathartici	71	cascarillæ	110
rhoedos	75	castorei composita	95
rosæ gallicæ	72	catechu	102
centifoliæ	71	cinchonæ composita	111
scillæ maritimæ	72	officinalis	95
sennæ	75	cinnamomi	101
simplex	66	compo-	
limonis succi	69	sita	96
toluiferæ balsami	73		

	Page.		Page.
Tinctura colombæ	ii. 96	Toluifera balsamum	i. 428
— convolvuli jalapæ	96	Tormentilla erecta	298
— croci	97	Tragacantha gummi	498
— digitalis purpureæ	97	Triticum hybernum	502
— ferri acetatis	299	Trochisci carbonatis calcis ii.	384
— ferri ammoniati	296	— cretæ	384
— ferri muriati	293	— glycyrrhizæ	385
— galbani	114	— cum	
— gentianæ composita	98	— opio	385
— guaiaci	99	— gummosi	386
— guaiaci ammoniata	99	— nitratis potassæ	387
— hellebori nigri	100	Turpethum minerale	330
— humuli	111	Tutia præparata	346
— hyoscyami nigri	100		
— jalapæ	96	U	
— japonica	102	Unguentum acetitis plumbi	
— kino	101	— acidi nitrosi	400
— lauri cinnamomi	101	— cantharidis	391
— meloes vesicatorii	101	— ceræ	391
— mimosæ catechu	102	— cerussæ acetatæ	400
— moschi	114	— cœruleum	393
— myrrhæ	102	— elemi compositum	404
— opii	103	— epispasticum for-	
— opii ammoniata	104	— tius	391
— opii camphorata	109	— — — — — mitius	392
— quassiæ	114	— hellebori albi	218
— rhei palmati	105	— hydrargyri	i. 218, ii. 393
— rhei et aloes	105	— — — — — præcipi-	
— rhei et gentianæ	104	— tati albi	ii. 406
— rhei composita	111	— — — — — nitrati	398
— sacra	81	— infusi meloes ve-	
— saponis	106	— sicatorii	392
— saponis cum opio	107	— oxidi hydrargyri	
— scillæ	112	— cinerei	397
— sennæ	107	— oxidi hydrargyri	
— serpentariæ	92	— rubri	398
— thebaica	103	— oxidi plumbi albi	400
— Toluiferæ balsami	108	— oxidi zinci	402
— valerianæ	112	— oxidi zinci impuri	402
— valerianæ ammoniata	113	— picis	403
— veratri albi	108	— piperis nigri	407
— zingiberis	113		
— zinci acetatis	350		

Ungue
vesi

tur

Uva u

Valer
Verac
Vina
Vinur

	Page.		Page.
Unguentum pulveris meloes		Vinum antimoniale	ii. 283
vesicatorii	ii. 391	— antimonii tartarisati	283
— resinæ flavæ	391	— ferri	84
— resinosum	391	— gentianæ compositum	82
— sabinæ	407	— ipecacuanha	82
— sambuci	405	— nicotianæ tabaci	83
— saturninum	400	— opii	83
— simplex	390	— rhei palmati	83
— spermatis ceti	390	— tartritis antimonii	283
— sub-acetitis cupri	393	Vitriolum album	347
— ————— compositum	404	— ————— cæruleum i. 229, 327	
— sulphuris	403	— ————— viride i. 225, ii. 291	
— tutiæ	402	Vitrum antimonii	ii. 265
— veratri	405	— ————— antimonii ceratum	267
Uva ursæ	i. 300		
		Z	
V		Zedoaria	i. 267
Valeriana officinalis	i. 201	Zincum	285, 227, 326
Veratrum album	441	Zinci carbonas	ii. 345
Vina	ii. 80	— oxidum	346
Vinum aloes socotorinæ	81	— sulphas	347
— ————— amarum	82	— acetas	349
		Zingiber	i. 267

