CHAPTER X.

METALLICA.

METALLIC PREPARATIONS.

SECT. I.

Preparations of GOLD.

GOLD is the moſt ponderous and perfect of the metals: it abides fixt and unaltered in the ſtrongeſt fire; and is not acted upon by alcaline, or any ſimple acid menſtruum. It diſſolves in aqua regis alone, into a yellow tranſparent fluid: this ſolution ſtains the ſkin, &c. purple: the ethereal ſpirit of wine, and ſome eſſential oils, take up the gold from it: alcalies precipitate the metal in form of a yellowiſh mud, which exſiccated, and expoſed to a ſmall heat, violently explodes.

As to the medicinal virtues of this metal, experience has ſufficiently ſhewn, that it is not poſſeſſed of any valuable ones. In its metallic form, however finely comminuted, it proves inactive; when ſatiated with acid, corroſive; and in the intermediate ſtates, either inſignificant or unſafe.

AURUM POTABILE.
POTABLE GOLD.

Diſſolve, with a moderate heat, half a dram of fine gold, in two ounces of aqua regia; and add to the ſolution one ounce of the eſſential oil of roſemary. Shake them together, and then ſuffer them to reſt: the acid loſes its gold yellow colour; and the oil, which ariſes to the ſurface, becomes richly impregnated therewith. Separate the oil by decantation, and add to it four or five ounces of rectified ſpirit of wine: digeſt this mixture for a month, and it will acquire a purpliſh colour.

There have been many preparations of this kind, contrived by the deſigning pretenders to alchemy, and impoſed upon the credulous and unwary, as cordials and diaphoretics of ineſtimable value. The above ſeems to be one of the beſt and ſafeſt of them; tho' it would be equally ſerviceable as a medicine, if made without the ingredient, which it receives its name from.

AURUM FULMINANS.
FULMINATING GOLD.

Diſſolve gold in aqua regia (about four times the weight of the gold will be ſufficient) and drop into the ſolution oil of tartar per deliquium, until the effervescence ceaſes: let the whole ſtand for ſome hours, and the gold will be depoſited: then pour off the liquor, waſh the precipitated matter with freſh parcels of water, and afterwards exſiccate it for uſe.

This

This powder requires to be exſiccated with the utmoſt precaution; for in a ſmall heat, it explodes with great violence: the ſame effect enſues likewiſe upon ſtrongly rubbing it. This property has given name to the preparation; and is the only one on account of which it is at preſent taken any notice of. It has been recommended indeed, in fevers, as a diaphoretic, in the doſe of a few grains: its more certain effect, however, is to operate downwards, and that not always with ſafety; Konig and Ludovici relate, that in ſome febrile caſes, it has occaſioned almoſt mortal diarrhœas. And Stahl (de *proexeucriſi medica*, ſect. viii) reports, that the inteſtines have been found eroded by it.

SECT. II.

Preparations of SILVER.

SILVER is the moſt permanent in the fire of all the metals after gold. It diſſolves in the pure nitrous acid, into a colourleſs, tranſparent liquor, intenſely bitter and corroſive. This ſolution exſiccated, furniſhes the ſhops with an uſeful cauſtic; which has likewiſe been taken internally in ſmall doſes, and mixed with other ſubſtances, as an hydragogue: it ſtains the ſkin black.

CAUSTICUM LUNARE.
THE LUNAR CAUSTIC.
Lond.

Let pure ſilver be diſſolved in about twice its weight of aqua fortis, upon warm ſand; then gently increaſe the heat, until a dry maſs is left. Melt this in a crucible, that it may be poured into proper moulds, carefully avoiding over much heat, leſt the matter ſhould grow too thick.

Cauſticum lunare, ſeu lapis infernalis.
The lunar cauſtic, or infernal ſtone.
Edinb.

Diſſolve fine cupelled ſilver, by the heat of a ſand bath, in three times its weight of ſpirit of nitre. Evaporate the ſolution, until two thirds of the moiſture are exhaled: then put the matter into a large crucible, and exhale the remaining moiſture over a gentle fire. Augment the heat by degrees, until the maſs flows like oil, and ceaſes to fume: then pour it into an iron pipe made for this purpoſe, previouſly heated and greaſed: laſtly, let it be dried, and kept for uſe in a glaſs veſſel cloſe ſtopt.

Strong ſpirit of nitre will diſſolve ſomewhat more than half its weight of pure ſilver; and the weaker of the *aquæ fortes*, formerly deſcribed, proportionably leſs, according to their quantity of pure nitrous acid. Sometimes this ſpirit contains a portion of the vitriolic, or marine acids; which, however minute, renders it unfit for diſſolving this metal, and ſhould therefore be carefully ſeparated before the ſolution is attempted. The method which the refiners employ, for examining the purity of their aqua fortis, and purifying it, if neceſſary, is, to let fall into it a few drops of a perfect ſolution of ſilver already made: if the liquor remains clear, and grows not in the leaſt turbid or whitiſh, it is fit for their uſe; otherwiſe, they add a ſmall

ſmall quantity more of the ſolution, which immediately turns the whole of a milk white colour: the mixture being then ſuffered to reſt for ſome time, depoſites a white ſediment; from which it is warily decanted, examined afreſh, and if need be, farther purified, by a freſh addition of the ſolution.

In evaporating the liquor, the heat ſhould be very gentle, till ſuch time as the matter appears dry, and then quickly raiſed ſo as to melt it: as ſoon as it flows thin, pour it into the mould, without waiting till the fumes ceaſe to appear, for when this happens, the preparation proves not only too thick to run freely into the mould, but likewiſe leſs corroſive than it is expected to be.

In want of a proper iron mould, one may be formed of tempered tobacco pipe clay, not too moiſt, by making in a lump of it, with a ſmooth ſtick firſt greaſed, as many holes as there is occaſion for: pour the liquid matter into theſe cavities, and when congealed, take it out by breaking the mould. Each piece is to be wiped from the greaſe; and wrapt up in dry ſoft paper, not only to keep the air from acting upon them, but likewiſe to prevent their corroding or diſcolouring the fingers in handling.

This preparation is a ſtrong cauſtic, and frequently employed as ſuch, for conſuming warts and other fleſhy excreſcencies, keeping down fungous fleſh in wounds or ulcers, and other like uſes. It is rarely applied where a deep eſchar is required, as in the laying open of impoſthumations and tumours; for the quantity neceſſary for theſe purpoſes, liquefying by the moiſture of the ſkin, ſpreads beyond the limits in which it is intended to operate.

PILULÆ LUNARES.
THE LUNAR PILLS.

Diſſolve pure ſilver in aqua fortis, and after due evaporation, ſet the liquor to cryſtallize. Let the cryſtals be again diſſolved in common water, and mingled with a ſolution of equal their weight of nitre. Evaporate this mixture to dryneſs, and continue the exſiccation, with a gentle heat, keeping the matter conſtantly ſtirring, till no more fumes ariſe.

Here it is neceſſary to continue the fire till the fumes entirely ceaſe, as more of the acid is required to be diſſipated, than in the preceding proceſs. The preparation is, nevertheleſs, in taſte very ſharp, intenſely bitter and nauſeous; applied to ulcers, it acts as a cauſtic, but much milder than the foregoing. Boerhaave, Boyle, and others, greatly commend it in hydropic caſes. The former aſſures us, that two grains of it made into a pill, with crumb of bread and a little ſugar, and taken on an empty ſtomach, (ſome warm water, ſweetened with honey, being drank immediately after,) purge gently without griping, and bring away a large quantity of water, almoſt without the patients perceiving it. He nevertheleſs cautions againſt the too liberal, or continued uſe of this medicine; and obſerves, that by its corroſive quality, it weakens the bowels, particularly the ſtomach; and that therefore proper corroborants, as the rob of juniper berries, ought to be occaſionally interpoſed.

SECT.

SECT, III.

Preparations of IRON.

IRON calcines by fire the moſt eaſily, and melts the moſt difficultly of all the metals. Sulphur promotes its fuſion, and changes it into a ſubſtance not greatly diſſimilar to a combination of the metal, with vitriolic acid. All acids diſſolve this metal; even the air corrodes it into a ruſt or calx.

Iron, in its metallic form, or lightly calcined, or combined with vegetable, or with mineral acids, acts in the human body in the ſame manner, (but with different degrees of power) by conſtringing the fibres. In all theſe ſtates, it promotes, or reſtrains ſecretions, where the deficiency or exceſs proceed from a laxity and debility of the veſſels; and, in general, raiſes the pulſe, and quickens the circulation. The calces are the leaſt active preparations, and in moſt conſtitutions prove altogether inert: the crude metal, duly comminuted, is more eaſily ſoluble in the animal fluids, and if acceſcent juices are lodged in the primæ viæ, ſoon manifeſts its operation by nidorous eructations, and the black colour of the alvine feces: if previouſly combined with ſaline bodies, it ſcarce ever fails of taking effect.

CHALYBIS RUBIGO PRÆPARATA.
RUST OF STEEL PREPARED.
Lond.

Expoſe filings of ſteel to the air, frequently moiſtening them with vinegar or water, until they change into ruſt; then grind them in a mortar, and pouring on water, waſh over the more ſubtile powder. The remainder is to be expoſed afreſh to the air, and moiſtened as at firſt, then triturated and waſhed again, and the powders that have been waſhed over, dried, and kept for uſe.

MARTIS LIMATURA PRÆPARATA.
FILINGS OF IRON PREPARED.
Edinb.

Set filings of iron, firſt cleanſed by the magnet, in a moiſt place, that they may turn to ruſt, which is to be ground into an impalpable powder.

They may likewiſe be prepared by moiſtening them with vinegar.

The cleanſing of iron filings by means of a magnet is very tedious, and does not anſwer ſo well as might be expected; for if they are ruſty, they will not be attracted by it, or not ſufficiently; nor will they, by this means, be entirely freed from braſs, copper, or other metallic ſubſtances which may adhere to them. It appears from the experiments of Henckel (Pyritolog. cap. *vom eiſen im kieſs*) that if iron be mixed by fuſion with even its own weight of any of the other metals or ſemimetals, regulus of antimony alone excepted, the compound will be vigorouſly attracted by the load-ſtone. — The ruſt of iron is to be procured at a moderate rate from the dealers in iron, free from any impurities, except ſuch as may be waſhed off by water.

The ruſt of iron is preferable as a medicine to the calces, or croci, made by a ſtrong fire. Hoffman relates,

relates, that he has frequently given it with remarkable ſucceſs, in obſtinate chlorotic caſes accompanied with exceſſive headachs, and other violent ſymptoms; and that he uſually joined with it pimpinella, arum root, and ſalt of tartar, with a little cinnamon and ſugar. The doſe is from four or five grains to twenty or thirty: ſome have gone as far as a dram; but all the preparations of this metal anſwer beſt in ſmall doſes, which ſhould rather be often repeated than enlarged.

Lemery ſhews a method of reducing ſteel to a very fine powder without ruſting it. The filings are put in an unglazed earthen veſſel, with ſo much water as will ſtand above them about four inches: the whole is to be well ſtirred every day, and more water ſupplied, as that in the veſſel exhales, ſo that the ſteel may remain always covered: by this means, he ſays, the filings will, in no long time, fall into an impalpable black powder. If ſuffered to remain for a little while uncovered with water, a part changes into ruſt.

CHALYBS CUM SULPHURE PRÆPARATUS.
STEEL PREPARED WITH SULPHUR.
Lond.

Heat the ſteel, with a very fierce fire, to a ſtrong white heat; and in this ſtate, apply it to a roll of ſulphur held over a veſſel of water: the ſteel will melt, and fall down in drops, which are to be picked out from the ſulphur that runs down with them, and ground into an impalpable powder.

It was ſuppoſed in former editions of this work, that this preparation is no other than common brimſtone, and that it contains nothing of the ſteel. If the ſteel indeed is not made extremely hot, it will not melt on applying it to the ſulphur; and the latter will run into the water by itſelf: but if the metal is heated to the degree above directed, it will readily melt, and fall down in drops of a brown colour; whilſt the ſulphur runs into long yellow ſtrings. The heat, requiſite for this purpoſe, is ſcarce procurable in the furnaces of the apothecary; and even if the ſteel is ſufficiently heated at firſt, it will ſoon become too cool to be corroded by the ſulphur. For this reaſon, and on account of the offenſive fumes, which ariſe very copiouſly, and are not avoidable by the operator, this proceſs has been long neglected. The ſhops have been generally ſupplied with a preparation of ſteel with ſulphur made, at an eaſier rate, in the following manner.

MARS SULPHURATUS.
SULPHURATED IRON.
Edinb.

Mix filings of iron with twice their weight of powdered ſulphur, and as much water as is ſufficient to make them into a paſte: ſuffer this to ſtand and ferment for ſix hours; then put it into a crucible, and let it deflagrate: afterwards keep the matter continually ſtirring with an iron ſpatula, till it falls into a deep black powder.

If the quantity of this mixture is conſiderable, and ſtrongly preſſed down, it will ferment ſo violently as to burſt out into flame. The calces, or ores of iron, do not produce this phænomenon.

CROCUS MARTIS APERIENS.
OPENING CROCUS OF IRON.
Edinb.

This is made by keeping the foregoing preparation longer over the fire, when it aſſumes a red colour.

colour. It is not different from the ruſt of iron, gently calcined in a crucible to redneſs.

CROCUS MARTIS ASTRINGENS.
ASTRINGENT CROCUS OF IRON.
Edinb.

This is made from the opening crocus of iron, by reverberating it for a long time in the moſt extreme degree of heat.

Theſe preparations differ from one another in virtue; though the difference is not of ſuch a kind as the titles, they have been uſually diſtinguiſhed by, import. All the preparations of ſteel act, if they act at all, by an aſtringent quality; that above denominated *aſtringent*, has the leaſt, if any, effect. The *crocus aperiens* has a greater chance of entering the habit; and the ſulphurated ſteel will in moſt conſtitutions take place (tho' with leſs certainty than the following preparations.) They may be given in form of bolus, electary, or pill, from ſix grains to a ſcruple.

In ſome pharmacopæias, the croci of iron are prepared from pure green vitriol. This ſtrongly calcined (or the colcothar remaining after the diſtillation of oil of vitriol) is the aſtringent crocus; when leſs calcined, it is called aperient. Theſe preparations differ little from thoſe above diſtinguiſhed by the ſame appellations.

MARS SOLUBILIS, ſeu CHALYBS TARTARIZATUS.
SOLUBLE or TARTARIZED STEEL.
Edinb.

Mix equal parts of iron filings and cryſtals of tartar, with as much water as is ſufficient to reduce them into a maſs: this is to be formed into balls, then baked in an oven, ground into powder, and again made into balls with a freſh parcel of water, and baked in an oven as before. Repeat this operation, till ſuch time as the matter will eaſily grind into an impalpable power.

This is a very elegant and uſeful preparation of ſteel, and will in many caſes take effect after all the foregoing ones have failed; the ſalt here joined rendering the metal ſufficiently ſoluble in the animal fluids. It may be given either in a liquid form, or in that of a bolus, &c. in doſes of half a ſcruple or a ſcruple. Dr. Willis is ſaid to have been the inventor of this preparation, and by his name it has been uſually diſtinguiſhed in the ſhops. The chemiſts have received another method of preparing iron with tartar; which is as follows:

Take equal quantities of filings of iron, and of white tartar. Grind them together, and put them into a crucible, which is to be ſet in a fire ſtrong enough to make the materials red hot; in this ſtate let them continue for ſome time. When grown cold, powder the matter in a mortar; and the part which will not paſs through a fine ſieve, heat and pulverize again; repeating this, until the whole has paſſed through. Mix the ſeveral ſiftings together, and keep them in a veſſel cloſe ſtopt from the air.

This preparation is ſoluble like the foregoing: expoſed to the air, it deliquiates like alcaline ſalts, and therefore is not to be preſcribed in any dry form. It is very rarely made uſe of.

FLORES MARTIALES.
MARTIAL FLOWERS.
Lond.

Take

Take of
Colcothar of green vitriol washed, or of filings of iron, one pound;
Sal ammoniac, two pounds.

Mix and sublime in a retort. Grind the flowers with the matter which remains in the bottom of the retort, and repeat the sublimation until the flowers arise of a beautiful yellowish colour.

To the residuum you may add half a pound of fresh sal ammoniac, and sublime as before; repeating this as long as the flowers arise well coloured.

Edinb.

Take of
Iron filings,
Sal ammoniac powdered, each equal parts.

Mix them well together, and suffer them to stand for some time in a moist place: then put them into an earthen cucurbit; fit on a glass head, and proceed to sublimation. First a spirit of sal ammoniac will arise, which may be catched in a receiver; then white flowers, which may be thrown away; and at length yellowish red flowers; these last are to be swept out of the head with a feather, and kept for use.

A tincture of steel may be drawn from the caput mortuum, as also from the flowers.

The success of this process depends principally upon the fire being hastily raised, that the sal ammoniac may not sublime before the heat is become strong enough to enable it to carry up a sufficient quantity of the iron. Hence glass vessels are not so proper as earthen or iron ones; for when the former are made use of, the fire cannot be raised quick enough without endangering the breaking of them. The most convenient instrument is an iron pot; to which may be luted an inverted earthen jar, having a small hole, in its bottom, to suffer the elastic vapours, which arise during the operation, to escape. It is of advantage to throughly mix the ingredients together, moisten them with a little water, and then gently dry them; and to repeat the pulverization, humectation and exsiccation, two or three times or oftner. If this method is followed, the sal ammoniac may be increased to three times the quantity of the iron, or farther; and a single sublimation will oftentimes be sufficient to raise flowers of a very deep orange colour.

This preparation is supposed to be highly aperient and attenuating; though no otherwise so than the rest of the chalybeates, or at most, only by virtue of the saline matter joined to the iron. It has been found of good service in hysterical and hypochondriacal cases, and in distempers proceeding from a laxity and weakness of the solids, as the rickets. It may be conveniently exhibited in the form of a bolus, from six grains to twenty: it is nauseous in a liquid form (unless in spirituous tincture) and occasions pills to swell and crumble, except such as are made of the gums.

LIXIVIUM MARTIS.
LEY OF IRON.
Lond.

Let the matter which remains after the sublimation of the martial flowers, be set by in a moist place: it will run into a liquor, which is to be kept for use.

This liquor seems greatly to resemble a saturated solution of iron made in spirit of salt: its taste is highly astringent, and somewhat sweetish. It may be given in doses of a few drops, in any convenient vehicle, for the same intentions as the other chalybeates.

SAL

SAL MARTIS.
SALT OF STEEL.
Lond.

Take of
Strong ſpirit or oil of vitriol, eight ounces;
Iron filings, four ounces;
Water, two pints.

Mix them together; and after the ebullition ceaſes, let the mixture ſtand for ſome time upon warm ſand: then pour off, and filter the liquor; and after proper exhalation, ſet it by to cryſtallize.

VITRIOLUM MARTIS, ſeu SAL CHALYBIS.
VITRIOL of IRON, or SALT of STEEL.
Edinb.

Take of
Oil of vitriol, four ounces:
Water, ten ounces;
Filings of iron, three ounces.

Cautiouſly mix them together, and digeſt in a cucurbit for twelve hours, that the metal may be diſſolved: filter the ſolution whilſt hot, then evaporate it to a pellicle, and ſet it in a cold place, until the vitriol has cryſtallized at the bottom of the veſſel. The liquor poured off from the cryſtals, is to be again evaporated till a pellicle forms on the ſurface, and ſet to ſhoot as before. Collect all the cryſtals together, and dry them on a paper in the ſhade.

During the diſſolution of the iron, a ſtrong ſulphureous vapour ariſes, which on the approach of flame, catches fire, and explodes, ſo as ſometimes to burſt the veſſel: to this particular therefore, the operator ought to have due regard.

The chemiſts are ſeldom at the trouble of preparing this ſalt according to the directions above given; but in its ſtead ſubſtitute common green vitriol, purified by ſolution in water, filtration, and cryſtallization. The only difference betwixt the two is, that the common vitriol contains ſomewhat more metal in proportion to the acid; and hence in keeping, its green colour is debaſed by a ruſty brownifh caſt. The ſuperfluous quantity of metal may be eaſily ſeparated, by ſuffering the ſolution of the vitriol to ſtand for ſome time in a cold place, when a browniſh yellow ochery ſediment will fall to the bottom; or it may be perfectly diſſolved, and kept ſuſpended, by a ſuitable addition of oil of vitriol. If the vitriol is ſuſpected to contain any cupreous matter, the firſt method ſhould be followed; for thus the moſt minute portion of copper will be ſeparated. The common Engliſh vitriol very rarely contains any metallic ſubſtance beſides iron.

The ſalt of ſteel is one of the moſt efficacious preparations of this metal; and not unfrequently made uſe of, in cachectic and chlorotic caſes, for exciting the uterine purgations, ſtrengthening the tone of the viſcera, and deſtroying worms. It may be conveniently exhibited in a liquid form, largely diluted with aqueous fluids: half a ſcruple, diſſolved in a pint of water, may be drank at a time, divided into different doſes: this quantity gives no very diſagreeable taſte to the water. If the doſe is increaſed to half a dram or a dram, it for the moſt part gently purges; and powerfully promotes urine, eſpecially if the patient walks about in a cool air during the operation. Theſe ſolutions may be uſed as ſuccedanea to the natural chalybeate waters, and will in many caſes produce ſimilar effects.

SECT. IV.

PREPARATIONS of COPPER.

COPPER is less easy of solution than iron; and, in its metallic state, does not appear to be acted on by the animal fluids, or to have any considerable effect in the body. Dissolved, it proves externally an escharotic; internally, a violent purgative and emetic. Acids of every kind dissolve it, and likewise volatile alcalies.* With the vegetable, nitrous, and marine acids, it forms a green solution; with the vitriolic acid, and volatile alcalies, a blue.

ÆS USTUM.

Let thin copper plates be stratified in a crucible, with sulphur, nitre, or common salt, and calcined until they are reduced into a powder.

These preparations consist of copper combined with a small portion of saline matter. They were used by the ancients for drying and cleansing ulcers, and preventing the growth of fungous flesh: and sometimes likewise internally as an emetic; but have not, for a long time, been taken notice of among us, for any medicinal intention.

CRYSTALLI VENERIS.
CRYSTALS of COPPER.

Dissolve pure copper in thrice its weight of aqua fortis, adding the metal to the acid by little and little at a time. Evaporate the liquor by a gentle heat, till one half of it is wasted; then set the remainder in a cool place to crystallize: afterwards dry the crystals, and keep them in a vial close stopt from the air.

These crystals are strongly caustic, similar to the *causticum lunare*; but are so much disposed to liquefy, that they are scarce ever made use of, and cannot be long preserved.

TINCTURA VENERIS VOLATILIS.
VOLATILE TINCTURE of COPPER.

Take of
- Copper filings, one dram;
- Spirit of sal ammoniac, twelve drams.

Let them stand together in a close vessel, frequently shaking it, until the liquor is tinged of a beautiful violet colour.

This tincture, or solution of copper, has been given internally, in the dose of a few drops, as a diuretic. Boerhaave directs at first three drops to be taken in a morning fasting, with a glass of mead, and this dose to be daily doubled till it comes to twenty-four drops; which last quantity is to be continued for some days: he says, that by this means, he cured an hydropic person labouring under a confirmed ascites; and that the medicine procured surprizing discharges of urine; that nevertheless, on trying it in another case of the same kind, it did not answer. See the article CUPRUM, page 120.

ENS VENERIS.
Edinb.

Take
- Colcothar of blue vitriol well edulcorated with water, and afterwards dried;
- Sal ammoniac, of each equal parts.

Reduce them separately into powder;

der; then mix, and put them into an earthen cucurbit, so as to fill two thirds thereof. Place the cucurbit in an open fire, and having adapted to it a glass blind head, apply at first a gentle heat, which is to be increased by degrees, and continued as long as the flowers arise of a yellow colour inclining to red: when the vessels are grown cold, let the flowers be carefully swept out with a feather.

This medicine is taken from Mr. Boyle. It has been lately disputed, whether the author prepared it from blue vitriol or from green: for tho' he expressly says, he used blue or cupreous vitriol, it is affirmed that this will not yield flowers of the colour here required; and it is certain that pure copper will not. It appears however from experience, that the foreign blue vitriols, the sorts used and recommended by Boyle, will afford, with sal ammoniac, a sublimate possessing the qualities he ascribes to his preparation, and not greatly different from the martial flowers already spoken of. The foreign blue vitriols, though manifestly cupreous, are not purely such: several trials discover in them a quantity of iron; and sal ammoniac elevates iron much more readily than it does copper. The making of this preparation from venereal vitriol, however, is by no means to be recommended; since in some cases so much of the copper may be raised, as to give it noxious qualities; and since it is parable with greater certainty, and at an easier rate, from iron or its vitriol.

SECT. V.

PREPARATIONS of LEAD.

LEAD readily melts in the fire, and calcines into a dusky powder; which, if the flame is reverberated on it, becomes at first yellow, then red, and at length melts into a vitreous mass. This metal dissolves easily in the nitrous acid, difficultly in the vitriolic, and in small quantity in the vegetable acids: it is also soluble in expressed oils, especially when calcined.

Lead and its calces, whilst undissolved, have no considerable effects as medicines. Dissolved in oils, they are supposed to be (when externally applied) anti-inflammatory and deficcative. Combined with vegetable acids, they are notably so; and taken internally, prove a powerful but dangerous styptic.

PLUMBUM USTUM.
BURNT LEAD.
Edinb.

Melt lead in an unglazed earthen vessel; and keep it continually stirring, with an iron spatula, till it changes into powder.

MINIUM.
RED LEAD.
Edinb.

This is made by a continuance of the foregoing process. The powder, at first blackish, in a little time becomes yellow, and at length of a very red colour, when it is to be taken from the fire, and kept for use.

The preparation of red lead is so troublesome and tedious, as scarce

ever to be attempted by the apothecary or chemist; nor indeed is this commodity expected to be made by them. The makers melt large quantities of lead at once, upon the bottom of a reverberatory furnace built for this purpose, and so contrived, that the flame acts upon a large surface of the metal, which is continually changed by the means of iron rakes drawn backwards and forwards, till the fluidity of the lead is destroyed; after which the calx is only now and then turned. It is said, that twenty pounds of lead gain, in this process, five pounds; and that the calx, being reduced into lead again, is found one pound less than the original weight of the metal.

These calces are employed in external applications, for abating inflammations, cleansing and healing ulcers and the like. Their effects, however, are not very considerable; nor are they perhaps of much farther real use, than as they give consistence to the plaster, unguent, &c.

CERUSSA.
CERUSSE, or WHITE LEAD.
Edinb.

Put some vinegar into the bottom of an earthen vessel, and suspend over the vinegar very thin plates of lead, in such a manner, that the vapour, which arises from the acid, may circulate about the plates. Set the containing vessel in the heat of horse dung, for three weeks; if at the end of this time the plates are not totally calcined, scrape off the white powder, and expose them again to the steam of vinegar, till all the lead is thus corroded into powder.

The making of white lead also is become a trade by itself, and confined to a few persons, who have large conveniencies for this purpose. The general method which they follow, is nearly the same with that above described. See the philosophical transactions, No. 137.

In this preparation, the lead is so far opened by the acid, as to discover, when taken internally, the malignant quality of the metal: and to prove externally, when sprinkled on running sores or ulcers, moderately cooling, drying and astrictive.

SACCHARUM SATURNI.
SUGAR OF LEAD.
Lond.

Boil ceruse with distilled vinegar, in a leaden vessel, until the vinegar becomes sufficiently sweet: then filter the vinegar through paper, and after due evaporation set it to crystallize.

Edinb.

Put any quantity of ceruse, minium, or litharge, into a cucurbit, and pour thereon distilled vinegar, to the height of four inches. Digest them together for some days in a sand heat, till the vinegar has acquired a sweetish taste, when it is to be suffered to settle, and then poured off. Add fresh vinegar to the remainder, and repeat this process till the menstruum no longer extracts any sweet taste. Let all the impregnated liquors rest for some time; and after they have been poured from the feces, evaporate them, in a glass vessel, to the consistence of thin honey; so that, upon being set in a cool place, the sugar may shoot into crystals, which are afterwards to be dried in the shade. Exhale the remaining liquor to a pellicle, set it again in the cold, and more crystals

cryſtals will ſhoot; repeat this operation till no cryſtals can be any longer obtained.

Ceruſſe (eſpecially that ſort called *flake lead*, which is not, like the others, ſubject to adulteration) is much preferable either to minium or litharge, for making the ſugar of lead: for the corroſion, which it has already undergone from the ſteam of vinegar, diſpoſes it to diſſolve more readily. It ſhould be finely powdered before the vinegar is put to it, and during the digeſtion or boiling, every now and then ſtirred up with a wooden ſpatula, to promote its diſſolution, and prevent its concreting into a hard maſs at the bottom. The ſtrong acid obtained from the caput mortuum of vinegar (ſee page 289.) may be employed for this proceſs, to better advantage than the weaker though purer acid above directed. If a ſmall quantity of rectified ſpirit of wine be prudently added to the ſolution as ſoon as it is duly exhaled, and the mixture ſuffered to grow cold by ſlow degrees, the ſugar will concrete into very large and tranſparent cryſtals, which are ſcarcely to be obtained by any other method.

The ſugar of lead is much more efficacious than the foregoing preparations, in the ſeveral intentions which they are applied to. Some have ventured upon it internally, in doſes of a few grains, as a ſtyptic, in hæmorrhagies, profuſe colliquative ſweats, ſeminal fluxes, the fluor albus, &c. nor has it failed their expectations. It very powerfully reſtrains the diſcharge; but almoſt as certainly as it does this, it occaſions ſymptoms of another kind, often more dangerous than thoſe removed by it, and ſometimes fatal. Violent pains in the bowels, or through the whole body, and obſtinate conſtipations, ſometimes immediately follow, eſpecially if the doſe has been conſiderable: cramps, tremors, and weakneſs of the nerves generally, ſooner or later, enſue.

Boerhaave is of opinion, that this preparation proves malignant only in ſo far as its acid happens to be *abſorbed* in the body; for in ſuch caſe, he ſays, "it returns again into ceruſſe which is violently poiſonous." On this principle, it would follow, that in habits where acidities abound, the ſugar of lead would be innocent. But this is far from being the caſe. Lead and its preparations act in the body only in ſo far as they are *combined* with acid: ceruſſe poſſeſſes the qualities of the ſaccharum only in a low degree; and either of them freed from the acid, have little, if any effect at all.

SECT. VI.

PREPARATIONS of TIN.

TIN eaſily melts in the fire, and calcines into a duſky powder, which by a farther continuance of the heat, becomes white. A maſs of tin, heated till it is juſt ready to melt, proves extremely brittle, ſo as to fall in pieces from a blow, and by dextrous agitation into powder. Its proper menſtruum is aqua regia, though the other mineral acids alſo may be made to diſſolve it, and the vegetable ones in ſmall quantity. It cryſtallizes with the vegetable and vitriolic acids; but with the others, deliquiates.

The virtues of this metal are little

tle known. It has been recommended as an antihysteric, antihectic, &c. At present, it is chiefly used as an anthelmintic.

STANNUM PULVERATUM.
POWDERED TIN.
Lond.

Melt the tin, and pour it into a wooden box rubbed in the inside with chalk: then immediately let the box be nimbly shook, and a part of the tin will fall into powder. The remainder is to be melted a second time, and treated in the same manner, till the whole of the metal is thus reduced into powder.

This preparation has been used for some time as a remedy against worms, particularly the flat kinds, which too often elude the force of other medicines. The general dose is from a scruple to a dram; some confine it to a few grains. But Dr. Alston assures us, in the Edinburgh essays, that its success chiefly depends upon its being given in much larger quantities: he exhibits an ounce, on an empty stomach, mixed with four ounces of melasses; next day, half an ounce; and the day following, half an ounce more: after which, a cathartic is administered: he says the worms are usually voided during the operation of the purge, but that pains of the stomach occasioned by them are removed almost immediately upon taking the first dose of the tin. The experiments on tin, related in page 211 of this work, account sufficiently for its being destructive to these animals; though not for its being safe to the patient.

CALX JOVIS.
CALX OF TIN.
Edinb.

Melt any quantity of tin in an unglased earthen vessel, and keep it continually stirring, with an iron spatula, until it falls into a calx.

This process is not here intended to be carried so far as the pharmaceutical writers in general direct: it must be discontinued as soon as the metal is reduced into a dusky powder: if calcined to whiteness, the following operation would not succeed. As to the virtues of the calx, we apprehend they are not greatly different from those of the foregoing preperation.

SAL JOVIS.
SALT OF TIN.
Edinb.

Take of the

Calx of tin, any quantity at pleasure;

Aqua regia, diluted with eight times its quantity of water, as much as will be sufficient to cover the calx to the height of some inches.

Digest them together in a gentle heat of sand, that a solution may be made, which is to be passed through a filter, exhaled to a pellicle, and then set by, in a cold place, for three or four days to crystallize: pour off the liquor, and dry the crystals for use.

The calx, which remains undissolved, may be digested with a fresh parcel of aqua regia as before; and the solution thereof mixed with the liquor that was left after the preceding crystallization. The whole being now duly evaporated, and set in a cold place, a farther yield of crystals will be obtained.

In the last edition of this dispensatory, it was denied that any salt could be obtained by this process. If the tin indeed is highly calcined, aqua regia will not act upon

upon it (though this circumſtance is ſuppoſed to promote the ſolution of tin in vegetable acids) nor will any other ſalt be produced, than what the menſtruum furniſhes. But if the calcination is continued no farther than directed under the preceding article, this acid will diſſolve ſome part of the calx: the cryſtallization indeed does not well ſucceed: if any appearance of cryſtals is expected from a ſolution of tin made in aqua regis, the liquor ſhould not be ſet in a cold place, but kept unmoved, in a gentle heat: as it begins to thicken, a number of ſaline concretions form, to the eye manifeſtly cryſtalline, but in texture infirm and incoherent: they muſt be carefully taken up, put into a warm, dry bottle, and well ſecured from the air.

This ſalt ſeems intended for external purpoſes. The preparation deſcribed in other books of pharmacy under the name of *ſal jovis*, and deſigned for internal uſe, may be commodiouſly made in the following manner:

Diſſolve pure tin in a proper quantity of aqua regia, continuing to add the metal, by little and little at a time, till the menſtruum will take up no more. Pour the ſolution into four times its quantity of water, and gradually put to it ſpirit of ſal ammoniac till the effervescence ceaſes: a white curdly matter will precipitate, which is to be waſhed with water, and gently dried. Digeſt this powder in a pewter veſſel, with ten times its weight of diſtilled vinegar, occaſionally ſtirring up the matter from the bottom, till the vinegar has acquired a rough ſweetiſh taſte: then evaporate the liquor to the conſiſtence of a ſyrup, add to it about one twentieth its weight of rectified ſpirit of wine, and ſuffer the heat ſlowly to decreaſe, that the ſalt may cryſtallize.

The cryſtals obtained by this method are hard, ſolid, colourleſs, tranſparent, void of acrimony. They have been recommended, in the doſe of a few grains, in uterine diſorders; but experience has not warranted the virtues attributed to them; nor are either this or the foregoing ſalt met with in the ſhops.

The powder precipitated from aqua regis, either by volatile alcalies or by water alone, is ſometimes employed as a coſmetic, under the name of MAGISTERY OF TIN. A whiter, and more elegant, preparation of this kind might be obtained, by diſſolving the metal in the vitriolic acid, and precipitating with volatile ſpirits.

AMALGAMA JOVIS.
AMALGAM OF TIN.
Edinb.

Melt ſome tin in a crucible; and heat the ſame quantity of quickſilver in another crucible, till it begins to fume: then immediately pour the hot quickſilver into the melted tin, and keep them ſtirring together, with an iron ſpatula, until the maſs grows cold.

This proceſs is given only as preparatory to the following. Iron ladles are more convenient than crucibles.

AURUM MOSAICUM.
MOSAIC GOLD.
Edinb.

Take of the
- Amalgam of tin, ſix ounces;
- Sal ammoniac,
- Flowers of ſulphur, of each three ounces.

Grind and mix them well together in a marble mortar: put the mix-

mixture into a cucurbit, and apply at first a gentle heat, which is to be raised by slow degrees to the utmost. When the process is finished, break the vessel; the mosaic gold will be found in the bottom, and the scoriæ, or dross, above it.

AURUM MUSIVUM.
Lond.

Take of
Tin, one pound;
Flowers of sulphur, seven ounces;
Sal ammoniac,
Purified quicksilver, of each half a pound.

Melt the tin by itself, add to it the quicksilver, and when the mixture is grown cold, reduce it into powder; mix this with the sulphur and sal ammoniac, and sublime in a matras: the mosaic gold will be found under the sublimed matter, with some dross at the bottom.

This preparation is chiefly valued, and receives its name, from its beautiful, sparkling, gold-like hue. As a medicine, it is at present little regarded; though formerly held in considerable esteem, in hysterical and hypochondriacal complaints, malignant fevers, and venereal disorders. It has been recommended in these last from a supposition of its being a mercurial; but none of the mercury made use of is retained in the preparation. It appears from experiments, made for this purpose by Dr. Lewis, and related in his commentary on the Edinburgh pharmacopœia, to be little other than a calx of tin, reducible, by proper fluxes, into its metallic form again: the volatile ingredients, sal ammoniac, sulphur and quicksilver, sublime in the process, partly escaping, and partly forming the scoriæ: the two last are found united together into a cinnabar. Tin calcined by itself gains near as much in weight, as it does by being made into *aurum musivum:* the golden colour of this preparation is probably owing to a minute portion of sulphur that adheres to it.

SECT. VII.

PREPARATIONS of MERCURY.

MERCURY, or quicksilver, is a ponderous metallic fluid, totally volatile in a strong fire, and calcinable by a weaker one (tho' very difficult) into a red powdery substance. It dissolves in the nitrous acid, is corroded by the vitriolic, but not acted on by the marine in its liquid state: it nevertheless may be combined with this last, if skilfully applied in the form of fume. Quicksilver unites by trituration, with earthy, unctuous, resinous, and other like substances, so as to lose its fluidity: triturated with sulphur, it form a black mass, which by sublimation changes into a beautiful red one.

The general virtues of the mercurial preparations are, to fuse the juices, however viscid, in the minutest and remote vessels; by this means they prove eminently serviceable in inveterate chronical disorders, proceeding from a thickness and sluggishness of the humours, and obstinate obstructions of the glands. Crude mercury has no effect this way. Resolved into fume, or divided into minute particles, and prevented from re-uniting by the interposition of other sub-

ſubſtances, it operates very powerfully; unleſs the dividing body be ſulphur, which reſtrains its action. Combined with a ſmall quantity of the mineral acids, it acts effectually, though in general mildly; with a larger, it proves violently corroſive.

ARGENTI VIVI PURIFICATIO.
PURIFICATION OF QUICKSILVER.
Lond.

Diſtil quickſilver in a retort; and afterwards waſh it with water and common ſalt, or with vinegar.

If a glaſs retort is made uſe of for this operation, it ought to have a low body, and a long neck, which ſhould be conſiderably inclined downwards, ſo as to allow the elevated mercury a quick deſcent: the receiver ſhould be filled almoſt to the neck of the retort with water; the uſe of this is not to condenſe, but to cool, the diſtilling quickſilver, leſt falling hot upon the bottom, it ſhould crack the glaſs. The diſtillation may be more conveniently performed in an iron retort, or pot fitted with a head.

The fire ſhould be raiſed no higher than is ſufficient to elevate the mercury; for certain mineral ſubſtances, which are ſaid to be ſometimes mixed with it, prove in part volatile in a degree of heat, not much greater than that in which mercury diſtils. Mr. Boyle relates, that he has known quickſilver carry up with it a portion even of lead, ſo as to have its weight very ſenſibly increaſed thereby: and this happened tho' only a moderate fire was uſed.

MERCURIUS ALCALIZATUS.
ALCALIZED MERCURY.

Take of
Pure quickſilver, three drams;
Prepared crabs eyes, five drams;
Grind them together in a glaſs mortar, till the mercurial globules diſappear.

This preparation, which has never been received into the London pharmacopœia, and is now rejected from the Edinburgh, we have inſerted here on account of its being ſtill now and then called for, and held by ſome in conſiderable eſteem. It has never come much into common practice, the labour of making it having been a temptation to a grievous abuſe in its preparation, *viz.* the addition of an intermedium, which facilitates the union of the mercury with the crabs eyes, but greatly abates its medical powers. The medicine, when duly prepared, is an uſeful alterative; and may be given, in cutaneous or venereal caſes, from two or three grains to a ſcruple.

MERCURIUS SACHARATUS.
SUGAR'D MERCURY.
Edinb.

Take
Pure quickſilver,
Brown ſugar candy, of each half an ounce;
Eſſential oil of juniper berries, ſixteen drops.
Grind them together in a glaſs mortar, until the mercury ceaſes to appear.

The eſſential oil, here added, is a very uſeful ingredient; as it not only promotes the extinction of the quickſilver, but likewiſe improves the medicine. The intention, in this and the foregoing proceſs, is only to divide the mercury by the interpoſition of other bodies; for when thus managed (as already obſerved) it has very powerful effects; though whilſt undivided it ſeems

to

to be altogether inactive. Sugar alone apparently anſwers this intention; but on the commixture of aqueous fluids, entirely diſſolves by itſelf, leaving the mercury to run together again in its original form: the addition of the oil effectually prevents this inconvenience; for the preparation made as here directed, will totally diſſolve in water, without any ſeparation of the quickſilver. The doſe of this medicine, as an alterative, is from two or three grains to a ſcruple.

ÆTHIOPS MINERALIS.
ETHIOPS MINERAL.
[*L. E.*]

Take
Purified quickſilver,
Flowers of ſulphur (unwaſhed) of each equal weights.
Grind them together, in a glaſs or ſtone mortar, until they are united.

The union might be greatly facilated by the aſſiſtance of a little warmth. Some are accuſtomed to make this preparation in a very expeditious manner, by melting the ſulphur in an iron ladle, then adding the quickſilver, and ſtirring them together till the mixture is completed. Nor does this practice appear to be juſtly blameable: for the ſmall degree of heat here ſufficient, cannot reaſonably be ſuppoſed to do any injury to ſubſtances, which have already undergone much greater fires, not only in the extraction from their ores, but likewiſe in the purifications of them directed in the pharmacopœia. In the following proceſs, they are expoſed in conjunction to a ſtrong fire, without ſuſpicion of the compound receiving any ill quality from it. Thus much is certain, that the ingredients are more perfectly united by heat, than by the degree of triture uſually beſtowed upon them.

Ethiops mineral is one of the moſt inactive of the mercurial preparations. Some practitioners have boldly aſſerted its poſſeſſing extraordinary virtues; and moſt people imagine it a medicine of ſome efficacy. But what benefit is to be expected from it in the common doſes of eight or ten grains, or a ſcruple, may be judged from hence, that it has been taken in doſes of ſeveral drams, and continued for a conſiderable time, without producing any remarkable effect. Sulphur eminently abates the power of all the more active minerals, and ſeems to be at the ſame time reſtrained by them from operating in the body itſelf. Boerhaave, who is in general ſufficiently liberal in the commendation of medicines, diſapproves the ethiops in very ſtrong terms. "It cannot enter "the abſorbent veſſels, the lacteals "or lymphatics; but paſſes di- "rectly through the inteſtinal tube, "where it may happen to deſtroy "worms, if it operates luckily. "They are deceived who expect "any other effects from it; at "leaſt I myſelf could never find "them. I am afraid, it is un- "warily given, in ſuch large "quantities, to children and per- "ſons of tender conſtitutions; as "being a foreign maſs, uncon- "querable by the body, the more "to be ſuſpected, as it there con- "tinues long, ſluggiſh, and in- "active. It does not raiſe a ſa- "livation, becauſe it cannot come "into the blood. Who knows "the effects of a ſubſtance, which, "ſo long as it remains compound- "ed, ſeems no more active than "any ponderous inſipid earth?"

CINNABARIS FACTITIA.
ARTIFICIAL CINNABAR.
Lond.

Take

Take of
Purified quickſilver, twenty-five ounces,
Sulphur, ſeven ounces.

Melt the ſulphur, and mix into it the quickſilver; if the mixture happens to catch flame, extinguiſh it by covering the veſſel. The matter is afterwards to be reduced into powder, and ſublimed.

It has been cuſtomary to order a larger quantity of ſulphur than here directed; but this ſmaller proportion anſwers better; for the leſs ſulphur, the finer colour is the cinnabar. As ſoon as the mercury and ſulphur begin to unite, a conſiderable exploſion frequently happens, and the mixture is very apt to take fire, eſpecially if the proceſs is ſomewhat haſtily conducted. This accident, the operator will have previous notice of, from the matter ſwelling up, and growing ſuddenly conſiſtent: as ſoon as this happens, the veſſel muſt be immediately cloſe covered. During the ſublimation, care muſt be had, that the matter riſe not into the neck of the veſſel, ſo as to block up and burſt the glaſs: to prevent this, a wide-neck bolt-head, or rather an oval earthen jar, coated, ſhould be made uſe of. If the former is employed, it will be convenient to introduce, at times, an iron wire, ſomewhat heated, in order to be the better aſſured, that the paſſage is not blocking up; the danger of which may be prevented, by cautiouſly raiſing the veſſel higher from the fire. If the ingredients were pure, no feces will remain: in ſuch caſe, the ſublimation may be known to be over, by introducing a wire as before, and feeling therewith the bottom of the veſſel, which will then be perfectly ſmooth: if any roughneſs or inequalities are perceived, either the mixture was impure, or the ſublimation is not completed; if the later, the wire will ſoon be covered over with the riſing cinnabar.

The preparers of cinnabar in large quantity, employ earthen jars, which in ſhape pretty much reſemble an egg. Theſe are of different ſizes, according to the quantity intended to be made at one ſublimation, which ſometimes amounts to two hundred weight. The jar is uſually coated from the ſmall end, almoſt to the middle, to prevent its breaking from the vehemence, or irregularity of the fire. The greater part, which is placed uppermoſt, not being received within the furnace, has no occaſion for this defence. The whole ſecret, with regard to this proceſs, is (1) the management of the fire, which ſhould be ſo ſtrong as to keep the matter continually ſubliming to the upper part of the jar, without coming out at its mouth, which is covered with an iron plate; (2) to put into the ſubliming veſſel, only ſmall quantities of the mixture at a time.

A method is mentioned in the practical chemiſtry of making cinnabar without ſublimation, by agitating or digeſting mercury in the volatile tincture of ſulphur, already deſcribed. We have found a ſulphureous liquor more eaſily parable to have a like effect: the ſolution for *lac ſulphuris* will, with ſome addreſs, ſucceed.

The principal uſe of cinnabar is as a pigment. It was formerly held in great eſteem as a medicine, in cutaneous foulneſſes, gouty and rheumatic pains, epileptic caſes, &c. but of late, it has loſt much of its reputation. It appears to be nearly ſimilar to the *ethiops*, already ſpoken of: like this, it is very mild, never occaſions a ſalivation, or

or other violent symptoms (the qualities for which it has been chiefly recommended:) but like this also, it is inactive. Cartheuser relates, that having given cinnabar in large quantities to a dog, it produced no sensible effect, but was partly voided along with the feces unaltered, and partly found entire in the stomach and intestines upon opening the animal. It is presumed no one will at this time have recourse to the arguments for the efficacy of cinnabar used so late as the elder Frederic Hoffman, that the *archeus*, or *anima* (a visionary superintendant of the vital functions) is pleased with its fine colour as it passes along the intestines, and whilst he has this beautiful object to divert him, ceases from committing disorders in the body.

Cinnabar is sometimes used in fumigations against venereal ulcers in the nose, mouth, and throat. Half a dram of it burnt, the fume being imbibed with the breath, has occasioned a violent salivation. This effect is by no means owing to the medicine as cinnabar: when set on fire, it is no longer a mixture of mercury and sulphur; but mercury resolved into fume, and blended in part with the volatile vitriolic acid; in either of which circumstances, this mineral, as already observed, has very powerful effects.

MERCURIUS CALCINATUS.
CALCINED MERCURY.
Lond.

Put purified quicksilver into a broad bottomed glass vessel, having a small hole opening to the air; and keep it in a constant heat, in a sand furnace, for several months, until it is calcined into a red powder.

This tedious process might, in all probability, be greatly expedited, by employing, instead of a vessel with a small aperture, a very wide mouthed, flat bottomed glass body, of such a height that the mercury may not escape: by this means, the air, which is essentially necessary to the calcination of all metallic substances, will be more freely admitted. A vessel might be so contrived, as to occasion a continual flux of air over the surface of the mercury.

This preparation is by some highly esteemed in venereal cases, and supposed to be the most efficacious and certain of all the mercurials. It may be advantageously given in conjunction with opiates: a bolus or pill, containing from half a grain to two grains of this calx, and a quarter or half a grain or more of opium, with the addition of some warm aromatic ingredient, may be taken every night. Thus managed, it acts mildly, though powerfully, as an alterative and diaphoretic: exhibited by itself in larger doses, as five or six grains, it proves a rough emetic and cathartic.

MERCURII SOLUTIO.
SOLUTION of MERCURY.
Edinb.

Take equal quantities of pure quicksilver and double aqua fortis. Digest them together, in a phial placed in a sand furnace, that a limpid solution may be made.

Aqua fortis dissolves mercury more easily, and in larger quantity, than any other acid: sixteen ounces, if the menstruum is very strong and pure, will take up eleven or twelve. As the liquor grows cold, a considerable part concretes, at the bottom of the vessel, into a crystalline form. If the whole is wanted to remain suspended, a proper quantity of water should be added after the solution is completed.

This process is given only as preparatory to some of the following

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ing ones. The ſolution is highly cauſtic, ſo as ſcarce to be ſafely touched. It ſtains the ſkin purple or black.

CALX MERCURII.
CALX OF MERCURY.
Edinb.

Take any quantity of the ſolution of mercury, and evaporate it over a gentle fire, till a white dry maſs remains.

This calx, or rather ſalt, of mercury, is violently corroſive. It is rarely made uſe of any otherwiſe than for making the following preparation.

MERCURIUS CALCINATUS,
vulgo
PRÆCIPITATUS RUBER,
RED CALX OF MERCURY,
commonly called,
RED PRECIPITATE.
Edinb.

Take any quantity of the calx of mercury, and reverberate it in a crucible, with ſucceſſive degrees of heat. Its white colour will change firſt into a brown, and afterwards a yellow; at length, upon increaſing the fire, it paſſes into a deep red.

MERCURIUS CORROSIVUS RUBER.
THE RED MERCURIAL CORROSIVE.
Lond.

Take
Purified quickſilver,
Compound aqua fortis, of each equal weights.

Mix, and ſet them in a broad bottomed veſſel, in a ſand heat, till all the humidity is exhaled, and the maſs has acquired a red colour.

The marine acid in the compound menſtruum ordered in this laſt proceſs, diſpoſes the mercurial calx to aſſume the bright ſparkling look admired in it; which, tho' perhaps no advantage to it as a medicine, ought nevertheleſs to be inſiſted on by the buyer as a mark of its goodneſs and ſtrength. As ſoon as the matter has gained this appearance, it ſhould be immediately removed from the fire, otherwiſe it will ſoon loſe it again. The preparation of this red precipitate, as it is called, in perfection, is ſuppoſed by ſome to be a ſecret not known to our chemiſts; inſomuch that we are under a neceſſity of importing it from abroad. This reflexion ſeems to be founded on miſinformation: we ſometimes indeed receive conſiderable quantities from Holland; but this depends upon the ingredients being commonly cheaper there than with us, and not upon any ſecret in the manner of the preparation.

This precipitate is, as its title imports, an eſcharotic, and in this intention is frequently employed by the ſurgeons, with *baſilicum*, and other dreſſings, for conſuming fungous fleſh in ulcers, and the like purpoſes. It is ſubject to great uncertainty in point of ſtrength; more or leſs of the acid exhaling, according to the degree and continuance of the fire. The beſt criterion of its ſtrength, as already obſerved, is its brilliant appearance; which is alſo the mark of its genuineneſs: if mixed with minium, which it is ſometimes ſaid to be, the duller hue will diſcover the abuſe. This admixture may be more certainly detected by means of fire: the mercurial part will totally evaporate, leaving the minium behind.

Some have ventured to exhibit this medicine internally, in venereal, ſcrophulous, and other obſtinate chronic diſorders, in doſes of two or three grains, and more.

But

But certainly, the milder mercurials, properly managed, are capable of answering all that can be expected from this; without occasioning violent anxieties, tormina of the bowels, and other ill consequences, which the best management can scarcely prevent this corrosive preparation from sometimes doing. The chemists have contrived sundry methods of correcting and rendering it milder, by divesting it of a portion of the acid; but to no very good purpose; as they either leave the medicine still too corrosive, or render it similar to others, parable at an easier rate.

MERCURIUS CORALLINUS.
CORALLINE MERCURY.
Lond.

Pour on the red mercurial corrosive, about thrice its weight of rectified spirit of wine, and digest them together, with a gentle heat, for two or three days, frequently shaking the vessel: then set fire to the spirit, keeping the powder continually stirring till all the spirit is burnt away.

Here the corrosive becomes somewhat milder, a part of the acid being dissipated by the heat of the burning spirit; (whether the spirit takes up any in the digestion, is greatly to be doubted;) the preparation nevertheless seems to be scarce sufficiently safe for internal use: a few grains of it generally prove cathartic or emetic, and sometimes occasion violent symptoms.

ARCANUM CORALLINUM.
THE CORALLINE SECRET.

Take five ounces of the red mercurial corrosive, and eight ounces of spirit of nitre: distil off the spirit in a retort; return it, with four ounces of fresh, upon the residuum, and draw it off again as before: repeat this process, with four ounces of new spirit; and at last keep the fire up very strong, for at least two hours. The powder, which remains in the retort, is to be put into a crucible, and kept of a worm-red heat for seven or eight minutes: then boil it for half an hour, in three pints of pure water: distil from it twelve ounces of tartarized spirit of wine, cohobating the spirit twice: digest it for forty eight hours in a sand heat, with the same quantity of fresh tartarized spirit; raising the fire towards the end, so as to make the spirit simmer a little: afterwards suffer the whole to cool, decant off the spirit, and dry the powder for use.

This preparation, notwithstanding its pompous name, is a very unthrifty and injudicious one. The cohobation of spirit of nitre upon the corrosive, answers no useful purpose; for whatever the acid communicates, is afterwards dissolved and separated by the water; if the direction of keeping up a strong fire for some time, after the last distillation, is not strictly complied with, all the mercury will dissolve in the water, and the solution will prove similar to the *solutio mercurii* above described.

PULVIS PRINCIPIS.
PRINCES POWDER.

Grind eight ounces of the red mercurial corrosive into a fine powder; and digest it with two quarts of water, in an almost boiling heat, for twelve hours, occasionally stirring up the powder from the bottom: then pour off the liquor, and digest the powder in a fresh parcel of water as before: repeating this process a third time. The last water

ter being poured off, grind the powder with double its weight of fixt alcaline salt, and digest it as at first, in fresh waters, till it becomes insipid. Afterwards boil it in spirit of wine; and lastly, pouring off the spirit, dry the powder for use.

PANACEA MERCURII RUBRA.
RED PANACEA OF MERCURY.

Digest the red mercurial corrosive with eight times its weight of water, for twenty-four hours, shaking the vessel three or four times: pour off the water, dry the powder, and digest it with eight times its weight of spirit of wine, for fifteen days. The spirit being then decanted off, burn upon the calx twice its weight of tincture of sulphur: afterwards, digest it two or three days longer in fresh spirit of wine; and in the last place, exsiccate it for use.

The three foregoing preparations, have been kept in particular hands as secrets. At bottom they are all nearly the same, and much too trivial to deserve the pains taken about them. They are perhaps farther divested of acid, than the *mercurius corallinus* of the shops; but have this disadvantage, that the quantity of acid separated in the troublesome digestions, &c. must vary according to different circumstances in the operation. All the four stand recommended in small doses, two grains for instance, as excellent alterants and diaphoretics: in larger ones, they prove emetic and cathartic.

MERCURIUS CORROSIVUS SUBLIMATUS, vel ALBUS.
The WHITE MERCURIAL CORROSIVE or CORROSIVE MERCURY SUBLIMATE.
Lond.

Take of
Purified quicksilver, forty ounces;
Sea salt, thirty-three ounces;
Nitre, twenty-eight ounces;
Calcined green vitriol sixty-six ounces.

Grind the quicksilver, in a wooden or stone mortar, with an ounce or more of corrosive mercury sublimate already made, until the former is divided into small granules: this mixture is to be ground with the nitre, and afterwards with the sea salt; then add the calcined vitriol, continuing the triture only for a little time longer, lest the quicksilver should run together again. Lastly proceed to sublimation, in a glass matras; to which you may adapt a head, in order to save a little spirit that will come over.

It has been supposed, that corrosive sublimate participates of all the ingredients employed in this process; though 'tis certain, that it consists only of mercury and the acid of the sea salt united together. The materials being mixed and exposed to the fire, first the vitriol parts with its acid; which dislodging those of the nitre and marine salt, takes their place. The marine acid, resolved into fume and assisted by the nitrous, dissolves the mercury now also strongly heated. This acid, though it very difficultly acts on mercury, yet when thus once united with it, is more strongly retained thereby than any other acid. The nitrous spirit, therefore, having nothing to retain it (for its own basis, and that of the sea salt are both occupied by the vitriolic; and that which the vitriolic forsook to unite with these, has now little affinity with any acid) arises; leaving the mercury and marine acid

cid to ſublime together when the heat ſhall be ſtrong enough to elevate them. Some ſmall portion of the marine ſpirit ariſes along with the nitrous; and hence this compound acid has been uſually employed, inſtead of the *aqua fortis compoſita*, to which it is ſimilar, for making the red corroſive.

It appears therefore, that the vitriol, and the baſes of the nitre and ſea ſalt, are of no farther uſe in this proceſs than as convenient intermediums for facilitating the union of the mercury with the marine acid. They likewiſe ſerve to afford a ſupport for the ſublimate to reſt upon, which thus aſſumes the form it is expected in, that of a placenta or cake.

Edinb.

Take

Calx of mercury (that is, a ſolution of mercury in aqua fortis, evaporated to a dry white maſs.

Decrepitated ſea ſalt, of each equal quantities.

Powder, and mix theſe well together; and put them into a matras, of which they may nearly fill one half: place the veſſel in a ſand furnace, and proceed to ſublimation; applying at firſt a gentle heat, and afterwards increaſing it, till all the ſublimate has aroſe, in a white cryſtalline maſs, to the upper part of the matras: ſeparate this from the red ſcoriæ, and purify it, if needful, by a ſecond ſublimation.

The ſublimate made by this method is in all reſpects the ſame with the foregoing; but as the quantity of fixt matter is ſmall, it difficultly aſſumes the form of a cake. It requires indeed ſome ſkill in the operator, to give it this appearance when either proceſs is followed. When large quantities are made, this form may be eaſily obtained by placing the matras no deeper in the ſand, than the ſurface of the matter contained in it; and removing a little thereof from the ſides of the glaſs, as ſoon as the flowers begin to appear in the neck; when the heat ſhould likewiſe be ſomewhat lowered, and not at all raiſed during the whole proceſs. The ſublimation is known to be completed by the edges of the cryſtalline cake, which will form upon the ſurface of the caput mortuum, appearing ſmooth and even, and a little removed from it.

Our apothecaries, and even the chemiſts, very rarely attempt the making of this preparation themſelves; greateſt part of what is uſed among us, comes from Venice, Holland, and other places. This foreign ſublimate has been reported to be adulterated with arſenic; and ſundry trials have been made for diſcovering this dangerous fraud. Barchuſen propoſes alcaline liquors as an infallible criterion; if theſe, he ſays, change the ſublimate black, it moſt certainly contains arſenic: Homberg affirms, that theſe liquors change all ſorts of ſublimate black: and on the other hand, Boulduc denies that they will change either the genuine or adulterated of this colour. It would be needleſs here to enquire, how far theſe gentlemen are in the right or otherwiſe, ſince the ſuſpicion which gave riſe to the controverſy, appears to have little foundation: arſenic, as Neuman obſerves, will not ariſe, in ſublimation, along with this mercurial preparation; and it cannot be mingled therewith afterwards, without deſtroying the form in which it is brought to us.

Sublimate is a moſt violent corroſive, preſently corrupting and deſtroying

ſtroying all the parts of the body it touches. A ſolution of it in water, in the proportion of about a dram to a quart, is made uſe of for keeping down proud fleſh, and cleanſing foul ulcers: and a more dilute ſolution as a coſmetic, and for deſtroying cutaneous inſects. But a great deal of caution is requiſite even in theſe external uſes of it.

Some have nevertheleſs ventured to exhibit it internally, in the doſe of one tenth, or one eighth of a grain. Boerhaave relates, that if a grain of it be diſſolved in an ounce or more of water, and a dram of this ſolution, ſoftened with ſyrup of violets, taken twice or thrice a day, it will perform wonders in many reputed incurable diſtempers; but particularly cautions us not to venture upon it, unleſs the method of managing it is well known.

Sublimate conſiſts of mercury united with a large quantity of marine acid. There are two general methods of deſtroying its corroſive quality, and rendering it mild; combining with it ſo much freſh mercury as the acid is capable of taking up, and ſeparating a part of the acid by means of alcaline ſalts and the like.

MERCURIUS DULCIS SUBLIMATUS.
DULCIFIED MERCURY SUBLIMATE.
Lond.

Take of
Corroſive mercury ſublimate, one pound;
Purified quickſilver, nine ounces.

Having powdered the ſublimate, add to it the quickſilver, and digeſt them together in a matras, with a gentle heat of ſand, until they unite; then, increaſing the heat, let the mixture be ſublimed. The ſublimed matter, freed from the acrimonious part at top and ſuch mercurial globules as happen to appear diſtinct in it, is to be reduced into powder, and ſublimed again; and this ſublimation repeated ſix times.

Edinb.

Take of
Corroſive mercury ſublimate, reduced to powder in a glaſs mortar, four ounces;
Pure quickſilver, three ounces.

Mix them exquiſitely together in a mortar, until the quickſilver ceaſes to appear. Put the powder into an oblong phial, of ſuch a ſize that only one third of it may be filled; and ſet the glaſs in a ſand furnace, ſo as that the ſand may reach up to one half its height. By degrees of fire ſucceſſively applied, almoſt all the mercury will ſublime, and adhere to the upper part of the veſſel. The glaſs being then broken, and the red powder which is found in its bottom, with the whitiſh one that ſticks about the neck, being thrown away, let the white mercury be ſublimed again three or four times.

If the ſublimation is repeated ſeven times, the preparation is called CALOMELAS or AQUILA ALBA.

The trituration of corroſive ſublimate with quickſilver is a very noxious operation: for it is almoſt impoſſible, by any care, to prevent the lighter particles of the former from ariſing, ſo as to affect the operator's eyes and mouth. It is nevertheleſs of the utmoſt conſequence, that the ingredients are perfectly united before the ſublimation is begun: this may be moſt commodiouſly effected, by the digeſtion ordered in the firſt of the above

above processes. It is indeed still necessary to pulverize the sublimate, before the mercury is added to it: but this may be safely performed, with a little caution; especially, if during the pulverization the matter be now and then sprinkled with a little spirit of wine: this addition does not at all impede the union of the ingredients, or prejudice the sublimation: it will be convenient not to close the top of the subliming vessel with a cap of paper at first (as is usually practised) but to defer this till the mixture begins to sublime, that the spirit may escape.

The rationale of this process deserves particular attention; and the more so, as a mistaken theory herein has been productive of several errors with regard to the operation of mercurials in general. It is supposed, that the dulcification, as it is called, of the *mercurius corrosivus*, is owing to the spicula or sharp points, on which its corrosiveness depends, being broken and worn off by the frequent sublimations. If this opinion was just, the corrosive would become mild, without any addition, barely by repeating the sublimation; but this is contrary to all experience. The abatement of the corrosive quality of the sublimate is entirely owing to the combination of so much fresh mercury with it, as is capable of being united; and by whatever means this combination is effected, the preparation will be sufficiently dulcified. Triture and digestion promote the union of the two, whilst sublimation tends rather to disunite them. The prudent operator therefore, will not be solicitous about separating such mercurial globules as appear distinct after the first sublimation; he will endeavour rather to combine them with the rest, by repeating the triture and digestion.

The college of Wirtemberg require their *mercurius dulcis* to be only twice sublimed; and the Augustan, but once: and Neuman proposes making it directly, by a single sublimation, from the ingredients which the corrosive sublimate is prepared from, by only taking the quicksilver in a larger proportion. If the medicine, made after either of these methods, should prove in any degree acrid; water, boiled on it for some time, will effectually dissolve and separate all that part in which its acrimony consists. The marks of the preparation being sufficiently dulcified are, its being perfectly insipid to the taste, and indissoluble in water.

Mercurius dulcis is one of the best and safest preparations of this mineral. Many of the more elaborate processes are no other than attempts to produce such a medicine as this really is: all that mercurials are capable of performing, as sialagogues, diaphoretics or alterants, may be effected by it. The dose, for raising a salivation, is fifteen or twenty grains; taken in the form of a bolus or pills, every night or oftner, till the ptyalism begins. As an alterant and diaphoretic, it is given in doses of six, eight, or ten grains; a purgative being occasionally interposed, to prevent its affecting the mouth. It answers, however, much better, when given in smaller quantities, as one, two, or three grains, every morning and evening in conjunction with such substances as determine its action to the skin, as the extract or resin of guaiacum; the patient at the same time keeping warm, and drinking liberally of warm diluent liquors. By this method

method of managing it, obſtinate cutaneous and venereal diſtempers may be ſucceſsfully cured, without any remarkable increaſe of the ſenſible evacuations.

PANACEA MERCURII.
MERCURIAL PANACEA.
Edinb.

Take any quantity of levigated calomel, and four times as much ſpirit of wine. Digeſt them together in a ſand heat for twenty days, frequently ſhaking the veſſel; then pour off the ſpirit, and dry the powder for uſe.

This preparation differs very little, if at all, from the foregoing; for, as Lemery obſerves, the ſpirit of wine does not diſſolve any part of the calomel. Some chemiſts have therefore recommended a proof ſpirit, or common water, as more ſuitable for this purpoſe than rectified ſpirit: if any part indeed of the calomel remains not ſufficiently dulcified, this will be diſſolved by boiling in water, and conſequently the preparation becomes milder; but if the calomel is well made, even water will have no effect upon it: the mercury and ſpirit of ſalt being ſo cloſely united to each other, as not to admit of any ſeparation by the means here propoſed. Nor indeed does good *mercurius dulcis* want any of its acid to be taken way, as being already ſufficiently ſafe and mild in its operation.

MERCURIUS PRÆCIPITATUS ALBUS.
WHITE PRECIPITATE of MERCURY.
Lond.

Take
Sublimate corroſive mercury,
Sal ammoniac, of each equal weights.
Diſſolve them both together in water, filter the ſolution, and precipitate it with a ſolution of any fixt alcaline ſalt. Waſh the precipitated powder, until it is perfectly ſweet (that is, inſipid or void of acrimony.)

MERCURIUS PRÆCIPITATUS DULCIS.
SWEET PRECIPITATE of MERCURY.
Edinb.

Diſſolve ſublimate corroſive mercury in a ſufficient quantity of hot water, and gradually drop into the ſolution ſome ſpirit of ſal ammoniac, as long as any precipitation enſues. Waſh the precipitated powder upon a filter, with ſeveral parcels of warm water.

The uſe of the ſal ammoniac in the firſt of theſe preſcriptions is to promote the ſolution of the ſublimate; which of itſel is difficultly, and ſcarce at all entirely, ſoluble in water; for however ſkilfully prepared, ſome part of it will have an under proportion of acid, and conſequently approach to the ſtate of *mercurius dulcis*. The chemiſts, however, to ſave the expence of this article, often make a leſs quantity, than above directed, ſerve; and take the trouble of boiling the ſublimate in ſeveral freſh parcels of water. A good deal of care is requiſite in the precipitation: if too large a quantity of the alcaline liquor be imprudently added, the precipitate will loſe the elegant colour which recommends it in unguents. For internal purpoſes this medicine is rarely made uſe of, nor is it at all wanted: it is ſimilar to calomel, but leſs certain in its effects.

Mercurius præcipitatus albus.
White precipitate of Mercury.
Edinb.

Take any quantity of the ſolution of mercury (made in aqua fortis) and pour into it, by little and little, ſome very ſtrong brine of ſea ſalt, until all the quickſilver is precipitated in form of a very white powder; which is to be waſhed upon a filter with warm water, till the water comes off without any acrimony. The powder is then to be put betwixt the folds of paper, and dried with a very gentle heat.

This is a very unfrugal preparation; for ſea ſalt, in whatever proportion it be added, will not precipitate all the mercury: this evidently appears upon adding a ſmall quantity of a ſolution of fixt alcaline ſalt, or volatile alcaline ſpirit, to the liquor which remains after the precipitate is fallen, when it will again grow turbid, and let fall a conſiderable quantity of freſh precipitate. Homberg obſerves, that if the acid ſpirit bears an over proportion to the mercury in the ſolution, no precipitation at all will follow upon the affuſion of the brine of ſea ſalt. If the precipitate be waſhed too often with hot water, it will all diſſolve and paſs the filter: the ſame accident will likewiſe happen, if the brine employed at firſt to throw down the mercury, be ſuffered to ſtand too long upon the precipitate.

Some have been accuſtomed to ſubſtitute the foregoing preparation in the place of this; but very injudiciouſly: the firſt is ſo mild, as not improperly to deſerve the appellation by which it is diſtinguiſhed in the Edinburgh pharmacopœia, *dulcis*; whilſt this laſt is ſo far corroſive, as to be employed by the farriers for the purpoſes of an eſcharotic. Internally, it is among us very rarely made uſe of; notwithſtanding the character given of it by Boerhaave, of being "perhaps the beſt remedy hitherto "afforded by mercury." *Mercurius dulcis* produces all the good effects which this is ſuppoſed to do, with a greater degree of certainty, and without diſordering the conſtitution, occaſioning vomiting, &c. which this precipitate, in a doſe of two or three grains, frequently does.

MERCURIUS PRÆCIPITATUS FUSCUS, vulgo WURTZII.

BROWN, commonly called WURTZ'S, PRECIPITATE.

Edinb.

Take any quantity of ſolution of mercury (made in aqua fortis) and gradually drop into it oil of tartar per deliquium, till the effervescence ceaſes. A powder will precipitate, which is to be edulcorated as the foregoing.

This preparation was in conſiderable eſteem ſome years ago, but at preſent is rarely made uſe of. It does not differ in ſtrength or effects from the ſweet precipitate.

MERCURIUS PRÆCIPITATUS VIRIDIS.

GREEN PRECIPITATE of MERCURY.

Edinb.

Diſſolve four ounces of corroſive ſublimate mercury (previouſly reduced to powder) in a quart of hot water.

Digeſt an ounce and a half of copper filings, with eight ounces of ſpirit of ſal ammoniac, in a matras, until a deep blue tincture is extracted.

Filter the tincture, and drop it by degrees into the mercurial ſolution: when the precipitate has fallen, evaporate in a ſand heat to dryneſs.

This differs from the ſweet precipitate in containing an admixture of

of copper, which renders it an emetic too rough to be uſed internally with ſafety: and hence the preſent practice has almoſt entirely rejected it.

MERCURIUS EMETICUS FLAVUS.

The YELLOW MERCURIAL EMETIC.

Lond.

Upon purified quickſilver, contained in a glaſs veſſel, pour double its weight of the ſtrong ſpirit or oil of vitriol. Heat the liquor by degrees, ſo as at length to make it boil, till a white maſs remains, which is to be throughly dried, with a ſtrong fire. This maſs, on the affuſion of warm water, grows yellowiſh, and falls into powder, which is to be diligently ground with the water in a glaſs mortar: then ſuffer it to ſettle, pour off the water, and waſh the powder in ſeveral parcels of freſh water, until it is ſufficiently dulcified.

MERCURIUS PRÆCIPITATUS FLAVUS, ſeu TURPETHUM MINERALE.

YELLOW PRECIPITATE of MERCURY, or TURPETH MINERAL.

Edinb.

Take four ounces of pure quickſilver, and ſixteen ounces of rectified oil of vitriol. Cautiouſly mix them together, and diſtil in a retort placed in a ſand furnace, to dryneſs; the white calx, which is left at the bottom, being ground to powder, and thrown into water, immediately grows of a yellow colour; waſh this in freſh waters, renewed ſeveral times, until it has loſt all its acrimony; then dry it for uſe.

The quantity of vitriolic acid in this laſt preſcription, is greatly too large; and even leſs than that in the firſt would ſuffice. Boerhaave directs this preparation to be made in an open glaſs, ſlowly heated, and then placed immediately upon burning coals; care being taken to avoid the fumes, which are extremely noxious. This method will ſucceed very well, with a little addreſs, when the ingredients are in ſmall quantity: but where the mixture is large, it is better to uſe a retort, placed in a ſand furnace, with a recipient containing a ſmall quantity of water luted to it. Great care ſhould be taken, when the oil of vitriol begins to bubble, to ſteadily keep up the heat, without at all increaſing it till the ebullition ceaſes, when the fire ſhould be augmented to the utmoſt degree; for the more perfectly the maſs is exſiccated, the greater will the yield of turbith prove.

The edulcoration of this preparation, which is attempted by repeated ablutions with water, does but ill ſucceed; eſpecially if the vitriolic acid has been uſed in too large a proportion, or the maſs not been duly exſiccated; in either of which caſes, great part of the turbith will be taken up by the water: this evidently appears upon pouring into it a little ſolution of fixt ſalt, which will throw down a conſiderable quantity of yellow precipitate, greatly reſembling the turbith, except that it is leſs violent in operation.

From this experiment, it appears, that the beſt method of edulcorating this powder is, by impregnating the water intended to be uſed in its ablution, with a determined proportion of fixt alcaline ſalt; for by this means, the waſhed turbith will not only turn out

greater in quantity, but, what is of more consequence, always have an equal degree of strength; a circumstance which deserves particularly to be considered, especially in making such preparations as, from an error in the process, may prove too violently corrosive to be used with any tolerable degree of safety.

Turbith mineral is a strong emetic, and in this intention operates the most powerfully of all the mercurials that can be safely given internally. Its action however is not confined to the primæ viæ; it will sometimes excite a ptyalism, if a purgative is not taken soon after it. This medicine is used chiefly in virulent gonorrhœas, and other venereal cases where there is a great flux of humours to the parts: it is said likewise to have been employed with good success, in robust constitutions, against leprous disorders, and obstinate glandular obstructions: the dose is from two grains, to six or eight, though there are some constitutions which have been much used to mercurials, that bear well even the dose of a scruple. It may be given in doses of a grain or two as an alterative and diaphoretic, after the same manner as the *mercurius calcinatus* already spoken of.

This medicine has been of late recommended as the most effectual preservative against the hydrophobia. There are several examples of its preventing madness in dogs that had been bit; and some, of its performing a cure after the madness was begun: from six or seven grains to a scruple, may be given every day, or every other day, for a little time, and repeated at the two or three succeeding fulls and changes of the moon. Some few trials have likewise been made on human subjects, that had been bit by mad dogs; and in these also, the turbith, used either as an emetic or alterative, had happy effects.

The washings of turbith mineral are used by some, externally, for the itch and other cutaneous foulnesses. In these cases, this mercurial lotion often does some service, but the patient must not be too free with it.

SECT. VIII.

PREPARATIONS of ANTIMONY.

ANTIMONY is composed of a semimetal, united with sulphur or common brimstone.

If powdered antimony be exposed to a gentle fire, the sulphur exhales; the metallic part remaining in form of a white calx, reducible, by proper fluxes, into a whitish brittle semimetal, called *regulus*. This is readily distinguished from the other bodies of that class, by its not being soluble in aqua fortis: its proper menstruum is aqua regis.

If aqua regis be poured upon crude antimony, the metallic part will be dissolved; and the sulphur thrown out, partly to the sides of the vessel, and partly to the surface of the liquor, in form of a greyish yellow substance. This, separated and purified by sublimation, appears on all trials the same with pure common brimstone.

The semimetal, freed from the sulphur naturally blended with it, and afterwards fused with common

common brimſtone, reſumes the appearance and qualities of crude antimony.

It is extremely difficult to determine exactly the proportions of ſulphur and ſemimetal which enter the compoſition of this concrete; ſince they can ſcarce be perfectly ſeparated from one another, without ſome part of them being loſt in the operation. The proportions likewiſe vary in different antimonies: ſixteen ounces of ſome ſorts yield ten or eleven of regulus; whilſt the ſame quantity of others ſcarce affords eight.

Many celebrated chemiſts have maintained, that antimony contains, beſides its own ſemimetal and ſulphur, a portion of an arſenical ſubſtance; to which they aſcribe the virulent effects produced by ſome of the antimonial preparations. But this opinion, how plauſible ſoever it may appear from the arguments which they bring in ſupport of it, does not ſeem to have any juſt foundation. Nothing arſenical has ever been ſeparated from pure antimony. The moſt violent antimonials are rendered inactive, by means which do not leſſen the poiſonous quality of arſenic; and the moſt inactive antimonial preparations are rendered virulent, by operations in which arſenic would either be diſſipated, or its violence abated.

The antimonial ſemimetal is a medicine of the greateſt power of any known ſubſtance whatever: a quantity too minute to be ſenſible on the tendereſt balance, is capable of producing virulent effects, if taken diſſolved or in a ſoluble ſtate. If exhibited in ſuch a form as to be immediately miſcible with the animal fluids, it proves violently emetic; if ſo managed as to be more ſlowly acted on, cathartic; and in either caſe, if the doſe is extremely ſmall, diaphoretic.

Thus, though vegetable acids extract ſo little from this ſemimetal, that the remainder ſeems to have loſt nothing of its weight; theſe tinctures, nevertheleſs, prove in no large doſes ſtrongly emetic, and in ſmaller ones powerfully diaphoretic. The regulus has been caſt into the form of pills, which acted as virulent cathartics, though without ſuffering any ſenſible diminution of weight in their paſſage through the body, and this repeatedly, for a great number of times.

This ſemimetal, diveſted of the inflammable principle which it has in common with all metallic bodies, that is reduced to a calx, becomes indiſſoluble and inactive. The calx nevertheleſs, urged with a ſtrong fire, melts into a glaſs, as eaſy of ſolution (partially) and as virulent in operation, as the regulus itſelf: the glaſs, throughly mingled with ſuch ſubſtances as prevent its ſolubility, as wax, reſins, and the like, is again rendered mild.

Vegetable acids, as we have already obſerved, diſſolve but an extremely minute portion of this ſemimetal; the ſolution nevertheleſs proves powerfully emetic and cathartic. The nitrous and vitriolic acids only corrode it into a powder, to which they adhere ſo ſlightly as to be ſeparable in good meaſure by water, and totally by fire, leaving the regulus in form of a calx ſimilar to that prepared by fire alone. The marine acid has a very different effect: this reduces the regulus into a violent corroſive, and though it difficultly unites, yet very cloſely adheres to it, inſomuch as not to be ſeparable by any ablution, nor by fire, the regulus ariſing along with it. The

nitrous or vitriolic acids expel the marine, and thus reduce the corrosive into a calx similar to the foregoing.

Sulphur remarkably abates the power of this semimetal: and hence crude antimony (in which the regulus appears to be combined with from one fourth to one half its weight of sulphur) proves altogether mild. If a part of the sulphur be taken away, by such operations as do not destroy or calcine the semimetal, the remaining mass becomes proportionably more active; the farther the sulphur is separated, the more does the regulus, thus divested of its corrector, exert its virulence.

The sulphur of antimony may be expelled by deflagration with nitre: the larger the quantity of nitre, to a certain point, the more of the sulphur will be dissipated, and the preparation will be the more active. If the quantity of nitre is more than sufficient to consume the sulphur, the rest of it, deflagrating with the inflammable principle of the regulus itself, renders it again mild.

The sulphur of antimony is likewise absorbed, in fusion, by certain metals, and by alcaline salts. These last, when united with sulphur, prove a menstruum for all the metals (zinc excepted) and hence, if the fusion is long continued, the regulus is taken up, and rendered soluble in water.

REGULUS ANTIMONII MEDICINALIS.
A MEDICINAL REGULUS OF ANTIMONY.

Take of
Antimony, eight parts;
Nitre, one part.
Mix, and inject them by little at a time, into a red hot crucible: when the deflagration ceases, take the crucible out of the fire, and reduce the matter into powder.

This preparation is sufficiently mild, though considerably more active than the crude mineral: eighteen or twenty grains will in some constitutions operate, though very gently, both upwards and downwards. It is similar to one to be described hereafter under the same name.

CROCUS ANTIMONII MITIOR.
The MILDER CROCUS of ANTIMONY.

Take of
Antimony, two parts;
Nitre, one part.
Mix, and inject the powder into a red hot crucible. As soon as the deflagration ceases, remove the matter from the fire (without suffering it to melt) and reduce it into powder.

This preparation acts much more powerfully than the foregoing; the increase of the nitre occasioning a greater quantity of the sulphur of the antimony to he dissipated. The London committee received it in their first draught, with the character of an antimonial of mild operation, which had proved a successful medicine in numerous instances, without any one example of its being unsafe. Some trials however, afterwards reported to them, where the operation of this and the following crocus were compared, induced them to lay this preparation aside. It appears to differ from the other only in being less violent.

CROCUS ANTIMONII.
CROCUS of ANTIMONY.
Lond.

Take
Antimony,
Nitre,

Nitre, of each equal weights.

Reduce them ſeparately into powder; then mix, and inject them into a crucible heated to a white heat, that the mixture (after deflagration) may melt. Then pour it out, ſeparate the ſcoriæ, and reſerve the matter underneath them for uſe: it proves different in colour according to the continuance of the heat; the longer it has been kept in fuſion, the yellower it will be.

CROCUS METALLORUM.
CROCUS of METALS.
Edinb.

The mixture of antimony and nitre, made as above, is to be injected into a red hot crucible; and when the detonation is over, ſeparate the reddiſh metallic matter from the whitiſh cruſt, and edulcorate it with water.

Here the antimonial ſulphur is totally conſumed, and the metallic part left diveſted of its corrector. Theſe preparations, given from two to ſix grains, act as violent emetics, greatly diſordering the conſtitution. Their principal uſe is in maniacal caſes; as the baſis of ſome other preparations; and among the farriers, who frequently give to horſes an ounce or two a day, divided into different doſes, as an alterative: in theſe and other quadrupeds, this medicine acts chiefly as a diaphoretic.

The chemiſts have been accuſtomed to make the crocus with a leſs proportion of nitre than directed above; and without any farther melting, than what enſues from the heat that the matter acquires by deflagration, which, when the quantity is large, is very conſiderable: a little common ſalt is added to promote the fuſion. The mixture is put by degrees into an iron pot, or mortar, ſomewhat heated, and placed under a chimney: when the firſt ladle-full is in, a piece of lighted charcoal is thrown to it, which ſets the matter on fire: the reſt of the mixture is then injected by little and little: the deflagration is ſoon over, and the whole appears in perfect fuſion: when cold, a conſiderable quantity of ſcoriæ are found upon the ſurface; which ſcoriæ are eaſily knocked off with a hammer. The crocus prepared after this manner is of a redder colour, than that of the firſt of the above proceſſes.

CROCUS ANTIMONII LOTUS.
WASHED CROCUS OF ANTIMONY.
Lond.

Reduce the crocus into a very ſubtile powder, and boil it in water: then, throwing away this water, waſh the powder ſeveral times in freſh warm water, until it becomes perfectly inſipid.

This proceſs is deſigned chiefly to fit the crocus for the preparation of emetic tartar, of which hereafter. Cold water would not extract the ſaline matter; for we have already ſeen, that ſulphur and nitre, deflagrated together, form a ſalt not diſſoluble in cold water.

EMETICUM MITE ANTIMONII.
A MILD ANTIMONIAL EMETIC.

Take of

Antimony, one part;

Nitre, two parts.

Grind them together, and throw them by little and little into a red hot crucible: when the deflagration is over, the remaining matter, which proves white, is to be waſhed for uſe.

The quantity of nitre is here ſo large, as to conſume not only the ſulphur

sulphur of the antimony, but likewise great part of the inflammable principle of the regulus. Boerhaave, from whom we have taken this preparation, informs us, that it is so mild as often to occasion only some light nausea and gentle vomiting, with a large discharge of saliva, and thick urine. Its effects seem to be nearly the same with those of the *regulus medicinalis*.

CALX ANTIMONII.
CALX OF ANTIMONY.
Lond.

Take of
Antimony, one part,
Nitre, three parts.

Let the powdered antimony be well mixed with the nitre, and gradually injected into a crucible, heated to a light white heat; the matter being afterwards taken from the fire, is to be washed with water, both from the salt which adheres to it, and from the grosser part that is less perfectly calcined.

ANTIMONIUM DIAPHORETICUM.
DIAPHORETIC ANTIMONY.
Edinb.

Take of
Antimony, half a pound,
Nitre, a pound and a half.

Reduce them separately into powder, then mix, and inject them, by a spoonful at a time, into a red hot crucible: when the detonation is over, let the white mass be calcined in the fire for half an hour longer; then powder, and keep it in a glass vessel closely stopt. This calx, unwashed, is called ANTIMONIUM DIAPHORETICUM NITRATUM, *nitrated diaphoretic antimony*.

The foregoing calx, digested for a nitre in as much water as will rise above it some inches, and then washed in fresh parcels of water five or six times, is named ANTIMONIUM DIAPHORETICUM DULCE, *edulcorated diaphoretic antimony*.

The several washings, mixed together, filtered, and evaporated over a gentle fire till a cuticle forms on the surface, yield in the cold, crystals, called NITRUM STIBIATUM, *antimoniated nitre*.

The calx of antimony, when freed by washing from the saline matter, is extremely mild, if not altogether inactive. Hoffman, Lemery, and others assure us, that they have never experienced from it any such effects as its usual title (that under which it stands in the last of the above processes) imports; Boerhaave declares, that it is a mere metallic earth, entirely destitute of all medicinal virtue: and the committee of the London college admit that it has no sensible operation. The common dose is from five grains to a scruple, or half a dram; though Wilson relates, that he has known it given by half ounces, and repeated two or three times a day, for several days together.

Some report, that this calx, by being kept for a length of time, contracts an emetic quality: from whence it has been concluded, that the powers of the reguline part are not entirely destroyed; that the preparation has the virtues of other antimonials which are given as alteratives, that is, in such small doses as not to stimulate the primæ viæ; and that therefore, diaphoretic antimony, as it is certainly among the mildest preparations of that mineral, may be useful for children, and such delicate constitutions where the stomach and intestines are easily affected. The observa-

obſervation, however, from which theſe concluſions are drawn, does not appear to be well founded: Ludovici relates, that after keeping the powder for four year, it proved as mild as at firſt: and the Straſburgh pharmacopœia, with good reaſon, ſuſpects, that where the calx has proved emetic, it had either been given in ſuch caſes as would of themſelves have been attended with this ſymptom (for the great alexipharmac virtues, attributed to it, have occaſioned it to be exhibited even in the more dangerous malignant fevers, and other diſorders, which are frequently accompanied with vomiting) or that it had not been ſufficiently calcined, or perfectly freed by ablution from ſuch part of the regulus as might remain uncalcined.

It has been obſerved, that when diaphoretic antimony is prepared with nitre, abounding with ſea ſalt, of which all the common nitre contains ſome portion, the medicine has proved violently emetic. This effect is not owing to any particular quality of the ſea ſalt, but to its quantity, by which the proportion of the nitre to the antimony is rendered leſs.

The *nitrum ſtibiatum* differs little from *ſal polychreſt*.

CERUSSA ANTIMONII.
CERUSSE OF ANTIMONY.

Take of
Regulus of antimony, one part;
Nitre, three parts.
Deflagrate them together, as in the foregoing proceſs.

The reſult of both proceſſes appear to be altogether the ſame. It is not neceſſary to uſe ſo much nitre here, as when antimony itſelf is employed; for the ſulphur which the crude mineral contains, and which requires for its diſſipation nearly an equal weight of nitre to the antimony, is here already ſeparated. Two parts of nitre to one of the regulus are ſufficient.

REGULUS ANTIMONII MEDICINALIS.
MEDICINAL REGULUS OF ANTIMONY.

Take of
Antimony, five parts;
Common ſalt, four parts;
Salt of tartar, one part.
Grind them together, and inject the mixture into a red hot crucible, and when it flows ſufficiently thin, pour it into a cone, ſmoked and heated: gently ſhake the cone, or ſtrike it on the ſides, that the regulus may ſink to the bottom. This regulus, freed from the ſcoriæ, appears bright like poliſhed ſteel; powdered, it aſſumes a reddiſh or purple colour.

This medicine is ſimilar in quality to one made with one eighth of nitre, already deſcribed: in both proceſſes, the antimony is freed from a ſmall portion of its ſulphur, which is diſſipated in flame by the nitre, and abſorbed by the alcaline ſalt. This preparation is greatly celebrated by Hoffman, and other German phyſicians, in ſundry obſtinate chronical diſorders, and eſteemed one of the beſt antimonials that can be given with ſafety as alterants: it operates chiefly as a diaphoretic, and ſometimes, though rarely, proves emetic. The doſe is from three or four grains to twenty.

This regulus, reduced into a ſubtile powder, is the genuine FEBRIFUGE POWDER of Craanius (*Pharm. Boruſſo - Brandenburg*, edit. 1734. pag. 107.) and has been greatly commended in all kinds of fevers, both of the intermittent and continual kind, (*Pharm. Argent.* 1725. pag. 252.) A doſe or two have frequently removed theſe

these disorders, by occasioning either a salutary diaphoresis, or acting mildly by stool or vomit. The colour of the levigated powder is a purplish brown. The antimonial emetic of Boerhaave already mentioned, which is white, is nearly similar to it.

The common salt is of no farther use in the process, than as it serves to promote the fusion; and even for this it is not necessary. The medicine proves rather more mild and certain in operation, if prepared without it.

REGULUS ANTIMONII.
REGULUS OF ANTIMONY.
Edinb.

Take
Antimony,
Nitre,
Crude tartar, of each equal parts.
Grind them separately into a powder, then mix, and rub them all together. Inject the powder, at several times, into a red hot crucible, taking care to break the crust, which forms on the surface, with an iron rod: when the detonation is over, let a strong fire be made, that the matter may flow like water, then pour it out into a warm greased cone, which is to be gently struck on the sides, that the regulus may separate and fall to the bottom; when grown cold, let the regulus be cleared from the scoriæ that lie a-top of it.

In this process, an alcaline salt is produced from the nitre and tartar; in such quantity, as entirely to absorb the sulphur of the antimony: the alcali, thus sulphurated, will take up more or less of the reguline part, according to its quantity, and the continuance of the fusion.

As the ingredients are above proportioned, the yield of regulus proves extremely small, and if the fusion is long continued, scarce perceptible, almost the whole of it being taken up into the scoriæ: in order to obtain the largest quantity, the nitre ought to be diminished one half. It is convenient to rub the nitre and tartar together, and deflagrate them in an iron ladle or pan, before their mixture with the antimony; for by this means, the loss of some part of the antimony, which otherwise happens from the vehemence of the deflagration, will be prevented, a smaller crucible will serve, and less time and labour complete the process.

The mixture of nitre and tartar deflagrated together, will reduce any of the antimonial calces (as the diaphoretic antimony, ceruse, or antimony calcined by itself) into regulus; the oily matter of the tartar supplying the inflammable principle, which all calces require for their revival into a metallic form; and the alcaline salt promoting their fusion. It is the common reducing flux of the chemists; by whom it is called, from its colour, the *black flux*. The largest yield of regulus, hitherto obtained from antimony, has been got by calcining it without addition, as directed hereafter for making glass of antimony, and reviving the calx by fusion, with this, or other like compositions. Mr. Geoffroy, who first communicated this method to the French academy, seems to look upon soap (the substance he happened to make use of himself) as the only one that will succeed: but the effects of this are not different from those of the foregoing flux. Both consist of an alcaline salt, and an inflammable (not sulphureous) substance, which are the only materials here necessary.

REGULUS ANTIMONII MARTIALIS.

MAR-

MARTIAL REGULUS OF ANTIMONY.
Edinb.

Take
Antimony,
Nitre,
Crude tartar, of each one pound;
Small pieces of iron, half a pound.

Heat the iron in a crucible to a white heat: then gradually add the other ingredients, first powdered and mixed together, and proceed in the same manner as in the foregoing process.

The nitre might here be diminished to one fourth its weight, and the tartar to half that quantity. The pieces of iron may be small nails; the filings of the metal, lying closer together, are not so readily acted upon by the antimony.

REGULUS ANTIMONII STELLATUS.
STELLATED REGULUS OF ANTIMONY.
Edinb.

This is made by melting the martial regulus several times with fresh nitre and tartar.

The simple regulus of antimony is more readily made to exhibit a starry appearance on its surface, than the martial; which it will also do by one, as well as by any number of fusions: the phænomenon entirely depends upon the regulus being pure, brought into extreme thin-fusion, and cooled slowly in the cone, without shaking or moving it. If the martial regulus is employed, it is convenient to add some fresh antimony (about one fourth the weight of the regulus) to absorb such part of the iron as may be retained in it: when the whole is in perfect fusion, inject, at times, about one eighth of nitre, or fixt alcaline salt, previously dried, and made very hot.

The three foregoing *reguli* are at present rarely, if ever, made use of in medicine: the emetic cups, and perpetual pills, formerly made from them, have long been laid aside as precarious and unsafe. The scoriæ, produced in the several processes, afford medicines less violent, some of which are in considerable esteem. These scoriæ consist of the sulphur of the antimony united with an alcaline salt, and a part of the regulus taken up by this compound, and rendered soluble in water.

SULPHUR AURATUM ANTIMONII.
GOLDEN SULPHUR OF ANTIMONY.
Edinb.

Let the scoriæ of regulus of antimony be reduced into powder, whilst warm, and then boiled for a considerable time in thrice their quantity of water. Filter the yellowish red solution, and drop into it a proper quantity of spirit of vitriol: a powder will precipitate, which is to be washed with water, till perfectly edulcorated and freed from its ill smell.

SULPHUR ANTIMONII PRÆCIPITATUM.
PRECIPITATED SULPHUR OF ANTIMONY.
Lond.

Take of
Antimony, sixteen ounces,
Tartar, a pound,
Nitre, half a pound.

Let these be reduced separately into powder, then mixed, thrown by degrees into a red hot crucible, and melted with a strong fire. Pour out the matter into a conical mould; the metallic part, commonly called regulus of antimony, will sink to the bottom,

bottom, the scoriæ swimming above it. Dissolve these scoriæ in water, filter the solution thro' paper, and precipitate the sulphur by dropping in some spirit of sea salt: lastly, wash the sulphur from the salts, and dry it for use.

These preparations are not strictly sulphurs: they contain a considerable quantity of the metallic part of the antimony, which is reducible from them by proper fluxes. That made by the first of the above processes contains greatest part of the semimetal; for as we have already seen, very little, sometimes scarce any at all, separates in the fusion. The quantity of regulus taken up in the second also will be different, according to the degree of fire employed, and the length of time that the fusion is continued. These medicines, therefore, must needs be liable to great variation in point of strength, and in this respect there is not perhaps any of the antimonials more precarious; notwithstanding the assertion in the last edition of this work, that they are the most certain of them.

These preparations prove emetic when taken on an empty stomach, in a dose of four, five, or six grains; but in the present practice, they are scarce ever prescribed in this intention; being chiefly used as alterative deobstruents, particularly in cutaneous disorders. Their emetic quality is easily blunted by making them up into pills with resins or extracts, and giving them on a full stomach: with these cautions, they have been increased to the rate of sixteen grains a day, and continued for a considerable time, without occasioning any disturbance upwards or downwards. As their strength is precarious, they should be exhibited at first in very small doses, and increased by degrees according to their effect.

A composition of the *sulphur auratum*, with *mercurius dulcis*, has been found a powerful, yet safe, alterative in cutaneous disorders; and has completed a cure after salivation had failed: in venereal cases likewise, this medicine has produced excellent effects. A mixture of equal parts of the sulphur and calomel (well triturated together, and made into pills with extracts, &c.) may be taken from four to eight or ten grains, morning and night; the patient keeping moderately warm, and drinking after each dose, a draught of a decoction of the woods, or other like liquors. This medicine generally promotes perspiration, scarce occasioning any tendency to vomit or purge, or at all affecting the mouth. See the *Edinburgh essays*, vol. i. and the *Acta natur. curiof.* vol. v.

KERMES MINERALIS.
KERMES MINERAL.

Take of

Antimony, sixteen ounces;
Any fixt alcaline salt, four ounces;
Water, one pint.

Boil them together for two hours, then filter the warm liquor; as it cools, the kermes will precipitate. Pour off the water, and add to it three ounces of fresh alcaline salt, and a pint more of water: in this liquor boil the remaining antimony as before: and repeat the process a third time, with the addition of only two ounces of alcaline salt, and another pint of water; filtering the liquor as at first, and collecting the powders which subside from them in cooling.

This medicine has of late been greatly esteemed in some places, under

under the names *Kermes mineral, pulvis Carthusianus, poudre des Chartreaux, &c.* It was originally a preparation of Glauber, and for some time kept a great secret, till at length the French king purchased the preparation from M. de la Ligerie, for a considerable sum, and communicated it to the public in the year 1720. In virtue it is not different from the sulphurs abovementioned: all of them owe their efficacy to a part of the regulus of the antimony, which the alcaline salt, by the mediation of the sulphur, renders soluble in water.

PANACEA ANTIMONII.
PANACEA OF ANTIMONY.

Take of
- Antimony, six ounces;
- Nitre, two ounces;
- Common salt, an ounce and a half;
- Charcoal, an ounce.

Reduce them into a fine powder, and put the mixture into a red hot crucible, by half a spoonful at a time, continuing the fire a quarter of an hour after the last injection: then either pour the matter into a cone, or let it cool in the crucible, which when cold must be broke to get it out. In the bottom will be found a quantity of regulus; above this, a compact liver-coloured substance; and on the top, a more spongy mass: this last is to be reduced into powder, edulcorated with water, and dried, when it appears of a fine golden colour.

This is supposed to be the basis of LOCKYER'S PILLS, which was formerly a celebrated purge. Ten grains of the powder, mixed with an ounce of white sugar candy, and made up into a mass with mucilage of gum tragacanth, may be divided into an hundred small pills; of which one, two, or three, taken at a time, are said to work gently by stool and vomit. The compact liver-coloured substance, which lies immediately above the regulus, operates more churlishly.

VITRUM ANTIMONII.
GLASS OF ANTIMONY.
Edinb.

Take of
- Antimony reduced to powder, one pound.

Calcine it over a gentle fire, in an unglazed earthen vessel, keeping it continually stirring with an iron spatula, until the fumes cease, and the antimony is reduced into a grey powder. Melt this powder in a crucible, with an intense fire, and pour out the liquid matter upon an heated copper plate.

The calcination of antimony, to fit it for making a transparent glass, succeeds very slowly, unless the operator be very wary and circumspect in the management of it. The most convenient vessel is a broad shallow dish, or a smooth flat tile, placed under a chimney. The antimony should be the purer sort, such as is usually found at the apex of the cones: this, grossly powdered, is to be evenly spread over the bottom of the pan, so as not to lye above a quarter of an inch thick on any part. The fire should be at first no greater than is just sufficient to raise a fume from the antimony, which is to be now and then stirred: when the fumes begin to decay, increase the heat, taking care not to raise it so high as to melt the antimony, or run the powder into lumps: after some time the vessel may be made red hot, and kept in this state, until the matter will not, upon being stirred, any longer fume. If this part

part of the process be duly conducted, the antimony will appear in an uniform powder, without any lumps, and of a grey colour.

With this powder, fill two thirds of a crucible, which is to be covered with a tile, and placed in a wind furnace. Gradually increase the fire, till the calx is in perfect fusion, when it is to be now and then examined by dipping a clean iron wire into it: if the matter, which adheres to the end of the wire, appear smooth and equally transparent, the vitrification is completed and the glass may be poured out from an hot smooth stone, or copper plate, and suffered to cool by slow degrees, to prevent its cracking and flying in pieces.

The glass of antimony usually met with in the shops, is said to be prepared with certain additions; which may perhaps render it not so fit for the purposes here designed. By the method above directed, it may be easily made, in the requisite perfection, without any addition.

The calcined antimony is said by Boerhaave to be violently emetic; but this does not appear from experience, and seems to have been an over hasty conclusion from the known qualities of the glass, which is extremely virulent, insomuch as to be unsafe for internal use: combined with wax or resins, it becomes mild.

VITRUM ANTIMONII CERATUM.
CERATED GLASS OF ANTIMONY.
Edinb.

Take of
Yellow wax, a dram;
Glass of antimony, reduced into powder, an ounce.

Melt the wax in an iron vessel, and inject upon it the powdered glass: detain the mixture over a gentle fire for half an hour, keeping it continually stirring; then pour it out upon a paper, and when cold, grind it into powder.

The glass melts in the wax, with a very soft heat: after it has been about twenty minutes on the fire, it begins to change its colour, and in ten more, comes near to that of Scotch snuff, which is a mark of its being sufficiently prepared: the quantity set down above, loses about one dram of its weight, in the process.

This medicine has for some time been greatly esteemed in dysenteries: several examples of its good effects in these cases, may be seen in the fifth volume of the *Ebinburgh essays*, from which the above remarks on the preparation are taken. The dose is from two or three grains to twenty, according to the age and strength of the patient. In its operation, it makes some persons sick and vomit; it purges almost every one; though it has sometimes effected a cure, without occasioning any evacuation or sickness.

Mr. Geoffroy gives two pretty singular preparations of glass of antimony, which seem to have some affinity with this. One is made by digesting the glass, most subtilely levigated, with a solution of mastich made in spirit of wine, for three or four days, now and then shaking the mixture; and at last evaporating the spirit, so as to leave the mastich and glass exactly mingled. Glass of antimony thus prepared, does not prove emetic, but acts merely as a cathartic, and that not of the violent kind.

The other preparation is made by burning spirit of wine upon the glass three or four times, the powder being every time exquisitely rubbed upon a marble. The dose

of this medicine is from ten grains to twenty or thirty: it operates mildly both upwards and downwards, and ſometimes proves ſudorific.

ANTIMONIUM CATHARTICUM.
THE PURGING ANTIMONY of Wilſon.

Take four ounces of glaſs of antimony, finely powdered, and gradually pour thereon twelve ounces of oil of vitriol; diſtil in a ſand heat; and waſh the powder, which remains in the bottom of the retort, till all its acrimony is loſt: then dry it, and grind it with an equal weight of Glauber's cathartic ſalt, and a double quantity of vitriolated nitre. Let this mixture be kept a quarter of an hour in gentle fuſion, in a crucible; and afterwards pulverized, waſhed, and dried for uſe.

Mr. Wilſon, the inventor of this preparation, informs us, that it is the moſt certain antimonial purge he ever met with; that it operates without nauſeating the ſtomach; and that by the uſe of this powder only, he knew three confirmed poxes cured. His doſe is from two grains to ten.

CAUSTICUM ANTIMOMIALE.
THE ANTIMONIAL CAUSTIC. Lond.

Take of
- Crude antimony, one pound;
- Corroſive mercury ſublimate, two pounds.

Reduce them ſeparately into powder; then mix, and diſtil them in a wide-necked retort, with a gentle ſand heat. The matter, which ariſes into the neck of the retort, is to be expoſed to the air, that it may run into a liquor.

BUTYRUM ANTIMONII.
BUTTER OF ANTIMONY. Edinb.

Take
- Crude antimony,
- Corroſive mercury ſublimate, of each equal parts.

Grind them firſt ſeparately, then throughly mix them together, taking the utmoſt care to avoid the vapours Put the mixture into a coated glaſs retort (having a ſhort wide neck) ſo as to fill one half of it: the retort being placed in a ſand furnace, and a receiver adapted to it, give firſt a gentle heat, that only a dewy vapour may ariſe: the fire being then increaſed, an oily liquor will aſcend, and congeal in the neck of the retort, appearing like ice, which is to be melted down by a live coal cautiouſly applied. This oily matter is to be rectified in a glaſs retort, into a pellucid liquor.

Theſe proceſſes are extremely dangerous, inſomuch that even the life of the operator, though tolerably verſed in common pharmacy, may be affected for want of taking due care herein. Boerhaave relates that one, who from the title he gives him, is not to be ſuppoſed inexpert in chemical operations, or unacquainted with the danger attending this, was ſuffocated for want of proper care to prevent the burſting of the retort. The fumes which ariſe even upon mixing the antimony, with the ſublimate, are highly noxious, and ſometimes iſſue ſo copiouſly and ſuddenly, as very difficultly to be avoided. The utmoſt circumſpection therefore is neceſſary.

The cauſtic, or butter as it is called, appears to be a ſolution of the metallic part of the antimony in the marine acid of the ſublimate; the ſulphur of the antimony,

and the mercury of the ſublimate, remain at the bottom of the retort, united into an ethiops. This ſolution does not ſucceed with ſpirit of ſalt in its liquid ſtate; and cannot be effected unleſs (as in the caſe of making ſublimate) the acid is highly concentrated, and both the ingredients violently heated. If regulus of antimony was added in the diſtillation of ſpirit of ſea ſalt, a like ſolution would be made.

When the congealed matter that ariſes into the neck of the retort, is liquefied by the moiſture of the air, it proves leſs corroſive than when melted down and rectified by heat; though it ſeems, in either caſe, to be ſufficiently ſtrong for the purpoſes it is intended for. It is remarkable, that though this ſaline concrete, readily and entirely diſſolves by the humidity of the air, it nevertheleſs will not diſſolve on putting water to it directly: even when previouſly liquefied by the air, the addition of water will precipitate the ſolution.

CINNABARIS ANTIMONII.
CINNABAR OF ANTIMONY.

Lond.

Let the matter, which remains in the retort after the diſtillation of the cauſtic, be ſublimed in a coated matras, in an open fire.

Edinb.

As ſoon as red vapours begin to appear, in the diſtillation of the butter, change the receiver, without luting the junctures; and increaſe the fire until the retort becomes intenſely red hot: in an hour or two, the whole of the black powder will be ſublimed, and its colour changed into red. Then break the retort, and diligently ſeparate the cinnabar, which will be found in the neck, from the black droſſy matter.

The cinnabar of antimony is compoſed of the ſulphur of the antimony, and the mercury of the ſublimate, which are perfectly the ſame with the common brimſtone and quickſilver, of which the *cinnabaris factitia* is made. The antimonial cinnabar therefore, whoſe ingredients are laborioſly extracted from other ſubſtances, is not different from the common cinnabar, made with the ſame materials procured at a much cheaper rate. The former indeed is generally of a darker colour than the other, and has ſomewhat of a needled appearance like that of antimony itſelf; from whence it has been ſuppoſed to participate of the metallic part of that mineral. But it appears from experiment, that both the colour and needled form are entirely accidental, and owing to the mixt containing a larger proportion of ſulphur, and being ſublimed in a more languid manner.

MERCURIUS VITÆ.
MERCURY OF LIFE.

Edinb.

Take of

Rectified butter of antimony, as much as you pleaſe:

Pour to it a ſufficient quantity of ſpring water, and an exceeding white powder will be precipitated: edulcorate this by repeated affuſions of warm water, and dry it by a ſlow fire.

This powder has not, as its name ſhould ſeem to imply, any thing of mercury in it, but is ſolely compoſed of the reguline part of the antimony, corroded by the acid ſpirit of ſea ſalt; which acid is ſo cloſely united, as not to be ſeparable by any ablution with water. Le Mort directs ſome alcaline ſalt to be diſſolved in the water, in order to obtund the acid: ſeveral other methods alſo have been contrived

contrived for correcting and abating the force of this violent emetic; but they either leave it ſtill virulent, or render it inert.

BEZOARDICUM MINERALE.
BEZOAR MINERAL.
Edinb.

Take any quantity of butter of antimony newly rectified, and gradually drop into it ſpirit of nitre, till the effervescence ceaſes. Draw off the ſpirit in a glaſs veſſel, placed in a ſand heat, till a dry powder remains behind: add to this a little freſh ſpirit of nitre, and again exſiccate it. Repeat this a third time: then commit the powder in a crucible to a naked fire, till it has received an almoſt white heat, and detain it in this ſtate for half an hour.

This preparation may be eaſier made, and with greater ſafety to the operator, by dropping the butter of antimony into three or four times its weight of ſpirit of nitre, and diſtilling the mixture in a retort, until a dry white maſs is left behind, which is afterwards to be calcined, as above directed. It may likewiſe be made by diſtilling ſpirit of nitre from the *mercurius vitæ*, and calcining the remainder; or by deflagrating the mercurius vitæ with thrice its weight of pure nitre. This laſt method, propoſed by G. Wolffg. Wedelius, is followed by the Auguſtan college.

Bezoar mineral was formerly held in great eſteem as a diaphoretic; but its reputation is at preſent almoſt loſt. It is not different in medical virtue, or in any ſenſible quality, from the calces of antimony made directly by deflagration with nitre, ſome of which have generally ſupplied its place in the ſhops. It appears at firſt pretty extraordinary, that the violent cauſtic, butter of antimony, ſhould be rendered indolent by the corroſive ſpirit of nitre: how this happens will be eaſily underſtood, upon conſidering that the nitrous acid expels the marine (to which the cauſtic quality of the butter is owing) and is itſelf expelled from moſt metallic ſubſtances by fire.

TARTARUM EMETICUM.
EMETIC TARTAR.
Lond.

Take of
- Waſhed crocus of antimony,
- Cryſtals of tartar, each half a pound.
- Water, three pints.

Boil them together for half an hour; then filter the liquor, and after due evaporation, ſet it by to cryſtallize.

Edinb.

Take of
- Cream of tartar, four ounces;
- Glaſs of antimony powdered, two ounces.

Boil them together in four pints of water, for ten hours, ſtirring them frequently with a ſpatula, and adding more water as there is occaſion. Filter the liquor whilſt warm; and evaporate it, either to dryneſs, or only till a pellicle forms, that it may ſhoot into cryſtals.

This preparation has been uſually made with the unwaſhed crocus of antimony: by employing, as here directed, the waſhed crocus, or the glaſs, it proves of a whiter colour, and likewiſe more certain in ſtrength; though it will ſtill be ſomewhat precarious in this laſt reſpect, if the cryſtallization is complied with: for ſome of the tartar, even though the operation is performed with a good deal of care, will be apt to ſhoot by itſelf, retaining little or nothing of the crocus. It ſhould ſeem therefore more eligible, as ſoon as the ſolu-

tion has passed the filter, to proceed to the total evaporation of the liquor, or at least to evaporate lower than is usual for crystallization, that the whole may shoot at once.

The title of this medicine expresses its principal operation. It is one of the best of the antimonial emetics, acting more powerfully than the quantity of crocus contained in it would do by itself, though it does not so much ruffle the constitution. And indeed antimonials in general, when thus rendered soluble by vegetable acids, are more safe and certain in their effects, than the violent preparations of that mineral exhibited by themselves; the former never varying in their action from a difference in the food taken during their use, or other like circumstances, which occasioning more or less of the others to be dissolved, make them operate with different degrees of force. Thus crude antimony, where acid food has been liberally taken, has sometimes proved violently emetic; whilst, in other circumstances, it has no such effect.

The dose of emetic tartar, when designed to produce the full effect of an emetic, is from four to six or eight grains. It may likewise be advantageously given in smaller doses, half a grain for instance, as a diaphoretic and alterative in cutaneous disorders; and added, in the quantity of a grain, as a stimulus to vegetable cathartics.

SECT. IX.

PREPARATIONS of BISMUTH.

THIS semimetal resembles in appearance the regulus of antimony; but differs greatly from it, in its pharmaceutical properties and medical qualities. It melts in a very small heat, long before ignition; and totally dissolves, with great effervescence, in aqua fortis, which only corrodes the antimonial semimetal. As a medicine, it seems, when pure, to have little or no effect; though some preparations of it were formerly accounted diaphoretic. At present, only one preparation comes under the notice of the apothecary or chemist; and that designed for external use.

MAGISTERIUM BISMUTHI.
MAGISTERY OF BISMUTH.

Dissolve bismuth in a proper quantity of aqua fortis, without heat, adding the bismuth by little and little at a time. Pour the solution into sixteen times its quantity of fair water; it will grow milky, and on standing for some time, deposite a bright white precipitate: the addition of spirit of wine will expedite the precipitation. Wash the powder in fresh parcels of water; and dry it in a shady place betwixt two papers.

This preparation is of some esteem as a cosmetic, which is the only use it is now applied to. The diaphoretic virtues, attributed to it when taken internally, have very little foundation, and by the present practice are not at all regarded. It was proposed to be received in our pharmacopœia at the late revisal, but was found much too insignificant to be admitted there.

SECT.

SECT. X.

PREPARATIONS of ZINC.

THIS ſemimetal melts in a red heat; and if the air is admitted, flames, and ſublimes into light, white, downy flowers; if the air is excluded, it ariſes, by a ſtrong fire, in its metallic form. Sulphur, which unites with, or ſcorifies all the other metals except gold, does not act on zinc. Acids of every kind diſſolve it.

Zinc, its flowers or calces, and ſolutions, taken internally, prove ſtrong and quick emetics; in ſmall doſes, they are ſaid to be diaphoretic. Externally, they are cooling, aſtringent, and deſiccative.

PURIFICATIO ZINCI.
PURIFICATION OF ZINC.

Melt zinc, with a heat no greater than is juſt ſufficient to keep it fluid. Stir it ſtrongly with an iron rod, and throw in alternately pieces of ſulphur and of tallow, the firſt in largeſt quantity. If any conſiſtent matter, or ſcoriæ, forms on the top, take it off, and continue the proceſs, until the ſulphur is found to burn freely and totally away on the ſurface of the fluid zinc.

Zinc uſually contains a portion of lead, which this proceſs effectually ſeparates. Sulphur united with lead forms a maſs, which does not melt in any degree of fire that zinc is capable of ſuſtaining.

FLORES ZINCI.
FLOWERS OF ZINC.

Let a large and very deep crucible, or other deep earthen veſſel, be placed in a furnace, in an inclined ſituation, only half upright. Put a ſmall quantity of zinc into the bottom of the veſſel, and apply a moderate fire, no greater than is neceſſary to make the zinc flame: white flowers will ariſe, and adhere about the ſides of the veſſel, like wool. When the zinc ceaſes to flame, ſtir it with an iron rod, and continue this operation till the whole is ſublimed.

Theſe flowers ſhould ſeem preferable, for medicinal purpoſes, to tutty, and the more impure ſublimates of zinc, which are obtained in the braſs works; and likewiſe to calamine the natural ore of this ſemimetal, which contains a large quantity of earth, and frequently a portion of heterogeneous metallic matter.

SAL ſeu VITRIOLUM ZINCI.
SALT or VITRIOL OF ZINC.

Diſſolve purified zinc, by a gentle heat of ſand, in a mixture of equal parts of oil of vitriol and water. Filter the ſolution, and after due evaporation, ſet it to cryſtallize.

This ſalt is an elegant white vitriol. It differs from the common white vitriol, and the *ſal vitrioli* of the ſhops, only in being purer, and perfectly free from any admixture of copper, or ſuch other foreign metallic bodies, as the others generally contain.

SECT. XI.

COMPOUND METALLIC PREPARATIONS.

LAPIS MEDICAMENTOSUS. *THE MEDICINAL STONE.*

Lond.

Take of
Litharge,
Bole armenic, or French bole,
Alum, each half a pound;
Colcothar of green vitriol, three ounces;
Vinegar, a quarter of a pint.

Mix, and exsiccate them till they grow hard.

Edinb.

Take of
Colcothar of vitriol,
Litharge of gold,
Bole armenic,
Alum, each equal parts;
Strong vinegar, as much as will cover them to the height of four inches.

Digest these ingredients together, for four days, in an earthen pan; then set them over the fire, that all the humidity may evaporate; after which, calcine the remaining mass with a strong heat.

This preparation is employed externally as an astringent, for fastening loose teeth, preserving the gums, healing and drying up ulcers and wounds, and repressing defluxions of thin acrid humours upon the eyes. It is sometimes used in injections for checking a gonorrhœa, after the virulence is expelled. A preparation much resembling this is said, in the memoirs of the French academy, to be greatly esteemed among the surgeons in the army as a vulnerary.

SPECIFICUM ADSTRINGENS MAETZII.

An astringent preparation taken from Maetz; which has been sold under the name of

COLBATCH'S STYPTIC POWDER.

Take of
Sugar of lead . . . .
Iron filings, as much as you please;
Spirit of salt, as much as will rise above the filings three or four inches.

Digest them together with a gentle heat, till the spirit ceases to act on the metal; then pour off the liquor, evaporate it to one half, and add thereto an equal weight of sugar of lead. Continue the evaporation, with a small heat, until the matter remains dry, and assumes a red colour.

If the process is stopt as soon as it becomes dry, it has exactly the appearance of Colbatch's powder. It must be kept close from the air, otherwise it deliquiates.

This is said to be the styptic, with which so much noise was made some time ago, by the author of the *novum lumen chirurgiæ*; and for the sale of which, a patent was procured; only in that was used oil of vitriol, instead of the spirit of salt in this, a difference not very material. The prepation stands recommended in all kinds of hemorrhagies and immoderate fluxes, both internally and externally: the dose is from four grains to twelve. It is undoubtedly an efficacious styptic, but for internal use a dangerous one. See the article LEAD, and its *preparations*.

ANTI-

ANTIHECTICUM POTERII.
POTERIUS's ANTIHECTIC.
Edinb.

Take of
Martial regulus of antimony, ſix ounces;
Fine tin, three ounces.

Melt theſe together in a crucible; then pour them out into a warm greaſed mortar, and when the maſs is grown cold, grind it into a powder. Add to this thrice its weight of pure nitre, and deflagrate the mixture in a crucible, throwing in only a ſpoonful at a time; then calcine it [that is, keep it in fuſion] for an hour; and having afterwards ground it into an impalpable powder, pour thereon a ſufficient quantity of warm water ſtir them well together with a peſtle, till the water grows milky, which thus loaded with the finer parts of the powder, is to be poured off, and freſh water put to the remainder: repeat this operation, till nothing but indiſſoluble feces remains behind. Suffer all the milky liquors to reſt; a powder will fall to the bottom, which is to be waſhed with repeated affuſions of warm water, and laſtly dried for uſe.

The regulus of antimony ſhould be melted before the tin is added to it; for if they are both put into the crucible together, a part of the tin will be diſſipated by the heat requiſite for the fuſion of the regulus.

The chemiſts have been greatly divided with regard to the proportion which theſe two ingredients ought to bear to one another. Some vary ſo much from the above preſcription, as to order two parts of the antimonial regulus to one of tin; others, no more than one part of the former to ſix of the latter. Nor have they agreed upon the colour which this preparation ought to have; ſome preferring that which is perfectly white; whilſt others look upon a bluiſh tinge as a mark of the proportions having been duly obſerved, and the operation regularly performed: in the proceſs above, it ſeems intended to be white; for without the obſervance of certain encheireſes, not there mentioned, as particularly calcining the powder after the ablution, it will ſcarce have any thing of a bluiſh caſt.

Practical phyſicians do not differ leſs in the accounts which they give of the virtues of this celebrated medicine. Some extol it as an excellent diaphoretic, &c. others are ready to vouch, that it has done moſt eminent ſervice in hectical caſes; whilſt many, of no ſmall note, are not only confident that it has none of the virtues attributed to it, but utterly condemn it as unſafe, and capable of producing the very diſorders ſaid to be remedied by its uſe. This affair probably will not be ſatisfactorily determined, till the virtues of *calx of tin* and *calx of antimony* (which this medicine is a mixture of) ſhall be better aſcertained than they are at preſent. In the mean time, the uſe of the *antihectic* is in common practice laid aſide; and is not likely to be ever introduced again.

BEZOARDICUM JOVIALE.
BEZOAR with TIN.
Edinb.

Take of
Regulus of antimony, three ounces;
Pure tin, two ounces;
Corroſive ſublimate mercury, five ounces.

Melt the regulus of antimony in a crucible, and put to it the tin, ſo as to make a new regulus; to which,

which, after being levigated, add the corrosive sublimate, and distil the mixture in a retort. Let the butter which arises in this process, be fixed by three repeated distillations with thrice its own quantity of spirit of nitre. The powder is then to be calcined; thrown, whilst ignited, into a proper quantity of spirit of wine; and afterwards dried for use.

This preparation is not greatly different from the foregoing. The butter seems to contain more of the tin, than of the antimonial regulus, united with the marine acid of the sublimate: the nitrous spirit expels the marine, and is itself afterwards expelled in the calcination; leaving the powder a mere calx, similar to one prepared from the same ingredients in a less troublesome manner, either by fire alone, or by deflagration with nitre.

ÆTHIOPS ANTIMONIALIS.
ANTIMONIAL ETHIOPS.

Let equal quantities of antimony and sea salt be fluxed together in a crucible for an hour; when grown cold, a regulus, (improperly so called) will be found in the bottom; which is to be separated from the scoriæ that lie above it, and ground with an equal weight of purified quicksilver, until they are united.

This medicine is said to be of remarkable efficacy in venereal cases of long standing, in cancerous tumours, scorbutic and scrophulous disorders, obstinate glandular obstructions, and sundry other chronical distempers which elude the force of the common medicines. A few grains may be given at first; and the dose gradually increased, according to its operation, to a scruple or more. It acts chiefly by promoting perspiration: in some constitutions, it proves purgative; and in others, if the dose is considerable, emetic.

Sundry other preparations of this kind have of late been held by some people in considerable esteem, though not taken notice of by common practice. They have been generally composed of mercury united by triture either with crude antimony, the medicinal regulus, or the golden or precipitated sulphur.