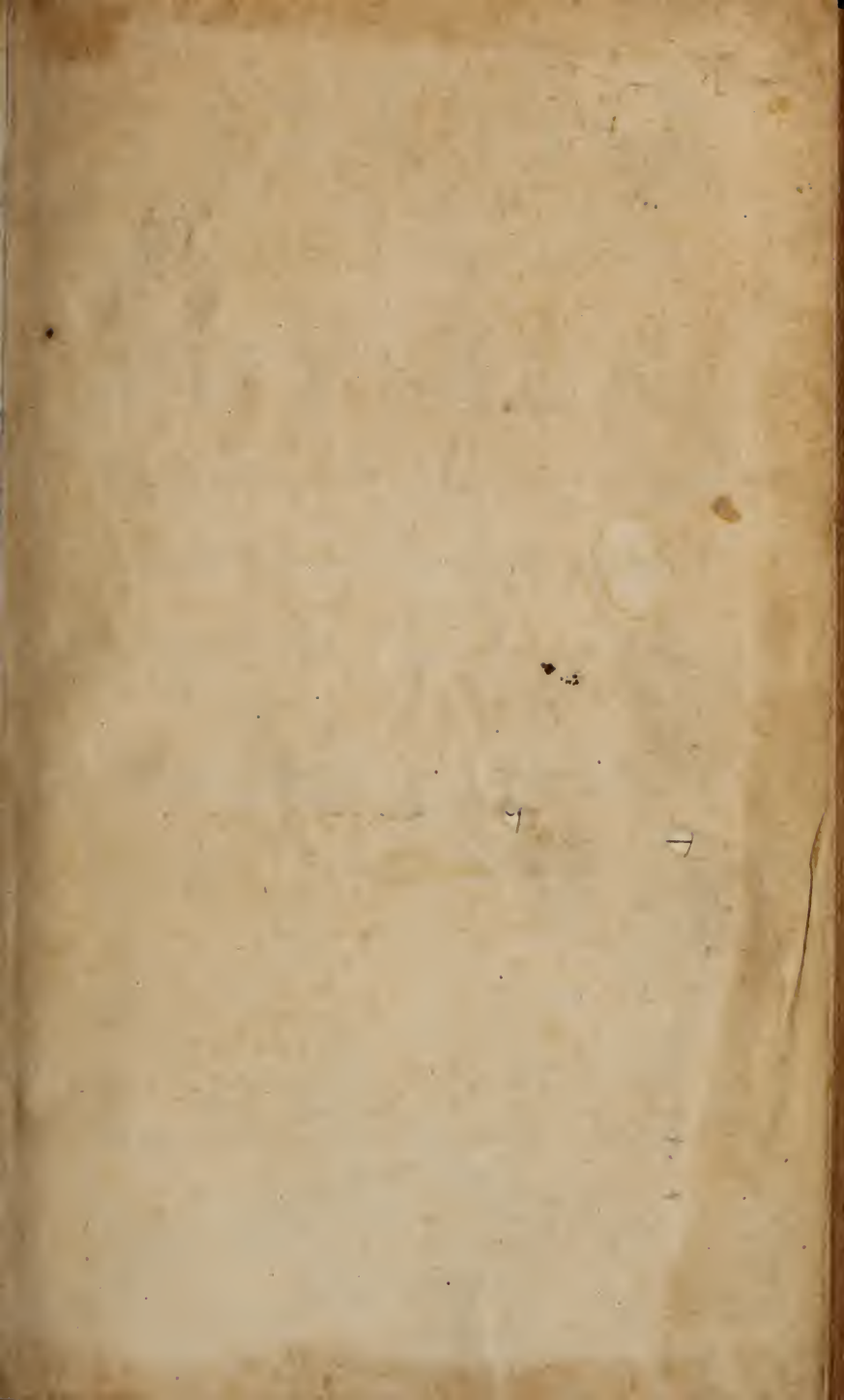




John Cranford,  
M. D.





A  
TREATISE

*John* OF THE *Crawford*  
*Fossil, Vegetable, and Animal Substances,*

That are made Use of in

PHYSICK.

CONTAINING

The HISTORY and DESCRIPTION of them;

WITH AN

Account of their several Virtues and Preparations.

To which is Prefixed,

An ENQUIRY into the constituent  
Principles of MIXED Bodies,

AND

The proper METHODS of Discovering the  
Nature of Medicines.

---

By the late STEPH. FR. GEOFFROY, M. D.

Chemical Professor in the Royal Garden, Mem-  
ber of the Royal Academy of Sciences, and  
Fellow of the Royal Society.

---

*Translated from a MANUSCRIPT COPY of the  
Author's Lectures, read at Paris.*

---

By G. DOUGLAS, M. D.

---

LONDON:

Printed for W. INNES and R. MANBY, the West End of  
St. Paul's; T. WOODWARD, between the two Temple  
Gates, Fleet-street; and C. DAVIS, in Pater-noster Row,

MDCCLXXXVI 13

1624

UNIVERSITY OF MANCHESTER

1871

1872

1873

1874

1875

Crawford



# P R E F A C E .



**B**EFORE the Reader enters upon the following Discourse, it may be requisite to give him some Account of the Author, from whence he may the better be able to judge, how well qualified he was for the Work he has undertook, and how justly it has deserv'd to be made publick.

\* STEPHEN FRANCIS GEOFFROY, Doctor of Physick, was born at *Paris*, on the 13th of *February*, 1672. His Father, *Matthæw Francis Geoffroy*, was a considerable Apothecary, and his Mother the Daughter of a celebrated Chirurgeon; so that he seems to have had a kind of hereditary Title to Skill in his Profession.

IN his Education, his Father spar'd for no Pains or Expence, that could contribute to his Son's Improvement. Whilst he was engaged in the Study of Natural Philosophy, he had regular Conferences held at his House, in which the most eminently Learned in every

\* *Hist. de l'Acad. Royale, &c. An. 1731. p. 93.*

Branch of that Science bore their respective Parts. Thither M. *Cassini* brought his Astronomical Instruments, *F. Sebastien* his Machines, and M. *Joblot* his Magnets; M. *du Verney* was Operator in Anatomy, and M. *Homburg* in Chemistry. And these Conferences were carried on with so much Judgment, and such apparent Usefulness, that they became the Model and Foundation of the several Courses of Experiments, which have since been given in the Colleges of *Paris*. Yet in all these the Father had no other Aim than the Instruction of a Son, whom he designed to bring up to his own Business, and leave behind him a Successor in his Shop. But he knew how large a Share of Knowledge was required to arrive at Perfection in Pharmacy, and was unwilling to omit any Circumstance, that might contribute to make him Master of a Profession, which he had followed with so much Advantage himself, both in point of Pleasure and Profit.

To this Study of Physicks in general, M. *Geoffroy* joined private Courses of Botany, Chemistry, and Anatomy; though these Sciences did not wholly engross his Application. His leisure Hours were usually spent in framing of Optick Glasses, in forming little Machines, or in learning *Italian*, of the famous *Abbé Roselli*, so well known by the Romance of the *Unfortunate Neapolitan*.

IN 1692. his Father sent him to *Montpellier*, to reside with a noted Apothecary there, whose Son he took to *Paris* in Exchange,  
that



that by this means he might become acquainted with the different Methods of Practice, and be able to learn abroad, what perhaps might have escaped his Notice at home. *M. Geoffroy*, whilst in that University, diligently attended upon the Lectures of the most learned Professors in that famous School, and there laid the Foundations of that high Reputation, which he afterwards gained, and was so justly due to his Merit.

BEFORE he returned to *Paris*, he travel'd into the Southern Parts of the Kingdom, visited the Sea Ports, and whatever else stood recommended as an Object deserving his Attention. But his Curiosity had like to have cost him dear; for in 1693. he was blocked up in the Town of *St. Malo*, at the Time it was bombarded by the *English*, and in all Probability would have perish'd in its Ruins, if the terrible Machine, which play'd upon the Town, had not fail'd of its Effect.

IN 1698. Count *Tallard*, being appointed Ambassador Extraordinary into *England*, made choice of *M. Geoffroy*, to attend him in his Embassy, though he had then taken no Degree in Physick; nor was he afraid to entrust the Care of his Health to a Person of his Merit, though at that Time undistinguish'd by any Title. *M. Geoffroy*, who knew the Advantages of travelling, took care to make all possible Improvements, during the Time of his Residence at *London*. He gain'd the Friendship and Acquaintance of most of the learned Men in the Country, and in less than six

Months was admitted a Member of the Royal Society.

FROM thence he pass'd into *Holland*, where he became acquainted with other Men of Learning, made farther Observations, and acquired still greater Improvements. In 1700 he travel'd into *Italy*, in the Company of *Abbe Louvois*, under the Character of his Physician, as himself phras'd it; but in the Language of the *Abbé*, as his Friend.

NATURAL History, and the *Materia Medica*, were the great Objects, which *M. Geoffroy* had always in his Eye; and he was the more oblig'd to turn his Views that way, as it was his Father's Design to leave him in his Business. In 1693 he underwent an Examination for Pharmacy, and pass'd through all the usual Forms upon that Occasion; but his Inclinations lay still towards being a Physician, though he had hitherto been afraid of declaring them. He directed his Studies however in such a manner, as to answer at the same time both his Father's Intentions, and his own; and thus the *Materia Medica* principally engag'd his Application, which a good Apothecary cannot be too well acquainted with, and a Physician does often not know so well, as the Nature of his Profession requires.

BUT at last, when the Time came that he could no longer dissemble, he let his Father into his Purpose, and gain'd his Consent. He had design'd his second Son for a Physician, whom by an easy Exchange he sent into the Shop, instead of his Brother; and he is now become

come one of the Chemists to the *French Academy*.

M. *Geoffroy* took his Degree of Bachelour of Physick, in 1702. His first Act was put off for some time, because M. *Fagon* the King's first Physician, whose Office it was to preside as Professor in that Exercise, which was usually performed by a Deputy, was resolv'd to attend in Person. The Thesis is generally drawn up by the President; but M. *Geoffroy* made his himself, and maintain'd the Affirmative of this Question, that *the Practical Part of Chemistry was a necessary Qualification to a Physician*. His other Exercises were all of his own Composition, and especially those requir'd for his Doctor's Degree, which he took in 1704. They were all upon Subjects of Consequence; and one of them upon the Question, whether *the human Fætus was not a Worm in its first Formation*, so raised the Curiosity of the Ladies, that he was oblig'd to translate it into *French*, in order to let them into the Secret of certain Mysteries, which had before not fallen under their View. All his Theses are said to have been look'd upon, in the Schools of *Paris*, as so many finished Discourses upon select Subjects, and were much better received by Foreigners, than such Performances generally are, which for the most part are more remarkable for their Style than their Matter.

HE did not hastily throw himself into Practice so soon as he was privileg'd to do it, but shut himself up ten Years in his Study,

that he might be sure of having laid up a good Fund of Knowledge, before he enter'd on the Use of it. Physicians have amongst them what they call Good Principles, and for this very Reason because they are good, they are not conformable to the Practice of the Generality of Mankind. *M. Geoffroy's* Brethren allow, that he was Master of them in the most perfect Degree. His calm, circumspect, and it may be somewhat timid Disposition, render'd him very attentive to listen to Nature, not to disturb her with Medicines, under Pretence of assisting her; nor to assist her improperly, or otherwise than as herself required. One particular Circumstance did him an Injury at his first setting out. He was too much concerned for his Patients, and the Sense of their Condition brought upon him an Air of Melancholy, which for a time alarm'd them; till at length, when they had discover'd the Cause of it, they found themselves oblig'd to him for the Expression of so uncommon a Tenderness, and withal so agreeable to Persons in Distress.

As he was persuaded that every sick Man had an equal Share in his Physician, he made no Difference in his Attendance between good Patients and bad ones, betwixt People of Fashion and Persons of a meaner Station. He was not solicitous after the best Business, nor refus'd any that offer'd. From whence it is easy to conclude, that the major Part of his Patients were of an inferior Rank; and the more so, as his first Engagements were ever  
sacred

facred to him, and the most promising Occasions could not prevail upon him, either to break through them, or slightly discharge 'em. Besides this, he was entirely free from all Appearance of Vanity. He was none of those, who take pains to spread abroad their own Reputation, and have the Art of whispering to Fame, what they would have her repeat aloud with all her hundred Mouths. But the Truth took place at last, and M. *Geoffroy's* Merit came well to be known. In Cases of Consequence, the Physicians of best Note always call'd him into Consultation, and from him it was that all others were desirous to learn. *Tully* concludes, that the *Romans* must have been the most valiant People in the World, because though every Nation claim'd to it self the first Rank for Valour, they constantly allow'd the second to the *Romans*.

IN 1709, the King gave him the Place of Physick Professor, in the College Royal, vacant by the Death of M. *de Tournefort*. He undertook to dictate to his Audience the whole History of the *Materia Medica*, upon which he had long before made large Collections; nor have we any thing more curious and compleat, than what he has left us upon this Subject. All that he had dictated, was found amongst his Papers in good Order, after his Decease. And it is from these Lectures that the following Discourse is translated, which we now lay before the Publick.

M. *Fagon*, though he retained the Title of Chemistry Professor in the Royal Garden, had  
the

the Place supplied by a Deputy. *M. de St. Ton*, upon whom he had confer'd this Employment, becoming incapable of performing it, through his many Infirmities, in 1707 *M. Geoffroy* was put into his Place, and acquitted himself so well in it, that in 1712 *M. Fagon* absolutely resign'd the Charge up to him. *M. Fagon*, that *M. Geoffroy* might not want Employment, desired that to his ordinary Lectures of Chemistry he would superadd others on the *Materia Medica*, which would extend the usual Sitting from two to four, and sometimes five Hours. *M. Geoffroy* readily consented, through a Zeal for the Service of the Publick, and without Doubt influenced likewise by a Sentiment of Glory, which has its Effect, as in Reality it ought, upon Minds that are the most remote from Ambition or Vanity. And he had the Pleasure of seeing, that such long Sittings were so far from discouraging his Audience, that they thereby became more diligent and more attentive. Herein, however, he too little consulted the Interest of his own Health, which, as he was naturally of a weak Constitution, was much injured by it.

The Faculty of Physick, who are accusom'd to chuse a President once in two Years, whom they call the Dean, found themselves in such Circumstances in 1726, as made it necessary to make choice of one, who, though worthy of the Employment, might give no Umbrage to their Liberty, and have a greater Regard for the Society, than his own private Advancement. The Election fell upon *M. Geoffroy*.

*froy*. But as all the Members of a Republick are not alike well-affected to the Good of the State, there were certain of them, who opposed his Election under the Pretence of some fancied Irregularity in the Proceeding; and he would have willingly been himself of their Party; but the Election was confirmed by the Judgment of the Court.

Upon the Expiration of the two Years he was to pass in this Office, he was continued in it by the very Votes which had formerly opposed him. There had arose a Dispute between the Physicians and Surgeons, a kind of Civil War, which divided the Members of the said Commonwealth; and this required either Zeal to carry it on, or Temper to put an End to it; or rather, it could not be carried on, as it ought, without an Intermixture both of Temper and Zeal. They did him a singular Honour upon this Occasion. There is usually under the Dean an Officer, nam'd the Censor, who is a kind of Deputy to him. This Title of Censor was suppress'd for the two succeeding Years of *M. Geoffroy's* Presidentship; and he was left at free Liberty to chuse whomsoever he pleas'd to assist him. Though these Testimonies of Esteem, paid him by the Society, were unsought by his own Ambition, yet had he a lively Sense of them, from a Principle of Gratitude, which is the stronger in such Persons as are disengaged from any violent Passion. He gave himself up, without Reserve, to the extraordinary Labours of this last Employment, which, join'd to those

those required by his Profession, and the different Places he held, quite ruin'd his Health, and in the Beginning of the Year 1730, he sunk under the Burden of his Fatigues. He had Courage, however, to put the last hand to a Publick Dispensatory, which the Deans, his Predecessors, had judg'd necessary, but had left unfinish'd.

HE was made a Member of the Royal Academy of Sciences in 1699, and the printed Transactions of that Society shew, that he discharg'd his Duty in that Capacity with no less Faithfulness than in all others, except that in the four last Years of his Life, his Attendance upon the Business of the Faculty was a Dispensation sufficiently excusable. He drew up in 1718 a singular System, with a Table of the Affinities or Relations which different Substances in Chemistry bear to each other. These Affinities gave Offence to some particular People, who were apprehensive they might be only Attractions disguis'd, and so much the more dangerous, as some Persons of eminent Learning had already cloath'd them in seducing Forms; but they soon grew sensible that this was an unnecessary Scruple, and that *M. Geoffroy's* Table might well be admitted; which, if rightly understood, and carried on to the utmost Degree of Exactness, might become a fundamental Law for Chemical Operations, and guide the Operator with Success. He died on the 6th of *January*, 1731.





THE  
CONTENTS.

	Page
<b>T</b> HE INTRODUCTION,	i
CHAP. I. <i>Definition and Division of Medicines</i>	ibid.
CHAP. II. <i>The Principles of Bodies in general</i>	5
CHAP. III. <i>The Principles of Bodies in particular</i>	9
Art. I. <i>Fire</i>	ibid.
Art. II. <i>Water</i>	10
Art. III. <i>Earth</i>	11
Art. IV. <i>Salt</i>	12
Art. V. <i>Oil or Sulphur</i>	16
CHAP. IV. <i>The Mixture of Elements</i>	20
CHAP. V. <i>The Manner of Discovering the Virtues of Medicines</i>	26

PART II.

*The Mineral Kingdom.*

SECT. I. OF WATERS.

CHAP. I. <i>Of the more Simple Waters</i>	42
CHAP. II. <i>Of Mineral Waters</i>	47
Art. I. <i>Of Mineral Waters mixed with Earthy Parts</i>	48
Art. II. <i>Of Waters impregnated with Salts</i>	49
Art. III. <i>Of Sulphurous Waters</i>	52
Art. IV. <i>Of Waters impregnated with Metallick Particles</i>	53
	SECT.

## SECT. II. Of EARTHS.

CHAP. I. <i>Of Clays, properly so called</i>	55
Art. I. <i>Of the Lemnian Earth</i>	56
Art. II. <i>Of the Earth of Malta</i>	59
Art. III. <i>Of German Sealed Earths</i>	ibid.
CHAP. II. <i>Of Marles</i>	60
CHAP. III. <i>Of Boles</i>	61
CHAP. IV. <i>Of Chalks</i>	63

## SECT. III. Of STONES.

CHAP. I. <i>Of the Lime-stone, and Lime</i>	65
CHAP. II. <i>Of Talck</i>	67
CHAP. III. <i>Of the Eagle Stone</i>	68
CHAP. IV. <i>Of the Fossil Bezoardic Stone</i>	69
CHAP. V. <i>Of Figured Stones</i>	70
Art. I. <i>Of the Belemnites, or Lapis Lyncis</i>	ibid.
Art. II. <i>Of the Lapis Judaicus</i>	71
CHAP. VI. <i>Of some Stony Substances</i>	72
Art. I. <i>Of the Glossopetra</i>	ibid.
Art. II. <i>Of the Fossil Unicorn</i>	73
CHAP. VII. <i>Of Opake Precious Stones</i>	74
Art. I. <i>Of the Lapis Lazuli</i>	ibid.
Art. II. <i>Of the Armenian Stone</i>	76
CHAP. VIII. <i>Of Gems, or Pellucid Precious Stones</i>	77
Art. I. <i>Of Crystal</i>	ibid.
Art. II. <i>Of other Transparent Precious Stones that     have been commonly used in Physick</i>	78
Art. III. <i>Of some Gems, never, or very seldom,     used in Physick</i>	82

## SECT. IV. Of SALTS.

CHAP. I. <i>Of Alimentary Salt</i>	84
Art. I. <i>Of Fossil Sal, or Sal Gem</i>	85
Art. II. <i>Of Sea-Salt</i>	86
CHAP. II. <i>Of the Nitre, or Natrum, of the Ancients;     and the modern Nitre, or Salt-Petre</i>	94
CHAP. III. <i>Of Vitriol</i>	107

	Page
CHAP. IV. <i>Of Alum</i>	114
CHAP. V. <i>Of Sal Ammoniac</i>	121
CHAP. VI. <i>Of Chrysocola and Borax</i>	128

SECT. V. *Of BITUMINOUS JUICES.*

CHAP. I. <i>Of Liquid Bitumens</i>	133
Art. I. <i>Of Naphtha, or Petroleum</i>	ibid.
Art. II. <i>Of Pissasphaltum</i>	135
CHAP. II. <i>Of Solid Bitumens</i>	137
Art. I. <i>Of the Bitumen Judaicum</i>	ibid.
Art. II. <i>Of Ambergrease</i>	138
Art. III. <i>Of Amber</i>	142
Art. IV. <i>Of Jet, and Fossil Coal</i>	147
CHAP. III. <i>Of Sulphur</i>	149
CHAP. IV. <i>Of Arsenical Juices</i>	159
Art. I. <i>Of Orpiment</i>	160
Art. II. <i>Of Realgar</i>	163
Art. III. <i>Of Arsenick, properly so called</i>	166

SECT. VI. *Of METALLICK FOSSILS.*

CHAP. I. <i>Of Metallick Fossils, which contain Parts of some true Metal</i>	171
Art. I. <i>Of the Lapis Hæmatitis, or Bloodstone</i>	ibid.
Art. II. <i>Of Smyris, Loadstone, Magnesia, and Petracorium</i>	176
Art. III. <i>Of the Lapis Cadmia, Lapis Calaminaris, Tutty, Pompholyx, and Spodium</i>	179
Art. IV. <i>Of Chalcitis, Misy, Sory and Melanteria</i>	187
CHAP. II. <i>Of Metallick Fossils of a peculiar Nature, called Metals by some</i>	189
Art. I. <i>Of Antimony</i>	ibid.
Art. II. <i>Bismuth</i>	209
Art. III. <i>Zinck</i>	210
Art. IV. <i>Cinnabar and Quicksilver</i>	214

SECT.

	Page
SECT. VII. METALS.	
CHAP. I. <i>Of Imperfect Metals</i>	239
Art. I. <i>Lead</i>	ibid.
Art. II. <i>Tin</i>	249
Art. III. <i>Iron</i>	253
Art. IV. <i>Copper</i>	266
CHAP. II. <i>Of Perfect Metals</i>	272
Art. I. <i>Silver</i>	ibid.
Art. II. <i>Gold</i>	278

## PART III.

*Vegetable Substances.*

SECT. I. ROOTS.	
1. <i>Radix Acori.</i> Acorus Root.	284
2. <i>Anchusa Orientalis.</i> Alkanet of the <i>Levant.</i>	285
3. <i>Beben.</i> Ben.	286
4. <i>Butua, sive Pareira Brava Lusitan.</i> Pareira Brava.	ibid.
5. <i>Contrayerva Officin.</i> <i>Drakena Klus.</i> <i>Contra-</i> <i>yerva.</i>	287
6. <i>Costus sive Costum Offic.</i> Costmary.	288
7. <i>Curcuma &amp; Terra merita Offic.</i> <i>Cyperus Indicus</i> <i>Diascorid.</i> Turmeric.	ibid.
8. <i>Cyperus Offic.</i>	289
9. <i>Cbina Officin.</i> <i>Cbinna vel Schinna Tabernæmont.</i> China Root.	ibid.
10. <i>Galanga Offic.</i> Galangal.	290
11. <i>Hermodactylus Officin.</i> Hermodactyl.	ibid.
12. <i>Jalappa seu Jalapium Offic.</i> <i>Mechoacanna nigra</i> <i>quorund.</i> Jalap.	ibid.
13. <i>Ipecacuanka, Radix Brasiliensis.</i>	291
14. <i>Iris Florentina.</i> Florentine Orice, or Flower-de- Luce.	293
15. <i>Mechoacanna Offic.</i> <i>Rhabarbarum album quorund.</i> Mechoacan.	ibid.
16. <i>Nardus.</i>	

16. <i>Nardus</i> . Spikenard.	Page 294
17. <i>Nisi</i> . <i>Geng-seng Sinenfium</i> . <i>Garen-toguen Hiro-quæorum</i> .	ibid.
18. <i>Pyrethrum Offic.</i> Pellitory of Spain.	295
19. <i>Rhabarbarum seu Rheum Offic.</i> Rhubarb.	296
20. <i>Rhaponticum Offic.</i> True Rhapontick.	297
21. <i>Saleb, vel Serapius Turcar. &amp; Offic.</i>	ibid.
22. <i>Sarsaparilla, Salsa-Parilla, or Zalsa Parilla Officin.</i>	ibid.
23. <i>Sima Ruba</i>	ibid.
24. <i>Serpentaria Virginiana Viperina; Aristolochia seu Piftolechia Virginiana</i> . Snake Root.	298
25. <i>Turpelhum Officin.</i> Turbith.	ibid.
26. <i>Zedoaria Offic.</i> Zedoary.	ibid.
27. <i>Zinziber seu Zingiber Offic.</i> Ginger.	299

SECT. II. BARKS.

1. <i>Cassia Caryophyllata, &amp; Cinnamomum Americanum Officin.</i> Canelle Gerofflée Gallor.	300
2. <i>Cassia Lignea, Cassia Odorata, &amp; Hylocassia Offic.</i> Woody Cassia.	ibid.
3. <i>Cinnamomum Officin.</i> <i>Cassia Zeilanica</i> , C. B. P. Cinnamon.	301
4. <i>Cortex Winteranus, Canella Magellanica, Cinnamomum Magellanicum.</i> Winter's Bark.	303
5. <i>Cortex Ligni Guaiaci.</i> Lignum Vitæ Bark.	ibid.
6. <i>China Chinæ. Kina-Kina. Cortex Peruvianus Offic.</i> The Peruvian, or Jesuit's Bark.	303
7. <i>Kina-Kina Aromatica, Palo de Calenturas, Cascarilla, Cortex Eleterii sive Scacarilla Officin.</i> <i>Cortex Peruvianus griseus sive spurius.</i>	307
8. <i>Costus Caryophyllatus</i>	308
9. <i>Cortex Tamarisci.</i> Tamarisc Bark.	ibid.

SECT. III. WOODS.

1. <i>Agallochum &amp; Xylo-Aloes Officin.</i> <i>Pao Agula.</i> Aloes Wood.	309
2. <i>Acajouanum Lignum</i>	ibid.
b	3. <i>Arundo</i>

	Page
3. <i>Arundo Saccharifera</i> . The Sugar Cane.	310
4. <i>Aspalathum Officin.</i>	ibid.
5. <i>Brasilianum Lignum</i> . Brasil Wood.	ibid.
6. <i>Calamus Aromaticus verus Officin.</i>	ibid.
7. <i>Campechianum Lignum</i> . Log-wood.	ibid.
8. <i>Cedrinum Lignum</i> . Cedar-wood.	ibid.
9. <i>Citridum Lignum</i> . <i>Lignum Jasmini</i> .	311
10. <i>Colubrinum Lignum</i>	ibid.
11. <i>Ebenus Officin.</i> Ebony.	ibid.
12. <i>Fetidum Lignum</i> . <i>Kasulai Malabarorum</i> . Stinking Wood.	312
13. <i>Guajacum Lignum</i> , <i>Lignum Sanctum</i> , <i>Palus Vitæ</i> . <i>Guajacum Wood</i> , or <i>Lignum Vitæ</i> .	ibid.
14. <i>Literatum Lignum</i> . <i>Lignum Sinense</i> . Letter'd Wood.	ibid.
15. <i>Nephriticum Lignum Offic.</i>	ibid.
16. <i>Rhodium Lignum</i> . Rose-Wood.	313
17. <i>San-Lucianum Lignum</i> . <i>Santa Lucia Wood</i> .	ibid.
18. <i>San-Marthanum Lignum</i> .	314
19. <i>Santalum Officin.</i> Saunders.	ibid.
20. <i>Sassafras Offic.</i>	ibid.
21. <i>Sassafras spurium</i> , <i>sive Lignum Anisatum</i> .	315
22. <i>Violaceum Lignum</i> . <i>Lignum Polyxandrinum</i> .	ibid.
23. <i>Xylo-Balsamum</i> .	ibid.

#### SECT. IV. FLOWERS and LEAVES.

1. <i>Alcanna Offic.</i> <i>Kenna Turcar.</i> & <i>Mauror</i> .	316
2. <i>Dictamnus Creticus Offic.</i> Dittany of Crete.	ibid.
3. <i>Carthamus Officin.</i> Bastard Saffron.	ibid.
4. <i>Crocus Officin.</i> Saffron.	317
5. <i>Cassine Vera Floridanorum</i> .	ibid.
6. <i>Folium Indium</i> , <i>Malabatbrum Offic.</i>	318
7. <i>Funcus Odoratus</i> , <i>Scænanthe Offic.</i>	ibid.
8. <i>Senna Offic.</i>	ibid.
9. <i>Thea Sinenfium</i> , <i>Tcha Tsa Japonens.</i> Tea.	319

SECT. V. FRUITS.

1. <i>Acajou Nux</i>	321
2. <i>Anacardium Offic.</i>	ibid.
3. <i>Anomum Racemosum.</i>	322
4. <i>Anisum Sinense, Semen Badian. Fructus</i> <i>latus.</i>	Stel- ibid.
5. <i>Aracus Aromaticus, Vanilla Offic. Vanillio.</i>	323
6. <i>Areca Offic. Fausel Pynang Bontii.</i>	ibid.
7. <i>Baccæ Bermudenses, Pilulæ Saponariæ Anglo-</i> <i>rum.</i>	ibid.
8. <i>Ben sive Glans Unguentaria Offic.</i>	ibid.
9. <i>Becuiba Nux.</i>	324
10. <i>Cacao Officin.</i>	ibid.
11. <i>Coffee Officin. Cabve Tartar.</i>	ibid.
12. <i>Cardamomum Offic.</i>	325
13. <i>Carpobalsamum Offic.</i>	ibid.
14. <i>Caryophylli Aromatici. Cloves.</i>	326
15. <i>Cassia Fistula, seu Solutiva Officin.</i>	ibid.
16. <i>Cocci Orientales, Cocculæ Officinar.</i>	327
17. <i>Colocynthis Officin. Coloquintida.</i>	ibid.
18. <i>Cubebæ Officin. Cubebs.</i>	328
19. <i>Folliculi Sennæ.</i>	ibid.
20. <i>Myrobalani.</i>	ibid.
21. <i>Nux Moschata. Nutmeg.</i>	329
22. <i>Nux Vomica.</i>	ibid.
23. <i>Nux Vomica legitima. Faba Sancti Ignatii. Faba</i> <i>Purgatrix.</i>	330
24. <i>Piper Indicum. Pepper.</i>	ibid.
25. <i>Piper Longum. Macro-Piper. Long Pepper.</i>	331
26. <i>Piper Jamaicense. Jamaica Pepper.</i>	ibid.
27. <i>Piper Æthiopicum Officin. siliquosum, J. B. Ni-</i> <i>grum oblongum, J. B.</i>	ibid.
28. <i>Ricini Americani majoris Grana</i>	ibid.
29. <i>Ricini Americani minoris Grana. Avellana Pur-</i> <i>gatrix Riverii</i>	ibid.
30. <i>Telli Grana, seu Tellina Officin.</i>	332
b 2	31. <i>Ricini</i>

	Page
31. <i>Ricini vulgaris Grana, seu Grana Palmæ Christi, Kiki.</i>	332
32. <i>Staphidis Agriæ Semen. Staves Acre.</i>	ibid.
33. <i>Semen Zina, Semen Sina, Semen sanctum, Semen Zedoariæ, Semen contra vermes, Semen Santonicum, &amp;c. Worm-Seed.</i>	ibid.
34. <i>Tamarindi Offic. Tamarinds.</i>	333

### SECT. VI. JUICES.

CLASS I. <i>Juices extracted from Plants by Art.</i>	334
1. <i>Acacia Vera Officin.</i>	ibid.
2. <i>Hypocistis Officin.</i>	335
3. <i>Glycyrrhizæ succus. Liquorish.</i>	ibid.
4. <i>Alces Officin.</i>	ibid.
5. <i>Opium Officin.</i>	336
6. <i>Saccharum Offic. Sugar.</i>	341
7. <i>Tartarus vel Tartarum Offic. Tartar.</i>	342
8. <i>Heliotropium. Turnsol.</i>	343
9. <i>Indigo.</i>	ibid.
10. <i>Alciot sive Uruba Indorum.</i>	ibid.
11. <i>Amylum Offic. Starch.</i>	344
12. <i>Terra Japonica.</i>	ibid.
13. <i>Sago.</i>	345
14. <i>Cacavi Mnaid. Manibot Thevet. Cassada.</i>	ibid.

### SECT. VI.

CLASS II. <i>Juices which flow from Vegetables naturally.</i>	346
ART. I. <i>Liquid Resinous Juices flowing from the Bark of Trees.</i>	ibid.
1. <i>Balsamum Judaicum, Syriacum, Hieruchuntinum, Constantinopolitanum, e Mecha, &amp;c. Opobalsamum Offic.</i>	ibid.
2. <i>Balsamum Copaiba. Balsam of Capivi.</i>	348
3. <i>Balsamum Peruvianum. Balsam of Peru.</i>	349
4. <i>Balsamum Tolutanum. Balsam of Tobu.</i>	ibid.
5. <i>Liqui-</i>	



	Page
5. <i>Liquidambar</i> Offic.	349
6. <i>Styrax Liquidus</i> . Liquid Storax.	350
7. <i>Terebinthina</i> Offic. Turpentine.	ibid.
8. <i>Balsamum Ipecuebæ</i> .	352
9. <i>Oleum Cacao</i> .	ibid.
10. <i>Oleum Palmeum</i> . Palm Oil.	353
Art. II. <i>Concreted Juices, which distil from Trees,</i> <i>whether Resins, Gums, or Gum-Resins</i>	ibid.
1. <i>Asa foetida, stercus Diaboli, Σιληφίον</i> Græcor. <i>La-</i> <i>ser</i> Latinor.	ibid.
2. <i>Bdellium</i> Offic.	354
3. <i>Benzoinum, Asa Dulcis</i> Offic.	ibid.
4. <i>Camphora, Capbura</i> Officin. Camphire.	355
5. <i>Caranna seu Caragna</i> Officin.	356
6. <i>Copal</i> Officin.	357
7. <i>Gummi Anime</i> Officin.	ibid.
8. <i>Elemi</i> Officin.	ibid.
9. <i>Euphorbium</i> Officin.	ibid.
10. <i>Galbanum</i> Officin.	358
11. <i>Gummi Ammoniacum</i> .	ibid.
12. <i>Gummi Arabicum</i> . Gum Arabick.	ibid.
13. <i>Gummi Nostras</i> . Cherry-tree Gum.	359
14. <i>Gummi Guajaci</i> .	ibid.
15. <i>Gummi Gutta, Cambogium, Gutta Gambe, Gutta</i> <i>Gamandra</i> . Gamboge.	ibid.
16. <i>Gummi Hederæ</i> . Ivy-tree Gum.	ibid.
17. <i>Labdanum seu Ladanum</i> Officin.	360
18. <i>Manna</i> Officin.	ibid.
19. <i>Mastiche</i> Officin. Mastich.	361
20. <i>Myrrha Troglodytica</i> Officin. Myrrhe.	ibid.
21. <i>Olibanum</i> Officin. <i>Thus Mas, Mamma Thuris,</i> <i>Olibanum Mammosum, sive Testiculosum.</i>	362
22. <i>Opoponax</i> Offic.	363
23. <i>Sagapenum</i> Offic.	ibid.
24. <i>Sandaracha</i> Offic. <i>Vernix Arabum.</i>	ibid.
25. <i>Sanguis Draconis</i> Offic. Dragon's Blood.	364
26. <i>Sarcocolla</i> Offic.	ibid.
27. <i>Scam-</i>	

- |  |           |       |
|--|-----------|-------|
| 27. <i>Scammonium, seu Scammonium Officinal.</i> | Scammony. | ibid. |
| 28. <i>Styrax Calamita Offic.</i>                |           | 365   |
| 29. <i>Tacamabaca Offic.</i>                     |           | ibid. |
| 30. <i>Tragacanthum Offic.</i>                   |           | 366   |

SECT. VII. FUNGI and other EXCRESCENCES.

- |   |                 |       |
|---|-----------------|-------|
| 1. <i>Agaricus levis sive fœmina, &amp; Agaricus mas.</i>   | Agarick.        | 367   |
| 2. <i>Auricula Judæ, Fungus Sambucinus.</i>   | Jews-Ear.       | ibid. |
| 3. <i>Tubera Cervina, Boleti Cervini.</i>   |                 | 368   |
| 4. <i>Lycopodii Pulvis, Sulphur vegetabile.</i>   |                 | ibid. |
| 5. <i>Bedeguar Offic.</i>   |                 | ibid. |
| 6. <i>Pocò Sempie, Skinkia Offic. Agnus Scythicus seu Tartaricus, sive Borometz. Muscus Aureus.</i> |                 | ibid. |
| 7. <i>Galla Orientalis Offic.</i>   | Galls.          | 369   |
| 8. <i>Cardui Hæmorrhoidalis Capitula.</i>   |                 | ibid. |
| 9. <i>Grana Kermes Offic. Coccus Infectorius, Grana Tinctoria.</i>                                  | Kermes Berries. | 370   |
| 10. <i>Coccinella Offic. Coccus Indicus Tinctorius.</i>   | Chineseal.      | ibid. |

PART IV.

*The Animal Kingdom.*

- |   |              |       |
|---|--------------|-------|
| 1. <i>Cantharides Offic. Muscæ Hispanicæ.</i>   |              | 371   |
| 2. <i>Scincus Marinus Offic.</i>                | Skink.       | 372   |
| 3. <i>Vipera Offic.</i>                         | The Viper.   | ibid. |
| 4. <i>Castoreum Offic.</i>                      | Castor.      | 373   |
| 5. <i>Moschus Offic.</i>                        | Musk.        | ibid. |
| 6. <i>Zibethum sive Catus Moschatus.</i>        | Civet.       | 374   |
| 7. <i>Vesiculæ Moschatae Orientales.</i>        |              | ibid. |
| 8. <i>Sanguis Hirci Alpini, seu Rupi-Capræ.</i> |              | ibid. |
| 9. <i>Priapus Balæne vel Ceti.</i>              |              | 375   |
| 10. <i>Cornu Cervi Offic.</i>                   | Harts Horn.  | ibid. |
| 11. <i>Ebur Offic.</i>                          | Ivory.       | ibid. |
| 12. <i>Dens Apri.</i>                           | Boars Tooth. | ibid. |

13. *Man-*

	Page
13. <i>Mandibulæ Lucii Piscis.</i> The Jaw Bones of a Pike.	376
14. <i>Cornu Rhinocerotis.</i> Unicorn's Horn.	ibid.
15. <i>Os è Corde Cervi.</i>	377
16. <i>Os Sepiæ.</i> The Bones of the Scuttle-fish.	ibid.
17. <i>Bezoar Orientale &amp; Occidentale Offic.</i>	ibid.
18. <i>Lapis Bezoar factitius, sive Lapis de Goa.</i> Goa Stone.	378
19. <i>Ægagropila Offic. Pilæ Damarum.</i> German Bezoar.	ibid.
20. <i>Hippolithos.</i>	379
21. <i>Calculus Cystidis Felleæ.</i> Gall Stones.	ibid.
22. <i>Margaritæ &amp; Uniones Offic.</i> Pearls.	ibid.
23. <i>Mater Perlarum Offic.</i> Mother of Pearl.	380
24. <i>Oculi sive Lapides Cancrorum Officinal.</i> Crabs Eyes.	ibid.
25. <i>Chelæ Cancrorum Offic.</i> Crabs Claws.	381
26. <i>Lapis Masali.</i> The Stone of the Sea Cow.	ibid.
27. <i>Dentali seu Dentalium Offic.</i>	ibid.
28. <i>Eutali, Eutalium Offic.</i>	ibid.
29. <i>Tubuli Marini, in quibus Vermiculi delitescunt.</i>	382
30. <i>Umbilicus Marinus Belliricus, seu Belliculus Marinus.</i>	ibid.
31. <i>Unguis Odoratus, seu Blatta Byzantina Offic. Onyx Dioscorid.</i>	ibid.
32. <i>Lapis Colubrinus, Pedra de Cobra de Cabelos Lusitanor.</i>	ibid.
33. <i>Folliculi Bombycini.</i> The Cod or Bags of Silkworms.	383
34. <i>Folliculi Araneorum.</i> The Cod or Bags of Spiders.	ibid.
35. <i>Ichthyocolla Offic.</i> Ising-glass.	ibid.
36. <i>Gluten Taminum.</i> Glue.	384
37. <i>Nidi Alcyonum seu Hirundinum.</i> Nests of Indian Swallows.	ibid.
	38. <i>Cera</i>

	Page
38. <i>Cera flava &amp; alba Offic.</i> Wax.	384
39. <i>Gummi Lacca Officin.</i>	385
40. <i>Mumia vera Officin.</i> Mummy.	ibid.
41. <i>Ungula Alcis.</i> Elks Hoof.	386
42. <i>Sperma Ceti Offic.</i>	ibid.





SCHOOL OF MEDICINE

T H E

# INTRODUCTION.

---

C H A P. I.

*Definition and Division of Medicines.*



THE Means used to preserve Health and cure Diseases are of three Kinds; *Diet*, or a proper Regulation of our Way of living; *Surgery*, or the Use of the Hand, either alone, or assisted by Instruments; and *Pharmacy*, which includes the Medicines employ'd for the various Diseases, to which the human Body is subject. As the Knowledge of these three general Branches of the Therapeutick Part of Physick is necessary to all Physicians; so that of Medicines in particular is very difficult to be acquir'd, both on account of their vast Extent, and of the Pains and Labour requisite to discover their Virtues.

By Medicines is meant whatever corrects a depraved or vitiated Condition of the Body; and

B

restores

restores it to a healthful State ; so that they differ both from Aliment, which preserves the Body in a sound State, whereas Medicines restore it when impaired ; and from Poisons, which tend to destroy the Body. All the Parts of Diet may indeed be termed Alimentary Medicines, inasmuch as they may serve to confirm Health on the first Approaches of a Disease ; as Poisons, which are always detrimental to the Body, have been term'd Deleterious Medicines.

Medicines are either Simple or Compound : Simple Medicines are those which are form'd spontaneously, or by the Assistance of Nature alone ; and those are called Compound, which are owing to the Art and Industry of Men, and to the Mixture of various Simples put together. We propose here to treat only of Simple Medicines ; the entire Collection of which is termed the *Materia Medica*.

The principal Differences of Simples, whether foreign or domestick, are taken either from their Form and Texture, or from their Virtues. In respect of their Texture they are divided into Minerals, Vegetables, and Animals ; each of which has been termed a Class, Kingdom, Family, &c.

The Virtue of every Medicine consists, in general, in changing the State of the Solids or Fluids of the Body. The Fluids are either thrown out of the Body or chang'd in it. Evacuating Medicines act by Stool, Vomit, Urine, insensible Perspiration, Sweat, the *Menses*, &c. and from thence are term'd Purgatives, Emeticks, Diureticks, Sudorificks, Diaphoreticks, Emmenagogues, &c. Again some of them have been supposed to evacuate only particular Humours ; and hence has arose the Distinction of Purgative Medicines into *Cholagoga*, *Melanogoga*, *Pblegmagoga*, &c. Alterative Medicines perform their Effects by al-

laying

laying the Heat and Motion of the Fluids, by attenuating them when too gross or viscid, by increasing their Motion when sluggish and languid; &c. and have accordingly been denominated refrigerating, heating, attenuating, &c. Their Virtues have been likewise apply'd either to particular Distempers, or to all the Distempers of some particular Part, and on these Accounts they have been distinguished into Febrifuge, Antipleuritick, Antidysenterick, Traumatick, &c. Cephalick, Ophthalmick, Pectoral, Cordial, Stomachick, Hepatick, Hysterick, &c.

Medicines which act on the Solids are subdivided into Emollients which relax the Fibres, Stypticks which contract, Cathæreticks which corrode, &c. These Differences of Simples, in respect of their Virtues, might be carry'd to an infinite Length; but as those which are founded on their Form and Texture are much more natural and simple, we shall here examine them in that Order, and accordingly divide this Treatise into three Parts; the first concerning Fossile Medicines, or those found in the Bowels of the Earth; such as Minéral Waters, Earths, Stones, Salts, Sulphurs, Bitumens, metallick Concretions, and perfect Metals. The second concerning Vegetable Productions, as Roots, Barks, Woods, Leaves, Buds, Flowers, Fruits, Seeds, liquid and concreted Juices, and all other Things belonging to Plants. The third concerning Animals, as Insects, Fishes, Birds, Men, and the Parts and Excrements of each Kind, so far as they are used in Physick:

To treat of each of these with that Accuracy which the Dignity of the Subject requires, it is not sufficient barely to relate the History and Virtues of each Simple, as handed down to us by Authors; but many other Particulars also must be attentively consider'd.

4 *Of Fossil, Vegetable, and*

In what the Ancients, for Instance, have left us concerning the *Materia Medica*, there is the utmost Confusion and Obscurity; the same Medicines are often called by different Names; some are barely mentioned without any Description; and the Virtues ascribed by them to one Simple have been by later Writers attributed to others. To clear up and determine all these Uncertainties at this Time of Day, would be a Task as difficult as it is useful. In the next Place, so great and so numerous Virtues are ascribed to particular Simples by Authors, that if they could be depended on, each ought to be reckon'd almost an universal Remedy; but as many of these Virtues are merely imaginary, it requires the greatest Caution to distinguish the fictitious from such as truly belong to them. Again, tho' the Knowledge of the *Materia Medica* be now carry'd a very great Length, there are nevertheless many Things still remaining to be discover'd about it, in order to enrich this Science with new specifick Remedies, to determine the Manner in which those Medicines act whose Effects are already known, and to fix upon a more safe Method of administering them. In order to this, I propose, first, to give both the ancient and modern Names of each Medicine; next, to add the Description, History, and Choice of them; then, to set down their chymical Analysis, and an Account of the Parts into which they are resolvable, whereupon their Virtues seem chiefly to depend; and afterwards to explain those Virtues, as they have been either discover'd by long Experience, deliver'd by Authors of Credit, or found out by myself. I shall likewise sometimes enquire into the Manner and Reason of their Action, that I may not appear so far to imitate the Example of Empyricks, as blindly to follow Experience, without any Regard to Reason and Philosophy.



Philosophy. Lastly, I shall carefully enumerate the several Cautions to be used in giving them, the Preparations they require, and in what Cases they may be hurtful. But before I begin, something must be premised concerning the Principles of Bodies, and the Methods of discovering the Virtues of Medicines.

---

## C H A P. II.

*The Principles of Bodies in general.*

**I**T is impossible to discover the Virtues of any Body, or how mix'd Bodies of different Kinds stand related to the human Body, either for the Preservation of its Functions entire, the restoring them when lost or impaired, or for the total Destruction thereof, 'till we know the Principles of which they consist, and likewise the Mixture and Proportion of such Principles in Bodies, to which their Effects are chiefly owing. Wherefore, having discovered by various Ways the Parts into which a true Chymical Analysis resolves Bodies, we must look upon such simple Parts, into which all Mixts are resolvable, and of which they seem to be compounded, as their true and genuine Principles. The Ancients having observed that in analysing all Bodies whatever, they obtain'd a Spirit or Mercury, Sulphur, Salt, Water, and Earth, concluded the Number of Principles to be five.

If Wine, for Instance, be distilled in a proper Alembick, a burning Water or Spirit will first arise, next an insipid Water, which they call Phlegm, a thick viscid Mass alone remaining in

6 *Of Fossil, Vegetable, and*

the Still. This they put into another Vessel, or Retort, which being exposed to a more intense Heat, a small Portion of Phlegm comes over first, then an acid Water, which according to them is still Spirit or *Mercury*, next a fat oily Substance called Sulphur. What remains still in the Retort is burnt to Ashes in an open Fire. These Ashes are thrown into an Earthen Vessel, with a proper Quantity of boiling Water, which they impregnate with Salt. This Water being filtered thro' Cap-Paper, and afterwards evaporated, leaves the Salt at the Bottom. The other Part of the Ashes, which the Water does not take up, is term'd Earth, or *Caput Mortuum*.

Of these five Substances the Chymists have reckon'd two to be passive, Water and Earth; and three active, Spirit, Sulphur, and Salt; and on these last they thought the whole Virtue and Efficacy of the mix'd Body depended. In this Analysis we may observe, that there is a two-fold Spirit; one oily and inflammable, which rises first by a gentle Heat, and is termed Spirit of Wine; another acid and penetrating, like that of Vinegar. Besides these Chymists give the Name of Spirit to other penetrating, volatile, or urinous Liquors, obtain'd from the Parts of Animals, such as the Spirit of Urine, Harts-Horn, Blood, and such like Substances. But the later Chymists have banished these Spirits from the Number of their Principles, as being nothing else than Sulphur, or Salt, dissolved in Water. Thus Spirit of Nitre, and others of that Kind, are only acid Salts in Water; Spirit of Harts-Horn, or Urine, Alkaline Salts; and Spirit of Wine, or of Turpentine, an æthereal attenuated Oil.

Some of the Moderns deny likewise, that either Sulphur or Salt deserve the Name of Principles or Elements, as not being the most simple Substances producible

producibile by Chymistry. For Sulphur, when treated with due Care, may be resolv'd into Salt, Water, and Earth; as is evident by distilling fetid distill'd Oils several Times with quick Lime; which by this Treatment yield, in large Quantities, a volatile Salt dissolv'd in Phlegm, together with a *Caput Mortuum*, or Earth. Likewise æthereal Oils are only fat, thick Oils, like that of Olives, attenuated by Salts and dissolv'd in Water, as may be prov'd by these two Experiments. If Oil of Olives, or any other of that Kind, be mixed with a fermenting Liquor, such as a Solution of Honey in Water, the whole will be converted into an inflammable Spirit. And if a Quart of Spirit of Wine, diluted with six Quarts of common Water, be expos'd in a cold Place to the open Air, the volatile Salts will fly off, and leave Drops of Oil swimming at the Top, which are in every respect the same with Oil of Olives, or Almonds.

Salt has no better Title to a Principle than Sulphur, because it may, by proper Management, be at length reduced to Earth and Water. Thus Nitre by Distillation may be almost wholly reduced to an acid Spirit, but if it be burnt with Tartar or Charcoal Dust, it becomes an Alkaline Salt, call'd Fix'd Nitre. This, if suffer'd to run *per deliquium*, and afterwards filtred through Cap-Paper, will leave a large Quantity of Earth behind; and if the same Liquor be distill'd to Dryness, a large Quantity of insipid Water will come over, and the Salt remaining at the Bottom of the Retort will have lost a great Part of its first Quantity. If this Operation be repeated, nothing will at length remain but Earth. Again, the Vitrification of Alkaline Salts seems to be nothing but the Conversion thereof into Earth, for Glafs has no Qualities different from those of Earth.

What we have proved by Experiments made by resolving Bodies, may be further confirm'd by others relating to the Formation and Composition of 'em, and particularly by *Van Helmont's* famous Experiment on the Willow, which has been often quoted by succeeding Authors. He took about two hundred Pounds of Earth dried in an Oven, and put it into a Vessel, cover'd with an Iron Lid full of Holes. In this Earth he set a Branch of Willow, weighing about five Pounds, which soon took Root, and grew so much, that in eight Years Time it weighed an hundred and sixty Pounds, the Earth it stood in having, during all this Time, lost only a few Ounces, so that the whole Increase of the Tree must have been owing to Rain Water and a very small Proportion of Earth, and the Salts and Sulphur therein must have been compos'd of these two Elements alone. The Experiments of this Kind made by the illustrious Mr. *Boyle* on small Sprigs of Mint, Marjoram, Pennyroyal, Balm, &c. set in Phials fill'd with clear Water, are more to be depended on. They increas'd in a short Time to double their first Weight, and being afterwards distill'd, they yielded the very same Principles, as they would have done, had they grown in the most proper Soil; from whence it is plain, that Salt and Oil owe their Original to Water and Earth.

Water and Earth do, in the strictest Sense, deserve the Name of Principles, but in the Formation of mix'd Bodies, a third Principle must necessarily concur with them; for as they are of themselves wholly unactive, something must be supposed to give them their Motion and Activity. Without this, Water would immediately turn to Ice, and as there are few Bodies, out of which Fire may not be drawn, it is evident that there must be some active moveable Principle in them  
all,

all, to which the Motion of the other Parts is owing. Therefore, though this Principle should not fall under our Senses in the same Manner as the others do, that can be no Reason for doubting of its Existence, since it must concur in the Composition of all Bodies, which, if they were made of Water and Earth alone, would remain for ever without any Virtue or Energy. This they must receive from another Principle, and according to the different Combinations of all the three, Bodies are formed with different Properties and Powers. We acknowledge therefore three simple Substances in Bodies, which are properly Elements or Principles. One active, which may be term'd Fire, and two passive, Water and Earth. From the most simple Union or Connexion of these three Salt arises, which consequently is to be look'd upon as the most simple of all mix'd Bodies. The next to that is Sulphur, or Oil, made by the Union of the three Principles and of Salt.

Thus far concerning the Principles of Bodies in general; we now go on to consider each of them in particular.

---

### C H A P. III.

#### *The Principles of Bodies in particular.*

##### A R T. I. *Fire.*

**W**E reckon Elementary Fire the first Principle of Bodies, as being that from whence all the rest receive their Activity. It is a simple and most subtle Body in a continual swift Motion, filling

filling and easily permeating the Pores of all other Bodies. Its immense Subtlety is evident from this, that it penetrates all Bodies whatsoever; and its swift Motion, from that Rapidity, which it is capable of communicating to them. Its Force is in proportion to the Quantity of it any where collected. In the Sun, which may be look'd upon as a vast Congeries of this Substance, its Motion is most violent. In Culinary Fires the Quantity and Motion of it are not so great, but still greater than in spirituous and volatile Liquors, where it is hardly to be perceived, except when they are set on fire. Not only all Motion, but also Heat, is owing to it, which as it exists in Bodies is nothing but the excessive Motion of their Parts. It is too subtle and active ever to be collected pure in chymical Analyses; where-ever it is found, it is always united with Water and Earth in Salts and Sulphurs; and is sometimes concentr'd in Bodies in so great Quantities, as considerably to increase their Weight, as is evident in calcin'd Antimony, in which there is an Addition made of almost a fifth Part.

#### A R T. II. *Water.*

**E**Lementary Water is a simple, liquid, insipid, inodorous, pellucid Substance. Its Fluidity is owing entirely to the Action of Fire, and when that Action is very great, its Parts are actually divided, and the whole turned to Vapour, but when it is very small, they cohere strongly, and turn to Ice. This Element the Chymists call Phlegm, and it may be conceived to consist of small smooth Particles of an oblong or oval Figure, and perfectly rigid or inflexible. From the Minuteness of its Particles it easily penetrates the Pores of almost all Bodies. An oval Figure  
seems

seems more agreeable to the Fluidity and Motion of Water than a spherical, and likewise to the Solidity we observe in Ice ; the Points of Contact being too few in spherical Bodies to form so strong a Cohesion. Were its Particles angular and flexible, they would be too weak to penetrate and dissolve Salts, and would likewise be too much resisted ; but as their Surface is smooth, they can easily enter the Pores of Salts, and afterwards as easily separate their Parts, that is, dissolve them, by their Rigidity and oval Figure. The want of Taste or Smell in Water seems to be owing to the Smoothness, Obtuseness, and Smallness of its Particles, which cannot vellicate the Nerves of the Tongue or Nostrils. The Fluidity of Water arises from the Smallness, Smoothness, and Figure of its Particles, and from the easy Motion thereof by the Fire contained in their Interstices. Without the Action of Fire separating these Particles and keeping them in continual Motion, their Fluidity would presently be lost, how much soever their Structure may dispose them to it, and they would become one solid Mass. On the other Hand, if the Action of Fire upon them be very great, they are further separated from one another, and fly off in Vapour or Smoak. In fine, Water is transparent, because its Pores are so disposed as readily to transmit the Rays of Light.

### A R T. III. *Earth.*

**E**Lementary Earth is the same with the *Terra Damnata* or *Caput Mortuum* of the Chymists ; being a simple, friable, porous Substance, without Smell or Taste, consisting of Particles of no regular Figure, and altogether unfit for Motion. The Porosity of Earth seems to arise from the irregular Figure of its Particles ; and as these Particles often

times

times touch one another only by their Angles, the whole Mass must necessarily be friable. The Want of Taste and Smell may be owing to their Inaptitude for Motion.

In the Analyses of Bodies the last thing is always this Principle of Earth; and in their Composition it seems to serve as a Basis or Foundation for the other Parts of the Mixture; and to it the Dryness, Solidity, and Hardness of Bodies is in a great Measure to be ascribed.

#### A R T. IV. *Salt.*

**S**ALT, as has been said, is a mix'd Body, but I chuse to say something of it in this Place immediately after the three Principles, because in all the common Analyses of Bodies it is obtain'd entire, and a great deal of Pains and Accuracy is requir'd to decompose it, or reduce it to its Principles. It is also the sole Origin of the Taste, Smell, and many other Properties of Bodies. It may be defined to be a mix'd Body, form'd by the Concretion of Fire, Water, and Earth, into a solid rigid Substance, soluble in Water, and fusible by Fire. As its Particles may be conceived to cohere by large Surfaces only, Salt cannot be friable like Earth, but requires a considerable Force to separate its Parts, which fly off from one another, like those of Glass, with a sensible Noise. It becomes the Cause of Taste and Smell, because its Particles terminate in strong Points, which vellicate the nervous Membranes of the Tongue and Nose.

Salt is of three Kinds, acid, acrid or alkaline, and a third compounded of the other two, called in Latin *Sal salsus*.

Acid Salt is a Congeries of inflexible solid Parts of an oblong Figure, and pointed at both  
Ends.



Ends. That its Particles are rigid and hard appears from the Force, with which it divides and dissolves solid Bodies; and their Sharpness and Pungency are evident from the Effect they have on the Tongue, different from the Corrosion of acrid Salts. Acid Salt is easily dissolv'd by Water, and after this Solution its Particles are equally dispersed through that Fluid, and have the same Motion with it. Hence it appears, that the Particles of both Substances have nearly the same specific Gravity; and likewise, that the Motion of the aqueous Parts is great enough to overcome the Cohesion of the Parts of Salt.

Concerning the Manner, in which the Particles of acid Salt are compounded of Fire, Water, and Earth, nothing can with Certainty be determin'd. It may be conjectur'd, however, that several Particles of Water being collected into one little Mass, are cemented together by some Particles of Fire and Earth, lodg'd in the Interstices left between them; and that all these taken together are disposed in an oval Form, or that of two Cones join'd by their Bases. This Configuration, however, is not the same in all acid Salts; but the Differences may all be reduced to three; the nitrous Acid, the muriatick, and the vitriolick; of all which more hereafter.

The Word *Alkali* is derived from *Kali*, the Arabick Name of a Plant, from the Ashes of which a Salt is obtain'd proper for making Glass; and from thence it came to be used for all Salts got from the Ashes of Plants, and afterwards for all Salts and other Substances whatever, that ferment with Acids.

Acrid or alkaline Salt seems to be a Congeries of spherical Particles, with rough prickly Surfaces, because of their great Disposition to Motion, and their corrosive burning Taste, the Points of  
their

their Surfaces acting on the nervous *Papillæ* of the Tongue, like so many Files, whereas acid Salt is only pungent. But then by these Points a larger Surface is exposed to the Action of Fire than could otherwise be, and thus the Particles of Alkaline Salt are very volatile, or easily raised by a gentle Heat. The Origin of this Salt is probably from a certain Connexion of acid Points and terrestrial Particles, because in many Operations of Chymistry such Salts arise from the Mixture of acid Salts and Earth; as we see particularly in the Preparation of fix'd Nitre, and Fermentation of Urine. Nitre being distill'd leaves a compound fix'd Salt behind, of the same Nature with Sea Salt, out of which, by a nicer Distillation, an acid Liquor may be extracted, without any volatile Salt, or at least but a very small Quantity; but if the same fix'd Salt be previously fermented, and then distilled, it yields a large Quantity of volatile Salt, and very little fix'd Salt or acid; because by Fermentation or Calcination, the acid and terrestrial Particles are intimately mix'd, the acid *Spicula* entering the Pores of the Earth, and so forming new *Moleculæ*, which are dense and close towards the Centre, and prickly on the Surface by the acid Points sticking out. Such are the Particles of volatile Alkali's, of which, if a great Number be join'd together, they must cohere very strongly by Means of their Points, and form *Moleculæ* of irregular Figures, in the Pores of which watery, earthy, sulphureous, or acid Particles may be receiv'd and absorb'd. Hence it is, that acid Salts are seldom pure; and as they are very often fill'd with Particles of Earth, they resist the most violent Degree of Fire, and will sooner melt than be rais'd by it. This is the true Nature of fix'd Alkaline Salt, such as Salt of Tartar, or the Salts got from the Ashes of Plants,

call'd

call'd Lixivial Salts. If they be impregnated with sulphureous Particles, they continue very volatile, and are raised by a small Degree of Fire, as we see in Salt of Urine, Harts-horn, and others got from Animals. Acrid Salts easily melt when exposed to a moist Air, because the Particles of Water contained therein readily enter their Pores. When thus melted, they become properly *Lixivia*, and are commonly termed Oils, as *Ol. Tartari per deliquium*. Volatile alkaline Salts diluted with Water, are called volatile urinous Spirits; such as the volatile Spirit of Urine, of Harts-horn, Blood, and others.

The *Sal Salfus*, or third Kind, is compounded of acid and alkaline *Moleculæ* united together; and the Figure of its Particles is chiefly owing to the Kind of Acid that enters its Composition. The Impression these Particles make on the Tongue is more dull and languid than that made by acid or acrid Parts alone, because the *Moleculæ* form'd by the Union of these are larger in Bulk, and consequently less disposed for Motion; and therefore, tho' there is a greater Quantity of *Aculei*, or Points, in one of these *Moleculæ* than in the former, yet their Bulk makes them less capable of entering the Pores of the Skin, and vellicating the nervous *Papillæ*, than when they are in a disjoin'd State. The Taste of these Salts is term'd saline, and varies according to the Difference of the acid or alkaline Particles which compose them, according to the Thickness of the *Spicula*, their Number, and the other Parts that may be mix'd with them. That this is the true Original of this Kind of Salts is evident, both from the artificial Composition thereof, from acid and acrid Particles blended together, and from the Resolution of them into the same. Thus by pouring Spirit of Nitre, of Sea Salt, or of Vitriol, on Salt of Tartar, new Salts  
are

are produced exactly of the same Appearance with Nitre, Sea Salt, and Vitriol ; and by analysing these three Salts, the essential Salts of Plants, *Sal Ammoniacum*, and others, an acid and alkaline Salt may be obtained, in some fix'd, in others volatile.

A R T. V. *Oil or Sulphur.*

**W**HAT the Chymists call Oil or Sulphur is not a simple Substance, but a Body compounded of Fire, Water, Earth, and Salt ; but we chuse to say something of it here, as it is most commonly separated entire in the Operations of Chymistry, and is with some Difficulty resoluble into its component Principles. It may be defined to be a fluid, viscid, inflammable, transparent Body, without Taste or Smell, (though by mixing it differently with Salts, these sensible Qualities are produced) compounded of Fire, Water, Earth, and Salt ; and it may be conceived to consist of many Flakes, or *Flocculi*, each of which is again made up of very small flexible Filaments, form'd of the four Principles before-mentioned, by Fermentation, as well in the Bowels of the Earth, as in the Bodies of Vegetables and Animals ; thus an aromatick Plant growing in Water, will, by Distillation, yield an Oil, which could never have been obtained from the Water in which it stood ; and all Oils may by Art be resolv'd into Water, Earth, and Salt. From these Filaments variously concreted arise the Flakes already mentioned, which are of different Thicknesses, and in the Pores thereof is lodged the Element of Fire, which also runs in Rivulets thro' their Interstices. Upon these depend the specifick Levity, Inflammability, and Fluidity of Oil ; but as, notwithstanding the intestine Motion  
caused

caused by the Element of Fire, the *Flocculi* still adhere, in some measure, together, this Fluid must be more viscid than any other.

From what has been said concerning the Nature of alkaline Salts, and the Figure and Structure of the oily *Flocculi*, it is easy to conceive why all Alkali's dissolve Sulphurs; for since the alkaline Particles are spherical and prickly, they cannot enter the Interstices of the *Flocculi* without carrying away some of them from the rest, and thus by Degrees throughly dissolving them. But the dense, rigid, and pointed *Moleculæ* of Acids, being forced into these Interstices, increase the Density and strengthen the Texture of the *Flocculi*; and from the Diversity of these and of the acid *Spicula* mix'd with them arise the different Kinds of Sulphurs. Sulphurs form'd in the Earth of Fire, acid Salt, Water, and a very fine Earth are term'd Bitumens. Thus Bitumens dissolved in a large Quantity of Water form the mineral Oils or Petrolea. But if they are mix'd with Earth and Salt, the solid Bitumens are produced, differing from one another in Degrees of Purity, according to the Quantity or Grossness of the Earth, or different Degrees of Mixture. Thus fossil Coals, Jet, Amber, and the common Bitumens, and bituminous Earths are produced. If there be but a small Quantity of Earth and much acid Salt, the common mineral Sulphur, or Brimstone, is form'd. If the mineral original Bitumen is join'd to a fusible Earth, capable of Vitrification, it communicates to it a metallick Form, that is, the Sound, Brightness, Softness, Ductility, Malleability, and all the other sensible Qualities of Metals.

This Origin of mineral Bitumens may be confirmed by many Experiments. If a Mixture of equal Parts of Oil of Vitriol and Oil of Turpen-

tine be digested together for a considerable Time in a very gentle Heat, and afterwards distill'd in a Retort, there will come over first a yellowish Liquor resembling *Petroleum*, both in Smell and Consistence. What remains in the Retort is at first a soft Bitumen, and afterward turns into a hard black Mass, easily inflammable, and, when burnt, smelling exactly like fossil Coal. But if the Distillation be continued, a white acid Liquor will next be obtain'd, which, by standing, lets fall a grey Powder, which is true common Brimstone, a yellow Substance of the like Nature adhering likewise to the Neck of the Retort; what is left behind being a black, shining, light Substance, disposed in thin disgregated Strata, like Talc, in which, by the Help of the Loadstone, Iron may be discover'd. Thus therefore all these Bitumens may be artificially produced; and the Analysis of the natural ones further confirm the Manner of their Formation. Thus the Chymists have shewn, that Metals are nothing but bituminous Substances, which have undergone a long Digestion; for by depriving them of their Sulphur they are reduced to Ashes, and then to Glass. This is easily seen in the imperfect Metals. For if any of them be exposed to a long Heat, and especially to the Rays of the Sun, collected by a large Burning-Glass, the sulphureous Principle flies off, and only a Calx, or Ashes, will be left behind, which, in a more vehement Degree of Fire, are presently vitrify'd; and by restoring the Sulphur this Glass may again be reduced to Metal.

The inflammable Substances in Animals and Vegetables consist of a different Combination of the Principle of Sulphur and acid Salt; for the Oil, or Sulphur, in these is form'd by a small Portion of Earth join'd to the elementary Fire, acid Salt and Water; this Oil, when join'd to an acrid Salt,  
 produces

produces Gums ; when join'd to a fine Acid, and a new Accession of fiery Particles, it produces essential Oils and inflammable Spirits ; but if the Acids are more gross, by Reason of a larger Quantity of Earth join'd to them, it forms Resins, as we learn from the artificial Composition of all these Substances. By mixing Spirit of Wine with volatile Spirit of Urine, we obtain a mucilaginous Concretion, or thin Gum. Oil of Olives and Salt of Tartar, melted together, make a kind of Soap, or thick Gum ; and if Spirit of Wine be digested for a long Time with Oil of Vitriol, and then distill'd, an inflammable Oil is obtain'd, resembling, in Smell and other Qualities, the essential Oils of Plants, a true Resin being left behind in the Retort.

In Animals this same oleaginous Principle forms the Fat, and other glutinous or gelatinous Substances ; these last being compos'd of an acrid volatile Salt and Oil, as appears from their Analysis ; but Fat is made of the same Oil and acid Salt ; for if Oil of Olives and Spirit of Nitre be mix'd together and digested, a Substance will be form'd in every thing resembling the Fat of Animals.

Sulphureous Substances found in Bodies are either fix'd or volatile. The fix'd Sulphurs are either solid, such as Fat, Resin, and the Bitumens ; or fluid, as Oils. Volatile Sulphurs are such as fly off with a small Degree of Fire, and have an Appearance compounded of that of Oil and Water. Such are inflammable Spirits obtain'd from the Flowers and Fruits of Plants.

## C H A P. IV.

*The Mixture of Elements.*

**A**LL Bodies consist of the five Principles mentioned in the last Chapter ; and the Diversity of Bodies arises entirely from the different Combination thereof. These Combinations, or the Mixture of the five Principles, are owing to Motion, and that Motion entirely to the Element of Fire. This Motion is sometimes slow and insensible, as in the Growth and Maturation of Fruits ; more lively and quick, as in the Fermentation of Must ; or very vehement, as in the De-flagration of Bodies. All these Motions go by the general Name of Fermentation, and if they tend to the Destruction or Dissolution of Bodies they are term'd Corruption.

The most simple or least compounded Mixture of Principles is seen in the Formation of Salts, which consist chiefly of Water and Earth ; next, of Sulphur, made up of Water, Earth, and Salt ; then of the acrid Salts, both fix'd and volatile, with the essential Salts of Plants, and sulphureous Bodies, whether solid or liquid. The Manner how these Mixtures are brought about, and the Changes arising from thence, will best be understood by Examples.

The Fruit of the Vine, just beginning to put on the Form of Grapes, is insipid, or at least tastes only like Grass. As it grows, a certain Acidity is discover'd in it, which at first produces an austere Taste, then an acerb one, in which State the Juice is term'd *Omphactum*, which, in Distillation, yields a great Quantity of Water, some acid Liquor, and a small Portion of Oil, a  
large



large Proportion of Earth being left behind. In this Juice therefore the austere and acerb Tastes are owing to the acid Spicula, just breaking out through the earthy Parts, but not wholly disengaged from them. When the Grapes come to be fully ripe, the austere Taste is changed to a sweet one, because the Juice, being more thoroughly penetrated by the Element of Fire, is rarify'd, and put in a more violent Motion, by which the Salts throw off their earthy *Involucra* altogether, and by a new Combination of these Salts, Water, and Earth, are form'd Sulphurs, or Oils. But if any of the acid Salts remain after the Composition of the Sulphurs, they continue still entangled by the Filaments thereof, and their sharp Points vellicating the nervous Papillæ of the Tongue, create that agreeable Taste which is perceiv'd in Must. This Must in Distillation affords a great Quantity of Phlegm, next a pretty large Portion of an acid Water, some acrid or volatile urinous Salt, and a Quantity of thick Oil, much beyond what was gain'd by the former Distillation. Lastly, from the Mass that remains in the Retort, an acrid fix'd Salt may be obtain'd by the common Method. However, even in this Juice of ripe Grapes, or Must, the Salts and Oils are not carried to the greatest Degree of Fineness, and Part of them remain still involv'd in the earthy *Involucra*. But if a large Quantity of it be set to ferment, the igneous Particles begin to act again, and by them this intestine Commotion is continued, 'till all the gross Parts are either attenuated or thrown out from the Liquor, and the Salts and Sulphurs perfectly set free from the earthy Parts, and intimately mix'd with one another. The Liquor in this State is Wine, and the gross Parts that fall to the Bottom of the Vessel are term'd Lees. The Briskness and penetrating Quality of

the Wine seems to be owing to the large Proportion of the Element of Fire, which harbours among the Filaments of the sulphureous *Flocculi*; and if this Liquor be distill'd, we obtain, first, a great Quantity of inflammable Spirit, then a copious Phlegm, next an acid Liquor with some Portion of an oily Spirit, a thick Oil, and lastly, a small Quantity of *Caput Mortuum*, which will yield a little fix'd Salt. In this Distillation a far less Quantity of acid Liquor is obtain'd than from Must, which, on the other Hand, yields no inflammable Spirit. If the Lees of Wine be well dry'd, and then distill'd, they yield a very large Quantity of volatile urinous Salt, the acid Salts combined with the sulphureous and earthy Particles being, by Fermentation and Heat, converted into alkaline Salts.

In the same Manner, if green Pease or Beans be distill'd, they yield a great deal of acid Liquor and Phlegm, with a small Proportion of Oil. If they are first fermented with common Water, an inflammable Spirit is got from them in the same Manner as from Wine; and if they are kept for some Months in a dry Place, they yield a volatile alkaline Spirit, without any acid Liquor, or at least but very little. From whence it is evident, that acid Salt, by its Union with other Principles, is changed into Sulphur, and by its Union with earthy and sulphureous Particles becomes an alkaline volatile Salt; as by being driven into earthy Particles alone, by the Force of Fire in Calcination, it is chang'd into a fix'd Alkali.

It may be proper upon this Occasion to observe, that the Salts of all Plants are not entirely alike, but differ from one another, not only as the Quantity of Sulphur, Water, or Earth, which is join'd to the Acid, is greater or less, but also according to the original Nature of the Acid, which enters  
their

their Composition. Acid Salts, as we have already said, are of three Kinds, muriatick, nitrous, and vitriolick. Muriatick Salts, such as Sea-Salt and *Sal Gemmæ*, being crystalliz'd, put on a cubick Figure, the Particles thereof appearing to be form'd of two quadrilateral Pyramids, join'd together by their Bases. Nitrous Crystals represent Prisms with six Sides, form'd by the Juxta-position of two triangular Pyramids. And Crystals of Vitriol seem to consist of two hexagonal Pyramids, as far as can be judged by the Particles thereof, when carefully separated from all Metals. These original Salts, combined with others, form Compound Salts of almost all Kinds. Thus in the vegetable Kingdom, the different Sorts of Vinegars are nothing but some original acid Salt dissolv'd in Phlegm. The essential Salts of Plants, obtain'd without Fire, consist of some Acid join'd with Particles of Earth, or of the other Principles. Sal Ammoniac arises from the Union of acid and volatile alkaline Salts. Fix'd Alkali's are only the acid Spicula stuck into earthy *Moleculæ*, and volatile Alkali's consist of the same Acid, join'd to very fine Particles of Earth and Sulphur, so as to form prickly Globules. Moreover, the same Varieties of acid Salts are to be met with in Vegetables, that are found in Minerals. Thus the essential Salts of Pellitory of the Wall, Borage, wild Cucumber, &c. are nitrous, and when thrown upon burning Charcoal they fulminate like Nitre. The fix'd Salts of Carduus Benedictus, Glass-wort, and Sponge, are like Sea-Salt, their Particles having the same cubick Figure, and when thrown upon burning Charcoal they decrepitate. The Crystals of Tartar are like those of Vitriol; and that they are form'd by a vitriolick Acid appears from the sulphureous Smell of Tartar, when artfully calcin'd.

Besides the saline Compounds already mentioned, other Mixtures are form'd in Plants, such as Gums, Resins, Honeys, &c. Gums are something between Acid and Oil, being an acid Salt so fix'd in Earth as that the greatest Part of it is changed to an Alkali, the other into Oil, so that the Mixture arising from thence is an oily Salt, resembling the saponaceous Concretes of the Chymists, made of Oil of Olives and a Lixivium of Tartar, or the mucilaginous Bodies form'd of Spirit of Wine and the volatile Spirit of Urine. And thus we see, that all Seeds, which are oily when ripe, are in the Beginning only a Mucilage, or imperfect Oil. Resins consist of Oil and Acid, and accordingly are artificially produced by mixing Spirit of Vitriol with Spirit of Wine, or of Turpentine. They are either solid or liquid, but these differ from one another only in the Proportion of Earth, that enters their Composition. Melleous Juices, which either exude spontaneously from Plants, such as Manna, or are obtain'd by Art, as Sugar, are essential Salts, consisting of a Mixture of Acid and Alkali, with a large Proportion of Oil.

The Mineral Kingdom furnishes us with a great Variety of Instances of the Way how the Principles of Bodies may be combined together. The Lime-stone and Parget are so framed, that by being calcined, a vast Number of Cells are open'd by the Fire, into which Water easily enters, with a Hissing or Collision of the included igneous Particles. If the Water remain long in these little Receptacles, nitrous Parts are form'd, as we see in old Walls built with these Materials, from which Nitre may always be obtained. The greatest Part of this Nitre, by Distillation, is changed into an acid Spirit, but by Calcination turns to an alkaline Salt. And it may be, that the Nitre  
of

of the Ancients, or that alkaline mineral Salt, which was dug out of the Earth in *Ægypt* and other Countries, and is obtainable by Art from mineral Waters, was nothing but Nitre calcin'd by the Heat of the Earth, and so converted into a fix'd alkaline Salt. The vitriolick Acid join'd with different metallick Substances produces all the Kinds of Vitriol; with an astringent Earth it forms Alums; and with the Principle of Fire, common Brimstone, which, by Deflagration, may be again converted into Oil of Vitriol, the other Principle flying off. Brimstone may likewise be artificially produced by uniting the Principle of Fire to any vitriolick Acid.

The like Mixture of the Principles of Bodies may be observed in the Animal Kingdom. Chyle and Milk contain a latent Acid; which easily discovers itself by Putrefaction; but this acid Salt having undergone a due Fermentation, or some other Action analogous to that in the animal Body, is changed into a volatile Alkali, obtainable in great Plenty from Blood, Serum, Bile, Urine, &c. In a healthful Body, however, these volatile Alkali's are never perfectly form'd, the animal Salts being more of the Nature of Sal Ammoniac, with a Mixture of earthy and oily Parts, to which Mixture the glutinous Quality of the Blood and Serum is owing. By Putrefaction or Calcination all Animal Liquors are changed, so as to afford perfect volatile Alkali's, as has been evidently shewn by Experiment.

## C H A P. V.

*The Manner of Discovering the Virtues of Medicines.*

NOTHING is more to be wish'd for than that Physicians could discover the Changes which all natural mix'd Substances are capable of producing in the human Body. This, with a sufficient Share of Discernment how to apply these known Remedies properly, would carry the Practice of Physick to as great a Height as can be desired. But as Observations of this Nature of the Effects of Bodies on one another are still very lame and imperfect, different Methods have been thought of, in some measure, to supply the Want thereof. Some have thought it worth while to frame from the Figure, Colour, or other external Qualities of natural Substances, certain Connexions between their Virtues and some particular Parts or Diseases of the human Body; and on these Principles have form'd Systems of the Medicines proper for the Distempers incident to each Part. Thus they have pretended, that there is a certain Analogy between Nutmeg and the Head, between the Leaves of Asarabacca and the Kidnies, between the Fruit of Anacardium and the Heart, between Leadwort and the Teeth, between the Seeds of the Ash Tree and the Tongue, between the Eagle-Stone and a Fœtus in the Womb, between the *Lapis Variolarum* and Pustules of the Small-Pox, between the Blood Stone and Blood; between Crabs Eyes, the *Lapis Judaicus*, the Lady's Thistle, Teeth of the Bear, Jaws of the Pike or Jack and pleuritick Pains; between the Roots of Figwort, or Knots of the *Carduus Hæmorrhoidalis*, and the

the Hæmorrhoids ; between Rhubarb, or Celandine, and the Bile ; and so of others ; but besides that this Way of discovering the Virtues of natural Substances has been carry'd no great Length, it is in itself altogether absurd, the exterior Appearances of Things serving only to distinguish them from one another, but not to teach us the Effect they will have on any Part of the human Body.

*Galen* and his Followers endeavour'd to deduce the Virtues of Medicines from their internal Qualities, and their Fault lay altogether in this, that instead of the real Properties of Bodies they substituted imaginary ones ; among which are to be reckoned, in many Cases, even their four primary Qualities of hot, cold, moist, and dry, on which all the rest depended. They had no other Way of discovering these in Bodies but by the Taste and Smell, which are far from being sufficient to inform us of all their Qualities, though they be, in some Instances, of very great Use. Thus we justly conclude, that all bitter Plants are good for Digestion ; that all Acids are proper to restrain the violent Motion of the Blood ; and that all Plants of an aromatick Smell are agreeable to the Nerves and animal Spirits. The Taste and Smell of natural Bodies therefore are not to be neglected in searching for their Virtues, but only are to be kept within their due Bounds.

The modern Philosophers, in order to find out the Virtues of Bodies, have taken two different Methods ; the one is to trace them back to their component Principles, and the other to observe their Effects : And both these Ways are still pursued by the Societies of learned Men in *France*, *England*, *Germany*, &c. By chymical Analyses the Principles of some mix'd Bodies have been so far discovered, as that by uniting these Principles  
again,

again, or other Substances like them, they have produced Compounds, exactly corresponding with those from whence the Principles were obtain'd. Thus nothing is more easy than to decompose, and again to form Sea Salt, Nitre, Vitriol, Allum, Brimstone, Bitumens, and many other mineral Substances; and by the Improvements that daily continue to be made in Chymistry, it is to be hoped that the Methods taken by Nature, in the Formation of mix'd Bodies, will at length be brought to Light. The Royal Academy of Sciences have been at an immense Pains in analysing Plants likewise, by distilling them, either fresh or after they have been fermented, but have been able to discover but very little Difference in their Principles. A large Quantity of Phlegm generally came over first, then an acid Spirit, an alkaline or urinous Salt, and lastly, a black foetid Oil. From the Ashes of what remains, is obtain'd a lixivial Salt, such as Salt of Tartar, which runs *per deliquium* in the open moist Air; or a Kind of *Sal Salsus*, as I have already defined it, such as that of the common Wall-flower. Besides these Substances, which are got by Distillation from almost all Plants, there are others obtainable only from some of them. Thus from aromattick Plants, such as Lavender, Thyme, Sage, &c. a subtle, fragrant, essential Oil generally rises first. From a few Plants, such as Ellebore, Elleborastrum, Speedwell, Cresses, and others, a very sharp penetrating Spirit or Oil comes over with the first Degree of Fire, which is likewise obtain'd after the Plants have been fermented, but in a different Order. Sometimes the first Degree of Fire brings over an acid or urinous Spirit, sometimes an inflammable and very volatile Spirit.

These



These are the few Elements, or Principles, obtainable from Plants. We are not, however, to imagine that those which go by the same Name are exactly alike in all Plants. The fix'd Salts, for Instance, got from their Ashes, being originally derived from some Acid, must differ from one another in various Plants, as much as Acids themselves do. For the same Reason the acid Spirits, volatile urinous Salts, and even essential Oil must be different; and accordingly we observe, that the essential Oil of Thyme, digested with Spirit of Sal Ammoniac, gives a violet or purple Tincture, which many other essential Oils will not do. Wherein all these Differences precisely consist has not hitherto been sufficiently clear'd up.

From animal Substances we obtain a large Quantity of volatile urinous Salt, a thick Oil, very little fix'd Salt, and still less acid Salt. The same Substances being boil'd in Water yield a Mucilage, or Jelly, from which, by Distillation, the Principles already mentioned may easily be got.

Though a perfect Knowledge of mix'd Bodies has not hitherto been gain'd by all the Labours which the Learned have undergone in Pursuit of this first Method, yet from the Analysis and Composition of Principles, in Plants especially, some certain Rules may be laid down for investigating their Virtues; but the peculiar or specifick Virtues of some mix'd Bodies have not hitherto been traced, because these, perhaps, depend either on some fine Particles which enter their Composition, and are too volatile to become the Objects of Sense and Experiment, or on the particular Disposition of the Parts of these Bodies hitherto undiscoverable. Upon one of these two Accounts it is, that we do not know whence the  
emetic

emetic Quality in Antimony proceeds, why the Jesuits Bark cures Agues, why Opium is Narcotic, why Cantharides affect the Bladder, why Arsenic is poisonous; but it is not impossible that when a sufficient Number of Observations and Experiments have been made, all these Things may be brought to Light.

This brings us to the second Method used by modern Philosophers, to discover the Qualities and Virtues of most Bodies, that of observing their Effects. To compleat this, a great Length of Time will be required, but I can with Pleasure affirm, that daily Advances are made in it. This Method of Observation consists in mixing the Principles of Bodies obtain'd by chymical Analysis with other Substances already known, that by their Action on these, the Nature of them may be discover'd; and likewise in mixing these Principles, or the Bodies of themselves, from which they were got, with the Blood and other animal Liquors, or injecting them into the Vessels of living Animals, which Practice has afforded some very useful Discoveries.

The Substances, with which the Principles of mix'd Bodies have been mix'd in these Experiments, are chiefly the Tincture of Heliotropium, the Tincture or Syrup of Violets, the Tincture of red Roses, the Tincture of Mallow Flowers, the Solution of corrosive Sublimate, of Salt of Lead, and Salt of Tartar, Lime Water, an Infusion of Galls, the acid Spirits of Sea-Salt, Nitre, and Vitriol, Spirit of Wine, and others. Substances that abound with acid Salts turn the blue Tincture of Heliotropium red, and this Red is of different Degrees of Deepness, from Purple, to the Colour of Bull's Blood, or of Fire, according to the Degrees of Acidity in the Subject. These Substances give likewise a red Colour to the Tincture of  
Violets,

Violets, red Roses, and Mallow Flowers. Bodies which contain an acrid or alkaline Salt turn the Tincture of Violets, Roses, and Mallow Flowers green. If the Alkali be very weak, by mixing it with Spirit of Sea Salt, a few Bubbles will rise; if stronger, the Agitation and Hissing will proportionably increase; and by a very strong Alkali a great Effervescence is immediately produced. A very weak, volatile, urinous Salt will, after some Time, change a Solution of corrosive Sublimate to the Colour of Opal; a stronger Salt of this Kind brings the same Solution to a pale Colour; and a very strong one to that of Milk, and gradually precipitates it: And the Quantity of volatile Salt being increased, this Precipitation will be made suddenly; and when it is very great, the Solution will be coagulated. A fix'd alkaline Salt turns the Solution of Sublimate to a yellowish Colour, and, if weak, precipitates it gradually, but, if stronger, the Precipitation happens immediately, and the Solution acquires an Orange Colour. If there be any Vitriol contained in a mix'd Body, it will turn the Infusion of Galls purple or black. The least Portion of Sea-Salt contained in any Body will make a Solution of Sugar of Lead foul; and whatever contains Sal Ammoniac yields an urinous Smell, with the Solution of Salt of Tartar or with Lime Water. Resinous Bodies give Tinctures to Spirit of Wine, and by mixing these with Water the Resins will fall to the Bottom of the Vessel.

Experiments have likewise been made on the Blood, Serum, Bile, and other animal Fluids, by which it has been found, that some Liquors coagulate the Blood in the Veins, and attenuate that in the Arteries, & *à contra* other Liquors attenuate or coagulate the Blood in both equally; from whence it appears, that there must be some Difference

rence between the arterial Blood and that in the Veins. The Juices of many Plants do not coagulate the Blood in the Arteries; among these are the Napellus, Deadly Nightshade, and other poisonous Plants; Black Ellebore of the purgative Class; Wormwood, Angelica, Masterwort, Arsmart, and others, that may properly be termed salutary. The Juices of almost all Plants change the Colour of the Blood, and a few, as Sage, Mint, Bugle, and Viper-grafs turn it livid. Acid mineral Spirits turn the Blood to a thick black Coagulum, except Spirit of Sulphur, which seems to make very little Alteration either in the Colour or Consistence; and *Borelli* affirms, that he injected a Drachm of this Spirit into the Jugular Vein of a Dog, without any bad Consequence; but if *Aqua Fortis*, or any other mineral acid Spirit, be injected in the same Manner, tho' diluted with Water, the Creature presently falls into Convulsions, and soon expires in great Torture, and on opening the Thorax, the Heart and Vessels are found to be fill'd with grumous Blood. A Solution of Salt of Tartar injected produces the same Convulsions, Tortures, and Death. But here the Blood in the Heart and Vessels is not observed to be altered in its Consistence. By mixing the same Solution, or that of any other fix'd Alkali with Blood, as it runs from a Vein, it seems to become more fluid, but at the Bottom of the Vessel thick turbid Fæces appear, which are likewise observ'd, though in smaller Quantity, when Blood is mix'd with volatile urinous Spirits. Spirit of Wine presently coagulates the Blood very much, and being mix'd with Serum, turns it to the Consistence of the White of a boil'd Egg. All acid Spirits likewise coagulate Serum, but alkaline Spirits do not change it. The yellow Colour of the Bile is by Acids changed to green, by Alkali's to a fainter  
yellow,

yellow, and by Bitters to a deeper yellow. Acid Liquors cause an Effervescence with Bile, but alkaline Liquors do not: Spirit of Wine, and all Acids, thicken it. All acid Spirits change the Colour of Urine: Spirit of Nitre, and the Phlegm of Vitriol, turn it to the Colour of Blood; but Spirit and Oil of Vitriol do not change it so much. Acid Spirits do not make clear Urine turbid, or cause any Precipitation; but when Urine begins of itself to be turbid, they hasten this Change; and for the most part likewise the Separation and Precipitation of its Contents. The same Liquors thicken, for the most part, the Sediment of Urine, and change it to a red Colour: Sometimes, however, the Sediment being formed either spontaneously, or by the Help of Acids, shall, by the Addition thereof, be again dissolved; and afterwards a great Quantity of sandy or gritty Matter, of a reddish Colour, subside to the Bottom of the Vessel. Alkaline Salts turn Urine to a paler Colour, and thin its Sediment, especially volatile Alkali's; by which turbid Urine with a large Sediment, is sometimes rendered perfectly clear, all the Contents disappearing: Acids coagulate Milk, and separate it into Curd and Whey: Alkaline Salts hinder this Coagulation; but if one Part of Milk be digested, in a slow Heat, with two Parts of a Solution of Salt of Tartar, the Mixture will become acid and transparent, and a few thick Clots will fall to the Bottom of the Vessel.

Some farther Observations have been made concerning the Effects of Mixed Bodies thrown into the Bodies of Men, and other Animals; by which some Substances have been found hurtful to the one, and harmless to the other. The same Quantity of corrosive Sublimate, which will only make a Dog vomit, will kill a Man. The *Nux Vomica*, which may, (as is believed) be safely taken by Men, is a Poison to Dogs: And the same may be said of *Cro-*

## 34 Of Fossil, Vegetable, and

*ens Metallorum.* Jalap, which to Men is a very mild Purgative, throws Dogs into Convulsions, and inflames their Stomach. Many Substances are fatal both to Men and Brutes: Of this Sort are the Roots of the *Corona Imperialis*, the Roots and Leaves of Henbane; which, being eaten, raise an intense burning Heat all over the Body, and disturb the Brain: The Fruit of the deadly Nightshade, which brings on a Delirium and Stupor, and sometimes a Sleep that ends in Death. The *Napellus* produces an intolerable Heat in the Throat and Breast, and as great a Cold in the Extremities, till Death relieves the Animal.

Many more Observations of this Kind might be added; but what has been already said, concerning the two Methods followed by modern Philosophers, in investigating the Virtues and Qualities of natural Mixed Bodies, is sufficient to demonstrate the Importance and Advantages of both, and to direct us in continuing the same Enquiries concerning the Effects of all Substances on the Human Body, and the Manner in which they are brought about; as will appear by the few following Examples.

Let us suppose that the Virtues of the common Burdock are to be found out. The first Enquiry is, what the Leaves will afford by Chymical Analysis. From five Pounds of these Leaves, are obtained a Pound and Half of insipid Phlegm, two Pounds of acid Liquor, eight Ounces of an alkaline Urinous Liquor, a Drachm of concremented alkaline Salt, three Ounces of thick Oil, reckoning both what comes over, and what is burnt away by calcining what remains at the Bottom of the Retort; an Ounce of fixed Salt, and the same Quantity of pure Earth. From this Analysis, it is probable that Burdock Leaves, before they are analysed, contain more of a watry Liquor, than of any other Parts; that this Liquor is plentifully stored with a Salt of the Am-  
moniacal

moniacal Kind, composed of the acid and volatile Urinous Parts joined together; that the fixed Salt did not exist in the Plant; but that the essential Salt is, by the Force of Fire, converted into it, in the same Manner as the Tartar of Wine, which is nothing but the earthy Part of that Fluid, overstocked with acid Salt, is, by Calcination, turned to a fixed Alkali. Again; the Leaves of this Plant are of a bitter Taste, and their Juice does not change the Tincture of Heliotropium; which shews that the acid Salt in them is so intimately combined with the alkaline, thick, sulphureous and Earthy Parts, as to have no separate Action in that State. These Leaves, when burnt, flash a little; from whence it may be concluded, that the Salt they contain is of the nitrous Kind. Therefore the chief Virtues of Burdock Leaves are owing to the great quantity of ammoniacal Salt contained therein, mixed with a smaller Proportion of nitrous Salt and Oil; and the Effects, which they are observed to produce, are exactly answerable to this Conjecture about the Composition of them; for they are diuretick, sudorifick, pectoral, anti-hysterick, and proper in Fevers.

In like manner, the Leaves of Agrimony, in the Quantity of five Pounds, being chymically treated, yield four Pounds of an acid and almost austere Liquor, two Ounces of an urinous alkaline Liquor, two Ounces of thick Oil, six Drachms of fixed Salt, and an Ounce of insipid Earth. From this Analysis it appears, that this Plant contains very little Salt of the ammoniacal Kind, since no concrete urinous Salt is got from it; but the acid Salt, wherewith it abounds, joined with Earth, forms a Concrete, resembling Tartar, or Salt of Coral, combined with a large Proportion of Sulphur. Moreover, Agrimony has a saline Taste, a little astringent and acid, and its Juice turns the Tincture of Heliotropium to a faint red; so that its astringent and aperitive Virtues

seem both owing to the same austere Salt ; for, though these Effects are contrary to one another, yet they often flow from one and the same Principle, the strengthening of the weak and lax Fibres of the solid Parts. Experience shews, that Agrimony has the Virtues which are supposed to arise from its Composition ; for it is astringent, detergent, resolvent, vulnerary, and aperient.

The Roots of Bistort and Silverweed are astringent, and stop the Flux of Blood, and, accordingly, are found to contain an aluminous Salt, joined with Sulphur ; for, by Analysis, they yield an acid Phlegm, some Oil, and a little urinous Liquor, a ponderous *Caput Mortuum* remaining ; and, as they are likewise of a styptic Taste, it is probable that the acid Salt and astringent Earth, wherewith they abound, are united in a Concrete of an aluminous Kind, upon which their Effects depend.

After the same manner, from the Analysis of the common Mallow, its Manner of acting may be discovered. From five Pounds of the Leaves and Roots, are obtained four Pounds of Phlegm, two Ounces of urinous Liquor, about Forty-eight Grains of concrete urinous Salt ; four Ounces of Oil, partly fluid, and partly thick ; six Drachms of fixed Salt, and an Ounce of Earth. Whence it appears that this Plant contains an ammoniacal Salt, joined with Earth ; and that the large quantity of Oil is, by its Union with the acid Phlegm, converted into a Mucilage ; which, tho' it be destroyed by the Fire, is, in the Plant itself, the Cause of its emollient and lenient Effects. Oil, long beat up with Water and fine Earth, turns to a Mucilage ; especially if a small quantity of any acid Spirit be thrown into the Mixture. The Juice of this Plant, taken either inwardly or by Clyster, is laxative ; both as it moistens and softens the hard Excrements, and as it relaxes the  
Fibres



Fibres of the Intestines, dried by Heat, and so become too tense and rigid for their natural Actions.

From five Pounds of the Leaves of common Toadflax, we get three Pounds of acid Phlegm, an Ounce of urinous Liquor, nine Ounces of Oil, three Drachms of fixed Salt, and an Ounce and half of Earth. This Plant therefore contains but a very small quantity of ammoniacal Salt, because no concrete urinous Salt followed the second Liquor. Its natural Salt comes nearest to Tartar, or to the *Terra Tartari foliata*. The whole Plant is of a saline herbaceous Taste, neither does its Juice at all change the Colour of the Tincture of Heliotropium. The Leaves being bruised between the Fingers have a disagreeable Smell, something like that of Elder. These Observations, compared with the Analysis of the Plant, shew that it abounds with a fine Oil, resembling the sulphurous Part of Opium; whence it must be anodyne and resolvent, as Experience shews it to be.

Five Pounds of Earth-Worms yield a Pound and half of urinous Phlegm, and the same quantity of urinous Liquor, much more penetrating than the former, five Drachms of concrete urinous Salt, seven Ounces of Oil, a Pound of Earth, and two Drachms of fixed Salt. Hence it is plain that these Animals abound with urinous Salt, involved by Sulphur in a large quantity, and mixed with a very small Proportion of Acid, much after the same manner as Soot. They contain likewise much Water and Earth. If they are kept long enough to putrefy, and be afterwards dried, by being washed with Water, this Mass will yield a Salt that flashes with Charcoal; which shews that the ammoniacal Salt in them resembles that Kind of Sal Ammoniac, which is made with the Acid of Nitre, and an urinous Spirit. It is therefore easy to conceive, that, when externally applied, they have an incisive, emollient, and detergent Vir-

tue; and that, inwardly taken, they are diuretick and aperient.

From what has been hitherto said, concerning the Manner of discovering the Virtues of Medicines, the following Rules, or Axioms, may be laid down.

1. Nothing is of greater Consequence in investigating the Principles by which Mixed Substances act on the Human Body, than the Observation of the Analogy that there is between them and Things commonly known; for it is only by comparing Things unknown with those that are known, that we come to discover their Virtues. Thus, for Instance, it is much more proper to attribute the Effects of Mixed Substances to the Sal Ammoniac, Tartar, Allum, Vitriol, Nitre, Sea-Salt, essential or foetid Oil, contained in them, and such-like; than to have Recourse to Acids and Alkali, Fire, Air, Water, and Earth, which are never obtained pure from any Mixture; or to Heat, Cold, Dryness, and Moisture, by which the Properties of no Body can ever be discovered.

2. All Animal Substances contain a gelatinous Fluid, which is easily extracted from Skins, Flesh, Bones, Horns, &c. by long boiling them in a large quantity of Water. This Juice differs but little from Blood and Lymph, and is chiefly composed of Sea-Salt, Sal Ammoniac, and Oil. If these three Principles are separated by the Force of Fire, or by Fermentation, a large quantity of alkaline urinous Salt, and also of thick Oil, is obtainable; but nothing like an acid Salt discovers itself, except in fresh Urine and Sweat; it being either all changed into an alkaline urinous Salt, by its Combination with Sulphur, or remaining locked up in the other Parts, in Form of fixed Salt, of which a very small Portion is obtainable by Fire. Insects however, such as Worms,  
Ants,

Ants, &c. are to be excepted ; from which a small quantity of nitrous acid Salt may be got by Distillation.

3. It is not to be thought that all acrid urinous Salts are exactly alike : Some of them approach to the Nature of Sea-Salt, as volatile Salt of Urine, as appears by the Taste ; neither is that so caustick as the Salt of Blood. Salt of Hartshorn is formed into little Branches, something resembling Horns ; but Salt of Urine, when crystallized, runs into little Cubes. The same Observation is to be made concerning Oils ; for tho' all animal Oils abound with active Parts, by virtue of which they are successfully applied to strengthen weak and paralytic Joints, to resolve Obstructions in the Nerves, and attenuate the Fluids of the Body ; yet some of them are not only active, but caustick and irritating to a great degree ; such as the Oil of Ants, Cantharides, &c.

4. All Vegetable Substances have an essential Salt, compounded of an acid, an urinous alkaline Salt, Earth, and Oil, as appears by their Analysis.

5. Mixed Substances which yield much acid Phlegm, and Earth, and have not a Styptick Taste, contain a Salt like Tartar, or Cream of Tartar ; and which has the same Virtues with these.

6. If to the Parts just mentioned a Styptick Taste be joined, then the Salt they contain is of the aluminous Kind, and its Virtues the same.

7. Whatever gives a blackish, or purple Colour, to an Infusion of Galls, contains a Salt like Vitriol.

8. Whatever flashes with burning Charcoal, abounds with a nitrous Salt, or something near a-kin to it. Such Plants are Pellitory of the Wall, Marygold, &c.

9. Plants that contain a large quantity of viscid mucous Juice, by which the other Principles are in-

volved, act chiefly by virtue of such Mucilage, much after the manner of Gum Tragacanth.

10. There are some Vegetables whose Action does not so much depend on their essential Salt, as on the fine Oil they contain, which is from thence termed their essential Oil. Whatever Plants have a strong aromattick Smell, abound with this Oil; and they yield it when distilled with a large quantity of Water.

11. Substances that have a disagreeable, foetid Scent, act by virtue of the foetid essential Oil they contain: Such are Rue, Castor, &c.

12. Substances that smell like Opium, are lenient and anodyne.

13. After all the Chymical and Physical Trials which we make, in order to discover the Nature and Action of Mixed Substances, we are not immediately to use them in Physick, till we are sure that no Inconveniency will attend them, either from their being already made use of by Physicians of our own Time, from the Authority of Writers that deserve to be believed, or from frequent Experiments made with them upon other Animals.

14. The Rules already laid down may undoubtedly be of great Use, in discovering the Properties of Mixed Bodies; but there are other Medicines termed Specificks, whose manner of acting on the Human Body cannot be discovered by any Means hitherto known. Most of them have been found out by mere Accident; and more may still be found, by an accurate and unwearied Observation of all that happens to Men or Brutes, both healthful and diseased, from the Use of different Substances, either as Food or Physick. The Necessity and Usefulness of such Observations cannot be too much inculcated on Students in Physick, as being a more sure way to improve and extend that divine Art, than the most  
subtle

subtle abstracted Reasonings of the greatest Theorists that ever lived. The Antifebrile Virtue of the *Peruvian* Bark was discovered by Chance. Some Trees which bear it being blown into a Canal, or Pool of Water, lay there till the Water acquired so bitter a Taste that no Person could drink it; one of the neighbouring Inhabitants, however, being seized with a violent hot Fit of an Ague, and finding nothing else to quench his Thirst, ventured upon a large Draught of this bitter Water, which cured him of his Fever and Thirst at the same time. This being made known by him, for the Benefit of his Neighbours, the same Water was used by many, with equal Success: But the Trees coming at length to rot, the Water lost its bitter Taste, and Virtue likewise; but upon a diligent Search after the Cause of this Bitterness, they at length traced it up to the Bark of these Trees; which has ever since been made use of, as the most certain Remedy for Intermitting Fevers of all Kinds.

---

## P A R T II.

*The Mineral Kingdom.*

## S E C T I.

*Of W A T E R S.*

**T**HE Waters used in Physick are either Simple or Mineral. Simple, or pure Water, is a fluid transparent Body, void of Taste and Smell; but no Water can be found absolutely pure, that is, without any Mixture of earthy, saline, or sulphurous Substances. Those therefore are to be esteemed Simple Waters, in which these heterogeneous Bodies are not in so great quantities as to be obvious to our Senses; and the other Waters, in which these Substances are easily perceivable, are termed Mineral.

## C H A P. I.

*Of the more Simple Waters.*

**T**HE more Simple Waters here meant are those of Springs, Rivers, Wells, Rain, Snow, and Lakes. The best Water is that which is most limpid, thin, and light, altogether without Smell or Taste, which does not lie heavy on the Stomach,  
but

but soon passes; which is soonest hot, and soonest cools again; which soonest boils Flesh and Ligaments, and most readily mixes with Soap. The worst Water for common Drink is that which is muddy, stagnant, or impregnated with any bad Qualities of the Earth through which it passes.

Every body knows how much Water is used, both to extinguish Thirst, and in the Preparation of our Aliments and Medicines. Water is provided by Nature for the common Drink of all Animals, in all Countries; and is undoubtedly more proper than any other Liquor. It assists the Digestion and Distribution of our Food, and the Fluidity, Smoothness, and Sweetness of the Chyle, by preventing Acrimony, or too great Heat. It keeps the Urinary Passages free and open, promotes the due Excretion of the Fœces, and insensible Perspiration. It allays the Heat, dilutes, and facilitates the Motion of the Blood, and all the other animal Fluids. It softens the solid Parts, and renders them flexible when too rigid. On these, and many other Accounts, confirmed by certain Experience, it is advantageous both in Sickness and Health. Sick People ought to drink it warm; and even by those who are well, it should never be drunk excessively cold; such Water being very offensive to the Nerves, creating Stupors, Palsies, and Cholicks, obstructing Digestion, and hindering the Motion of the Blood, and other Fluids. Neither is too large a quantity of warm Water without some Inconveniencies; it relaxes and weakens the Fibres of the Stomach, and, by that Means, carries the Contents thereof into the Intestines, before they are sufficiently concocted.

We must not here omit taking notice, That one Dr. *Hancock*, a Divine of the Church of *England*, has extolled Cold Water as a very great Sudorifick, and a never-failing Remedy in Fevers. He has attempted to prove, by Observations, that both Inter-

mittent

intermittent and Continual Fevers, even those of the Malignant and Putrid Kind, the Small Pox, Measles, &c. may be cured by drinking cold Water in the Beginning of the Distemper, till the Patient sweats plentifully. In Agues, just before the Fit, and in Continual Fevers before the Exacerbation, or at the very first Appearance of the Distemper, he orders Children to drink between six and eight Ounces of very cold Water, and grown People between a Pint and a Quart, in the Space of a Quarter or Half an Hour; the Patient lying in Bed, and being covered no warmer than when in Health. In a very short time after a plentiful Sweat appears, or, at least, an agreeable and salutary Heat is diffused through the whole Body. This first Dose very often carries off the Distemper; but if it does not, it is to be repeated before the Paroxysm or Exacerbation, as before; and the Author declares that he very seldom had Occasion to repeat it above once more. There is likewise a Friar of *Malta*, Disciple to one *Roveda*, a *Spaniard*, that practised Physick at *Naples*, who pretends to cure all Diseases both Acute and Chronical, by the Use of Cold Water alone. He orders his Patient to drink ten or twelve Pints, or more, every twenty-four Hours, and to use a very spare Diet; some of them having lived for twenty, thirty, and even sixty Days, upon nothing but Water; and it must be owned, that many have been cured by this Method. In Dysenteries, Inflammations, and Obstructions of the Viscera of the Abdomen, he sometimes throws in Water by way of Clyster, and with good Success. This Monk differs from Dr. *Hancock* in the Quantity of Water which he prescribes, and in this also, that instead of Sweating, he does what he can to make the Water pass by Urine or Stool; and, to this End, he does not allow his Patients to lie in Bed, but orders them to walk in the open Air. The Systems of these two Doctors seem,



as yet, more to be wondered at, than put in Practice. Time, and farther Experiments, must determine the Merit, and fix the Limits thereof.

Water is likewise outwardly applied in Bathing. A warm Bath, moderately used, is healthful to most People. It deterges and opens the Pores, and, by the Water's insinuating itself into them, the Solids are relaxed and softened, the Fluids diluted and attenuated; and the Circulation and Perspiration promoted. For these Reasons, it is found so beneficial to weary Limbs, and in violent Pains; and it is justly recommended, in Nephritick Complaints, Inflammations, and Obstructions of the Bladder, Kidneys, Intestines, and other Viscera of the Abdomen; and it has likewise been found of Service in some Cutaneous Affections. It must, however, be observed, that the Warm Bath is very prejudicial to some Persons, especially if they have not been accustomed to it; such are those of a Plethorick Habit, or who are full of gross Humours, or subject to Catarrhs; as likewise it is seldom proper in acute Fevers, Deliria, Loosenesses, or Hemorrhages; and is more especially disserviceable to those who labour under a Debility of some Noble Viscus; because the Fluids being attenuated and diluted, may be carried in too great Quantity, or with too great Force, to the affected Part. Lastly, Hypochondriacal Persons seldom find any Advantage from it.

Though the Cold Bath be less agreeable, and much less used, the Use of it ought, by no means, to be rejected; because, if any Credit is to be given, either to the Ancients, or to many of the Moderns, it is a most powerful Remedy in many Cases. It is often recommended by *Hippocrates* himself; and it was a Custom among the *Romans* to go from the Hot Bath into the Cold; and *Galen*, who approves that Practice, says, that by this Means the Limbs and Skin are strengthened, and thereby Health confirmed, such  
Persons

46 *Of Fossil, Vegetable, and*

Persons being least liable to be affected by the Changes of Air or Weather. This Custom is thought to have been introduced by *Antonius Musa*, who having cured the Emperor *Augustus* of a dangerous Catarrh, by the Cold Bath, recommended it afterwards in almost all Diseases; and it was by his Advice that *Horace* left the Hot Baths of *Baiæ*, as being hurtful to his Eyes, and used the Cold Baths of *Clusium* and *Gabii*, as he tells, *Epist.* 15. *Lib.* 1.

— *Nam mihi Baias*

*Musa supervacuas Antonius, & tamen illis  
Me facit invisum, gelida cum perluor unda  
Per medium frigus. —*

In *Pliny's* Time, Cold Bathing was so much the Mode, that even Men of Consular Dignity strove to outvye one another in shaking and trembling in the coldest Water they could meet with; and *Seneca* valued himself on having the Title of *Psuchroluta*, and that he was able to dance in cold Water on the First Day of *January*. In all this there was undoubtedly an Excess. Bathing in moderately cold Water is of use to check the exorbitant Heat of the Fluids, to contract the Pores, to stop too great Perspiration, and to brace the Fibres of the Muscles, and thereby increase their Strength. Some Years ago, the Cold Bath began to be very much used in *England*, in Hectick Fevers, Hemorrhages, Inflammations, Erysipelas, the Gout, Hypochondriack Affections, Barrenness, the Rickets, Convulsive Asthma, and many other nervous Distempers. It is only to be used in the Summer, by Persons of a strong Constitution, and hot Temperament; infirm and aged Persons, and Children, ought to abstain from it, as also they who labour under a Suppression of the Hæmorrhoids, Menfes, or Lochia, who are subject to Cholick Pains, or an Hemiplegy, or who have any Ulcers,  
either

either external or internal. The Cold Bath is thought to be dangerous in the Beginning of Fevers, but in the Declension of them, it is sometimes useful. The Patients are to be prepared for it by Bleeding and Purging, according as their Constitution and the Nature of the Disease require. They go in in the Morning fasting, and having dipped their Heads several Times, they sit up to the Neck in the Water, from two or three Minutes, to half an Hour, according as they are able to bear the Cold. Then their Bodies being wiped very dry, they put on a Flannel Shirt, and go to Sleep in a warm Bed. They continue it for three or four times, or oftner, if it be judged necessary; and during this Course proper Medicines are administred, and a Regimen observed, suitable to the Distemper. But care is to be taken that they never use the cold Bath after excessive Venery, any violent Exercise, Purging, Vomiting, or whatever tends to dissipate the Spirits or natural Heat.

---

## C H A P. H.

*Of Mineral Waters.*

**M**ineral medicated Waters are either Cold or Hot. The first are termed *Acidulæ*, because of the subacid or urinous Taste, which they are all supposed to have when fresh drawn. The other are called *Thermæ*, by which Word the *Greeks* expressed them. The only probable Cause that can be assigned for the Heat of these Waters, is subterraneous Fire warming the Veins and Receptacles where they lie; and accordingly, we find them most frequent near *Vulcano's*, and they all smell of Sulphur or Bitumen, the most inflammable Substances under Ground, and  
which

Persons being least liable to be affected by the Changes of Air or Weather. This Custom is thought to have been introduced by *Antonius Musa*, who having cured the Emperor *Augustus* of a dangerous Catarrh, by the Cold Bath, recommended it afterwards in almost all Diseases; and it was by his Advice that *Horace* left the Hot Baths of *Baiæ*, as being hurtful to his Eyes, and used the Cold Baths of *Clusium* and *Gabii*, as he tells, *Epist.* 15. *Lib.* 1.

— *Nam mihi Baias*

*Musa supervacuas Antonius, & tamen illis  
Me facit incisum, gelida cum perlucor unda  
Per medium frigus.* —

In *Pliny's* Time, Cold Bathing was so much the Mode, that even Men of Consular Dignity strove to outvie one another in shaking and trembling in the coldest Water they could meet with; and *Seneca* valued himself on having the Title of *Pſuchroluta*, and that he was able to dance in cold Water on the First Day of *January*. In all this there was undoubtedly an Excess. Bathing in moderately cold Water is of use to check the exorbitant Heat of the Fluids, to contract the Pores, to stop too great Perspiration, and to brace the Fibres of the Muscles, and thereby increase their Strength. Some Years ago, the Cold Bath began to be very much used in *England*, in Hectick Fevers, Hemorrhages, Inflammations, Erysipelas, the Gout, Hypochondriack Affections, Barrenness, the Rickets, Convulsive Asthma, and many other nervous Distempers. It is only to be used in the Summer, by Persons of a strong Constitution, and hot Temperament; infirm and aged Persons, and Children, ought to abstain from it, as also they who labour under a Suppression of the Hæmorrhoids, Menfes, or Lochia, who are subject to Cholick Pains, or an Hemiplegy, or who have any Ulcers,  
either

either external or internal. The Cold Bath is thought to be dangerous in the Beginning of Fevers, but in the Declension of them, it is sometimes useful. The Patients are to be prepared for it by Bleeding and Purgings, according as their Constitution and the Nature of the Disease require. They go in in the Morning fasting, and having dipped their Heads several Times, they sit up to the Neck in the Water, from two or three Minutes, to half an Hour, according as they are able to bear the Cold. Then their Bodies being wiped very dry, they put on a Flannel Shirt, and go to Sleep in a warm Bed. They continue it for three or four times, or oftner, if it be judged necessary; and during this Course proper Medicines are administered, and a Regimen observed, suitable to the Distemper. But care is to be taken that they never use the cold Bath after excessive Venery, any violent Exercise, Purgings, Vomiting, or whatever tends to dissipate the Spirits or natural Heat.

---

## C H A P. H.

*Of Mineral Waters.*

**M**ineral medicated Waters are either Cold or Hot. The first are termed *Acidulæ*, because of the subacid or urinous Taste, which they are all supposed to have when fresh drawn. The other are called *Thermæ*, by which Word the *Greeks* expressed them. The only probable Cause that can be assigned for the Heat of these Waters, is subterraneous Fire warming the Veins and Receptacles where they lie; and accordingly, we find them most frequent near *Vulcano's*, and they all smell of Sulphur or Bitumen, the most inflammable Substances under Ground, and  
which

which are found in great Plenty in the Fields near such Springs. The Virtues of these Waters do not depend on their being Hot or Cold, but on the different Substances of which they are composed. These may be reduced to four Kinds, Earth, Sulphur, Salt, and Metal; from all of which though Water perhaps is never found entirely free, they will nevertheless serve as general Heads, under which all Mineral Waters may be classed; some one of them being commonly in a much greater Proportion than the rest, and the Virtues of these Waters depending chiefly thereon.

## A R T. I.

*Of Mineral Waters mixed with Earthy Parts.*

**A**Mong the Mineral Waters that abound with Earthy Particles, none is more in Use than the saponaceous Spring of *Plombiere* in *Lorrain*; the Water of which, at its Source, is limpid and warm; hath a greasy, soapy Taste, but withal a little rough upon the Tongue. It contains a fine fat Clay, like Soap, and is mightily cried up in Diseases of the Stomach proceeding from Acidity, in an acid Disposition of the Blood and other Fluids, Spitting of Blood, Hemorrhages, Consumption, convulsive Asthma, Ascites, Diabetes, Fluor Albus, Dysentery, and in all Diseases of the Skin. Externally applied, it deterges and dries up Ulcers; and taken inwardly, it sometimes proves gently Cathartick. It is to be drank in the Morning fasting, from one Pint to Six. For the use of those, who have not the Conveniency of going to *Plombiere*, many artificial Waters of the same Nature may easily be prepared. About three Drachms of the saponaceous Earth, taken up at the Source of this Spring, may be dissolved in good common Water, or in any other that may be thought most proper for the Patient: Or, instead of this  
Earth,

Earth; Terra Sigillata, common Bole, Chalk, Coral, or Crabs-Eyes, reduced to an unpalpable Powder, may be mixed with Water in the same Proportion. But nothing will better supply the Place of these Waters, than the White Drink very much used among the *English*, which is made in this manner: Take of burnt Hartshorn prepared, and fine Crumbs of Bread, of each two Ounces; boil them in three Pints of good Water, to a Pint and an half, and to the strained Decoction, add two Ounces of white Sugar, or of any proper Syrup.

A R T. II. *Of Waters impregnated with Salts.*

OF the Mineral Waters that contain Salts, some are impregnated with a Salt like *Sal Gemmæ*, some with Sea-Salt, and others with a fossile alkaline Salt, like the *Natrum* of the Ancients. Between the first two Kinds there is this Difference, that *Sal Gem* is pure and simple, whereas Sea-Salt is really compounded of *Sal Gem*, a fossile alkaline Salt, and a volatile urinous Salt, arising from putrified Fishes, Plants, &c. with some Portion of Bitumen. To this Mixture is owing the bitter Taste of Sea-Salt, and the agreeable Scent, which it yields, when chymically treated.

The Waters of *La Trauliere* in the *Bourbonois*, and of *St. Pierre* near *Clermont*, are impregnated with *Sal Gem*. Those of the Sea, of *Bourbon Luncie* in *Burgundy*, of *Dancause*, of *Balarruc* in *Languedoc*; of *Bourges*, and some others of less Note, owe their peculiar Virtues to a Mixture of Sea-Salt.

The disagreeable Taste of Sea Water prevents the internal Use of it; but externally it is recommended for the Itch, Scurvy, Ringworm, Elephantiasis, Tumors, and Pains in the Limbs; and it is esteemed a Specifick in the *Hydrôphobia*. In Places remote from the Sea, a strong Solution of Sea-Salt

in Water has been successfully used, as was experienced lately at *Paris*; where a Woman of about twenty Years of Age bit by a mad Dog, was perfectly cured, in one of the great Hospitals, by being frequently dipped in this Solution. The Mineral Waters that contain *Sal Gem* or Sea-salt, taken inwardly, vellicate the Intestines, and thereby are purgative and diuretick: For the same Reason they are astringent and discutient, and are frequently found to be serviceable in Dropsies, and other bad Habits of Body. Externally, they deterge and cleanse putrid Ulcers, and are useful in Catarrhs, Stupors, Spasms, Palsies, and œdematous Tumors.

A fossile alkaline Salt is found in the Waters of *Archimbault* in the *Bourbonois*, those of *St. Reine*, of *Mont d'Or* in *Auvergne*; which last, however, contain but a very small Portion of this Salt. These Waters are generally said to be nitrous; not that they contain a Salt like what we now call Nitre, or Salt-Petre; but a Salt like the Nitre, or *Natrum*, of the Antients, which is of an alkaline Nature, very much resembling Salt of Tartar. For, after the Waters have been evaporated, the Salt that remains at the Bottom of the Vessel, being thrown upon burning Charcoal, does not deflagrate, like Nitre, but like an Alkali, causes an Effervescence when mixed with Acids, turns the Syrup of Violets green, makes the Solution of corrosive Sublimate turbid, and precipitates a yellow Sediment. The Waters that contain much of this Salt are cathartick and diuretick. They likewise attenuate thick viscid Humours, and are proper in Cases of Vomiting, Loss of Appetite, Cholicks, Palsy, Jaundice, and Nephritical Affections. It ought, however, to be observed, that no Mineral Waters are to be prescribed in a Suppression of Urine, except it be known that the Disorder does not proceed from a Stone; for, otherwise, the Obstruction must be increased, to the great Detriment  
of



of the Patient. These Waters are likewise used externally for dissolving Tumours and Schirrhuses, for discussing Obstructions in the Nerves, and for Palsies; and for these Purposes the Patient is ordered either to bathe, or to receive the Water falling from a great Height on the Part affected. By this last Contrivance, the Water penetrates further, the saline Particles dissolve the coagulated Fluids more effectually, and a greater quantity of Spirits rush towards the Part. In all Fevers, and other inflammatory Distempers, the use of these Waters, whether external or internal, is to be avoided; because the saline Spicula will irritate the Parts, and increase the Inflammation.

Artificial saline Waters may be made, which shall be indued with the same Virtues as the Natural ones. Thus, with the *Sal Catharticum Amarum*, or *Sal Mirabile Glauberi*, a Water may be prepared like those impregnated with *Sal Gem* or Sea-salt, which purges gently, without Irritation or Heat; and may therefore be successfully used in Hypochondriacal Affections from a hot Cause, in want of Appetite, *Cholera Morbus*, Cholicks, and in all Distempers that arise from a viscid Lymph, obstructing the Glands, which it both dissolves and evacuates. The best way of making these Waters is this: Dissolve three Pounds of common Sea-salt in clear Water; and, having filtered the Solution through Cap Paper, drop into it highly rectified Oil of Vitriol, till the Effervescence ceases: Then distil the Mixture in a Glass Retort, and calcine the remaining dry Mass over an open Fire in a Crucible, which being afterwards dissolved in warm Water, and filtered as before, the Solution, evaporated to a Pellicle, is to be set to crystallize in a cool Place, and the Crystals taken off from time to time are to be dried in the Shade, and kept for Use. An Ounce, or more, of this Salt, dissolved in a Quart or three Pints of warm

Water, is to be drank fasting in the Morning, in the space of two Hours.

In the same manner may be made artificial Mineral Waters, of the same kind with the alkaline salt Waters, with fixed Nitre, soluble Tartar, the Duke of *Holstein's* Salt, &c. Artificial warm Baths may likewise be prepared with what is called the *Aqua Matris Nitri* (Eau Mere de Nitre) or with Nitre and Tartar calcined in equal Parts. Thus, for the Palsy, Rheumatism, or Sciatica, the following Bath has been found of great Service: Take the Leaves of Mallows, Marsh-Mallows, Chamæmile, Mellilot, Southernwood, Tanfy, and Sage, of each a large Handful; the Roots of white Briony, round Birthwort, and common Flower de Lis, of each four Ounces; Laurel Berries, and Jujubs, of each two Ounces, and a Pound of the *Aq. Matris Nitri*: Boil all these Ingredients in a quantity of Water sufficient for a Bath, which is to be used warm, Morning and Evening, at the greatest Distance from Meals; and while the Patient sits in this Bath, the same Decoction may be pumped upon the affected Parts.

### A R T. III. *Of Sulphurous Waters.*

**S**ulphurous Particles are contained in many Mineral Springs, which may be known by their foetid inodorous Smell, like that of the *Hepar Sulphuris*, and by the Inflammability of the Sediment which is left after the Water is evaporated; for this being thrown upon burning Charcoal, sends out a fine blue Flame, and smells like burning Brimstone. The Waters that abound most with Sulphur, are those of *Bagnole*, near *Argenteuil* in *Normandy*; which, taken inwardly, are celebrated for Diseases of the Breast, Asthmas, Consumptions, Scurvy, Itch, and other Diseases of the Skin. They are used externally for  
the

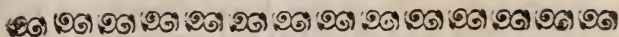
the same Purposes, and especially for the Rickets in Children. Artificial sulphurous Waters are easily prepared by quenching burning Brimstone several times in Water; but the disagreeable Taste thereof makes them unfit for internal Use. Several Preparations of Sulphur make more agreeable Waters; and a warm Bath of this kind, nothing inferior to the natural ones, may be made in the following manner: Take equal Parts of Nitre, crude Tartar, and Sulphur; mix them well, and throw the Powder by Degrees into an ignited Crucible, and when the De-flagration is over, set the remaining Mass in a Cellar, to run *per deliquium*. Two Ounces of this Liquor, well filtered, will serve for a quart of Water.

## A R T. IV.

*Of Waters impregnated with Metallick Particles.*

I Know no Waters in *France* that are impregnated with any other Metal but Iron, viz. Those of *Forge* and *Passy*. The Waters of *Forge* contain a fine ferruginous Earth, with a small Portion of Salt, of the Nature of Sea-salt. In those of *Passy*, besides the same Kind of Earth, is found a Salt, resembling the *Natrum* of the Ancients. Both Waters have a ferruginous, or vitriolick Taste; and, being mixed with the Infusion of Galls, they turn it of a blackish, or dark violet, Colour. The Waters of *Passy* operate by Urine and Stool, and are serviceable in Vomitings, Looseness, Spitting of Blood, a Suppression or immoderate Flux of the Menses, a Diabetes, Obstructions of the Spleen and Liver, Jaundice, Melancholy, and Hypochondriacal Disorders. In scorbutick Habits they open Obstructions of the Kidneys, Bladder, and Uterus; but are very prejudicial in Hectick Fevers. Chemistry furnishes us with several Preparations of Steel, with which these

Waters may be imitated by Art ; such are the Salts and Tinctures of that Metal ; but the natural Water seem to me very much preferable to any that can be artificially prepared ; because the Metallick Particles with which they are stored, are extremely subtle and attenuated ; so that they make no Alteration in the Heat or Transparency of the Water ; and, merely by being exposed to the Air, they lose their Taste and Virtue ; and likewise because they may be drank in much larger Quantities than artificial Waters, whereby the viscid and coagulated Juices are more effectually attenuated, and too tense and rigid Fibres relaxed. For this Reason, the artificial Waters ought to contain a very great Proportion of simple Water ; and where the natural cannot be had, the following seem to be contrived in the best manner possible to supply their Place. Having reduced to Powder equal Parts of Filings of Steel and Tartar, pour upon them as much *French Brandy* as will stand four Fingers breadth above the Surface, and set the whole to digest in the Sun, in a close Vessel, stirring it now and then, till the Mass is dry. This is again to be powdered, and new Brandy put to it, and the whole Operation repeated, till the Steel is perfectly dissolved. Then the Preparation may either be made up in Balls, or kept in Powder ; and a Drachm thereof being infused in eight Ounces of strong Wine for one Night, the Tincture is to be mixed with two quarts of common Water, and the whole to be drank warm, in the space of two or three Hours in the Morning, fasting. A Water of the same Kind may be prepared, by dissolving ten Grains of the Vitriol of Iron in a quart of Water.



## S E C T. II.

## Of E A R T H S.

**W**E here consider Earth, not as a Chemical Principle or Element, but as a fossile mixed Body. Earths may in general be distinguished into Clays and Sands. Clays consist of very fine Parts; and, being gradually wetted with Water, become first glutinous, and then turn to Mud. Being mixed with a great quantity of Water, they are a long time in subsiding; and, when dried, they become very hard. Sandy Earths are a Congeries of Particles of different Sizes, Figures, and Colours. They never become viscid by being mixed with Water, but immediately subside. Common Earth is compounded of both these Kinds. The Medicinal Clays are of four Sorts; *Argillæ*, or Clays, properly so called, Boles, Marls, and Chalks; of each of which in order.

## C H A P. I.

*Of Clays, properly so called.*

**C**LAY, as here understood, is a ponderous Earth, dense, fat, viscid, and slippery. Being held for some time in the Mouth, it makes an Impression on the Tongue, something between that of Soap and Fat. When fresh dug, it may be moulded into any Figure, like soft Wax; and, by Fire, it may be made as hard as a Stone. The Species of Clay are almost innumerable; some are white, re-

sembling Suet, such as that saponaceous Earth with which the Waters of *Plombiere* in *Lorraine* are impregnated; some are variegated, like the different Kinds of *Porphyry* and *Marble*, as certain Earths found in *Bohemia*: Others are of an Ash Colour, Red, Black, &c. The Clays used in Physick are, the *Lemnian Earth*, the Earth of *Malta*, and several other sealed Earths from *Germany*.

A R T. I. Of the Lemnian Earth.

*Terra Lemnia Dioscoridis,*  
*Σοεγγίς ἀγρῆς, seu sigillum Capræ veterum,* } Officin.  
*Terra sigillata vera seu Turcica,*

THE *Lemnian Earth* is a fat, viscid, slippery Clay, of a pale Red Colour. It is brought to us in little Cakes, or Troches, marked with different Characters, each weighing about four Drachms. It has its Name from the Island of *Lemnos*, where it is dug; and it is not a little surprising to find how much this Earth has been celebrated in all Ages. Even in the Time of *Homer* and *Herodotus*, a great many very solemn Rites were observed in digging it. In *Dioscorides's* Days, it was made up with the Blood of a She-Goat, newly killed, and the Priests of *Venus* stamped it with proper Images; and from thence it was called *Sigillum Capræ*. In *Galen's* Time the Goat's Blood was omitted, but many other superstitious Ceremonies still remained; which, when *Petrus Bellonius* was at *Lemnos*, were laid aside, and others substituted in their place. It is dug, says that Author, only on the *Sixth Day of August*; as much being then taken out, as is supposed to be sufficient for a whole Year. When the Vein is opened, the *Greek* Priests rehearse some Forms of Prayer, at which all the considerable Inhabitants of the Island, both *Greeks* and *Turks*, are present. The Vein being afterwards

afterwards closed, and covered with common Earth, the Inhabitants are forbid, under the severest Penalties, to open it any more during that Year. The greatest Part of this Earth is sent to *Constantinople*, to the *Grand Sultan*, with whose Seal it is marked; the rest is sold to Merchants, by the Governor of the Island, sometimes with, and sometimes without, his Seal upon it. *Bellonius* remarks, that at *Constantinople* they have the Art of counterfeiting it so dexterously, that the false Earth can hardly be distinguished from the true. That *Lemnian* Earth is reckoned the best, which, when bruised between the Fingers, or held in the Mouth, appears most like Fat, and contains least Sand. The Antients have said much about the Virtues of this Earth; but there is some room to think that the Reputation it had among them, was more owing to the superstitious Ceremonies observed about it, than to its intrinsic Qualities. *Dioscorides* commends it as an Antidote against Poisons, and Dysenteries: *Galen* says, that when outwardly applied, it heals all fresh Wounds; and *Fernelius* is of opinion that, whether applied outwardly or inwardly, it stops all Fluxes of Blood. Some have celebrated its alexipharmick Qualities in all pestilential and contagious Distempers; but many of the Moderns think it to be a mere alkaline Earth, endued with no other Quality but that of absorbing Acids. This, however, must be a Mistake; because no Earths of this Kind raise an Effervescence with Acids; and it appears, by its Analysis, not to be altogether destitute of the Virtues attributed to it by the Antients. It yields a small quantity of volatile urinous Salt, of a bituminous Oil, and of a Salt not much different from Sea-salt; whence we may conclude that this Earth is impregnated with a kind of Sal Ammoniack, mixed with a bituminous Oil, by which the Action of Acids upon it is prevented; and that its Virtues must be in some degree alexi.

alexipharmick, diaphoretick, detergent, and vulnerary. This sealed Earth needs no other Preparation than to be finely powdered, or dissolved in a proper Liquor. In Dysenteries, Ulcers of the Intestines, and Hæmorrhages, it may be administered in Draughts or Bolus's, in the following manner :

*Take of Lemnian Earth, finely powdered, one Drachm ; of Syrup of Quinces an Ounce ; Plantain Water, and Knot-Grass Water, of each three Ounces : Mix them into a Potion, to be taken by Spoonfuls.*

*Take Lemnian Earth, Conserve of Red Roses, and of Hips, of each half an Ounce ; of Syrup of Barberries a sufficient quantity to make them into a soft Electuary ; of which the quantity of one Drachm is to be taken Morning and Evening.*

*Take of Lemnian Earth half a Drachm ; Syrup of Clove-guliflowers an Ounce ; the simple Waters of Balm, Viper-grass, and Blessed Thistle, of each two Ounces ; of Treacle-water six Drachms : Mix and make them into a Potion ; to be taken by Spoonfuls, several times in the Day.*

In external Applications, this Earth is often joined with Bole, as we shall see in the proper Place.

The *Lemnian Earth* is used in *Venice Treacle*, in the Confection of *Hyacinth*, in *Renodæus's Bezoardic Powder*, in *Hoffman's Orvietan*, in the *Antivenereal Pills of Cbaras's Pharmacopœia Regia*, in that Author's *Plaster for fractured Bones, &c.*

The Inconveniencies that may arise from using this Earth too long, or in too great Quantities, are common to it with all the other absorbent Earths. They load the Stomach, by adhering closely to, or plastering



ftering its inner Surface, which causes a very disagreeable Sensation ; and, by shutting the Orifices of the Glands of the Stomach and Intestines, they hinder Digestion, and may occasion the Fluids that ought to be excreted there, to be carried to other Parts of the Body ; from both which Causes many Disorders may follow. The way to prevent Accidents of these kinds is to give these Absorbents in small Quantities, diluted with much Liquor, and diligently to observe the Effects they produce.

A R T. II. *Of the Earth of Malta.*

*Terra Sigillata Alba,* }  
*Terra Sancti Pauli,* } Officin.

**T**HIS Earth, denominated from the Island where it is found, is of a whitish ash-colour ; it is dug out of a Cave near the ancient City of *Malta*, and made up in Tablets, with various Figures marked upon them. It is celebrated for its alexipharmick Qualities in the Small-pox, Measles, and putrid Fevers ; but, above all, it is thought to be an Antidote against the Poison of Vipers and Scorpions ; which Virtue, they say, was given to it by *St. Paul*, when he was shipwrecked on the Island of *Malta*. Vessels are made of it, which are supposed to communicate its cordial Efficacy to the Wine or Water, which is poured into them. It is, however, very rarely used in Physick.

A R T. III. *Of German Sealed Earths.*

**I**N the *German* Shops, some other sealed Earths are to be met with ; of which the *Terra Strigoniensis*, and *Lignitzensis*, are the chief. The former, termed by the *German* Writers *Axungia* and *Medulla Solis*, is of a yellow Colour, fat like Soap, and

and melts in Water, or when held in the Mouth. It is dug in the Clefs of hard Rocks, in the Hill of *St. George*, among the Gold Mines near *Strigonium*, in *Hungary*. The Magistrates take a great deal of care that it be duly prepared; and, being formed into little Balls, it is marked with the Seal of the Town, and is believed to be impregnated with the Sulphur of Gold. The *Terra Lignitzensis*, or *Goldabengensis*, called *Axungia* and *Medulla Lunæ*, is of a whitish ash-colour, and imagined to arise from Silver. Both these Earths are said to be useful in Malignant Fevers, the Plague, Dysentery, Diarrhæa, and the Bites of venomous Animals. They operate by Sweat; and the Dose is between half a Drachm and two Drachms.

---

## C H A P. II.

*Of* M A R L E S.

**M**A R L E is a light, friable Substance, of a middle Nature between Clay and Chalk; being neither so fat as Clay, nor so dense as Chalk; it sticks to the Tongue, and is of various Colours. Of the different Kinds of Marle, only two are used in Physick. The first is termed *Marga Alba, officin.* and *Medulla saxorum*; because it is found in the Clefs of Rocks in *Bohemia*, and in the Cavities of some flint Stones (called from thence *Geodes*) as Marrow in Bones.

The other Marle, called *Agaricus mineralis Ferdinandi Imperatoris*, and *Lac Lunæ Gesneri*, is a light friable, fungous, white, insipid Earth, very much resembling the common Agaric. It easily dissolves in Water, and turns it white. It is believed to have a refrigerating and astringent Quality, and to increase the Milk of Nurfes; being taken in the quantity  
of

of one Drachm, either dissolved in Broth, or made up in an Emulsion. Some commend it as an Anodyne, and use it for a Tenesmus and Dysentery ; and, externally, for drying Ulcers.

---

## C H A P. III.

## Of B O L E S.

**B**OLE is a ponderous Earth, more fat than Marle, but less so than Clay, styptic on the Tongue, staining the Fingers, and of different Colours ; some being of a deep saffron Colour, some yellow, and others white. There are but two Sorts of Bole used in the Shops, the *Armenian* and *Common*. The first, called *Bolus Armena vera officinarum*, is a ponderous, fat, brittle Earth, of an astringent Taste, of a Colour between Red and Yellow. It is found in *Armenia*, but very little of it comes to us. It is not certain, whether that mentioned by *Galen* be the same with that of the *Arabian*, and latter *Greek* Writers ; for the first was pale, and the other is of a saffron Colour. It is possible, however, that the same Vein may afford Boles of different Colours, as we see in the common Sort, which is found in the same Spot of Earth, sometimes white, sometimes yellow, and sometimes red. The best *Armenian* Bole is that which is most easily reduced to a fine Powder in a Mortar, or dissolved in any Liquor ; which is without Grit, and when held in the Mouth, seems to melt like Butter, leaving an astringent Taste on the Tongue. It is commended by *Galen* in Dysenteries, and other Fluxes, in Spitting of Blood and Catarrhs, especially those in which a thin Matter falls into the Thorax, and in Ulcers of the Lungs. The same Author affirms, that in a great  
Plague,

Plague, all who used this Medicine were cured. Outwardly applied, it is drying and astringent, and is therefore proper to stop a Flux of Blood from fresh Wounds.

The common Bole is a ponderous brittle Earth, of a Colour between Yellow and Red, of an astringent Taste, and is found in many Parts of *France*. It has the same Virtues with the former, and is to be met with in all Shops. As both these Boles are frequently mixed with Sand and Grit, the Apothecaries prepare them in the following manner :

*They dissolve them in Water ; and, after the Sand alone has subsided, they pour the turbid Solution into another Vessel, where it remains till the Water is clear ; being poured off, the Sediment is dried in little Cakes, and kept for Use.*

They may be prescribed to be taken inwardly, either alone, or mixed with sealed Earth, in this manner :

*Take prepared or washed Armenian Bole, sealed Earth, and Venice Treacle, of each half a Drachm ; of Syrup of dried Roses, an Ounce ; of Plantane Water, six Ounces ; mix and make them into a Julep : To be taken by Spoonfuls, in Loosenesses, &c.*

*Take prepared Armenian Bole, Dragon's Blood, and Mastich, of each a Scruple ; of Roch Alum, fifteen Grains ; of Syrup of Comfrey, a sufficient quantity to make them into a Bolus. This Bolus is to be repeated every four Hours, till the Flux is stopped ; together with a Draught of the Decoction of the Greater Comfrey Roots.*

In Wounds and Contusions, these Boles, and the Sealed Earth, may be used thus :

*Take of washed Armenian Bole, a sufficient quantity ; beat it up with the White of an Egg and Rose-Water into the Consistence of a Cataplasm, to be spread upon Linnen Cloth, and applied to the Part affected, and keep it on by Bandages dipped in Oxycrate.*

*Take of Armenian Bole, Sealed Earth, and Dragon's Blood, of each two Drachms ; Aloes, Myrrh, and Colcathar, of each one Drachm : Mix them into a Powder, to be applied to the Part from which the Blood flows.*

These Boles are used in several officinal Compositions, in the Confection of Hyacinth, Fracostorius's Confection, Gordonius's Troches, the Bezoardic Powder of *Renodæus*, the Ceratum Santalinum, and Plaister for Fractures, in the *Pharmacopœia Regia* of *Charas*.

#### C H A P. IV.

#### Of C H A L K S.

**C**HALK is a dense, brittle, earthy Substance, which readily stains the Fingers, and sticks to the Tongue, without any Astringency. Different Kinds of Earth come under the Denomination of Chalk ; among which those used in Physick are the White Chalk, and Red Oker.

White Chalk, or *Terra Cretica*, is so called from the Island of *Crete*, where the best sort was formerly found ; but we now meet with it in many other Countries.

tries. It raises an Effervescence with acid Liquors; and is therefore deservedly looked upon as an Alcaline, or Absorbent Earth. It is used with Success to allay the too great Acidity of the Juices of the Stomach; particularly in the Disease commonly known by the Name of the *Heart-Burn*; and also in Coughs, that arise from a sharp Phlegm. It is likewise serviceable in Hæmorrhages, and is said to kill Worms. In a Word, the Property of all alkaline Earths is not only to absorb Acids, but to allay the Acrimony of the Fluids, and especially to restrain the violent Motion of the Bile, by detaining the Salts and Sulphurs thereof in their fixed Parts. White Chalk is given alone, from ten Grains to a Drachm: It is likewise used in the *Decoctionum Cretaceum* of *Bates*, which is thus prepared:

*Boil half a Pound of powdered Chalk in three Pints of Water to a Quart; and, when the thicker Parts have subsided, pour off the clear milky Liquor, and add to it a proper quantity of Sugar of Roses, or of any other proper Syrup.*

An Emulsion may likewise be made of this Decoction, by pouring it, by degrees, on two Drachms of each of the four Greater Cold Seeds, bruised in a Mortar; and then adding to the strained Liquor two Drachms of Chalk finely powdered, and five Ounces of the Syrup of Colt's Foot, Comfrey, or any other suitable to the Intention. The Patient is to drink plentifully of either of these Liquors.

Powdered Chalk is likewise given with Milk, to prevent its turning acid in the Stomach; and, externally, it is commended for drying Wounds, Ulcers, and Fissures in the Nipples.

## S E C T. III.

## Of S T O N E S.

**S**TONES are solid, hard, fossile Substances, not ductile, nor capable of being dissolved in Water or Oil. They are divided into Common and Precious. Common Stones differ from one another, as their Substance approaches most either to Clay, Sand, or Crystal; and as they are disposed, either in Filaments, thin Plates, or Squammæ. And to these may be added Figured Stones, and Petrifications. Precious Stones are opaque, imperfectly transparent, or perfectly so, which last are termed Jewels. Of all these various Kinds of Stones, very few are used in Physick, though extraordinary Virtues have been ascribed to many of them; but these Conceits have had their Rise, not from any certain Experiments, but merely from Credulity.

## C H A P. I.

*Of the Lime-stone, and Lime.*

**T**HE Limestone is a hard, ponderous, rocky Stone, of different Colours in different Countries. It is reduced to Lime by the Action of Fire upon it. If Water be poured upon Lime, it makes first a very great Noise, then grows hot, and afterwards turns to a soft white Mass; but calcined Lime-stones, if exposed to the moist Air for some time, may be reduced to a fine Powder. Quick-lime

lime is Corrosive and Caustick, and is therefore never used inwardly. But, from a Lixivium of Quick-lime and Potash, the Surgeons prepare a Caustick, which burns the Part to which it is applied, leaving a Crust, or Eschar, behind. Slaked, or Washed Lime, does not corrode, but powerfully dries; and is applied in that Intention to obstinate Ulcers. The Water in which Quick-lime is washed, called Lime-Water in the Shops, is used externally to the same Purpose, either alone, or impregnated with corrosive Sublimate, in what is called Phagedenic Water, which is likewise used with Success to eat away fungous or superfluous Flesh; and, when mixed with Spirit of Wine, or Spirit of Vitriol, it conduces to stop the Progress of a Gangrene. Lime-Water, tinged blue with Vitriol of Copper, and intimately mixed with Oil of Roses, makes the famous Liniment for Burns; and, when impregnated with a Solution of Sugar of Lead till it turns Milky, it is applied, by way of Fomentation, to Scabs, foul Ulcers, and *St. Anthony's Fire*.

In the Opinion of *Morton*, and other experienced Physicians, Lime may safely be given inwardly, for the Cure of old obstinate Ulcers, whether internal or external. It is likewise very much commended for healing the Lungs; for, by throwing off the saline acrid Parts of the Blood through the Urinary Passages, the whole Mass being thus corrected, the Ulcers are much more easily cured. The Method of giving it inwardly is this:

*Take of Sarsaparilla, in thin Slices, six Ounces; Currants, half a Pound: Boil them in three Quarts of Water, and in the strained Decoction slack half a Pound of Quick-lime. After it has sufficiently subsided, pour off the Liquor by Decantation, and keep it in Glass Bottles, well corked, for Use. It is given in the quantity of four Ounces, two or three times*



times a Day, at Medical Hours. Morton likewise recommends it for the Cure of scrophulous Tumors proceeding from the Measles.

Chemists have been at much Pains to procure the Salt, Spirit, Tincture, and Oil of Lime, but all to no Purpose; for what they pretend to have obtained from any of these Substances, came rather from what was mixed with the Lime, than from the Lime itself. Lime is used in preparing the volatile Salt of Urine, and the Sal Alkali Basilianum.

## C H A P. II.

### Of T A L C K.

**T**A L C K is a shining, fissile Stone, easily divisible into very thin pellucid *Laminæ*, a little flexible. In the Fire it does not melt, is not calcined, nor does it lose its Colour. Some Talck is of a Silver Colour, called by the Chemists *Argyrolithos*; some Yellow, called Solar Talck; some Greenish, and some Black. That which is brought from *Venice* is reputed the best, and is of a light Green Colour. This Stone is seldom used in Physick, but is very much in Vogue as a Cosmetic; the Ladies being of Opinion that it cleanses and whitens the Skin.

It is first of all to be prepared by being reduced to an impalpable Powder; which can be done no way so readily as by heating it red hot several times in the Fire, and as often quenching it in cold Water; for, by this Means, it may easily be levigated on a Porphyry Stone, to any Degree of Fineness, the Powder being of a shining Silver Colour, and very smooth to the Touch. Of this Powder the Women make Ointments, or Pomatums, which they use as

a Wash. Some Chemists have endeavoured, by the Oil of Talck, to fix Quicksilver, and afterwards turn it into Silver; but they never considered that what they called Oil of Talck, was entirely the Product of the other Substances mixed with it.

---

## C H A P. III.

*Of the Eagle Stone.*

**T**HIS Stone is made up of Scales, or stony Crufts, and is hollow within. In this Cavity there is sometimes another Stone contained, sometimes a kind of Gravel, and sometimes Clay. They are of a whitish, or ash Colour, and sometimes like Iron. Their outer Surface is rough and uneven, their Figure generally oval, and their Size various. Some Authors restrain the Name of Eagle Stone to such as contain either another Stone, or Gravel, and consequently make an audible Noise when shook; calling those which contain Earth *Lapides Geodes*; but I rather chuse to call all scaly hollow Stones, Eagle Stones; and apply *Geodes* to those which are as hard as Flint, whether they contain Earth, or are incrufted or lined with Crystal. It is called the Eagle Stone, either because it is said to be sometimes found in the Nests of Eagles, or from its Colour; or because, according to some, Eagles cannot hatch their Young without it.

It is found in many Places; but that which comes from the *Levant* is preferred to the rest. It is believed by some to be of wonderful Efficacy in promoting Delivery, if laid to the Woman's Thigh, who is in Labour; but if tied to the Arm, it is said to prevent Miscarriage. It must, they pretend, be removed immediately after the Birth, lest it not only draw out  
the

the Child, but the Uterus along with it; of which an Instance is mentioned by *Valeriola*, of a Woman, who having forgot that she had a Stone tied to her Thigh, the Uterus fell down without the Body, and she died instantly. But I believe it more probable that the ignorant Midwife had by ill Management extracted and bruised that Part, and afterwards, to save her own Reputation, laid the Fault on the Eagle Stone. Many other Fables are told of this Stone, but they are too ridiculous to bear being mentioned.

## C H A P. IV.

*Of the Fossile Bezoardic Stone.*

**T**HE Fossile Bezoardick Stone of *De Laet*, Fossil Bezoar Mineral of *Boccone*, Bezoar Mineral of *Besslerus*, and Geodes of *Aldrovandus*, is a scaly Stone, of a white or ash Colour, of various Thickness, and of an irregular Figure, something roundish. It is made up of different Coats, cas'd over each other, till they become of the Size of an Hazel Nut in some Stones, of a Walnut in others, and in some of a Goose Egg, and in the Centre of it is found sometimes a little Gravel, sometimes a small Shell, and sometimes a Bit of Pit-Coal. It is called Bezoar, from its Likeness to an animal Substance of that Name; or from the alexipharmack Virtues ascribed to it; for *Bezabar* is an *Arabick* Word, signifying any Medicine possessed with the Virtue of expelling Poisons.

This Stone is found in many Places; in *France*, near *Montpelier*; in *Sicily*; in *Italy*, near *Tivoli*; and in *New Spain*, in the River *Zhuatlau*; from whence, according to *Hernandes*, very large Stones are brought. The

*Italians* and *Sicilians* commend its Virtues very much against Poisons, in putrid Fevers, the Small-pox, and Measles; in changing the acid Disposition of the Blood, and calming its Effervescencies. It provokes Sweat and insensible Perspiration; being given from twelve Grains to a Drachm, in any convenient Vehicle. Empiricks pass these Stones upon the ignorant Vulgar for true Animal Bezoar; and indeed it is still uncertain, whether the Occidental Bezoar be an animal or fossil Substance.

## C H A P. V.

*Of Figured Stones.*A R T. I. *Of the Belemnites, or Lapis Lyncis.*

**B**ELEMNITES, *Daëtylus Idæus, Lapis Lyncis Officin.* *Lapis Lyncurius* of some Authors, is a round oblong Stone, ending in an obtuse Point, sometimes of a white, sometimes of a gold, and sometimes of a dark Colour. Some of these Stones are solid, others hollow, and it is distinguished by Lines drawn from the Axis to the Circumference. It is commonly about an Inch in Length and Thickness, though some have been found as large as a Man's Arm; and in every one of them there is a Fissure or Slit running through its whole Length. The Name, *Belemnites*, comes from a *Greek* Word, which signifies the Point of an Arrow; *Daëtylus Idæus*, from its resembling a Finger in Shape, and its being found in Mount *Ida* in the Island of *Crete*. But it is dug up likewise in the Alps, and many other Places of *France* and *Germany*. It is without Ground taken for the *Lapis Lyncurius* of the Antients, since it is evident that by that Word *Dioscorides* understood

derstood Amber, which he tells us was by some taken to be the concreted and indurated Urine of the *Lynx*. The *Germans* say, that this Stone is good against the Night-Mare, and the Stone in the Kidneys. It is given in Powder, from half a Drachm to a Drachm, in any convenient Liquor.

ART. II. Of the *Lapis Judaicus*.

THIS is an oblong, roundish Stone, of the Figure of an Olive, marked with Streaks and Furrows, running from the Basis to the Apex, according to its Length, at equal Distances from each other. It is of a whitish or ash Colour, and shining within. It parts obliquely into thin *Laminae*, and is given in Powder to the quantity of a Drachm, in any proper Vehicle. It was called *Lapis Judaicus*, or *Syriacus*, from the Countries where it is found. By others it is named *Euroius*, as being of a diuretick Virtue; and *Tecolithos*, from its lithontriptick Virtue. This last Virtue I very much question, but it is plain from Experience, that this Stone, the *Lapis Lynceis*, Crabs Eyes, and several other things said to have a Power of dissolving the Stone, are really diuretick. But it cannot be concluded, that, because oftentimes Gravel comes away with the Urine, therefore they have any lithontriptick Quality; for the fixed earthy Parts of these Stones being mixed and incorporated with the Salts of the Fluids in the Body, become thereby more fixed, and more unfit to pass off through the Pores of the Skin, but find their Way more easily through the Strainers of the Kidneys. Therefore the Secretion by insensible Perspiration being lessened, they are excreted in greater Quantities by Urine; and thereby whatever Saburra they find there, they wash away; and hence the Urine becomes turbid, and is sometimes mixed with Gravel, some Particles of which may be of a considerable

Sige, when the Passage is wide enough to transmit them. In this manner the diuretick Quality of these Stones may be accounted for ; but neither Experience nor Reason give any Ground for attributing to them a lithontriptick Quality.

---

## C H A P. VI.

*Of some Stony Substances.*A R T. I. *Of the Glossopetra.*

**T**H E *Glossopetra* is commonly a triangular Stone, with a broad rough Basis, but everywhere else smooth like Horn. It is marked on the Sides with Impressions in the Shape of small Teeth, of a yellowish white Colour, and of different Magnitudes. It has the Name of *Glossopetra*, because it has been thought to be a Serpent's Tongue petrified ; but this must be a Mistake, because the Tongue of a Serpent is not triangular, but round and bifid ; and besides, it is now found that they owe their Original to the Teeth of the Sea-Dog, or some other Fish of that Kind. There is another smaller kind of *Glossopetra*, like the Tongue of a Magpie, which seems likewise to have been the Tooth of some Fish. It is thin, long, and sharp, and of the same Colour with the larger kind, with which it is often found. Some attribute an alexipharmack Quality to these Stones, but with us they are only used by Women to hang about their Children's Necks, while they breed their Teeth.

## A R T. II.

## ART. II. Of the Fossil Unicorn.

THE Fossil Unicorn, or *Lapis Ceratites* of *Gefner*, is a stony Substance, resembling in Colour, Smoothness, and Shape, the Horns, Teeth, and Bones of Animals. It is made up of an Outer hard Part of a yellowish, blackish, or ash Colour, and a soft, friable, compact Medullary Part, without Pores, of an astringent and drying Quality, sticking very close to the Tongue, and sometimes of an agreeable Smell.

It is often dug up in the Form of Bones turned to Stone, among which we often find the *Dentes Molares*, and Incisory, and we can perfectly distinguish between the Root of these Teeth, and that Part which appears without the Gums. Sometimes we meet with Fragments of the *Radius* and *Tibia*, representing the natural Conformation of these Bones in a very perfect manner. There are likewise dug up large Branches and Trunks of Trees, in which the Species of Wood is still distinguishable. There is therefore no room left to doubt, but that these stony Substances are really Petrifications of the Horns, Teeth, and Bones of Animals, or of Wood; which being putrified by remaining long under Ground, and in a manner calcined, their Substance becomes more rare and porous; as we see daily in rotten and worm-eaten Wood. By the Afflux of a fine Marl dissolved in Water these porous Substances are filled, and the Water insensibly evaporating, the Remainder incorporates with the Bones or Pieces of Wood into a stony Substance, of the same Form and Figure with what they were before. But if these earthy Parts, which concrete with them, be of the Crystalline, or Flinty Kinds, then they turn to a Substance like Crystal or Flint, as we see in several Sorts of Fossil Shells.

The Unicorn Fossil is found in many Places of *Germany*; and at *Mont-Martyr*, near *Paris*, there were lately found many Bones hid in a stony Substance. The *Germans* esteem it for its astringent, alexipharmack Qualities, and as a Provoker of Sweat; and, accordingly, often use it in Diarrhæas, Dysenteries, Hæmorrhages, the Fluor Albus, Malignant and Pestilential Fevers, and in the Epilepsy. The Dose is from Ten Grains to a Drachm. But they do not use all Kinds of it indifferently, but chuse that which has a pleasant Smell, and which has been previously tried upon Dogs, or other Animals; because it sometimes contains a poisonous Quality, especially when dug out of the Earth, mixed with Arsenic; and therefore great Care is required about it.

## C H A P. VII.

*Of Opake Precious Stones.*A R T. I. *Of the Lapis Lazuli.*

**T**HIS is a hard blue Stone, with Gold or Silver coloured Specks and Veins, and it is found of two Kinds; one that can bear the Fire, the other that cannot. The first is brought from *Asia*, and *Africa*, and is called the *Oriental Stone*; the other is found in some Places of *Germany* and *Italy*, being dug out of the Gold, Silver, and Copper Mines, and is softer than the Oriental. The Oriental produces the *Ultramarine Blue*, which never changes with Age. But the *German Ultramarine* is easily affected by external Causes, and in Time turns Green. The best *Lapis Lazuli* is of a deep blue Colour, marked  
with



with some Gold Specks, hard to break, and durable in the Fire.

It purges Upward and Downward, and is recommended by Authors in melancholy Affections, Quartan Agues, Apoplexies, Epilepsies, &c. They attribute to it a corroding Quality, with some Astringency; the first of which *Dioscorides* and *Galen* say may be corrected by washing it in Water; but they are mistaken; for, both washed and unwashed, it vomits and purges; and what the Water carries off from it differs from what remains only in the Fineness of the Parts. The blue Colour of this Stone arises undoubtedly from some Parts of Copper mixed with it, to which also its purgative Quality is owing; but it may very reasonably be asked, why an acrid and purgative Medicine of this Kind, should be used in the *Confectio Alkermes*, designed for a strengthening Cordial? To answer this, it is to be considered that the ancient Physicians acknowledged two Virtues in this Stone, one purgative, the other styptick; which, though contrary to each other, were nevertheless found in the same Subject. The styptick Quality, by which it becomes a Strengtheners, they counted natural to it, when it was found in Gold Mines, mixed with small Particles of Gold; the cathartick Quality they considered as merely accidental, arising from the Mixture of heterogeneous Parts. Therefore, on account of the strengthening Virtue of this Simple, they endeavoured, by various Ways, to correct the other, as by repeated Ablutions and Calcinations; but, whether they have succeeded or not, is with me still a Doubt; tho' I must own, that long Experience has shewn, that no bad Accident ever happens from the *Confectio Alkermes*, rightly prepared. Whence it may be conjectured, that by Calcination the purgative Virtue of the Stone is very much lessened, or entirely destroyed; but I cannot say that it contributes any thing to the cordial Virtues  
of

of the Confection. The Ancients thought it purged off particularly the *Atra Bilis*, but, I am afraid, upon no good Grounds; for the black Colour of the Stools after taking it, is not so much owing to the Nature of the Fæces, as to the Tincture which all Steel and Copper Medicines communicate to them.

As there are many Medicines of more certain Efficacy among us, we seldom use the *Lapis Lazuli* in any thing but the *Confection* already mentioned; all the Magisteries, Tinctures, and Elixirs, which the Chemists prepare from it, being laid aside.

#### A R T. II. *Of the Armenian Stone.*

**T**H E *Armenian* Stone is opake with green, blue, or blackish Spots, smooth, and marked like the Azure Stone, with gold-coloured Specks, and friable. There is indeed but very little Difference between the two Stones, they being often found in the same Glebe, and used indifferently for each other, as having the same Virtues; only the *Armenian* Stone is more strongly purgative. It is given from six Grains to a Scruple; and, externally used, it is detergent, with some degree of Acrimony and Stypticity. It is very seldom used in Physick, but the Painters employ it in making a beautiful blue Colour, with a greenish Cast.

## C H A P. VIII.

*Of Gems, or Pellucid Precious Stones.*A R T. I. *Of Crystal.*

**R**OCK Crystal is a soft, transparent Gem, resembling Ice; and its Figure is that of an hexagonal Pillar, pointed at both Extremities; or it may be said to be compounded of two Pyramids, with such a Pillar between them. A second Kind is found in *Iseland*, and in some Parts of *France*, especially about *Troyes* in *Champaigne*, which seems to be made up of Crystalline Plates, and fissil in the Direction of all its plain Surfaces; and when reduced to Powder, it still retains a rhomboidal Figure, so that even the finest Powder viewed through a Microscope, shows a Congeries of very small rhomboidal Solids. Another Property of this Crystal is, that all Objects seen through it, appear double, which arises from a double Refraction of the Rays of Light. A third Species of Crystal is that mentioned by *Dr. Lyster* in the *Philosophical Transactions*, which is very smooth, pellucid, and glistering, coming near to a Diamond. Its Figure is spherical, oval, depressed, and sometimes representing an Hemisphere, or Hemispheroid, and in others roundish and irregular. It is very hard, and has an exquisite natural Polish, and is dug up in Pieces of different Sizes, in several Places of *England*.

Crystal is said to have an astringent and lithontrip-tick Virtue, and hence is prescribed by some in Loosenesses, the Fluor Albus, and in the Stone in the Kidnies or Bladder. What Judgment is to be made of the lithontrip-tick Virtue of these Stones, has been already said; and some go even so far as

to imagine that they rather conduce to the Generation than the Dissolution of *Calculi*.

## A R T. II.

*Of other Transparent Precious Stones that have been commonly used in Physick.*

1. **A G A T E** is a precious Stone, reckoned commonly between the Opake and Transparent, of different Colours, and marked with Spots, or Specks; which are imagined to represent Trees, Fishes, and other Things. The finest come from the *East-Indies*, the common sort from *Germany, Bohemia, &c.* Great Virtues have been attributed to this Stone, both cordial and alexipharmack; but they seem to be all imaginary.

2. *Onyx*, or *Sardonyx* according to some, is different from the true *Sardus*. One Kind of it is opake, the other transparent, which is of the Colour of a Man's Nail, when the Blood appears in it, and from thence it has its Name. It is of an astringent Quality, and has been used inwardly; and also outwardly, for Ulcers in the Eyes.

3. *Sardus*, *Sarda*, or the *Sardian* Stone, is very rare, and not perfectly transparent. We meet with two Kinds of it, one called *Oriental*, the other *Occidental*, or *European*, the former of which is the hardest. Both these were by the Antients termed *Sardonyx*. The second Kind is the *Indian* and *Arabian*, of which the former is pellucid, the other opake.

The *Indian Sardonyx* resembled both the *Sardus* and *Onyx*, its Surface being like the *Onyx*, or Human Nail; but its Root was white, like the *Sardus*, or of a Flesh Colour; and was mostly transparent; though

though some of them, being opaque, were from thence called *Cæcæ*, or *Blind*.

The *Arabick Sardonyx*, called by some *Memphitis*, was distinguished by a black or dark blue *Substratum*, surrounded by a white Circle, and by its Surface being more or less white. This, by Jewellers, is termed simply *Onyx*.

The Antients were of opinion that the *Sardus*, by a certain Irradiation, exhilarated the Mind, banished Fear, inspired with Courage, defended against the Power of Witchcraft and Poison. It is given in Powder to stop all Bloody Fluxes; but is very little used at this Time.

4. *Hyacinth*, so called from its Resemblance to the Plant of that Name, in its yellowish red Colour; of which there being several Degrees, the different Kinds of it are taken from thence. Some are of the Colour of Red Lead, or Bilious Blood, some of Saffron, some of yellow Amber, which are the least esteemed. Hyacinths are distinguished into *Oriental*, which are brought from the *East-Indies*, and *Occidental*, which come from *Silesia*, *Bobemia*, *Auvergne* in *France*, and other Places. These Hyacinths seem to be different from that mentioned by the Antients, especially by *Pliny*, which was of a shining Violet Colour, like the Amethyst, though not so strong. Many superstitious Virtues have been ascribed to this Stone. They said it was of a cold Nature, that it strengthens the Heart, is gently astringent, and procures Sleep. *Schroeder* reckons it a great Specifick against Spasms and Contractions. It is an Ingredient in the *Electuarum de Gemmis*, together with the other precious Fragments, as they are called, and it gives its Name to the famous *Confectio de Hyacintho*.

5. *Sapphire*,

5. *Sapphire*, called by some the Gem of Gems, is a hard Stone of a blue Colour, like that of the clear Sky. It comes nearest the Diamond in Splendor, Transparency, and Hardness, and is of two Kinds; one pale, called the Female Sapphire, the other of a deeper Blue, called the Male. There is a third Sort likewise, which has no Colour at all, and is sometimes made to pass for a Diamond, but is neither so hard nor so brilliant.

Sapphires are brought from different Parts of the *East Indies*, called from thence *Oriental*. The rest are found in *Silesia* and *Bobemia*, called *Occidental*. The Colour of Sapphire may be taken out by Fire, and then it looks liker a Diamond; for which Reason I believe this Colour to come from a small Mixture of fine Sulphur of Copper. Many are the inestimable Qualities superstitiously ascribed to this Stone; but, besides these, we are told that it raises and exhilarates the Spirits, resists Poison, and cures Ulcers of the Intestines.

6. *Emerald*, is a green diaphanous shining Gem, very pleasant to the Sight, but excessively brittle, which has given Occasion to many Stories. It is divided into *Oriental* and *Occidental*. The *Oriental* is the best in all respects; the other, which comes from *Peru*, is not near so bright, and besides, has generally some foul Spots. There is a third Kind of Emerald, or *Pseudo-smaragdus*, found in the Mountains of *Switzerland* and *Auvergne*, which is extremely tender, and of the palest Green.

Fragments of Emerald thrown upon a clear Fire emit a fine Flame, and totally lose their Colour; which is Proof sufficient that this Gem contains some Sulphur of Copper. Besides the superstitious Uses ascribed to it, it is said to stop Fluxes of all Kinds. It makes Part of the *Electuarium de Gemmis*, and  
*Confectio*

*Confectio de Hya intb<sup>o</sup>*, together with the other precious Fragments.

Authors are very much divided about the Virtues of these five Fragments, as they are called. Some Modern Writers reject as fictitious all that is found in the Ancients, not only about their superstitious, but medical Virtues, and are therefore of opinion that they should be banished the Shops. Others believe that they are not altogether without Efficacy, being in their opinion alkaline Absorbents; but, if we consider that their Colours are owing to some metallick Parts contained in them, we must be of opinion that they cannot be altogether destitute of some other Virtue, besides that of being Absorbents, and that these Virtues come from their metallick Parts. It may here be objected, that Gems are the hardest Bodies in Nature, and cannot be dissolved even by *Aqua Regia*, and therefore must remain untouched in the Stomach, and pass off as they entered. But this Objection is of no Force; for an Emerald thrown upon live Coals kindles like Brimstone; and having lost its green Colour by the Fire, remains still transparent, and colourless, like Crystal. From hence we see that Gems consist of two Parts; one Crystalline and Fixed, the other Sulphureous, or Metallick, and Volatile; which easily evaporates, the former remaining entire and unchanged; and what is here done by the Fire, may be done by the natural Heat of the Stomach, and the Action of the Juices thereof; that is, the crystalline Part remaining undissolved, the sulphureous Part may be separated from it, and, being mixed with the Fluids, act upon them according to its own Nature. If it be objected further, that this metallick Part is in too small Quantity to be able to perform so wonderful Effects, as are ascribed to them; I answer, that the Energy of a Medicine does not always depend on its

## 82 *Of Fossil, Vegetable, and*

Bulk or Weight. A very small quantity of Opium induces Sleep, and eases Pain. A very small quantity of Antimony, in the Emetic Tartar, will cause violent and long-continued Vomiting. And how small must that quantity of Matter be, in which the Poison of the Viper consists, which however infects in a Moment almost, the whole Mass of Blood, if once mixed with it through a Wound. We ought not therefore rashly to banish all Gems from the Shop-Compositions, which have been long in Use, and consequently long examined and approved of.

### A R T. III.

*Of some Gems, never, or very seldom, used in Physick.*

1. **T**OPAZ, or *Chrysolithos* of the Antients, is a pellucid Gem, of a shining Gold Colour, and of two different Kinds; the *Oriental*, which is very hard, and of the Colour of the purest Gold; and the *European*, which is soft like Crystal, and has a greater or less Mixture of Black in it. The Antients ascribed a Solar Nature to this Stone, and therefore made it to banish Fear and Melancholy in the Night-time, to improve the Understanding, prevent troublesome Dreams, and stop Hemorrhages. It is used only in the *Confectio de Hyacintho*.

2. *Crysolithus*, or the *Topaz* of the Antients, and *Crysoprasius* of some Writers, is a Gem of a green Colour, fainter than that of an Emerald, and with a small Cast of Yellow, the Rays of which passing through the Green, do sometimes give the whole a red Colour. It yields to the File; and, though it has had the same Virtues attributed to it as the other *Topaz*, it is never used in Physick.

3. *Opal*,



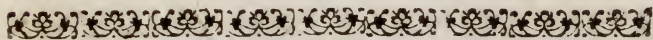
3. *Opal*, is a beautiful Gem, of almost all Colours, according as the Rays of Light are refracted through it; it appears Blue, Purple, Green, Yellow, Red, Milky, and Black; and hence it has been by some called the Gem of Gems. The best Opals are found in *India*, the more ordinary Sort in *Cyprus*, *Egypt*, *Hungary*, and in some *Danish* Islands. They all grow in a soft Stone marked with black or dark Lines. It is said to have the same Virtues with the rest, but is never used in the Shops.

4. *Ruby*, is a pellucid ruddy Gem, a little inclining to Blue, and will not admit the File. On account of the Degrees of Splendor and Brightness found in it, it is usually divided into four Kinds: The true Ruby, *Pyropus*, or Carbuncle, so called because it is of the Colour of a lighted Coal: *Bala-sius*, which has but a small Degree of faint Redness: *Rubicellus*, not so pale as the former, but paler than the true Ruby: *Spinaleus*, which is softer and less shining than the true Ruby. The best are found in the Island of *Ceylon*; and very wonderful things are said of the Virtues of this Stone, but they are all vain and superstitious.

5. *Diamond*, the hardest, most transparent, and most brilliant of all Gems. It is of the Colour of the clearest Water; but this Colour is sometimes mixed with White, Yellow, or Black, which are reckoned Blemishes. Diamonds consist of Crystal *Laminæ*, or *Strata*, laid upon each other; and the Joinings of these Tables may be discovered by skilful Lapidaries, and then they are easily separated with the Edge of a Knife. Diamonds are not calcinable by Fire, nor changeable by the Sun's Rays, if the plain Surfaces of the Plates be exposed to them; but the Edges, or Extremities, easily admit the Solar Fire, and then they are separated as before, and af-

terwards melted into a Mass of Glass, which retains nothing of the Splendor of the Diamond. They are found only in the *East Indies*, and in *Brazil*, but are not used in Physick.

6. *Amethyst*, is a pellucid Gem, of a violet Colour, arising from a Mixture of Red and Blue, but not very vivid. It is found in many Places, but is not used in Physick. Chymists have endeavoured to extract Tinctures from these coloured Gems, but it is not certain whether ever they succeeded; or, if they did, what the Use of these Tinctures is.



## S E C T. IV.

### *Of* S A L T S.

**B**Y *Salts*, I mean solid, friable, pellucid and sapid Mineral Bodies, dissoluble in Water, fusible by Fire, and easily concrescible in Form of Crystals. This Definition agrees to Alimentary Salt, Nitre, Vitriol, Allum, Sal Ammoniac, and Borax; of each of which in order.

## C H A P. I.

### *Of* Alimentary Salt.

**A**Limentary Salt, or that which is used in Food, is distinguishable from all other saline Bodies by the cubical Figure of its Crystals, which Figure it retains even in the least Particles, which are the Objects of Sense. It is of two Kinds; being either dug  
out

out of the Earth, from whence it is called Fossil Salt, or Sal Gem: or prepared by evaporating the Sea-Water, being from thence termed Sea-Salt.

ART. I. *Of Fossil Salt, or Sal Gem.*

THERE are several Kinds of this Fossil Alimentary Salt, differing from each other only in their Colour; which is White, Grey, of a yellowish Red, or pellucid like Crystal; which last, most properly called Sal Gem, is preferred to all the rest, as being judged must pure. It is of an octogonal, or cubical Figure, and salt Taste, pellucid like a Gem, and often resembles Crystal, both in Colour and Brightness. In the Mountains of *Catalonia*, near the City of *Cardona*, and also in deep Mines in *Poland*, near *Cracow*, huge Rocks of this Salt are found, and they beat them to Pieces with proper Instruments of Iron.

The Virtues of Sal Gem are the same with those of Sea-salt, of which in the next Article. This Salt is used as a *Stimulus* in Clysters and Suppositories given to soften and evacuate the indurated Fæces, in this or the like Manner:

*Take of despumated Honey, two Ounces; Sal Gem, a Drachm and an half; boil them to a due Consistence for a Suppository. Or, Take of Honey, boiled to a due Consistence, an Ounce; Sal Gem, and Species of Hiera, of each half a Drachm; Diagridium, fourteen Grains: Mix and make into a Suppository.*

*Take of the Root of Spanish Pellitory half an Ounce; Leaves of Marjoram and Rue, of each an Handful; Leaves of Senna, Agaric, and the Pulp of Coloquintida, of each two Drachms; boil in a sufficient quantity of common Water to*

*twelve Ounces, of strained Liquor; in which dissolve of Sal Gem two Drachms, and add of Emetic or Antimonial Wine, three Ounces, for a Clyster in Apoplexies, and other sleepy Diseases.*

In these Affections even the strongest and most stimulating Clysters are sometimes of no Effect, because the Intestines are become Paralytic; and they are never to be used in an Inflammation of the Intestines. The Chymical Preparations of Sal Gem are the same with those of Sea-Salt. It is used in the *Benedicta Laxativa*, and *Pilulæ Polychrestæ*.

#### A R T. II. Of Sea-Salt.

**T**HE artificial Sea-Salt is obtained by the Heat of the Sun, or by Coction, from Sea-Water, and salt Springs or Wells. In *Britany* in *France*, the Manner of making Sea-Salt is, to dig shallow broad Trenches, which they line with Clay. These being filled with Sea-Water by the Tide, the Heat of the Sun evaporates the Water, and a large Proportion of Salt remains behind. In *Normandy*, they make small Heaps of Sand on the Shore, which imbibe the Sea-Water, and the insipid Humidity being afterwards evaporated by the Heat of the Sun, the Salt remains among the Sand. To separate it, they first boil it in fresh Water, and then having strained off the Lixivium, containing now only a Solution of Salt in fresh Water, they boil it again with a gentle Heat in Leaden Cauldrons, to a certain degree of Thicknes; then putting out the Fire, the Salt crystallizes.

Salt is made from salt Fountains likewise, by boiling the Water till the Humidity exhales; and while it is boiling, they mix with it either Gall or Bullock's Blood, which makes the Salt form itself more easily into larger Lumps; for the Parts of the  
Gall

Gall or Blood inviscate or entangle the bituminous or earthy Parts, which hinder the Concretion of the Salt, and are altogether thrown up as a Scum, or at least remain in the Strainers.

Sea-Salt prepared by the Heat of the Sun, is preferable, both for culinary and officinal Uses. The Taste of it is very well known; the Colour is greyish, because of the Particles of Earth mixed with it; but if it be dissolved and crystallized by a gentle Heat, it is formed into very white cubical Grains. Salt made by Boiling is white, but the Grains thereof are not exactly cubical, because of some Mixture of different Salts.

Before Sea-salt has felt the Fire, it changes neither the Syrup of Violets nor Tincture of *Heliotropium*, it makes no Effervescence with *Ol. Tartari per deliquium*, but discovers however some small Signs of Acidity. It lessens the Transparency of the urinous Spirit of *Sal. Ammoniac*, and darkens the Colour of the Infusion of Galls. By other Trials it seems likewise to discover an alkaline Nature, for it turns a Solution of corrosive Sublimate white, and makes an hot Effervescence with Oil of Vitriol. A Solution of Salt in Water being evaporated to a Pellicle, and then set in a cold Place, the greatest part of it will be formed into cubical Crystals; but the Remainder cannot be brought to concrete without Heat; and even then it is formed into no regular Figure, and soon runs *per deliquium* in the moist Air. Hence it is evident, that Sea-Salt is made up of an Acid of a peculiar Kind, and of a Mineral Alkali, and that the acid Portion is so far intangled and involved in the other, as hardly to be able to exert its proper Virtues in a concrete Form.

From Sea-Salt, by Distillation in a Retort, we obtain an acid Spirit, which turns the blue Tincture of *Heliotropium* into a purple Colour, and ferments vehemently with Oil of Tartar, but without any

sensible Heat ; but does not raise any Effervescence with Lime Water. This acid Spirit is the only Dissolvent of Gold and Tin, but cannot dissolve Silver or Lead ; and it communicates this Quality to Spirit of Nitre and of Vitriol ; which, by being mixed with it, becomes *Aqua Regia*. If this Spirit, when very pure, be saturated with the alkaline Salt of Tartar, it concretes into a *Sal Salsus*, resembling Sea-Salt in Taste, and in the cubical Figure of its Crystals ; whence it appears that Sea-Salt is an Acid perfectly saturated with an alkaline Salt. The Crystals of Sea-Salt crackle and crepitate in the Fire.

Its Virtues are to check too great Fermentation, and to resist Putrefaction ; and, for that Reason, it is used by Chymists in macerating Plants, to keep them from rotting ; and what it does to Plants in macerating, is not different from its Effects on the Aliment in the Stomach ; where it both checks too great Fermentation, and prevents Putrefaction. It likewise calms the too great Ebullition of the other Fluids of the Body ; and, as it readily joins with volatile urinous Salts, and changes them into a *Sal Ammoniac*, it is fitted to soften the Acrimony of the Fluids, and promote the Depuration thereof by Urine. By its little Points, it likewise stimulates gently the solid Parts, and thereby increases their oscillatory Motion, by which Means all the Functions of the Body are better performed. On these Foundations are built all the Virtues ascribed to Sea-Salt, of drying, heating, deterging, digesting, opening, attenuating, increasing the Appetite, exciting to Venery, and of resisting Poisons and Putrefaction.

It is ordered in an *Apepsia*, or want of Digestion, in want of Appetite, in Costiveness, and Obstructions of Urine, and is an Ingredient in the *Unguentum Emulatum*. It is much esteemed by the Chymists, as being the only Menstruum for Gold, and they prepare from it the acid Spirit of Salt, already mentioned,  
and

and the *Aqua Temperata* of *Basil Valentine*, both used in Physick.

Before the Salt is distilled, some Preparations are necessary, and especially Calcination or Decrepitation; for since the Grains of Salt fly and crackle in the Fire, they would burst all the Vessels used in the Distillation, except the watery Fluid, with which they abound, were first carried off by Calcination. This Decrepitation arises from the watry Fluid contained and enclosed between the Particles of the Salt, which being rarified by the Heat, burst the Prison wherein they were detained, separating the Particles that surround them with a kind of Explosion. The Decrepitation or Calcination of Salt is performed in this manner.

*The Salt is set on lighted Charcoal, in an open Earthen Vessel, and stirred constantly with an Iron Spatula. As soon as the Salt begins to be thoroughly heated, it makes a crackling Noise, which increases for some time, and then ceases altogether. When all the Noise is over, the Salt is decrepitated, calcined, dried, and burnt, and remains in the Vessel in Form of a Powder. This decrepitated Salt serves for cementing Minerals or Metals, for the Distillation of Spirit of Salt, and for many other Chymical Operations.*

Spirit of Salt is prepared thus :

*Take of decrepitated Salt, one Part; of Potter's Clay, two Parts: Let them be powdered and well mixed, and then made into a Mass with a small quantity of Water. This Mass is formed into little Balls, of the Size of an Hazel Nut, and they being dried with a gentle Heat, are put into a Retort, coated with a proper Lute, so as to fill it half full. The Retort is set in a Reverberatory Furnace, and a  
very*

very large Receiver fitted to it; and the Fire is increased by Degrees till the Retort is heated red hot. The Spirit comes over in white Vapours, and when these cease to arise, the Distillation is over. Then the Receiver is taken off, and the Spirit is poured into proper Vessels, and there kept for Use. It may be rectified, if necessary, without the Addition of any other Substance, by only drawing off the insipid Plegm in a common Alembic in Balneo Mariæ, till the Drops begin to be acid. The Spirit, now intensely acid, remains at the Bottom of the Alembic, and is to be kept for Use. The Spirit of Salt may likewise be rectified by the Addition of Zuich or Calamine, which are first dissolved in the Spirit, and then the Solution distilled with a Fire gradually intreasd. The inside Plegm comes over first, which is to be thrown away; then the concentrated, or rectified Spirit, ascends free from all Mixture of Plegm.

Spirit of Salt is made by Mixing it well with three times its quantity of Spirit of Wine, and then digesting them together for several Weeks in a gentle Heat. The Mixture acquires a very fragrant Smell, and is in this Manner kept for Use. This is the Aqua Temperata of Basil Valentine.

Besides the Chymical Uses of this Spirit, in dissolving Metals and drawing out their Tinctures; it is highly esteemed among Physicians, for promoting the Secretion of Urine, preventing the Stone, curing Dropsies, allaying Thirst in burning Fevers, and for conquering the Malignity of the Juices in the Scurvy. It is very properly given in Malignant Fevers, and in the Plague, either in the common Drink of the Patient, or mixed with as much Sugar as it can dissolve, into a kind of Syrup. The edulcorated Spirit is prescribed from three to twenty Drops,  
and



and the Syrup in the quantity of an Ounce, and thus it may be exhibited to dissolve or expel the Stone :

*Take simple Strawberry, or Burnet Water, of each three Ounces ; of strong White Wine, six Ounces ; Oil of Sweet Almonds, two Ounces ; Spirit of Salt, a Drachm : Mix for three Doses, to be given every six Hours, as warm as they can be taken.*

In Nephritic Pains, and Stones in the Kidneys,

*Take simple Water of Pellitory of the Wall, and Burnet, of each three Ounces ; Syrup of Violets, an Ounce ; Spirit of Salt, fifteen or twenty Drops, or as much as will be sufficient to give it a grateful Acidity.*

To prevent the Stone, this Spirit is taken every Morning for several Days, either in Broth, or in some proper Apozem. In Dropsies, the dulcified Spirit, from fifteen to twenty Drops, or the acid Syrup already mentioned, are to be taken every Morning on an empty Stomach, in six Ounces of the Decoction of Juniper Berries.

We must not here omit the Use of the Spirit of Salt in curing Hernia's, which was a Secret purchased by the *Most Christian King* for the Good of the Publick. The Spirit is mixed with Red Wine, in a Quantity suitable to the Age of the Patient, and thus drank for seven Mornings fasting ; the Patient remaining for four or six Hours afterward without taking either Victuals or Drink ; but if it should happen not to agree with the Stomach, then it may be taken only every other Day. For a Child from two Years old to six, the Dose is three or four Drops, in a spoonful or two of Red Wine : From six Years to ten, let a Drachm of the Spirit be mixed with a Pint of Wine, for seven Doses. It is to be continued,

tinued, if necessary, for a Fortnight longer, in the same Manner. From ten to fourteen Years, the Quantity of the Spirit may be increased to two Drachms; from fourteen to eighteen, to two Drachms and an half; and after eighteen, to five Drachms. During four Months after this Course is begun, a Steel Truss must be wore Night and Day, exactly fitted to the Rupture. The Patient ought never to sit down, but either to stand or lie; and neither run, ride, or go in a Coach, taking great Care to commit no Error in Diet. Under the Truss the following Plaister is applied to the Part, being first shaved:

*Take of Mastich, half an Ounce; Labdanum, three Drachms; Hypocystis, a Drachm; three dried Cyprus Nuts; of sealed Earth, a Drachm; Black Pitch, three Ounces; Venice Turpentine, a Drachm; yellow Wax, an Ounce; dry Comfrey Root, half an Ounce. Make into a Plaister according to Art.*

Many Physicians are afraid to use Acids, being of opinion that almost all Diseases arise from an acid Cause. But it is easily proved, that this Acid is destroyed in the Blood; for all animal Fluids, except Milk, contain Sa'ts which come nearest to an alkaline Nature. This appears not only from their Analysis, by which no Acid, but a large quantity of alkaline Salt, is obtained; but also from their urinous Smell, while in a State of Fermentation or Putrefaction, and from the green Colour which they give to the Syrup of Violets. If Dr. Colebatche's Experiments may be relied on, by comparing the Blood in an healthful and morbid State, it appeared by Chymical Analysis, that the Proportion of Alkali in the morbid Blood was to that in sound Blood, as six to four. And to carry this Enquiry a little further; if an Acid can discover itself in any Disease, it would certainly be in Ulcers in the Lungs; and yet the purulent Matter

of

of these Ulcers discovers no Sign of Acidity, for it does not turn the Tincture of *Heliotropium* red, but, on the contrary, discovers manifest Signs of a strong Alkali, by turning the Syrup of Violets green. The Serum taken from dropical Persons, the purulent Matter of Abscesses, and the chalky Substance found in the Joints of gouty Persons, produce the same Effects. If it be objected, that alkaline Salts have not Force enough to produce all those racking Pains, which venereal Patients, for Instance, are affected with, or that Erosion of the Parts found in the Scurvy, and other Effects of that Kind: I answer, that the Chymists every Day prepare Lixivial Liquors, which have as great a corrosive Power as the most powerful Acids. Cauteries, for instance, are nothing but alkaline Salts exalted to a great Degree of Causticity. From all which it is evident, that many Diseases arise more from an alkaline than from an acid Cause, especially those of the malignant and pestilential Kind; in which the Blood seems to be so far dissolved by an alkaline Salt, that it cannot be any longer contained in the Vessels, but breaks through them, and afterwards stagnating produces red Spots or Pustules; or, it seems to be so acid and caustick, as to corrode the Extremities of the Vessels, and thus bring on fatal Hemorrhages. The Practice of both ancient and modern Physicians is agreeable to this Hypothesis; for in many severe Diseases they recommend Acids as the most powerful Remedies, and attribute to these Salts a cordial Virtue, a Power of resisting Putrefaction and Poisons, of curing Fevers, quenching Thirst, raising the Appetite, of cooling, resolving, and discussing.

Acid Salts do both resolve and coagulate, but in different respects: They resolve tartarous Concretions, and grumous Blood, by subduing the alkaline Salts to which these Concretions are owing, and by stimulating the solid Fibres, they increase their Oscillations,

lations, and consequently their Action on the stagnating coagulated Blood; which, being thus attenuated, is made to circulate more easily through the small Vessels. They coagulate the Blood when too thin, and the Bile when too much rarified, by inspissating the too exalted Sulphurs, and fixing the volatile Salts.

The most skilful Physicians never forget to give Acids in bilious, putrid, and pestilential Fevers, and in scorbutick Affections; but, as vegetable Acids are very weak, and easily conquered by the more acrid alkaline Salts, and turned to the same Nature with these, mineral Acids are to be preferred, as more powerfully resisting Fermentation. However, we must not forget *Riverius's* Caution, that in Peripneumonies, spitting of Blood, Phthisis, and other Affections of the Lungs, (except those that proceed from a thick pituitous Phlegm obstructing their Vessels) in Inflammations of the Stomach, Intestines, and Liver, in bloody Urine, and Ulcers of the Kidneys and Bladder, Acids are not to be meddled with; because they irritate the inflamed Membranes by their sharp *Spicula*, and thus increase the Inflammation, and bring on violent Coughs, Cholicks, and other dismal Symptoms.

## C H A P. II.

*Of the Nitre, or Natrum, of the Ancients;  
and the modern Nitre, or Salt-Petre.*

**T**HERE is a very great Difference between the Nitre, or *Natrum*, of the Antients, and our Salt-petre; which we do not know whether the Antients were acquainted with or not; and, in like manner, their Nitre is almost unknown to us.

By

By Nitre, the Antients understood an acrid alkaline Salt, found in *Egypt* and other Places, which, as it made an Effervescence with Acids, was used as a lixivial Salt, for cleansing Cloaths and for making Glafs. *Solomon* mentions the Effervescence of Nitre with Vinegar, *Prov.* xxv. 20. where he compares a Man that sings Songs with an heavy or afflicted Heart to a Mixture of Vinegar and Nitre; which Antipathy, or Contrariety, cannot be understood of the common Nitre, or Salt-petre, which raises no Effervescence with Vinegar. The Ancients frequently used their Nitre, or *Aphronitrum*, in Baths, and the Women in their Washes; whence *Jeremiah* says, chap. ii. ver. 22. *Though thou washest thee with Nitre, and takest thee much Soap, yet thine Iniquity is marked before me, saith the LORD GOD.* This cannot be said of Salt-petre, but of the Lixivium of that alkaline Salt, which was brought from *Egypt* by the Name of *Nitrum*, or *Aphronitrum*.

This Nitre easily relented in the Air, fermented with Vinegar, and had an absterfivè Quality; and even at this Time, in the Fields of *Lesser Asia*, near *Smyrna* and *Ephesus*, the Earth rises in small Hillocks placed very near each other, like Molehills, during the Spring and Autumn, of which the Inhabitants prepare a Ley for washing Cloaths; as also of the Salt they get from that Earth, by dissolving it in Water, they make Soap; as is related by the great *Tournefort*. This antient Nitre was likewise used to make Glafs, being mixed with Sand; as they afterwards did with the Salt of the Plant *Kali*, or Glafs-Wort, as may be gathered from what *Tacitus* says, *Hist.* l. 5. that the Sands of *Palestine* and *Syria*, near *Egypt*, were made into Glafs with Nitre.

It is evident therefore, that the Nitre of the Antients was quite different from ours. At this Time it is very little used and very rare in *Europe*, though it was very much in Use among the Antients, both  
for

95 *Of Fossil, Vegetable, and*

for making of Medicines, and for other Purposes of Life. The common Custom of Bathing alone consumed a vast quantity of it. It served likewise for Dyeing, for seasoning Victuals, and for glazing earthen Vessels. Very little of it is brought us, and it is very hard to determine the Difference between the *Aphronitrum*, or the *African or Egyptian Nitre*; or *Spuma Nitri*, which I believe to be the *Baurach* of the *Arabians*, and the *Grecian Nitre*. Nitre was a native Salt, of a red or white Colour, and bitter Taste. It did not fly in the Fire like common Salt, nor flash like Salt-petre, but melted and rose in Bubbles, like Allum and Borax. It made an Effervescence with Acids; and hence I look upon it to have been of the same Nature with Salt of Tartar, or Pot-Ash.

The Nitre of the Moderns, or Salt-petre, is a white crystalline Substance, of an acrid bitter Taste, with a certain Sensation of Cold, which concretes into long, small, and equally thick Prismatic Crystals, of six Sides, the outermost of which end in Points like Pyramids. It is easily soluble in Water, and melts by Fire without Deflagration; and, if it be mixed with Brimstone or Charcoal, it detonates. Salt-petre appears sometimes in spontaneous Efflorescences on old Walls not much exposed to Rain, which may be called the Flower of Nitre, and is gathered only by sweeping it together with Brooms. It is likewise obtained from the Ruins of old Stables or Vaults, or from Earth that has imbibed the Urine or Fœces of Animals, by boiling them in Water; and may be made artificially, by mixing Earth with the Soil of Houses of Office, or with Pigeons Dung, the Salts of which are thus soon changed into Salt-petre. Since no Salt-petre is obtainable except from Earths impregnated with the urinous Salts of Animals or Vegetables, it is doubted by some whether this Salt be of a Mineral or Animal

mal Original. This we leave to be determined by others, but we chuse to follow the Example of the Generality of Chemists, in ranking it among Minerals, because it is extracted immediately from the Earth, and cannot be obtained from the Urine and Fæces of Animals without Earth. The Manner of preparing it is this:

*When it appears by the Taste that the Earth contains a large quantity of it, they dissolve and dilute it with a great quantity of Water; and having then strained off the Solution impregnated with Nitre, they boil it to a due Consistence, continually taking off the Scum that arises. Then they pour the Liquor, while warm, into Vessels, and leave it there for some Hours, till it is perfectly cold. In the mean time the Sea-Salt, of which there is always some quantity found in Nitre, concretes into little Grains, and falls to the Bottom. Then they pour off the nitrous Liquor, leaving the Sea-Salt behind, and set it in a cold Cellar, to let it crystalize. When these first Crystals are taken off, they boil the remaining Liquor again, till it becomes thicker and more acrid, and then expose it to the Cold, in the same manner as before, to form new Crystals. By continuing this Process, an acrid, bitter Water at length remains, fat to the Touch, like Oil, which never concretes by Cold, and is called Eau mere de Nitre, The Mother-Water of Nitre; because being sprinkled upon the Earth, it disposes it towards the Generation of more Nitre. All the Crystals, by being dissolved in fresh Water, become purer; and this may be repeated two or three times. Sometimes these very pure Crystals are melted by a strong Fire, and all the Humidity being exhales, they are suffered to concrete into a hard solid Mass, called commonly Rock-Nitre.*

Pure Salt-petre melts in the Fire without Noise, but detonates strongly with Charcoal, and gives a vivid, not a faint Flame, leaving very little fixed Salt behind upon the Coals; but when Nitre crackles in the Fire, it is mixed with Sea-Salt.

Salt-petre, well purified, is distinguished from the other Salts, 1. by Detonation, or Deflagration, which happens when it is thrown on lighted Charcoal; for it never deflagrates, except a sulphureous Matter be joined to it. 2. By the Taste; for it affects the Tongue with a Sense of Cold and Bitterness together. 3. By the hexagonal prismatic Figure of its Crystals. Before it has been exposed to the Fire, it gives no Signs of Acidity; for it neither changes the Tincture of *Heliotropium*, nor Syrup of Violets. It does not curdle Milk, but it coagulates Blood a little, and thickens the Serum, and turns the Solution of corrosive Sublimate to the Colour of Milk, in about a quarter of an Hour. Like alkaline Salts, it likewise renders an Infusion of Galls turbid, and turns it to a white or ash Colour; and yet, which is very surprising, it yields an acid Liquor by the Force of Fire, which turns the Tincture of *Heliotropium* and Syrup of Violets red like Fire, coagulates Milk in an Instant, and makes a great Effervescence with *Ol. Tartari per deliquium*, without any perceivable Heat. It likewise raises an Effervescence with Spirit of Sal Ammoniac, and generates Heat. This Liquor is the only Dissolvent of Silver, whence it is termed *Aqua Fortis*; and it communicates the same Quality to Oil of Vitriol and Oil of Sulphur, which of themselves are unable to make any Impression on Silver, but it leaves Gold untouched, *Aqua Regia* being the only Dissolvent thereof.

Salt-petre is esteemed by the best Physicians to have a refrigerating Quality, and to calm the Heat and Ebullition of the Blood, and is therefore recommended for allaying febrile Effervescences, quenching  
Thirst,



Thirst, and preventing Putrefaction in malignant Fevers. *Riverius* says that it has likewise a diaphoretick Virtue; and many have ascribed to it an anodyne Quality, and from thence have termed it the Mineral Anodyne. On the other hand, some have, without Ground, suspected it of a fiery and caustick Quality; for which they have had no other Foundation but the Authority of the Antients, who called their Nitre Caustick, and the Deflagration of our Nitre with Charcoal. To correct this imaginary igneous Quality, they order it to be burnt with Brimstone, or some such Substance. But, in the first place, all these Operations have proceeded from a Mistake; and, in the next place, these Concretions rather destroy than improve the natural Qualities of Nitre; and, accordingly, the best Chemists agree that Saltpetre well purified and crystallized, or melted, and formed into little Tablets, by the Name of Crystal Mineral, is to be preferred to all the other Preparations of it. It is given inwardly, in Substance from three Grains to twenty, three or four times a Day; or it may be dissolved in our common Drink, in the quantity of half a Drachm, or a Drachm, to a Quart. If it be taken in a greater Proportion, as that of an Ounce to a Quart, it will be apt to bring on a Looseness. It is ordered in burning and putrid Fevers, in Pleurisies, Peripneumonies, Quinsies, and all other Inflammations; in Suppressions of Urine, in Inflammations of the Kidnies and Bladder, in a Suppression of the Lochia, in Hæmorrhages, spitting of Blood, gouty Pains, and in Cases of Melancholy; and we need not be afraid of bringing on unseasonable Diarrhœas in acute Diseases by the use of Nitre, as is well observed by that excellent Physician and Chemist *M. Stahl*, now first Physician to the King of *Prussia*, in his *Dissertation on the Medical Use of Nitre*, where he tells us, that he has often given it with Success in Diarrhœas brought on

in the time of malignant Fevers, or of the Small-Pox; for as such Diarrhœes are always symptomatical, proceeding from two great a Colliquation of the Blood, Salt-petre, by gently coagulating the Blood, not only cures the Diarrhœa, but often allays other greater Symptoms, and, with the Assistance of proper Medicines, quite carries them off. It is true that Nitre does sometimes bring on a Diarrhœa, but then it is always advantageous for the Patient. In an Inflammation of the Intestines, for Instance, Nitre will bring on a Flux; but then, as the Author observes, this does not happen till the Inflammation is gone; for then the noxious Juices, with which the Glands were replete, break through their Prisons, and force their way, through the Intestines, out of the Body. He observes likewise, that Nitre is used with great Success in Suppression or Heat of Urine, and in all inflammatory erysipelatous Pains. In Cases of a Fever following a Suppression of the Lochia, he says that by the Use of Nitre he has often found the Fever to be immediately calmed, and the orderly Flux of the Lochia to return. He used Nitre likewise as a Lenient in *Paroxysms* of the Gout, which not only ease the Joints, but the Diaphragm likewise, thereby endangering the Patient very much; in the Hypochondriacal Heartburn, or that flatulent spasmodic Affection, which arises from too great an Afflux of Blood to the Orifice of the Stomach, or a slight Inflammation of that Part; and, lastly, in Hæmorrhages and spitting of Blood.

Though this great Physician is of opinion that no bad Consequences are to be feared from the internal Use of Nitre, yet in ulcerous Affections, and in Phthises, since it is found to do no Service in these Complaints, but may be thought to cause a greater Irritation, he thinks it ought not to be used.

In Inflammatory and Malignant Fevers, Nitre may be ordered in this manner :

*Take of the Diaphoretick Mineral, two Drachms ; prepared red Coral, and Mother of Pearl, of each half a Drachm ; purified Nitre, a Drachm : Mix into a Powder, of which let a Drachm be taken every three Hours, in a Draught of Carduus Water.*

*Take of Bezoar Mineral, two Drachms ; purified Nitre, two Drachms ; Camphire, one Drachm ; Syrup of Cloves, or of Citron Peel, a sufficient quantity to make them into an Electuary, of which a Drachm is a Dose.*

*Take the simple Water of Balm and Carduus Benedictus, of each three Ounces ; Crystal Mineral, a Drachm ; Syrup of Lemons, an Ounce : Mix them together, and make a Julep, to be taken by Spoonfuls.*

Salt-petre is seldom used externally, except in Gargles, for Roughness, Dryness, or Blackness, of the Tongue ; and such Gargles may be thus made :

*Take of pure Nitre, a Drachm ; Houseleek Juice, or Water, five Ounces : Mix them together, and make a Gargle for the Tongue or Fauces. Or,*

*Take of fresh Butter, washed in common Night-Shade Water, two Ounces ; Crystal Mineral, half a Drachm : Mix them, and keep the Mixture in cold Water, to be taken in the quantity of a Pea or Bean, often in the Day, holding it long in the Mouth.*

In Quinsys, Gargles may be made of Sal Prunel, or purified Nitre, in these Forms :

102 *Of Fossil, Vegetable, and*

*Take Barley-Water, mixed with Agrimony, six Ounces; Sal Prunel, a Drachm; Syrup of Mulberries, an Ounce: Dissolve and make a Gargle.*  
Or,

*Take Plantane, Nightshade, and Honeyfuckle Water, of each two Ounces; Honey of Roses, and Sal Prunel, of each a Drachm: Mix, and make a Gargle.*

Crystal Mineral was formerly very much used in laxative Apozems and Decoctions; but it is now seldom ordered in such Intentions, except there be a Necessity of Purging when the Fluids are violently heated; for the Tinctures of Purging Medicines are much better extracted by Salt of Tartar, or fixed Nitre, and their Purgative Quality is much more increased by vitriolated Tartar, or the *Arcanum Duplicatum*, than by purified Nitre, or Crystal Mineral.

Some Physicians cry up pure Nitre; as a Specifick in Dropsies; and it has been for some time a mighty Arcanum among some Monks to mix it with a quarter Part of *Crocus Martis*, and to give sixteen Grains four times a Day; and besides to dissolve a Drachm in a Quart of the Patient's common Drink, to be drank in a Day's time; and it must be owned that this Method has often succeeded.

Salt-petre has always been much used by Chemists, and called by various enigmatical Names; such as *the Sulphurous Salt, the Infernal Salt, the Chemical Cerberus, and the Earthy Serpent.*

There are a great many Preparations of Nitre; such as, first, the Purification or Purgation of it, by which it is freed from the Sea-Salt, and a sort of fatty Matter contained in it. This is done by repeated Solutions and Crystallizations, in the Manner already mentioned. Secondly, Fusion, by which the Crystal Mineral, called by some *Lapis Prunellæ*, is prepared. Some mix a certain quantity of Sulphur with  
the

the Nitre, while melting in the Crucible; but by this they destroy the refrigerating Quality of the Medicine, and bring it to a sort of *Sal Polychrestus*. The third Preparation is Calcination with Sulphur, in this manner:

*Take pure Nitre and common Sulphur, of each equal Parts; reduce them to a fine Powder, and pass them through a Searce. Then throw them gradually in small Quantities into a red-hot Crucible, and when the Deflagration is over, let the remaining Mass be calcin'd by a very strong Fire, for an Hour; then dissolve it in hot Water, and filtre it through Cap Paper, and evaporate it to Dryness; the Salt that remains will be very white, and of the same Virtues with the vitriolated Nitre, of which hereafter. It is named Sal Polychrestus.*

Fourthly, Nitre is likewise calcined in a Crucible set in the middle of burning Coals; and when it is in perfect Fusion some Charcoal Dust is thrown in by Degrees, which causes a great Deflagration and Noise. When all that is over, throw in more Dust, and repeat it till the Nitre ceases to flame, and remains a dry, greenish, hard Mass. This is what is called Fixed Nitre, or Nitre turned to an alkaline Salt, which, by Solution and Filtring may be purified, and turned to a dry white Salt, of the same Virtues with Salt of Tartar; and by dissolving it *per se* we obtain the Liquor of Fixed Nitre, which is the Alcahest or natural Menstruum of *Glauber*, and is much celebrated among Chemists for the extracting Tinctures from the sulphureous mixed Bodies of all the three Kingdoms. Fifthly, by Distillation an acid Spirit is drawn from Nitre, in different Manners:

*Take of pure dry Nitre, one Part; of Bole, or dry Clay, three Parts; powder and mix them very*

*well, and distil them according to Art in an Earthen Retort, in a Reverberatory Furnace, applying a very large Glass Receiver. The Spirit of Nitre will come over in red Fumes, called by Chemists the Blood of the Salamander. This yellow fuming Spirit is to be kept for Use without any farther Rectification.*

Another Way is to *Take pure Nitre, one Part; Vitriol calcined to Yellowness, two Parts; and to distil them according to Art, till the Fumes change from a red to a dark Colour. This Spirit is to be kept for Use by the Name of Aqua Fortis, or Aqua Separatoria, which last Name has been given it because it dissolves Silver, and separates it from Gold. It borrows nothing from the Vitriol, and differs in nothing from the Spirit made with Bole.*

A third Way is to *Take of pure dry Nitre, two Pounds; rectified Oil of Vitriol, one Pound; let them be distilled to Dryness, and a very strong Spirit of Nitre will be obtained; a saline Mass remaining at Bottom, called Vitriolated Nitre, being the same that is got by Lixivation from the Caput Mortuum of Aqua Fortis.*

Both these Salts are celebrated among the Chemists by the Names of *Arcanum Duplicatum*, the Duke of *Holstein's Salt*, *Panacea Duplicata*, and *Sal ex duobus*; but they do not seem to differ from the *Sal Polychrestus*, or vitriolated Tartar, and, when rightly prepared, they may all be used indifferently. They are very fitly mixed with Purgatives, to increase their Virtue, and to attenuate the Humours. They operate both by Urine and Stool, given in the quantity of half a Drachm, or a Drachm. They are often ordered to be mixed with cathartick Potions, or alterative

rative Apozems, and an artificial Mineral Water made of them is very beneficial in Chronical Diseases arising from an Obstruction of the Viscera.

It is to be observed, however, that vitriolated Nitre, and *Sal Polychrestus*, except they be very well calcined, excite a Nausea and Vomiting; and therefore, if they are perceived to retain any Taste of Vitriol or Sulphur they must be calcined afresh.

*Aqua Regia* is prepared from Spirit of Nitre, by dissolving in it a fourth Part of its Weight of Sal Ammoniac; and then it no longer dissolves Silver, but Gold only, and therefore has the Name of *Lavacrum Minerale Solis*. Spirit of Nitre is seldom given inwardly, and it ought always to be first mitigated or dulcified with Spirit of Wine, in the following Manner:

*Take of pure Spirit of Nitre, one Part; rectified Spirit of Wine three Parts; digest them together for several Weeks, and the dulcified Spirit thus obtained has the same Virtues with dulcified Spirit of Sea-Salt.*

It calms febrile Effervescences in malignant Distempers; and in flatulent Cholicks it is preferred to all the other acid Spirits, and for that Reason is by some called the Carminative, or Anti-Colick Spirit. Every body knows that Gunpowder is made with Nitre, Sulphur, and Charcoal; and the *Pulvis Fulminans* with Nitre, Sulphur, and Salt of Tartar. But these are seldom or never used in Physick.

## C H A P. III.

*Of Vitriol.*

SOME derive the Name *Vitriol* from *Vitrum*, because it has the Colour and Transparency of Glass; in *Greek* it is named *χαλκασθιον*, as if it were an Efflorescence of Brass, and in *Latin* *Atramentum Sutorium*, because it is used in blacking Leather. Vitriol is either Natural or Factitious. The Former is found in Crystals, or *Striæ*, sticking to the Roofs of Mines; and the Latter is made by boiling the vitriolick Veins of some mineral Oars in Water, and afterwards letting them stand in the Cold to crystallize; or by corrupting and fermenting the *Pyrites*, or *Marcasite*, and then mixing it with Water, from which Vitriol is afterwards obtained by Coction and Crystallization. This Way of making Vitriol seems to have been unknown to the *Greeks*.

White Vitriol is brought from *Germany*, made up in Loaves like Sugar, and is of a sweetish astringent Taste. They are mistaken, who think that White Vitriol of *Goslar* is only the Green calcined by the greatest degree of Fire; for it is found in proper Mines, like a downy Efflorescence, which being dissolved in Water, to a due Consistence, is afterwards boiled till it concretes into a white Mass like Sugar. Sometimes little Pieces of it are found in the same Mines, transparent like Crystal. This Vitriol contains an imperfect Iron Oar, or, perhaps, an Iron Oar mixed with Calamine, or Lead. Blue Vitriol is dry to the Touch, and concreted into blue Crystals, like *Sapphires*, of a rhomboidal Figure, flattened, and consisting of ten Sides. It is brought from several Places, especially from *Hungary* and *Cyprus*, and its beautiful blue Colour is owing to the Copper which



it contains. The Taste of it is very acrid and austere. Green Vitriol has different Names from the different Places where it is found; as *Roman*, *Swedish*, *English*, *French*, &c. It contains a large Portion of Iron, from whence its green Colour is derived. It is kept in the Shops either in large rhomboidal Crystals, or in Heaps of small crystal Grains, sometimes a little unctuous, and sticking to the Hands. It is of an acid styptick Taste; and indeed it cannot well be supposed to have any other, Vitriol being an acrid Salt, which having corroded Iron or Brass, coagulates with them, and concretes into a pellucid Mass, either of a green or blue Colour, according to the Metal which it has dissolved. Some Authors mention likewise Red Vitriol, but I have not hitherto been able to learn what it is.

Vitriol is obtained by various Arts, from Waters, Earths, vitriolick Stones, and especially from the *Pyrites*. In *Galen's* Time, blue Vitriol was made in *Cyprus* by the Heat of the Sun exhaling the Humidity of a vitriolick Water. In some Places of *Hungary* the same Vitriol is now made by boiling and evaporating a Water of the same Kind; and the green Vitriol is made by a Method not much different, in other Places of *Germany*. In some Places it is made by frequent Ablutions of an ash-coloured Earth marked with Spots of different Colours, some of which look like the Rust of Iron, others like Verdegrease, with a strong sulphureous Smell, and an unpleasant acerb Taste. This Vitriol is therefore composed of a Mixture of Iron and Copper, and accordingly its Colour is a Mixture of Blue and Green. In *England*, at the Distance of about a League from *London*, green Vitriol is made from the *Pyrites*, which are heavy, dense Stones, of a dark Colour on the Outside, but their inner Surface is radiated from the Centre to the Circumference, the Rays shining like Bath Metal. They are perfectly insipid

insipid to the Taste, and by being exposed to the open Air for a sufficient Length of Time, they acquire an inward kind of Fermentation, and spontaneously fall to Pièces. In the Cracks or Openings, we observe a certain sort of white saline downy Efflorescence; of an acid styptick Taste. Afterward the whole Substance of the Stone is dissolved, and falls into a fine Powder of a saline and vitriolick Taste; and sulphureous Smell. If fresh *Pyrites* be burned and calcined in the Fire, the Fumes which they emit smell like Brimstone; and a red Calx remains, which contains some Iron and Copper. The way of extracting Vitriol from the *Pyrites* is this:

*The entire Stones are spread abroad in a large Area, to the Height of about three Feet; and there they lie exposed to the Air for three Years, being turned once in six Months, that the Rays of the Sun may calcine them the better, and the Rains penetrate them more easily. By this Means they are reduced to a vitriolick Earth, which being well washed with Rain-Water, the Liquor is afterwards conveyed by Pipes into Cisterns. Then they boil it to a due Consistence in large leaden Vessels, throwing in a Quantity of old Iron, which is presently consumed by the Lixivium. Afterwards the Liquor is set to cool in other leaden Vessels, with Sticks fixed a-crofs, about which the Vitriol crystallizes.*

The *Pyrites* of Sweden and Leige are very full of Sulphur, and the Way of preparing Vitriol from them shall be related in speaking of that Mineral. Sulphur is obtained from these *Pyrites*, *per Descensum*, and then the remaining Mass is calcined, and afterwards made into a *Lixivium*; which being strained, is boiled in leaden Vessels, and then set to crystallize, as before, in a cold Place.

A Solution of Vitriol turns the Tincture of Heliotropium into a faint Purple Colour, coagulates Milk,

Milk, turns Syrup of Violets to a greenish Colour, but does not change a Solution of corrosive Sublimate. When it is mixed with a Solution of Salt of Tartar, or Lime-Water, the Colour becomes a little yellowish, and it communicates a black or dark purple Tincture to the Infusion of Galls, which indeed is peculiar to Vitriol.

By Distillation an acid Spirit is obtained from Vitriol by a very great degree of Fire, called by the Name of the Spirit or Oil of Vitriol, which turns the Tincture of *Heliotropium* and Syrup of Violets to the Colour of Fire, coagulates Milk and Blood, and raises a strong Fermentation and Heat with any alkaline Salt. The Oil of Vitriol, or that strong acid Liquor obtained from it by Distillation, when mixed with common Water, raises an intense Heat; with Sal Ammoniac it raises an Effervescence, but generates Cold, though the Fumes that arise feel hot.

After this Distillation is over, a blackish or red Earth remains in the Retort, called *Colcothar*, and it is the Calx or Crocus of either Iron or Copper, according to the Nature of the Vitriol that hath been distilled. From this Process it is evident that Vitriol is composed of an acid Salt subdued by metallick Parts, which is likewise easily demonstrated from the artificial Ways of producing Vitriol. If Spirit of Vitriol be poured on the Filings of Iron, a very good Vitriol is obtained; and if Copper-Plates, stratified with Sulphur, be calcined in a Crucible, the Water in which this Calx is made to boil for some time, if evaporated, will leave behind a true blue Vitriol.

The Virtues ascribed by Chemists to Vitriol, are past Belief, neither do we find the Event to answer their Promises. *Diascorides* mentions an Emetic Quality of it, and says that dissolved in Water it is good against Worms in the Intestines, and after eat-

ing poisonous *Fungi*. He tells us further, that this Solution snuffed up the Nose purges the Head, and reckons it among the astringent, heating, and caustick Medicines. *Pliny* commends it in Diseases of the Eyes, Fluxes of the Blood, and for the Cure of Ulcers, and *Galen* made use of it in Collyriums. At present it is used as an Emetick, Vermifuge, Styptick, Detergent, and Antiphlogistick, but is seldom given inwardly without Preparation. Externally, white Vitriol is chiefly used in Collyriums, to allay an Inflammation of the Eyes, and stop their Running; and it is thus prescribed :

*Take of white Vitriol, one Scruple ; of Rose or Plantane Water, an Ounce : Let the Vitriol be dissolved in the Water, and strain the Solution, which, if it be too acrid, may be made milder by the Addition of more Water. Or,*

*Take of the common or Florentine Iris, a Scruple ; Rose and Plantane Water, of each three Ounces : Boil them over a gentle Fire till a third Part be consumed, and in the strained Liquor dissolve eight Grains of Vitriol for a Collyrium.*

Powder of blue Vitriol is applied to the Extremities of the Bleeding Vessels in Wounds, and stops the Bleeding by cauterizing the Vessels, and coagulating the Blood.

Among the Preparations of Vitriol, the first is Purification, called *Gilla* of Vitriol, in which white Vitriol is mostly made use of ; it is purified by Solutions, straining, and drying, twice or thrice repeated ; and then being taken from a Scruple to a Drachm at a Dose, in a proper Vehicle, will excite Vomiting. This is recommended by *Paracelsus*, and other Chemists, as an excellent Emetick, as not only cleansing the Stomach by gentle Vomiting, but  
also

also strengthening both Stomach and Intestines afterward by its Astringency, whence it is given with Success in Diarrhœas and Dysenteries. This *Gilla* very much in use before antimonial Emeticks were known, and the Use of *Ipecacuanha* was discovered, but is now almost quite left off.

The Spirit of Vitriol is likewise obtained by Distillation, in the following Manner :

*Take any quantity of green Vitriol, calcine it to Whiteness according to Art, and then fill an earthen Retort two Thirds full of it, and distil it in a reverberatory Furnace. Begin with a gentle Heat to draw off the phlegmatick Part of the Vitriol; then increase the Fire by degrees, till acid Drops begin to appear; and then, having changed the Receiver, and well luted the Joints, raise the Fire to the greatest degree, and keep it up at that Height for three or four Days and Nights, till the white Fumes cease to arise from the Retort. After this, having cooled all the Vessels, pour the Liquor in the Receiver into a Glass Retort, with a Glass Receiver fitted to it, and distil it again in a Sand Heat. The acid Liquor that comes over is termed Spirit of Vitriol, and the heavy and extremely acid Liquor that remains is termed Oil of Vitriol. This Spirit and Oil differ only in this, that in the former the acid Salt is dissolved in a greater quantity of Phlegm, than in the latter. If during the Distillation some Fissures, or Cracks, be made in the Retort, instead of the Oil of Vitriol, a volatile sulphureous fine Spirit will come over, as has been observed by M. Stahl, which is very much sought after and commended by Chemists. From this is prepared a celebrated Diaphoretick in acute Diseases, in this Manner: Take of the volatile Spirit of Vitriol, an Ounce; rectified Spirit of Tartar, three Ounces; Treacle Water, five Ounces,*

*Ounces, and mix them together.* This Medicine is sudorifick and anafseptick, and is given with Succes, from a Scruple to a Drachm, in all malignant Diseases.

Spirit of Vitriol, like all other acid Spirits, calms the Ebullition of the Fluids, stops Hæmorrhages, promotes the Excretion of Urine, often cures intermitting Fevers, when taken in the Beginning of the Fit, diluted with a sufficient quantity of Water, so that the Liquor retain only a grateful Acidity. It may be dulcified by being digested with Spirit of Wine. Oil of Vitriol is caustick, and is used in many Chemical Operations, but its Virtues are the same with those of the Spirit, only it must be given in a smaller Dose; and the best way of exhibiting all these acid Spirits is to drop them into Water, till it attains a grateful Acidity.

Vitriolated Tartar is prepared by saturating the Oil of Vitriol with a sufficient quantity of the Salt of Tartar; and its Virtues are the same with those of the *Arcanum Duplicatum*, or *Sal Polychrestus*; for it is of the same Nature with them. The Salt and Vitriol of Iron is made by digesting and dissolving Filings of Iron with Oil of Vitriol, and evaporating and crystallizing the Solution.

The Mass that remains after the Distillation of Vitriol, called *Colcothar*, is a red Martial Earth, still impregnated with some quantity of acid Salt, and by often washing and drying it becomes an Astringent, which is used externally to stop Bleeding in Wounds; and from the Water in which it is washed, a Salt is obtained, called the fixed Salt of Vitriol, or Salt of Colcothar. When the Colcothar has not been much calcined, it remains white and pellucid, not emetick, but diuretick, and aperient. Though this Salt is so much fixed as not to rise by a very great degree of Heat, continued for several Days, yet it

is

is easily made volatile by means of Borax, and is sublimed in the Form of Silver-coloured saline Flowers. This is the Sedative Salt of the great M. Homberg, and is thus prepared :

*Take the fixed Salt of Vitriol well calcined, and Borax, of each two Ounces: Dissolve them separately in four Pints of warm Water; and then, having mixed the Solutions, pass the turbid Liquor through Cap-Paper, and then distil it in a Glass Alembic, to Dryness; which being done, white saline silver-coloured Flowers will be sublimed. These are to be gathered, and kept for Use. The fixed Salt that remains in the Bottom of the Alembic, by a new Effusion of Water, may be fitted for a new Distillation, which being continued to Dryness, fresh Flowers will arise; and this Operation may be repeated, till all the Salt is sublimed. The same Preparation may be obtained by taking Oil of Vitriol instead of the fixed Salt, and mixing it with twice its Weight of Borax. In this case there is no Precipitation, but nevertheless Flowers are raised of the very same Kind with the former.*

These Flowers are almost insipid to the Taste, and not easily dissolved in Water. They calm the feverish Heat of the Blood, and especially in burning Fevers; they prevent or remove delirious Symptoms, and allay spasmodick Affections, whether hypochondriacal or hysterical, at least for a Time. In a word, this Salt is an excellent Anodyne, and has a just Title to all the Virtues ascribed by Chemists to Vitriol, Sulphur, or what they call the *Archæus Sedor*. The Dose is from one to ten Grains, in any proper Liquor. It is however unsafe to order this Salt in Inflammations of the Lungs, spitting of Blood, and other Inflammations of the Thorax; for though it be insipid to the Taste, yet it contains latent *Spicula*,  
I which

which being gradually disengaged in the Body, may irritate and vellicate the Membranes of the Lungs, and so bring on a Cough.

Vitriol is likewise the Basis of the famous *Sympathetick Powder*, to make which they calcine *Roman Vitriol* by the Rays of the Sun in the Dog-Days, to a white or yellowish Powder, and keep that Powder for Use in Vessels close stopped. *Digby*, and others, have said wonderful things of this Preparation, which are not confirmed by Experience. However, it certainly stops Bleeding, when applied immediately to the open Extremities of the Vessels; and hence some have endeavoured to cure Wounds by the Use of it, mixing only a small quantity of Gum *Tragacanth* in case of a purulent Discharge.

## C H A P. IV.

*Of* A L U M.

**A**LUM is a Salt either natural or artificial. The Natural is either Liquid or Solid. Of the liquid Alum, two Kinds are taken Notice of by the Antients; one pure, the other impure. The Pure liquid Alum was very common and very cheap. It was a smooth, limpid, or milky Substance, always moist. The Impure was always foul, being mixed with some other Substance, of a pale Colour, and rough. The Solid, or Concreted Kind, was by the Antients distinguished, according to the Figure of its Parts, into Fissile and Round. The fissile natural Alum was either in Form of a compact, uniform Globe, or appeared divided into small Hairs or Filaments. The round Kind was sometimes of a more rare Texture, with the Appearance of Bubbles upon it, or full of Holes like a Sponge; and sometimes consisted of several *Strata*, or Crusts, laid over each other.

The



The Factitious Alum is distinguished only by the Countries where it is made, into a great many different Kinds ; and if it is in large Masses, like Rocks, it is termed *Rock*, or *Rocbe-Alum* ; and if it looks like the Fragments of Ice, it is termed *Glacial*, or *Icy Alum*. Factitious Alum was entirely unknown to the Antients, but with us is the only Kind in Use ; for we now know very little of the Natural Kinds, which were formerly so common. M. *Tournefort* found two Species of natural Alum in the Island *Milos*, or *Milo* ; one was in *Strata*, or *Crusts*, of an astringent Taste, and an ash Colour, covered with some filamentary Efflorescences, which smelled like *Aqua Fortis*, but not near so strongly. The other was the Capillaceous, or Filamentary Kind, or true *Alumen Plumosum*. It was in small Pieces, of the Thickness and Length of a Man's Finger, and might by beginning at the Ends, be easily divided into small greyish Filaments, resembling a Tuft, or Pencil. It was soluble in Water, and melted in the Fire, and of an astringent Taste. Even in *Diascorides's* Time, this Alum seems to have been confounded with the *Lapis Amiantus* ; for that Author, talking of the fissile Alum, observes that there was a Stone very like it, and that the way to distinguish them was by the astringent Taste of the Alum, which the Stone had not ; and he might have added, that it could not be melted by Fire, nor dissolved in Water. The History of Medicines being afterwards quite lost in the Ages of Ignorance and Darknes, the Name of the Salt was given to the Stone, and from thence it is that it is, still found thus mistaken in some Dispensatories.

The Ways of making Alum are different in different Countries :

In *Italy*, near *Puteoli*, in a Plain called *Solfatara*, the Alum rises in Form of Flowers spontaneously

neously out of the Ground. *These Flowers are swept into Pits filled with Water, and when the Water is fully saturated with the Salt, they strain it off into leaden Cisterns placed under Ground, till by the Heat of the Earth the greatest Part of the Humidity is evaporated; and then they set the Lixivium in wooden Vessels in a cool Place, to crystallize; which being done, the remaining Humidity is poured off, and the Crystals dried and kept for Use.*

In the Mountains near this Plain, Stones are dug for Building, of which Alum is made in the same Manner as near Rome, which is this:

*The Stones are sawed asunder, like Marble or Free-Stone, and then burnt in Furnaces in the same Manner as Lime-Stones, for twelve or fourteen Hours. After they are cooled, they are carried to a large Area, in which are several Trenches filled with Water, and there laid in small Heaps. These Heaps are watered from the Trenches three or four times a Day, for forty Days; and at length they begin to ferment, and be covered with a red Efflorescence. After this Preparation the calcined Stones are thrown into a Caldron, where they boil till the saline Substance of the Stones is dissolved. Then they convey this Lixivium, boiled to a proper Consistence, through Pipes or Troughs, into large Vessels of Oak, the earthy or stony Part remaining behind in the Caldron, and in about eight Days time the Alum sticks to the Sides of the Vessels four or five Inches thick. The Crystals are pellucid, and of a pale red Colour. The Liquor that remains uncrystallized is boiled over again, either by itself or with fresh Lixivium. The Crystals being separated from the Sides of the Vessel, and washed with clear Water, and afterwards dried,*  
are

are what is called *Alumen Rupeum*, or *Rock-Alum*, in the Shops, because it comes originally from Rocks.

The Way of making Alum in *England*, called likewise *Rock Alum*, is different from this, as the Mineral from whence it is prepared comes nearer the Nature of a *Pyrites*, and accordingly will yield *Vitriol*; and as the *Alga Maritima*, and other things, are mixed with it.

Alum is a strong, astringent, acid Drier. The Native Alum smells a little like *Aqua Fortis*, but the Factitious has little or no smell. When thrown upon live Coals, it rises in Bubbles, and melts in Water. The Crystals of Alum have eight Sides, representing an hexagonal Pyramid, with the Angles cut off, or they are bounded by four hexagonal and four triangular Surfaces. A Solution of Alum coagulates Milk, turns the Tincture of *Heliotropium* purple, makes no Alteration in the Solution of Corrosive Sublimate, turns the Infusion of Galls turbid and whitish; with Salt of Tartar it concretes into a white Coagulum, without any sensible Heat or Smoak; and often upon mixing this Solution with Oil of Tartar, an urinous Smell is perceived; but this happens only when the Alum has been purified with Urine, as in the *English Alum*; but there is no such Smell in the *Roman*.

By Chemical Analysis Alum yields an acid Spirit, not much different from Spirit of *Vitriol*, but not in so great quantity, nor so strong as the Oil of *Vitriol*; for that astringent or absorbent Earth, which is the Basis of Alum, retains the acid Salt so firmly, that the greatest Force of Fire cannot separate them. What remains after the Distillation of Alum, will crystallize into Alum again, if it be first dissolved in Water, and then gently dried. From this Account it is evident, that Alum consists of an acid Salt of the *Vitriolick*

Kind, and an astringent Earth like Bole, or Chalk, very closely united together. It is commended by *Diascorides* for stopping Hæmorrhages, fastening loose Teeth, bringing down Swellings in the Gums, stopping Defluxions of the Ears, Tonfils, and Uvula, for eating away proud Flesh, curing Dimness of the Sight, cleansing and drying Ulcers, checking spreading Foulnesses in the Skin, and for stopping any disagreeable Smell in the Arm-pits and Groins. The same Authors observe also that unmarried Women have used Alum to procure Abortion, and to conceal the Fault they had committed. *Hippocrates* often used the *Egyptian Alum*, and that of *Milos*, in Pains of the Gums, and for various Kinds of Ulcers; but at present Physicians do not order it often, either internally or externally. In Fluxes of Blood it may be used inwardly, in the following Manner:

*Take Rock-Alum, a Drachm; Plantane and Knot-grafs Water, of each three Ounces; add to the Solution, Syrup of white Thorn, an Ounce; for a Julep, to be taken by Spoonfuls.*

*Or, Take of Pure Rock-Alum, two Ounces; melt it over the Fire, adding in the mean time, of the finest Powder of Dragon's Blood, half an Ounce; and make this Mixture, before it grows hard, into Pills as big as a small Pea. The Dose is from a Scruple to a Drachm, every four Hours, till the Flux is stopped; and then once or twice a Day for some Days afterwards. After every Dose the Patient ought to drink a large Draught of some proper Liquor. But great Care is to be taken not to stop the Flux unseasonably, and therefore Bleeding ought to go both before and after it; and Clysters ought likewise to be administred from time to time, to prevent Costiveness, which commonly follows on taking this Medicine.*

When

When it is proper to prevent or check a beginning Defluxion in a Quinsy, Gargles may be made with Alum, in this Manner :

*Take red Rose Leaves, and Alum in Crystals, of each a Drachm ; boil them in eight Ounces of Plantane Water, and in the strained Liquor dissolve an Ounce of Syrup of Mulberries, for a Gargle.*

In Inflammations of the Eyes, the following Collyrium is excellent :

*Let the White of an Egg be shaken or beat with a Piece of Alum, till it acquires the Consistence of an Ointment. Spread this upon a Linen Rag, and lay it warm to the Eyes.*

Riverius orders this Collyrium to be taken off after two Hours, lest it should by its Astringency so far contract the Vessels, as to fix the obstructed Fluids in them. Some Physicians are of Opinion, that repellent and astringent Collyriums should not be applied to inflamed Eyes immediately after the Inflammation appears ; lest the Fluids still in Motion should be fixed in the affected Part, and thereby the Obstruction be increased ; but, except the Motion of the Fluids toward the inflamed Part be very violent, this Precaution is unnecessary ; and, on the contrary, by increasing the Strength and Contraction of the Vessels, these Applications enable them to resist the Force of the Fluids ; whilst at the same time other proper Means are to be used to divert their Course another Way, such as Bleeding, Blistering, Purgings, Cupping, and the like. Besides, if we stay till the Quantity of the obstructed Fluid is very much increased, it is in vain to think of applying Astringents, which would serve only to condense them more, and pre-

vent their being resolved. In scorbutick Disorders of the Gums, the following Wash is very proper :

*Take of Campfire, an Ounce ; Crystal Alum, two Ounces ; Sugar-Candy, four Ounces ; French Brandy, a Quart : Let them stand in a quiet Place for two Days, and then strain off the Liquor, and keep it for Use.*

Alum is by some reckoned a great Specifick in Intermitting Fevers, when prepared in this Manner ;

*First calcine it in an open Fire, and while it is still hot throw it into Vinegar, and let it dissolve ; evaporate the Solution, and beautiful Crystals will be formed. It is to be taken from a Scruple to a Drachm, in a proper Vehicle, before the Fit.*

The usual Preparations of Alum are, Purification, Distillation, and Ustion or Calcination. It is purified by being dissolved in fair Water, and then by evaporating and crystallizing that Solution in the common Manner. It is distilled like Vitriol, and the first thing that comes over is an insipid Phlegm, then an acid Spirit nearly the same with Spirit of Vitriol. What remains in the Retort is a white, light, friable Substance, called Burnt Alum ; being Alum deprived of its Phlegm, and some Portion of its Acid, and by a new Solution and Evaporation it will run into Crystals, as before Distillation. The Phlegm of Alum would be perfectly useles if pure, but as it contains always some Portion of the Acid, and some Alum likewise, which sticks in the Neck of the Retort, it becomes a very useful external Application in Chirurgical Cases, for moderating Inflammations, and drying Ulcers. One Drachm of Alum dissolved in six Ounces of this Phlegm, makes an Alum Water, which is an excellent Detergent for Wounds

Wounds and Ulcers. The Spirit of Alum is used the same way as Spirit of Vitriol. Burnt Alum eats away fungous Flesh, and is usefully sprinkled upon Linnen to absorb bad Smells arising from any Part of the Body.

---

## C H A P. V.

*Of Sal Ammoniac.*

**T**HE Sal Ammoniac of the Antients was very different from what is now called by that Name. *Salmasius*, in his Treatise *De Homonymiis Hyles Iatricæ*, thinks that the antient Salt was the same with Sal Gem; or, if it differed from it in any thing, it was only on account of the different Places where it was found, and in this respect the Sal Gem of one Country may now differ from that of another. *Diascorides* reckons it among the Kinds of common or alimentary Salt, and says that it is fossil, dense, pellucid, white and fissile, the Fissures running in parallel Lines, in all which Properties it agrees with Sal Gem. *Serapion* writes, that Sal Ammoniac is made of hard pellucid Stones, which may very well be said of Sal Gem. *Avicenna* says, it is fissile, diaphanous and crystalline. *Pliny* mentions this fossil pellucid Sal Ammoniac, and also gives an obscure Hint of another kind of it. In the Country of *Cyrene*, says he, Sal Ammoniac is found under the Sands of the same Colour with Alum, in long opake Glebes, of an unpleasent Smell, but useful in Physick. This Description might be applied to our Sal Ammoniac, were it not for the Words that immediately follow, which I am therefore inclined to think have been foisted in by some other ignorant Hand.

Hand. *The best Sal Ammoniac*, says the Text, *is transparent, with streight Fissures*. Whatever be in that, *Pliny's Sal Ammoniac* and ours differ likewise in this, that his was fossil and native, ours is factitious. The antient *Sal Ammoniac* was so called from that Part of *Lybia*, where the Temple of *Jupiter Ammon* stood, where it was found in greatest Plenty. We have now in the Shops a sort of native *Sal Ammoniac*, found in sulphurous Rocks about *Puteoli* in *Italy*; and may be found in all Places where subterraneous Fires do often vomit Flame or Smoke; for the Heaps of Rocks or Stones at the Opening of these Caves are continually exposed to the saline Fumes, and after some Days a white Soot, or saline Crust, is found sticking to the Stones, which being carefully gathered is called *Sal Ammoniac*. This Soot is Sea-salt, or a fossile Salt, dissolved in Water, and sublimed by the subterraneous Heat; and the watery Particles being evaporated, the saline are condensed, and stick in the Crannies or Chinks of the Stones, like a saline Flower, of a salt Taste, soluble in Water, reducible to cubical Crystals, and seeming to differ in nothing from Sea-salt.

The common factitious *Sal Ammoniac* of the Shops, falsely called by some *Armoniac*, is of two Kinds; one brought from *India* in conical Loaves, like Sugar, of an ash Colour; the other comes from *Egypt* and *Syria*, by the way of *Marseilles*, in round flat Cakes, convex on one Side, with a kind of *Umbilicus* in the Middle, and a little concave and rough on the other, being about six Inches in Breadth, and three or four Inches in Thickness; ash-coloured on the Outside, and white within, crystalline and streaked, of a pungent, acrid, salt Taste. Some relate that this Salt is produced from the Urine of Camels dried in the *Lybian* Sands, the fixed Salt being raised, or sublimed as it were, to the Surface by the heated Water of the Urine. But this Account is not confirmed



firmed by any credible Author. Others think this Salt is produced from the Urine of Camels or Cattle, which is first dried, then purified by frequent Lotions, and so formed into Cakes. Others again believe that it is made of five Parts of human Urine, one Part of common Salt and Soot, boiled together till the Humidity is evaporated, that the rest is sublimed, then dissolved again, and so coagulated. But the true way of preparing this Salt was never known till Father *Sicard*, a *Jesuit*, Missionary in *Egypt*, published an Account of the Original and Preparation thereof in the *Memoirs of the Missions of the Jesuits in the Levant*, printed at *Paris* in 1723. “ Sal Ammoniac, says that Author, is made in several Places of *Egypt*, but the best at *Damaier* in the Province called *Delta*. It is sublimed from a certain Soot, which is first thrown into large Glass Vessels about a Foot and half in Diameter, with a little Salt diluted with a small quantity of the Urine of Camels or other Beasts of Burthen. Twenty or thirty of these Vessels, filled two thirds full, are set in Furnaces built for that Purpose, and the Bellies of them covered with Bricks and Clay. The Sal Ammoniac is sublimed into the Neck of these Vessels, a blackish Mass remaining at Bottom. Every kind of Soot is not proper for this Purpose, but only that made from the Dung of Animals, especially Camels, which is therefore collected with great Care; for Wood being very scarce in that Country, they make up this Dung with Straw into Lumps or Cakes for Fuel, having first dried them very well.”

Sal Ammoniac does not change the Tincture of *Heliotropium* immediately, but, after a few Hours, gives it a dark red Colour. It does not coagulate Milk, nor any way affect the Solution of corrosive Sublimate. When mixed with Oil of Tartar, or Lime-water, it yields a penetrating Smell; but  
with

with Oil of Vitriol it raises a violent Effervescence, and a very great Degree of Cold. When the Humidity is evaporated, this Salt concretes into pointed Crystals, representing in some measure little Tufts of Feathers. By Chemical Analysis we obtain from Sal Ammoniac two thirds of a volatile urinous Salt, and a small Portion of an acid Salt, very like the Spirit of Sea-salt. The urinous Salt, when dissolved, coagulates a Solution of corrosive Sublimate, and turns it white, turns the Tincture of Violets green, and raises an Effervescence and Heat with Acids; but, before it is dissolved, the Fermentation it makes with Spirit of Vinegar, and the common Spirits of Nitre and Vitriol, is accompanied with Cold. From hence it is plain that Sal Ammoniac is composed of an acid Salt, joined with an alkaline urinous Salt, but its chief Effects depend on the latter, which is in much greater quantity than the acid.

Sal Ammoniac is much used both by Chemists and Physicians. When given inwardly, it attenuates viscid Juices, and promotes Perspiration, Sweat, and Urine. It is recommended as a great Specifick in Intermitting Fevers, being given in the quantity of half a Drachm, mixed with a Scruple of prepared Crabs-Eyes, before the Fit. In Pleurisies, when Expectoration is indicated, a Scruple, or half a Drachm of Sal Ammoniac, mixed with Syrup of red Poppies, is ordered with Success. Externally, this Salt, by its little Spicula, penetrates the solid Fibres, and attenuates the pituitous viscid Fluids; and therefore, in Swellings of the Tonsils or Uvula, and in a Palsy of the Tongue, it is used as a Gargle, in this Form:

*Take of Florentine Iris Water, six Ounces; Pepper and Ginger, of each half a Drachm; Sal Ammoniac, a Drachm: Mix and make a Gargle.*

Or,

Or, Take Elder Flower Water, six Ounces ; Spirit of Scurvygrafs, an Ounce ; Sal Ammoniac, half a Drachm : Mix and make a Gargle.

To cure certain white Specks in the Eyes, the blue ophthalmic Water is made in this Manner :

*Having poured any quantity of Lime Water into a brass Bason, dissolve Sal Ammoniac in it, and keep continually stirring the Liquor, till it becomes of a fine blue Colour.*

This Salt is likewise used in Washes and Fomentations, to dissolve œdematous or gouty Tumors, and to consume the putrid Flesh of a Gangrene.

Sal Ammoniac is purified by Solution, straining, drying, &c. as the other Salts ; and likewise by Sublimation, in this Manner :

*Take Sal Ammoniac, and common Salt, of each equal Parts ; sublime them according to Art. The white Flowers that arise are termed the Flowers of Sal Ammoniac.*

To obtain the volatile Salt, urinous Spirit, and acid Spirit of Sal Ammoniac, Take that Salt, and Salt of Tartar, of each equal Parts ; sublime and distil them according to Art, in a Glass Alembic. The first thing that arises is a volatile urinous Salt, in a dry Form ; next, the Spirit, or another Portion of the same Salt diluted in a small quantity of Pblegm. The saline Mass which remains at the Bottom, being dissolved in Water, and crystallized, is the febrifugal Salt of Sylvius, consisting of Salt of Tartar and Sea-salt. It is given, in the quantity of two Scruples, in the Beginning of the Paroxysm, and sometimes it succeeds. This Salt, distilled with three times its quantity of Bole, yields

## 126 *Of Fossil, Vegetable, and*

*an acid Spirit, of the same Nature with Spirit of Sea-salt.*

A most penetrating pungent Spirit of Sal Ammoniac is obtained by distilling it in a gentle Heat, with three times its Weight of Quick Lime. This Spirit, mixed with rectified Spirit of Wine, concretes into what is called the *Ossa Helmontii*, which cannot be produced from Spirit of Sal Ammoniac made with the Salt of Tartar.

*Sylvius's* volatile oily Salt, so highly esteemed by some, is made of Sal Ammoniac and some Spices, in this Manner :

*Take of Cardamums, an Ounce ; Cinnamon, a Drachm and an half ; Nutmeg, six Drachms ; Cloves and Cubeb, of each two Drachms ; Salt of Tartar, an Ounce ; Sal Ammoniac, four Ounces ; Spirit of Wine, a Quart : Let them be macerated in a close stopped Glass Vessel for a Day, then distil them in an Alembic of Glass.*

It may likewise be made *extempore*, thus :

*Take volatile Spirit of Sal Ammoniac, and rectified Spirit of Wine, of each four Ounces ; Oil of Citron-Peel, and Mace, of each a Drachm ; of Cinnamon, half a Drachm : Mix them together.*

Sal Ammoniac, and its Spirit, because of their most penetrating Smell, when applied to the Nostrils, are used in that manner with Success in Lethargies, Apoplexies, Syncope, Giddiness, and the Hysterick Passion, to raise the drooping Senses; to stimulate the nervous Membranes, and to excite the animal Spirits. The Spirit is likewise proper for Rheumatick and Paralytick Disorders, being mixed with Oil of Earth-Worms, or any other Oil of that Kind, and applied to the Part affected as an Ointment.

ment. Internally taken, this Salt and Spirit promote a Diaphoresis, Sweating, and the Excretion of Urine, correct the acid Juices that lurk in the Body, help the Circulation of the Fluids, refresh the Spirits, and increase the oscillatory Motions of the Nerves, and thereby remove Obstructions. On these Accounts, the Spirit and volatile oily Salt are given from six Drops to sixty, in Apoplexies, Epilepsies, Lethargy, in sleepy Affections, in hysterical Complaints, and in Malignant Fevers. We ought, however, to be very cautious not to give the volatile Spirit of Sal Ammoniac, or any other subtil penetrating Liquors of that Kind, in too great Quantities, especially without Mixture; lest they should inflame the Membranes of the Œsophagus and Stomach; and burn like Causticks. The best way therefore is to dilute them with a large quantity of any small Liquid.

Sal Ammoniac is much used by the Chemists to volatilize fixed Bodies, to extract the Sulphurs of Metals, and other Minerals; and also to draw their Mercury from them, as they pretend. Hence they have given it various Names, such as the *Heavenly Eagle*, the *Flying little Bird*, the *Solar Salt*, the *Mercurial Soot*, the *Mercurial Salt of the Philoſophers*, the *Mineral Stone*, the *Key of Metals*. Sal Ammoniac is used in preparing the Flowers of several Metals; such as Iron, Copper, Blood-stone, and others, of which in their proper Places. *Aqua Regia*, in which Gold is soluble, is made by mixing Sal Ammoniac with Spirit of Nitre. Besides this common Sal Ammoniac, the Chemists have contrived several other Sorts; such as that made by mixing the volatile Salt of Urine with Spirit of Nitre, of Vitriol, or of Vinegar; by which Ammoniacal Salts are produced, which easily rise in Flowers, and are thereby fitted for the Volatilization and Attenuation of the Parts of Metals.

## C H A P. VI.

*Of Chryfocolla and Borax.*

**NITRUM**, *Baurach*, *Baurachium*, *Borax*, *Tincar*, *Chryfocolla*, are fynonymous Terms. The ancient *Greeks* used the Word  $\text{Νίτρον}$ ; the *Arabians*, *Baurach*; from whence the modern *Greeks* took their  $\text{Βουραξ}$ , and  $\text{Βουραχίον}$ ; and the barbarous *Latins*, *Borax*; all these Terms signifying the *Egyptian* or *African* Nitre already mentioned. *Tincar* is an *Arabic* Word, signifying one Species of Nitre which served to folder Gold, and from thence came the Term *Chryfocolla* of the modern *Greeks*, which by the Antients was used to express a Substance of a quite different Nature. *Serapion* writes, that *Tincar* was a kind of Salt, which was in Taste something like *Borax*, or *Egyptian* Nitre; and that there was a Species of Nitre, or *Aphronitrum*, of which *Tincar* was made. We must not therefore imagine that the modern *Borax*, or *Chryfocolla*, is the same with that of the ancient *Greeks*, such as *Diascorides* and *Galen*. The ancient *Chryfocolla* was a kind of Metallick Medicine, and they had two Sorts of it, Natural and Factitious. The Natural grows in Veins of Copper; and if ever it is found in the Mines of other Metals, it is a sure Sign that they are mixed with Copper. It is found sometimes like a loose Sand, sometimes adhering to some metalline Matter, from which, when it is separated, it appears again in the Form of Dust or Sand. All this Natural *Chryfocolla* is of a green Colour, though not always in the same Degree; for some is of a very deep Green, like a Leek or Emerald, which is the least esteemed; some is of a fainter Green, and more valuable.

This

This *Chryscolla* is refined by different Washings, in this Manner :

*It is put first of all into a Mortar, and Water poured upon it. As soon as it has settled to the Bottom, this Water is strained off, and fresh poured on, with which it is ground and rubbed with a Pestle, and these Lotions and Grinding are continued till the Water comes off clear. Afterwards it is dried in the Sun, and kept for use. If it be desired still finer, it is bruised and calcined over the Fire, and then washed as before.*

Factitious *Chryscolla* is of two Kinds ; one called *Herbacea*, the other *Santerina*. The *Chryscolla Herbacea*, according to *Pliny*, was made in this Manner :

*Native Chryscolla, first well bruised, calcined, and powdered very fine, is macerated in Vinegar, then pounded again, washed, and dried, and coloured with what he calls the Herba Lutea, whence the Painters who use it gave it the Name of Herbacea. It is likewise called Orobitis, either from the Colour of Vetches, or because it was made up in Grains resembling Vetches in Figure.*

The *Chryscolla Santerna*, according to *Pliny*, is made of *Cyprian Verdegrease* and the Urine of a healthy Child, with an Addition of Nitre, all which are beat together in *Cyprian Mortars*. *Galen*, following *Diascorides*, does not mention the Nitre, but informs us that this Kind of *Chryscolla* is prepared in the Summer Time, or in a very warm Air ; and that the Urine must be brought to the Consistence of Honey, before it is used. *Diascorides* ranks this Species among the *Ærugines* or *Verdegreases*. *Pliny*

says that it was used in Physick; and *Galen*, that it was used by the Goldsmiths for foldering Gold.

This is what we find in *Pliny*, *Diascorides*, and *Galen*, concerning *Chryfocolla*. We must, in the next place, examine, whether our Borax be any of the Kinds thereof above mentioned. There are two Kinds of Borax now in the Shops; one called Native, the other Native Borax refined. The Native Borax is brought to us in Pieces about the Size of a Hazel Nut or Walnut, of a dark green Colour, soöl and earthy, and smeared over, as it were, with some kind of Fat or Oil. It is dug up in several Places, but especially in the Empire of the *Great Mogul*, and in *Persia*. In these Countries, in several Mines, but especially in those of Copper, is found a saline turbid Water, of a greenish Colour, which is collected with great Care, and being evaporated to a proper Consistence, then being formed into a Paste with the Mud or Slime of the Springs from whence it arises, and with the Fat of some Animals, it is laid in Pits dug in the Earth, and left there for several Months. Afterwards the Pits being opened, the Water is found conereted into Hairs or Threads. These Threads, dug out of the Pits with the fat Earth about them, is the Native Borax of the Shops. The refined Borax are a Substance made up of clean white pellucid Threads, like Crystals of Alum, having a salt Taste, with some Degree of Acrimony, soluble in Water; and is only the Former, or Native Borax, purified by a Lixivium of Quick Lime. We had it formerly from *Venice*, whence it was termed *Venetian Borax*, but now the refining of this Drug is almost entirely in the Hands of the *Dutch*.

It is evident therefore that the Official Borax is different from the *Chryfocolla* of the Antients; for that was a Species of native Verdegrease, not soluble  
in



in Water, and which, according to *Diascorides*, excited vomiting, and sometimes proved poisonous. Our Borax is a Kind of Salt, soluble in Water, and never poisonous; but I cannot be positive whether it be really different from the Borax or Tincar of the *Arabians*, because none of that is ever brought to us. Thus far we may be sure, that they do not both come from the same Countries.

The Official Borax swells and rises in Bubbles in the Fire, like Alum, and afterwards melts quietly, and concretes again into a hard pellucid Mass, like Glass, still soluble in Water. By being exposed to the Air, it is in a manner calcined, and becomes opaque. It yields nothing in Distillation but an insipid Phlegm; nor does it raise any Effervescence either with Acids or Alcalies, but quickly unites with Oil of Vitriol; and though they are both fixed, they form by their Union an insipid Volatile Salt. A Solution of Borax does not change the Tincture of *Heliotropium*, but turns Syrup of Violets green; when mixed with a Solution of Sal Ammoniac, it sends forth an urinous Smell; and it turns a Solution of Corrosive Sublimate, of a Saffron Colour. Hence it follows that Borax is a fixed Alkaline Salt, something of the Nature of Salt of Tartar, but differing from it in this, that it suffers acid Salts to be united with it, without any Tumult.

Borax has a two-fold Use, Mechanical and Medical. Goldsmiths use it to solder Gold, and facilitate the Fusion of Metals; and Dyers to give a Gloss to Silk Stuffs. Physicians use it to promote Delivery, to bring away dead Children and the Secundines, and to forward the suppressed Menfes or Lochia. The Dose is from half a Scruple to a Drachm. As an Emenagogue, it may be thus prescribed:

*Take of Borax, a Scruple; Myrrh, twelve Grains; Oil of Cinriamon, one Drop; Saffron, three Grains:*

K 2

Mix

## 132 Of Fossil, Vegetable, and

*Mix them, and make them into a Powder, to be taken either in a Glass of Wine, or in a sufficient quantity of Syrup of Mugwort, at the Time that the Menses are expected.*

To bring away the *Placenta,*

*Take Borax and Myrrh, of each fifteen Grains; Birthwort and Saffron, of each three Grains; Oil of Savine, two Drops; Syrup of the Five Opening Roots, a sufficient quantity to make a Bolus.*

The Good Women having observed that Borax served to clean and give a Gloss to Silk, have imagined that it might be good likewise to clear the Skin, and for that reason it is frequently used in Cosmetick Washes and Pomatums.

Borax is an Ingredient in the *Unguentum Citrinum*, in the Powder for difficult Births of *Charas*, in the *Balsamum egregium pro manibus*, and in the *Aqua Cosmetica Columbarum*, of the same Author.

S E C T.

## S E C T. V.

## Of Bituminous Juices.

**B**Y *Bituminous Juices* we mean such Mineral Substances as are inflammable, soluble in Oil, and which may be mixed therewith. These may be divided into Bitumens properly so called, whether Liquid or Solid, into Sulphurs and Arsenic.

---

## C H A P. I.

## Of Liquid Bitumens.

**L**iquid Bitumens are mineral Fluids, either of a thinner Consistence, like Oil, called *Naphtha*, or *Petroleum*, or of a thicker Consistence, like Pitch, called *Pissasphaltum*, or Mineral Pitch.

A R T. I. Of *Naphtha*, or *Petroleum*.

**T**HE *Naphtha* of *Dioscorides*, *Petroleum* of the Shops, is a subtle, inflammable, mineral Oil, with a fragrant bituminous Smell, of different Colours, either white, yellow, red, or black. Different Names are given it by Authors. The *Babylonians* gave the Name of *Naphtha* to an Oil, either black or white, which flowed from some Fountains near *Babylon*. It was likewise called the Oil of *Medea*, because she is said to have burnt *Creon's* Daughter to Death by anointing her with this Oil.

It had the Name of *Petroleum*, because it distils from Rocks. By *Myrepsus* it is termed *Allicola*; by others, the Oil of St. *Barbarus* the Abbat, the Oil of St. *Catharine*, or the Holy Oil. The Word *Naphtha* comes from a *Greek* Verb which signifies to light, or kindle.

There are few Countries in which this Oil is not to be found. In the Island of *Samos*, a kind of it is gathered, called by the Inhabitants by a Name which signifies *Oleum Terræ*; and it is in great Esteem among the *Indians*. In *Italy*, near *Modena*, this Oil is gathered from Springs and Wells; and indeed this whole *Dutchy* abounds with it, especially at a Place called *Frumetto*. The Inhabitants dig Wells to the Depth of thirty or forty Feet, till the oily Spring is found, and there it is always mixed with Water. The Wells dug at the Foot of the Hill furnish a large Quantity of very red Oil; those near the Top, a white Oil, but in smaller Quantities. There is another Rock in the same Country, near the *Apennine Hills*, where there is a perpetual Spring of Water, on which this Oil swims of a yellow Colour, and in so great Quantities, that twice a Week they gather six Pounds of it at a time. *Petroleum* is found likewise in *France*; and particularly in *Britany*, near *Beriers*, a red Oil mixed with Water flows from the Crannies of some Rocks, which is collected with great Care, being no way inferior to the rest in Virtue. There is another such Fountain near *Clermont* in *Auvergne*.

*Petroleum* easily takes Fire, and it is the Custom in many Places to burn it in Lamps instead of common Oil. It is plentifully stored with fine volatile Parts, which easily evaporate, and are so greedy of Fire, that if a lighted Torch, or any other flaming Body, be held in the Wells or Fountains of *Petroleum*, the exhaling Effluvia very often take Fire. It is difficultly mixed with Spirit of Wine. By Distillation

stillation it yields an oily Liqueur, something more pellucid than before; but it loses a great deal of its native Smell, and gives a more languid and less fuliginous Flame. A small Quantity of a yellowish *Magma* remains at the Bottom of the Alembic; and from all this it is evident that *Petroleum* is not at all bettered by Distillation. The best *Petroleum* is reckoned that which is fresh gathered, of a subtle bituminous Smell, white and pellucid; next to that is the yellow, then the red; but the black is counted the most impure of all.

*Diascorides* commends it in Suffusions and Dimness of the Eyes. The *Petroleum* of *Britany* is given, a few Drops at a time, with very great Success, in what is called a Suffocation of the Uterus, and to kill Worms in Children. † It is proper in a Suppression of the Menfes, taken in the quantity of twenty-five Drops, or the Region of the *Pubes* being anointed with it. In a Palsy accompanied with cold Pains in the nervous Parts, the Part affected is anointed with it. *C. Lusitanus* commends the Use of it in stopping the Progress of a Schirrus, made up in the following Liniment:

*See Habelschuch's Travels p. 388.*

Take Oil of Myrtle, and of Nutmegs, of each half an Ounce; the Fat of any Beast of Burthen, two Ounces; Petroleum, three Ounces: Mix them together.

## ART. II. Of Pissasphaltum.

THE *Pissasphaltum* of *Diascorides*, and of the Shops, or mineral Pitch, is a black or red kind of Bitumen, of a fragrant and not unpleasent bituminous Smell, viscid, or of a middle Consistence between Petroleum and a solid Bitumen, not unlike the common Pitch, fusible by Fire, concrescible by Cold, and easily inflammable. It is compounded of two

*Greek* Words which signify Pitch and Bitumen, and the Compound might be rendered a *Bituminous Pitch*, or *Pitchy Bitumen*; the Reason of which Name is not that it consists of an artificial Mixture of these two Substances, but that it smells like such a Mixture. It distills from Rocks, or springs from the Earth in several Countries. That which was brought from *Epidaurus* is commended by *Diascorides*; and in *Italy* they use that which is found in the *Campania di Roma*, about sixty Miles from the City, near a little Town called *Catho*. It ouses through the Crannies of Rocks in the Summer time, of the Consistence of Honey, of a black Colour, and penetrating Smell. There is likewise a plentiful Spring of this Bitumen in *Auvergne* in *France*, which is soft and black, like Pitch, and of a bituminous Smell. If it be kept a great while, it grows hard, retaining still something of its fatty Consistence, and never grows so dry or hard as the solid Bitumens.

Fresh *Pissasphaltum* is digestive, maturating and resolvent. It is used in ripening Buboës, resolving Tumors, discussing Sciatick Pains, and to strengthen luxated Parts after they have been reduced. A Mixture of this, and slimy or muddy Clay, is called *Maltha*, and was used as Mortar in building the Walls of *Babylon*, according to *Vitruvius*.

## C H A P. II.

*Of Solid Bitumens.*

**A** Solid Bitumen is a hard friable Substance, fusible by Fire, easily inflammable, and which is condensed and dried by Cold. It is soluble in Oil, not in Water, and of different Colours. It is formed in the Bowels of the Earth; and while it remains soft, is carried along with the Waters, either into Springs or into the Sea, where it grows hard in a very little time. Other solid Bitumens are dug out of the Earth in that Form; and therefore though they were all once soft and fluid, they are divided into such as are collected from Water, such as the *Bitumen Judaicum*, and Ambergrease; and such as are dug out of the Earth, as yellow Amber, Jet, and Pitcoal.

A R T. I. *Of the Bitumen Judaicum.*

**T**HE *Asphaltum* of *Diascorides*, and *Bitumen Judaicum* of the Shops, called *Carabe* and *Gummi Funerum* by *Serapion*, and by others *Mumia*, is a solid, brittle, ponderous Substance of a red, blackish, or dark Colour; easily inflammable, and of a strong bituminous Smell, especially when warm, and fusible by Fire. It is found in several Places; but the best is that which comes from *Judea*, where it is gathered on the dead Sea, called from thence the Lake *Asphaltites*. It is probable that a great Quantity of this Bitumen rises from the Bottom of that Lake, to the Surface of the Water. At first it is soft, viscid and glutinous, that it can with Difficulty be separated from any Part which it touches; but in time it grows harder than Pitch, and from the Place where it is found,

found, it is called *Carabe* of *Sodom*, *Carabe* being used often by the *Arabians* to denote any solid Bitumen, and the *Dead Sea* being the Lake where *Sodom* stood. The Names of *Gummi Funerum* and *Mumia* were given it because the common People among the *Egyptians* used it in embalming and preserving dead Bodies.

The true *Bitumen Judaicum* is seldom brought to us; for *Diascorides* directs us to make choice of that which shines like Purple, and to reject the black kind as being foul, and of small Value; but all that we see of that kind is black; though even that, when broken in Pieces, appears against the Light to be of a Saffron Colour; and therefore it is possible this may be the same kind recommended by *Diascorides*, only boiled to a hard Consistence in Brass Kettles before it is sent to us.

It is of a discutient, emollient, and agglutinating Quality. It dissolves coagulated Blood, and promotes the Menstrual Discharge. It is an Ingredient in *Venice Treacle*, and in the embalming Powder of *Charus*.

## A R T. II. *Of Ambergrease.*

**A**MBER, called also *Ambarum Cencraceum*, and *Ambra Grysea* in the Shops, is a solid, sebaceous, or fat Substance, not ponderous, of an ash Colour, variegated like Marble, and marked often with white Specks. It flows out of the Earth in Form of a soft Bitumen into the Sea, where it hardens, and is found either floating on the Surface of the Water, or cast on the Shore. This Substance was unknown to the ancient *Greeks*; for no Author mentions it before *Aetus*; neither are the Words *Ambar*, or *Ambarum*, used by the modern *Greeks* and *Arabians* to signify yellow Amber, or *Succinum*, before *Avicenna* and *Simeon Sethi*. And from hence a great deal



deal of Confusion has arisen in the Application of this Term by later Authors.

There are two Kinds of Ambergrease, the ash coloured and black. The first is to be preferred, when cleared of all Filth, with a strong Smell and light, and which, being pricked with a hot Needle, drops a fat odorous Juice. The black is less esteemed, as being mixed with Earth or Mud, or adulterated according to some.

Authors are not agreed about the Nature of Ambergrease: Some take it to be the Dung or Fæces of Birds; some, the Excrement of Whales; some, a vegetable Resin; some, a Species of Camphire; some, the Froth, or *Scum*, of the Sea concreted: And others think, that it is Wax or Honey mixed with the Salt of the Sea, and digested and baked by the Heat of the Sun. But there is now no room left to doubt, but that it is a kind of Bitumen flowing from the Earth into the Sea, soft at first, but afterwards concreted and condensed; for in the Middle of the Lumps, or Glebes of Ambergrease, we find Stones, Shells, the Bones of Animals, the Beaks and Claws of Birds, Honey-combs filled with a soft Wax, and other things of that sort, which could never have remained lodged in this Substance, had it not been once soft and likewise viscid, like a Bitumen. The Glebes of Ambergrease are sometimes found so big as to weigh above two hundred Pounds. It is gathered in great Quantities about the *Molucco* Islands, in the *Indian Sea*, and is frequently found on the Shores both in the *East-Indies*, and in *Africa*. Pieces of it are likewise met with on the Northern Coasts of *England*, *Scotland*, *Norway*, and *Ireland*, being thrown ashore by the Tide.

Ambergrease melts by Fire into a Gold Colour'd or yellow Resin. It is easily inflammable, and is all soluble in Spirit of Wine, except a black, pitchy Matter, which the Spirit leaves untouched. When  
this

this Solution has stood for some time, it lets fall a cloudy Sediment, which is by degrees inspissated and coagulated by the Evaporation of the fine Particles of the Spirit; and when this Coagulum is dried, it turns to a shining foliaceous Earth, not unlike *Sperma Ceti*.

In distilling Ambergrease we get first an insipid, then an acid Liquor or Spirit, and a yellow Oil of a most penetrating Smell, with a small Portion of acid volatile Salt, like Salt of Amber, a black, shining, bituminous Matter remaining in the Retort. From whence it is plain that Ambergrease consists of fine volatile Parts, intangled in other thicker Parts, both saline and bituminous.

This Drug is very much used by Confectioners and Perfumers, in giving a fine Smell to their Preparations; and is recommended by Physicians as proper to raise the drooping Spirits, to supply the Defect thereof, and to accelerate their Motions. Hence it is both a cephalick and cordial Medicine, enlivens the Senses, and is very effectual in Faintings, and all other Affections of the Head and Nerves. It is thought to be very instrumental in prolonging Life, and in producing such Effects as are necessary for Generation. This Opinion prevails chiefly among the *Eastern Nations*.

It is used both outwardly and inwardly. The Dose in Substance is from one to four Grains, taken in a pitched Egg, or in a Glass of Wine with Sugar and Spices. The Tincture extracted with Spirit of Wine is given from one to ten Drops. This Tincture is either Simple or Compound. The Simple Tincture is made by only dissolving the Ambergrease in Spirit of Wine, and then separating the Solution from the Fæces. The Compound Tincture is very fragrant, and is prepared in this Manner:

*Take*

Take Ambergrease and Sugar-Candy, of each two Drachms; Musk, twelve Grains; Civet, two Grains; Spirit of Wine, four Ounces: Digest them in a Glass Vessel for some Days, and then decant the Liquor, and keep it for Use. The Dose is from one Drop to eight or ten, taken in Spanish Wine, Cinnamon Water, or any other Liquor.

Riverius commends Ambergrease as a Strengtheners of the Stomach, and as a Specifick in the *Fames Canina*; and he likewise orders it in Hypochondriacal Melancholy, after Purgings, and a due Use of diluting Liquors, for reviving the native Heat, and exhilarating the Spirits. It is however to be observed that all Perfumes and strong Smells are hurtful to Hysterical Women, and those in Child-bed; and the same thing is remarked in many Hypochondriacal Men; for at this time few People can bear Perfumes or strong fragrant Smells, and for that Reason, the Compositions used by former Physicians, in which Ambergrease was an Ingredient either alone or joined with Musk, are now almost quite laid aside. Sweet Smells, though offensive to hysterical Women, are, nevertheless, of great Service to them, applied by way of Fumigation to the *Uterus*. Ambergrease is an Ingredient in the *Pulvis Diambrae* of *Mesue*, the *Pulvis Aromaticus Rosatus* of *Gabriel*, the *Pulvis Lætificans* of *Nicolaus Præpositus*, the *Pulvis contra Pestem* or *Bezoarticus* of *Renaudæus*; in the *Electuarium Diasatyrium* of *Charas*, in the *Tabellæ Magnanimitatis* and *Apoplectick Balsam* of that Author, and in the *Confectio Alkermes & Hyacinthi*, when they are compleat; for in these Compositions both the Ambergrease and Musk are often ordered to be left out.

ART. III. *Of Amber.*

AMBER, called by various Names by the *Greek* Writers, *Succinum* by the *Latins*, *Karabe* by the *Arabians*, *Hambarum* by the *Barbarous* Writers, and yellow or Citrine Amber in the Shops, is a bituminous, hard, dry, brittle, pellucid Substance, sometimes of a yellow, sometimes of a whitish, and sometimes of a dark Colour; of an acid bituminous Taste, with a small Degree of Astringency, and when warm, of a fragrant bituminous Taste; inflammable, and indued with that Property called from thence Electricity. *Diascorides* has mentioned two Kinds of Electrum or Amber, one called *ἠεφύζορβον*, because it attracts Feathers, named by others *Lyncurium*, from an Opinion that Amber was the Urine of the *Lynx* indurated to the Consistence of a Stone; the other, from its Gold Colour, called *Chrysoforum*, which, he says, was taken by some for the *Lacryma*, or Exsudation of the Black Poplar; but he absolutely rejects the other Origin, from the Urine of the *Lynx*. We may venture to affirm therefore, that the Origin of Amber was entirely unknown to *Diascorides*. It was called likewise *Hyalas*, from its Resemblance to Glass in Splendor and Transparency; and *Harpax*, from its attractive Quality. The *Latin* Name, *Succinum*, seems to have been given it from the prevailing Opinion that it was the Juice of some Tree. The *Barbarous* Name, *Ambarum*, is said to be derived from two *Arabick* Words which signify the *Roman* Poplar. *Karabe* comes either from a *Persian* Word which expresses its attractive Quality, or from an *Arabick* Word which signifies a kind of Bitumen.

There have been various Opinions concerning the Origin of Amber. *Diascorides*, as we have already said, was uncertain about it. *Pliny* writes that it is an Exsudation from a kind of Pine-Tree, which  
grows

grows in the Islands of the Northern Ocean, condensed by Cold; and falling into the Sea, is carried to the nearest Shores of the Continent, and there gathered. But at present there is no Doubt to be made but that it is a bituminous Mineral Juice, formed in the Bowels of the Earth, liquid at first, but afterwards concreted into a hard solid Substance; for in several Parts of *France*, especially in *Provence*, it is dug out of the Mountains, and likewise in *Italy* and *Sicily*; but all this is of the dark and least valuable Kind. The best is found in *Prussia*, where it is of two Kinds; one dug out of the Earth; the other found on the Sea-shore, which is of the same Nature with the former. *Hartmannus*, who has wrote an accurate History of Amber, is of opinion that all *Prussia* and *Pomerania* stands upon a Bed of that Bitumen, because in digging Pits the Inhabitants always meet with great Quantities of Amber, sometimes at a very small Distance from the Surface of the Earth. The chief Amber Mines are near the Sea Coast of *Prussia*, and from the Shore where they are situated, an Hill arises, made up of a cortical Kind of Substance, and resembling Heaps of the Bark of Trees laid together. The exterior *Strata* are of an ash Colour, and dry; the interior are black, soft, and bituminous. Under these *Strata* is found a Substance like Wood, not composed of different Ranks of Fibres, contorted or woven together like vegetable Wood, but of different flat *Laminæ* laid upon one another, which may be called a fossil Wood. This Substance *Hartmannus* believes to be the Matrix of Amber, because a great Quantity thereof is contained in the Veins of the Wood, and it is very seldom found without this Wood. And here I cannot but observe, that in other Places where Amber is found, this fossil Wood is likewise met with, as also the *Lapis Lyncurius*, and Mineral Native Vitriols. The Amber which is gathered on  
the

the Sea-shore comes from these succiniferous Hills beat to Pieces by the stormy Sea, and so carried along with the Waves, and afterwards thrown on the Shore.

Authors are not agreed which of the three Kinds of Amber, the Yellow, White, or Dark, is to be preferred for Physical Uses. The Yellow contains the greatest quantity of Oil, and by Rubbing gives a bituminous Smell, that is not unpleasant. The White has less Oil, and the Brown more Earth. Therefore when the volatile Salt is wanted, the White is to be preferred; when the Oil of Amber is desired, the Yellow ought to be made choice of; but the Brown is to be rejected, as most unfit for both.

Amber is soluble in Spirit of Wine, and likewise in *Oleum Spicæ*, Oil of Lavender, and of Linseed; but with more Difficulty. In Distillation, Amber yields a Phlegm, which is not insipid, but a little acid, and also mixed with some earthy Portion of Oil. Next to that we get a thick brownish Oil. A much greater Quantity of volatile Salt is obtained from White Amber than from Yellow. For from a Pound of the first we get four Drachms of Salt, whereas from the same quantity of the second we get hardly one Drachm. When the Distillation is over, a black shining *Caput Mortuum* remains in the quantity of an Ounce for every Half Pound of Amber. The Salt of Amber being dissolved, and afterwards evaporated, does not crystallize, but runs into little Grains like Millet or Hail; but if it be sublimed in a Glass Vessel with a long Neck, it will be raised to the upper Part of the Vessel in white Flakes like Snow, armed with small short *Spicula*, of an acid and not unpleasant Taste, making no Effervescence with Spirit of Vitriol, but absorb'd by the volatile Spirit of Sal Ammoniac, or Oil of Tartar, with an hissing Noise, and the Appearance of many Bubbles.

From

From these Trials we may conclude that Amber consists of a thicker kind of bituminous Fat, and of another fine subtilę oily Part joined to a volatile Acid, such as exhales from lighted Sulphur, and inspissated thereby.

Many great Virtues are ascribed to Amber; especially when taken inwardly, in a cold State of the Brain, and in Catarrhs, in the Head-Ach, sleepy and convulsive Disorders, in a Suppression of the Menfes, Hysterical and Hypochondriacal Affections; in a Gonorrhœa, *Fluor Albus*, and Hæmorrhages. The Dose is from a Scruple to a Drachm, in a pitched Egg, or any other proper Vehicle :

*Take, for Instance, of Amber finely powdered, or reduced to an Alcohol on a Porphyry, Conserve of Red Roses, and Rosemary Flowers, of each half a Drachm; Syrup of Stæchas, a sufficient quantity for a Bolus; to be taken in the Morning, to check the Flux of Rheum, and blunt its Acrimony in Colds in the Head, Catarrhs, and Running at the Nose.*

*Take prepared Amber, Camphire, and Dragon's Blood, of each a Drachm; Syrup of dried Roses, a sufficient Quantity to make an Opiate; of which the Quantity of a Drachm is to be taken every Morning in a Gonorrhœa; after due Preparation of the Body:*

*Take prepared Amber, and prepared Millepedes, of each two Drachms; Myrrh, half a Drachm; Conserve of the Flowers of white Dead Nettle, one Ounce and Half; Syrup of common Yarrow, a sufficient Quantity for an Opiate; to be taken in the quantity of two Drachms twice a Day in the Fluor Albus.*

## 146 Of Fossil, Vegetable, and

*Take of prepared Amber, a Scruple ; Sperma Ceti, and Terra Japonica, of each fifteen Grains ; Syrup of Ground-ivy, or of Diacodium, a sufficient Quantity to make a Bolus, in a Spitting of Blood, or an habitual Cough proceeding from an acrid Phlegm.*

*Take of Amber, half a Drachm ; Castor and Myrrh, of each twelve Grains ; Saffron, six Grains ; Conserve of Wormwood or Extract of Rue, a sufficient Quantity to make a Bolus, in Hysterical Suffocations, and in a Suppression of the Menses.*

Externally Amber is used as a Fumigation, in Cataplasms, and Cucuphæ, in Disorders of the Head or Brain. The Fumes of it, received at the Mouth, are often found successful in beginning Quinsys, a Falling-down of the Uvula, or Swelling of the Tonfils from a Catarrh.

The Preparations of Amber are, first, Prepared Amber, properly so called ; which consists in reducing it to an impalpable Powder upon the Porphyry, and this Powder is much preferable to the Magistery of Amber. Secondly, the Tincture of Amber, with tartariz'd Spirit of Wine, which may be taken from a few Drops to a Drachm. With this Tincture is made the volatile oily succinated Salt ; by mixing equal Parts thereof, and of the common volatile oily Salt, and then digesting them in a gentle Heat. This new Tincture is Cordial and Diaphoretick, and of surprizing Efficacy in sleepy Affections, Catarrhs, Hysterical Disorders, Palpitation of the Heart, Fainting, Obstructions of the Menses, and Palsies. The Dose is from a few Drops to a Drachm, in Tea, Wine, or any other convenient Liquor.

Externally, the Sutures of the Cranium, the Nares and Temples, are anointed with it in Catarrhs ; the *Scrobiculum Cordis*, in Faintings, and Palpitations,



pitations; and the umbilical Region in Hysterical Affections.

The Third Preparation from Amber, is a volatile acid Salt, a yellow Oil, and a black foetid Oil. The volatile Salt is diuretick, and esteemed a Specifick in hysterical, convulsive, and spasmodick Complaints, taken from ten Grains to half a Drachm; and with that is prepared the succinated Liquor of Hartshorn of *Michael*, very much recommended in the epileptick Fits of Children. This Liquor is made by dissolving as much Salt of Hartshorn and Salt of Amber in Spirit of Hartshorn as the Menstruum will take up. The Oil is useful in hysterical, cephalick, and nervous Complaints, taken inwardly, from two to twenty Drops. Externally, it is used in the Gout, Palsy, and Catarrh, by rubbing it into the Part affected; with it is prepared the succinated Balsam of Sulphur; and it is an Ingredient in the *Emplastrum Magneticum* of *Angelus Sala*.

Amber is an Ingredient in the *Trochisci de Carabe*, in *Crato's Pilulæ de Succino*, in *Charas's* Stomach Plaister, and in his diaphoretick and Styptick Plaisters.

#### •ART. IV. Of Jet, and Fossil Coal.

*JET*, or the Black Amber of the Shops, is a bituminous, dry, hard, black, smooth, shining Substance, which burns almost like Pitch, sending out a black thick Smoak, and a bituminous Smell. It had its Name, *Gagates*, from a Town in *Lycia* called *Gage*, or *Gagis*, and is now found among the Rocks in many Countries in *Europe*; such as the Province of *Narbonne* in *France*, in *Germany*, *Sweden*, *Ireland*, &c. It seems to me to differ from Fossil Coal in the Purity and Fineness of its Parts; for Coal is more gross, and leaves a greater Quantity of earthy Parts after Calcination. It differs from

Bitumen in that it is not fusible by Fire, and is often observed to be covered with a kind of Vitriolick Dust in the Places where it is found.

By Distillation, Jet affords a white and subacid Spirit, or Phlegm, then a black Oil, and next a butyraceous Substance, or thick gross Oil, leaving a black *Caput Mortuum* of a rare Texture, at the Bottom of the Vessel.

*Diascorides* attributes to Jet an emollient, discutient Virtue. In Fumigations, it is proper for a Suffocation of the Uterus; and *Aetius* writes, that Wine, in which burning Jet has been quenched, presently relieves those who are afflicted with the Heart-burn, and that it causes Sweat, and increases the Motion of the Blood. The Chemical Oil is proper to be smelled to in hysterical Disorders.

To Jet may be referred the Fossil Coal, concerning which *Diascorides* says he had been informed that the Fire made of it was increased by Water, and extinguished by Oil; the Truth of which we see every Day in Blacksmith's Forges, who sprinkle Water on their Coal Fires, to prevent the Dissipation of the Flame, and to concentrate the Heat, or confine it to one particular Place, and thereby to make it more intense. This Coal is of no Use in Physick; but an Oil may be extracted from it, resembling that of Jet in Nature and Virtues.

## C H A P. III.

## Of Sulphur.

**T**HE Sulphur of the Shops, called *θειον* in Greek, because used in all Expiatory and other Sacred Rites, is a mineral, concreted Juice, solid, dry, friable, fusible by Fire, and very easily inflammable. The Flame it emits is blue, and the Smell of burning Sulphur is strong, subtile, acid, and very prejudicial to the Lungs.

Sulphur is of various Kinds; it is, in the first place, divided into *απυρον*, or Native Sulphur, which has never been exposed to the Fire; and *εμπυρόμενον*, or Factitious Sulphur, prepared by Fire. It is either of a yellow, yellowish, ash, or light Colour, and either Pure or Impure in Substance.

Native Sulphur, termed *Sulphur Vivum* in Latin, is of two Kinds; one pellucid, and shining like Gold, and either of a citrine or greenish Colour. This is found about the Gold Mines in *Peru*, in *Switzerland*, and many other Places. The other is opaque, found either in hard, solid, shining, greenish or yellow Lumps, or in Form of a clayish Glebe, of a light ash Colour, or yellow. This Kind is dug near all the Burning Mountains, near some sulphureous Springs, and in several other Places of *Europe* and *America*.

Factitious Sulphur is prepared in different Manners. In some Places it is obtained by boiling of Water, and at *Buda* in *Hungary*, according to *Agricola*, it is evaporated along with the Water of the Mineral Springs, and concretes in the Covering, or Dome of these Fountains, like Flower of Brimstone, and is gathered from thence, once every Year, with great Care. It is likewise extracted from a sort of ash-coloured argillaceous Earth. Thus in

Some Places of *Italy* there are Mines out of which a fat, white, argillaceous Earth is dug, mixed with some blackish Veins; and this Earth being put into very capacious earthen Vessels, and distilled, the melted Sulphur runs out at the *Rostrum* of the Alembic into a Receiver, where it soon concretes into large Lumps. After the Distillation is over, a red Earth remains, which is thrown away, as useless. Sulphur is likewise often extracted from a kind of Pyrites, especially near *Liege* in the *Low-Countries*, where there is a kind of Pyrites like Lead Oar, which being dug up, is broken into small Pieces, and then thrown into very large Crucibles, or rather earthen Cucurbits of a quadrilateral Figure, with a narrow Orifice. These Vessels are placed in proper Furnaces, in an inclined Position, whereby the Sulphur contained in these Stones, being melted by the Fire, runs into Leaden Vessels filled to a certain Height with Water, where it concretes immediately; the Substance which remains in the Cucurbit, containing a large Proportion of Vitriol. If by this first Operation, the Sulphur be not sufficiently pure and clean, it is melted a second time in Iron Vessels, and boiled with the Addition of a certain Quantity of Linseed Oil. Afterwards it is made up, either in large Lumps, or is thrown into hollow Cylinders of Iron rubbed over with Oil on the Inside, and so is formed into Rolls.

Sulphur so prepared is called common Brimstone, or common Sulphur, and is of two Kinds, Yellow, or Greenish; which last is preferred for the Extraction of Oils or Sulphurs from other Bodies, as containing the greatest Quantity of Vitriolick Salt. Common Sulphur melts by Fire, is easily inflammable, emitting a fine blue Flame, with acid Effluvia, which, affecting the Nostrils and Lungs, excite Coughing; an electrical Quality is likewise observed in it. It is not soluble by Acids, but very readily by alkaline or  
oily

oily Substances. When fired in the open Air, it flies almost all away, a small Portion of a kind of Metallick Earth only remaining; but if the Vapour that ascends from burning Sulphur be collected with Care, it becomes an acid Liquor, of the same Nature with Spirit of Vitriol, without any apparent Mixture of oily or bituminous Parts; but if Sulphur be distilled in an Alembic, or any other close Vessel, the Vapour does not then turn to a Substance of a different Kind, but concretes in Form of a yellow, footy Dust, called Flowers of Sulphur, which is of the same Nature as it was before Distillation. Therefore, as Sulphur cannot be resolved into its different Principles in close Vessels, the Distillation of it remained very imperfect, till M. *Homberg* put the finishing Hand to it. His Method, as explained in the *Memoirs of the Royal Academy of Sciences*, for the Year 1703. is this:

*Take of Flower of Brimstone, four Ounces; Oil of Turpentine, a Pound: Digest them in a Matrafs over a Sand-Heat for eight Days, till the Sulphur is dissolved, the Liquor appearing of a dark red Colour. Then if the Solution be set in a cool Place, in a Vessel cooled by Art, about three fourth Parts will turn to yellowish Crystals, the other fourth Part remaining dissolved in the Liquor. The Crystals being separated from the Tincture, let a Pound of fresh Oil of Turpentine be poured upon them, and thus continue to repeat all the Parts of the Operation till the Flower of Sulphur be quite dissolved. Mix all the Tinctures together, and distil them in a large Glass Retort over a gentle Fire; the greatest Part of the Oil of Turpentine will come over limpid, together with a small Portion of a whitish and very acid Liquor; but as soon as the Drops from the Neck of the Retort appear red, change the Receiver, and increase the*

*Fire by Degrees, till nothing more will come over. Near the End of the Operation, a thick brownish Oil will appear, mixed with a small Portion of a whitish acid Liquor. In the Bottom of the Retort is found a black, rare, spongy Earth, or Caput Mortuum, in some measure foliaceous, shining, insipid, and remaining fixed in the most vehement Degree of Fire. Let the thick, dark-coloured, and bituminous Oil, be put into another Glass Retort, and when the Remains of the Oil of Turpentine, and of the white acid Liquor, are all drawn off by a very gentle Heat, red Drops will begin to arise: Then immediately remove the Fire, and upon the bituminous Matter in the Retort pour rectified Spirit of Wine, which being drawn off again in a gentle Heat, will have a very fetid Smell: Pour fresh Spirit on the Remainder, and continue this Process, till the Spirit that comes off has lost all its unpleasant Smell; and the Black Matter which then remains in the Retort will smell agreeably enough, and is the true bituminous and inflammable Part of Sulphur.*

It is here to be observed, that only a certain Portion of this bituminous Substance is dissolvable in Spirit of Wine, another Part remaining which is soluble neither by that Spirit, nor by any lixivial Liquor, but only by essential distilled vegetable Oils. This indissoluble Substance is a strong Cathartick given in the Quantity only of two or three Grains; but that Portion which yields to Spirit of Wine is an excellent Balsam for the Lungs.

By this Analysis, three very different Substances are obtained from Sulphur almost in equal Quantities; one acid, the second bituminous, and the third earthy and fixed. The acid Liquor is not different from Spirit of Vitriol, and when saturated with Salt of Tartar, is formed into Crystals, exactly like

like those of vitriolated Tartar. This Similitude of these two Liquors is farther confirmed by the artificial Production of Sulphur, either by reuniting the different Substances extracted from Sulphur, or by the Mixture of other Substances analogous to the former. Thus, if the white acid Liquor, or the Spirit of Sulphur, or Spirit of Vitriol, be mixed with the bituminous Portion of Sulphur, or with any other Bitumen, or Oil, or Fat; and these Mixtures be distilled with Salt of Tartar, a saline Mass will remain in the Retort, partly yellow, and partly red, from which common Brimstone may be obtained by Separation.

This Artificial Sulphur may be made in an easier Manner, by *Pouring upon Vitriol the fixed Salt of Vitriol, vitriolated Tartar, Sal Mirabilis Glauberi, Alum, or any other vitriolick Salt, melted in a Crucible, the distilled or expressed Oil of Vegetables, the Fat of Animals, any mineral Bitumen, or even Spirit of Wine, to the Point of Saturation; For soon after the Affusion of these inflammable Liquors, a bluish Flame appears, and blue-coloured Fumes are seen to arise in the Crucible. If at that Time the saline Mass be taken out of the Crucible, and dissolved in Water, and distilled Vinegar be poured on the Solution, the Liquor turns white, like Lac Sulphuris, and a greyish or yellowish Powder falls to the bottom, which is true genuine Sulphur.*

*Diascorides* writes, that Sulphur is good in Coughs, when mixed with an Egg; and *Hippocrates* used it in hysterical Affections accompanied with Coughing, by way of Fumigation, sometimes alone, and sometimes mixed with other Substances. The internal Use of Sulphur is recommended by Physicians in Diseases of the Lungs, of which it is, by way of

Emi-

Eminence, termed *The Balsam* ; because it promotes Expectoration, and clears and strengthens that Organ ; and is therefore very beneficial in a Phthisis, Asthma, and Catarrh. It has in all Ages been a famous Medicine in cutaneous Diseases, Scabs, *Psoræ*, &c. used inwardly or outwardly. Externally applied it discusses hard Tumours, ripens and digests Buboës, but no Medicine prepared with Sulphur is thought to be agreeable to Women with Child, because it is apt to cause Abortion. Inwardly taken, it is laxative, and promotes insensible Perspiration, as may be perceived by the sulphureous Smell of such Persons as have taken it, and by the brownish or black Colour which it gives to the Gold or Silver they carry about them. It is therefore very quickly and readily diffused through the whole Body, and by its balsamick Parts it blunts and intangles the acrid Salts, with which the Fluids abound in these Diseases ; and thus resolves their native, mild, soft, and oily Qualities ; by which Means it readily cures small Ulcers in the Lungs and Skin.

Though Sulphur may be given inwardly, even in a gross Powder, yet it is seldom ordered without some Preparation. It may be purified different Ways : Some put it into Water with melted Wax, which swims at the Top while the Sulphur falls to the Bottom ; and by repeating this Mixture till the Sulphur begins to acquire a red Colour, it is then thought to be more defecated. Some boil it in Water for several Days, changing the Water every now and then ; and afterwards they set it for two Hours in hot Smoak that some Fumes may exhale, and the remaining pale yellowish Sulphur they judge to be very pure. Others make Milks and Magisteries of Sulphur, which they think much preferable to common Sulphur ; but all these Preparations either change the true Nature of Sulphur, or else are of no Effect at all. The best way to purify it is by Sublimation, or  
the



the Reduction of it to Flower, by which common Method it is freed from the earthy or metallick Parts that may have been mixed with it.

Sulphur thus prepared may be ordered in the Diseases already mentioned, in the following Manner :

*Take Flower of Brimstone, four Ounces ; Sugar of Roses, one Ounce ; Syrup of Maiden-Hair, a sufficient Quantity to make a soft Opiate ; of which three Drachms, or half an Ounce, are to be taken every Morning fasting, and every Evening, at the greatest Distance between Meals, for a long Continuance of Time, in the Scabies and Asthma.*

*Take Flower of Brimstone, an Ounce ; white Sugar, four Ounces ; Rose-Water, a sufficient Quantity : Boil them according to Art, and make them into Tablets or Lozenges ; to be taken at a great Distance from Meals, in Coughs, Consumptions, and Asthmas.*

*Take Flower of Brimstone, two Drachms ; mix it well in a potched Egg, and swallow it early in the Morning fasting, and repeat it again in the Evening, for the Itch, rubbing the Body with the following Ointment :*

*Take the Roots of wild sharp-pointed Dock, and Elecampane, of each two Ounces ; fresh Butter, four Ounces ; Flower of Brimstone, an Ounce and half. Mix them together, and make them into an Ointment.*

As the powerful Acid contained in Sulphur is very prejudicial to the Lungs, Chemists, in order to make it a more safe, and equally efficacious Medicine, have endeavoured to mitigate or inviscate that acid Salt, by the Preparation called *Balsam of Sulphur*, for  
which,

which, on any Quantity of Flower of Brimstone, they pour as much Oil of any Kind as will swim three or four Fingers Breadth above it, and then digest them in a gentle Sand Heat, till the Oil begins to look red or brown. This Liquor, when cold, is separated from the Fæces, and kept for Use. In this Manner are the different Balsams of Sulphur prepared; such as the *Balsamum Anisatum, Faniculatum, Terebinthinatum, Juniperisatum, Succinatum*, so called from the different Oils made use of. The Dose is from ten Drops to thirty, in Asthmas, immoderate Coughs, Ulcers in the Lungs, Nephritick Pains, and Ulcers in the Kidneys and Bladder. From this Balsam are prepared the Balsamick Pills of *Morton*, which in such slow scorbutick or scrophulous Phthises, are attended with a very small Fever, if any at all; and where the expectorated Matter is glutinous, as in an Asthma, are very beneficial, both in the Beginnings and subsequent Stages of the Disease.

*Take Powder of Millepedes, three Drachms; Gum Ammoniac, well purified, a Drachm and an half; Benjamin-Flowers, two Scruples; Extract of Saffron, and Balsam of Peru, of each ten Grains; Terebinthinate Balsam of Sulphur, a sufficient Quantity: Mix and make into Pills, which must either be gilt, or rolled in Powder of Liquorish. The Dose is fifteen or eighteen Grains, to be repeated three times a Day, at Medical Hours.*

But the best Balsam of Sulphur that has ever been prepared is undoubtedly that of the great *M. Homberg*, made by *Extracting a Tincture with Spirit of Wine from the bituminous Part of Sulphur, freed from all its acid and earthy Parts. This Tincture, evaporated over a gentle Fire to the Consistence of a Syrup, is the genuine Balsam of Sulphur,*

*Sulphur, and of excellent Use, not only in Diseases of the Lungs, but in all Disorders in which the animal Functions are disturbed by acrid Salts in the Fluids. It is taken, a few Drops at a time, in any Syrup, or licked from the Palm of the Hand.*

Chemists extract the acid Salt of Sulphur from the bituminous Part, in Form of a Liquor, called Spirit of Sulphur; and among all the different Methods of doing this mentioned by M. *Homburg*, in the *Memoirs of the Royal Academy* for 1703, the following is the best.

*Take of Citrine, or greenish Sulphur, ten or twelve Pounds; melt it in a large Crucible, or any other Earthen Pot, till it takes Fire; then set it on an inverted Crucible, in a broad Earthen Dish; and, having provided a large Receiver, with a wide Neck, about six Inches in Diameter, suspend it so as that it may receive within its Orifice the Crucible which contains the burning Sulphur. The acid Fumes of the Sulphur are thus collected by the Humidity of the Air in Drops which stick to the Sides of the Receiver, and from thence trickle down through the Orifice into the Earthen Dish. This acid Liquor is termed the Spirit or Oil of Sulphur.*

Concerning this Operation, we must observe,  
 1. That two Crucibles ought always to be in Readiness, that, in case the Flame should be extinguished in one, the other, still burning, may be put in its Place. 2. The Crust which is always formed on the Surface of burning Sulphur, is to be taken off with Care, lest it should check the Flame too soon. 3. That the greatest Quantity of the acid Spirit is obtained in moist, rainy, cloudy, cold Weather. 4. That  
 in

in this Method of extracting it, more Spirit is obtained than by any other, a Pound of Sulphur sometimes yielding an Ounce and an Half.

This Spirit of Sulphur is proper in Burning, Malignant, and Pestilential Fevers. It quenches Thirst; prevents the Putrefaction of the Fluids, and calms the Effervescence of the Blood and Bile, not by coagulating the whole Mass of Fluids, as the other mineral acid Liquors, but only by intangling the sulphureous Parts; for, according to *Borelli's* Observation, a Drachm or two of Spirit of Sulphur injected into the Jugular Vein of a Dog, did not kill the Animal; but the same Quantity of *Aqua Fortis*, even diluted with Water, throws a Dog into terrible Convulsions, of which he soon dies; and upon opening his Body, the whole Blood contained in the Veins and Heart is found in grumous Clots. Moreover, Spirit of Sulphur attenuates gross viscid Humours, and thereby often removes Obstructions; whence it is recommended by some in Asthmas; however, I do not think it proper for phthical People, because, like other acid Liquors, it excites Coughing. It is given only in a few Drops at a time, sufficient to give a grateful Acidity to any proper Vehicle; and by repeating this Dose at the Beginning of every Paroxysm, Intermitting Fevers are often cured by it.

Spirit of Sulphur, either by itself, or mixed with Honey of Roses, cures simple *Aphthæ* in a very small Time, provided there be no Inflammation, by only touching these little Ulcers with the Spirit or Mixture, imbibed by a bit of Cotton or Linnen Rag. *Riverius* is of opinion, that it is an excellent Remedy in Putrid Fevers; and that it is found, by Experience, to cool, open, resist Putrefaction, prevent the Inflammability of the Fluids, quench Thirst, &c. But it is never to be given in Pleurifies, Peripneumonies, Spitting of Blood, Phthisis, and other Diseases  
of

of the Lungs, except the Obstruction arises from a thick, pituitous Matter, in Inflammations of the Stomach, Dyfentery, Bloody Urine, and Ulcers of the Kidneys and Bladder.

## C H A P. IV.

*Of Arsenical Juices.*

**A**RSENICAL Substances are nearly allied to Sulphur, and have likewise some Affinity to Metals. They agree with Sulphur in being dissolved by Oil, in being easily inflammable, and in emitting a sulphureous Smell while burning; though this Smell comes nearer to that of Garlick, and is very hurtful. Lastly, they agree with Sulphur in being easily sublimed, or raised into fine Flowers, without leaving any considerable Quantity of the Metallick Part behind. These Substances likewise partake something of the Nature of Metals, especially of Mercury; for they either naturally do, or may be easily made to, shine like Metals; they often leave a Metallick Part after Evaporation, and by the Fumes of them Copper may be turned white, in the same Manner as by those of Quicksilver.

The Word *Arsenick* was taken by the Antients in a more extended Sense than by the Moderns. It was used by *Diascorides* for two different Substances, one of which is the same with our Orpiment, or Yellow Arsenick; the other was Red, resembling Sandaracha, but we do not know precisely what it was; for he distinguished it from Sandaracha, though at the same time he owns that in outward Appearance they differed only in the Degrees of Redness, which in what he calls Arsenick was deeper, and more like  
the

the Colour of Cinnabar. The *Arabians* mention only two Kinds of Arsenick; the Yellow, which is the same with our Orpiment; and the Red, which they called also *Realgar*; but they confounded the Red Arsenick of *Diascorides* with the Sandaracha of that Author. It is however to be observed, that there is a great Difference between the Sandaracha of the *Greeks*, and of the *Arabians*. That of the *Greeks* was an arsenical, poisonous Substance; but that of the *Arabians* is the Gum of the Juniper Shrub, commonly called Varnish; and this Distinction is carefully to be rememberd in the Composition of Medicines.

The Moderns, taking Arsenick in a more limited Sense, understand by it only *Auripigmentum*, or Orpiment. The White and Red Arsenick they sometimes name *Realgar*, and the latter they likewise call Sandaracha. We shall divide Arsenical Substances into three Classes; the First taking in Orpiment; the Second *Realgar*; the Third Arsenick, properly so called.

#### A R T. I. *Of Orpiment.*

**T**HE Orpiment of the Shops, *Auripigmentum* in Latin, Ἀρσενικόν of *Diascorides*, Ἀρσενικόν of *Galen*, *Naructh* of *Serapion*, *Zarnich Arfar* of the *Arabians*, and *Orpiment* or *Orpin* in French, is an arsenical Juice, in squammous or foliaceous Glebes, like the *Lapis Specularis*; the *Squammæ*, or *Strata*, being easily separable from each other.

Orpiment is of three Kinds; one of a Gold Colour; the second of a deeper Red, or Cinnabarine Colour, mixed with Yellow; and the third, greenish and yellowish, mixed with a large Proportion of Earth, and therefore the least valuable. These three Kinds are found in the Veins of Gold, Silver, and Copper Mines; but we know not what was the  
other

other Kind of Orpiment, mentioned by *Diascorides*.

Orpiment is of an acrid Taste, soluble in Oil, and inflammable by Fire, emitting a thin Flame, with a great deal of Smoak, smelling strongly of Sulphur or Garlick. This Smoak, if collected, turns to yellowish Flowers, like Sulphur, and a red, or blood-coloured Mass remains behind; which, when cold, concretes into a hard solid *Regulus*, like Cinnabar, called by some Red Orpiment, or Realgar. If the Orpiment be kept in a subliming Vessel for a long time on the Fire, the whole Mass is raised to the upper Part of the Vessel, and there concretes into a beautiful, red, pellucid Substance like a Ruby; only a small Quantity of Metallick Earth remaining at the Bottom. The first Fumes, which come from this *Regulus*, will turn Copper white and brittle.

Orpiment therefore must consist of the same Parts as common Sulphur, with some Mineral Particles mixed with them; or, it is composed of an acid Salt intangled in Particles of Mercury, and of a bituminous Substance. Its Corrosive Quality arises from the acid *Spicula* stuck into the Particles of Mercury; but it has that Quality in a less Degree than Corrosive Sublimate, because of its bituminous Part. It is less inflammable than Sulphur, because the Energy of the acid Salts contained in it is weakened by the Mineral Parts; and from its Corrosive Quality it is deservedly reckoned among the Poisons.

It was anciently used by Physicians to eat away fungous Flesh, but is now laid aside in that Intention, Chemistry having furnished us with much better Cathereticks. It is used sometimes by Barbers, with a Mixture of Quick Lime, as a Depilatory to eradicate the Hairs of any Part of the Body; but if they let it lie on too long, it corrodes the Skin. Some Physicians recommend the internal Use of Orpiment in Substance, in a purulent Phthisis accom-

panied with Expectoration, and in Asthmas. The Fumes of it may likewise be received at the Mouth in the same Intentions, and the *Chinese* reckon it among the Purgative Medicines. However, I cannot think the inward Use of this Medicine in any respect allowable; for it is a strong Poison, destructive to the Nerves, and accordingly is found by Experience to bring on very terrible Symptoms, such as Spasms in the Hands and Feet, Stupors and Contractions, Cold Sweats, Palpitations of the Heart, Faintings, Thirst, inward Burning, Vomiting, Belly-Ach, Erosions, violent Pains, and Death itself, according to the different Doses of this Poison; and in the Bodies of such as die in this Manner, the Oesophagus, Stomach, and Intestines are found to be inflamed, corroded; and perforated in several Places.

The Antidotes for Orpiment, and all other Arsenical Substances, are whatever is able to blunt the Acrimony of these corrosive Medicines; such as Milk and Oil drank in great Quantities, fat Broths, the juice of Mallows, or Marsh-Mallows, Decoctions of Flea-wort, and Linseed, Marsh-Mallow Roots, and such like. Orpiment or Arsenick worn about the Neck like an Amulet, cannot be so hurtful as some imagine, neither do we believe it of any Virtue in preserving against the Plague or pestilential Diseases.

Of the *Lixivium* of Orpiment and Quick Lime is made the Sympathetick Ink, by the Effluvia of which alone, Letters wrote with Vinegar of Lead become visible; and the Painters use it for Gold Colours, from which Use its Name is derived.



## ART. II. Of Realgar.

**R**EALGAR, or *Lifagallum* of the Shops,  $\Sigma\alpha\rho\delta\tau\epsilon\rho\alpha\lambda\chi\eta$  of the *Greeks*, *Realgar*, *Lesegal*, and *Zarnick Abmer* of the *Arabians*, called by us Red Orpiment, is an Arsenical Juice, of the same Nature with Orpiment, differing from it only in Colour. It is of two Kinds, Native and Factitious. The Native Realgar is dug out of the same Mines with Orpiment, being of a cinnabarine Colour, and smelling like Sulphur and Garlick when burnt, and made up in solid brittle Glebes. The Factitious Kind is made of Orpiment melted and boiled for some Time in subliming Vessels, by which the Yellow Flowers are raised to the upper Part of the Vessels, and the Mass remaining at the Bottom, being condensed by Cold, becomes of a red Colour, like Cinnabar, and is called Realgar; which, if it be exposed to the free Air for a long Time, becomes covered with a saline Efflorescence. This Realgar is not to be confounded with the Factitious red Arsenick, of which we shall treat in the following Chapter.

Realgar is brought from *China* in different Figures; some of which resemble the Figures of little Men, called *Pagods*, and I am of opinion that it is not cut into these Figures, but cast in Moulds.

Realgar is no less poisonous than Orpiment. According to *Diascorides*, Sandaracha has a septick and corroding Virtue; but it is wonderful, that he should recommend the Use of it not only in Fumigations for Coughs of long standing, but also taken inwardly, mixed with Resin for Asthmas, with Honey for a Hoarseness, or a spitting up of a purulent Matter. Even *Hippocrates*, in a Suffocation of the Uterus, accompanied with a Cough, orders the Weight of an *Obolus*, or about twelve Grains, of Sandaracha, mixed with the same Quantity of unprepared Sulphur,

and three or four blanched Almonds, to be taken in sweet or perfumed Wine. The *Indians* commonly drink Wine or Water out of Arsenical Cups for various Diseases, as a sovereign Remedy; though among us, this Practice has been found to be attended with very bad Consequences. It must be owned therefore that the Bodies of Men in hot Countries are different from ours. As the insensible Perspiration is there more copious, their solid Fibres are drier, and more unfit for Motion, and for that Reason require more strongly irritating and stimulating Medicines to make these Fibres contract as they ought. Likewise, as the Fluids in their Bodies are thicker and more viscid than in ours, by the Evaporation of the more fluid Parts of them, they cannot be attenuated but by strong and very acid Medicines; and therefore what is a certain Poison to us, is to them an efficacious Remedy; as the Cathartick Medicines which we use have hardly any Effect on them, except they be given in three times the common Quantity, as has been often observed by Physicians. In our Climate therefore we ought to abstain from the inward Use of these Medicines however prepared, corrected or mitigated, because they still retain some Part of their deleterious Qualities, and prove fatal in tender Constitutions of the Viscera. Neither is the external Use of them altogether safe, for *Fernelius* relates that by applying a large Quantity of Arsenick to a cancered Breast, the Patient was carried off in six Days. About three Hours after the Medicine was applied, she was seized with a Shivering, Vomiting, Pain in her Head, and frequent Fainting. Her Pulse was weak, and as the Symptoms increased by Degrees, she began to be cold in the Extremities of her Body, and then her Face and other Parts swelling beyond measure, she soon died. From this Observation, *Fernelius* takes Occasion to caution Physicians against the External Use of Arsenical Medicines,

Medicines, except in small Quantities, and to Parts at a great Distance from the Heart and Brain, though in the Opinion of many very great Physicians they are thought to be very powerful and efficacious Remedies in cachectick, phagedenic, and carcinomatous Ulcers.

The Correction of Realgar, first proposed by *Helmont*, and afterwards published by *Dallicot*, first Physician to the Duke of *Lorraine*, which has been found successful in many Cases, is this :

*Put any Quantity of Realgar, finely powdered, into a Glass Matrafs, and pour upon it as much of a strong Lixivium of Tartar and Nitre as will swim four Fingers breadth above the Realgar. Digest them in a Sand-heat for twenty-four Hours, shaking the Matrafs very often. Then pouring off and preserving the Tincture, pour new Lixivium upon the Powder, and repeat the whole Operation, till almost all the Realgar is dissolved, some indissoluble metallick Parts only remaining. Afterwards mix all the Tinctures together, pass them through Cap Paper, and pour at several times as much Vinegar of Lead to the strained Liquor, as will precipitate all that can be separated from it. Then, pouring off the clear Liquor from the Precipitate by Inclination, let the Powder be washed with warm Water till it become almost insipid, and when it is well dried, burn a sufficient Quantity of rectified Spirit of Wine upon it, and then calcine it with the Tincture of Opium extracted with Spirit of Wine. This Powder so prepared is a gentle Escharotick, of great Service in cancerous Swellings.*

ART. III. *Of Arsenick, properly so called.*

**A**RSENI<sup>C</sup>K properly so called, is a Substance extracted from an Oar found in *Saxony* and *Bobemia*, named *Cobalt*. It is of three Kinds, Crystalline, Yellow, and Red; and as this Original of Arsenick, and the Way of preparing it, are not commonly known, I shall here shew what is the Nature of Cobalt, and in what manner Arsenick and the other Substances found with it in the Oar, are extracted, also what are the Kinds of Factitious or Artificial Arsenick.

*German* Cobalt of the Shops, *Cadmia Metallica* of *Agricola*, is a ponderous, hard, fossil Substance, almost black, not unlike Antimony or some Kinds of Pyrites, emitting a strong sulphureous Smell when burnt, often mixed with Copper, sometimes with Silver. It is dug out of Mines in *Saxony*, near *Goslar*; in *Bobemia*, in the Valley of *Joachim*; and in *England* in the *Mendip* Hills, in great Quantities. It has so strong a Corrosive Quality as sometimes to burn and ulcerate the Hands and Feet of the Miners, and is a deadly Poison for all known Animals. All the three Kinds of Arsenick are extracted from it, and it likewise serves to make *Zaffera*, used by Potters in giving a blue Colour to their Vessels; and the *Encaustum Cæruleum*, or that Kind of Blue sometimes used by Painters, and often by Women to mix with Starch for whitening and stiffening Linen. The way of making all these, is taught by *Runkelius* in his Art of making Glass. To this Purpose they put the Cobalt in a calcining reverberating Furnace, made for that Purpose in such a manner as that the Flame may just graze upon the Oar, and so set it on Fire. The Flame of the Oar is blue, accompanied with a copious Smoak which is received on the Ceiling of the Furnace, and from thence conveyed  
out

put through a large Funnel made of Boards, and above a hundred Ells in Length, but the greatest Part of it sticks to the Inside of the Funnel, in Form of a whitish Soot; and every six Months the Labourers sweep the Funnel with Brooms, and carefully preserve this Soot, which afterwards serves to make both Crystalline, Yellow, and Red Arsenick.

Crystalline Arsenick is made only by sublimating the Soot in Iron Vessels into an opaque Substance, sometimes white and shining like the *Encaustum Album*, sometimes streaked with Red and Crystalline Veins.

Yellow Arsenick is made of the same Soot sublimed with common Sulphur, in the Proportion of one Part of Sulphur to ten of Soot. The sublimed Mass is of a yellow Colour solid like Sulphur, shining, and not altogether opaque, easily broken, but not friable, or easily crumbled into Dust; and distinguishable from Orpiment by not taking Fire when thrown upon burning Coals, as Orpiment presently is.

Red Arsenick is made of the same Soot and Sulphur, mixed with a small Proportion of a Metallick Substance called the *Spuma* of Copper. The sublimed Mass is solid, of a Cinnabarine Colour, and opaque.

The calcined Cobalt, after the Evaporation of the Fumes or Smoak, is powdered and calcined again; and this Operation repeated till the Calcination is judged to be perfect. Then being very finely powdered, it is mixed with two or three times the Quantity of powdered Flint Stones, and moistened with a little Water in large Tubs, where, in a very short time, it becomes a solid firm Mass, called *Zaffera*, as already said, which is used by the Potters, Glass-Men, Enamellers, &c.

*If two Parts of calcined Cobalt, one Part of Pot-Ash, and three of common Sand, be melted together, a vitreous, opake, bluish Mass is produced, which is ground in Mills to a very fine blue Powder, which is called Smaltum, or Encaustum Cæruleum, used by Painters, and in washing Linnen.*

Arfenick consists of an acid Salt, and a kind of Mercurial or Metallick Substance, which discovers itself when it is distilled in a Retort, mixed with Soap, Suet, Oil, or any fat or oily Substance; for with a strong Degree of Fire the Arfenick will be raised into the Neck of the Retort in a Metallick Form, like Antimony. The Sulphur contained in Arfenick is in so small a Proportion, that it does not flame when cast on burning Coals, though Cobalt contains a great Quantity of Sulphur; which consequently has been separated from the Arfenical Parts in the Calcination and Deflagration, and so evaporated; but the Smell of Arfenick proves that some Sulphur still remains in it. Arfenick is very volatile, for if any Quantity of it is put into a Crucible, and set over the Fire, it will presently evaporate in white Fumes, without leaving any Remainder. If melted, stratified, or cemented with Copper, it turns it of a Silver Colour; but as it impairs its Ductility, this Change of Colour is rendered of no Use.

Arfenick is a powerful Corrosive, and reckoned among the strongest Poisons. When taken inwardly, it causes many bad Symptoms, of which some are common to it with other Poisons; such as Anxieties, Swoonings, Palpitations, a sudden Dejection or Sinking of the Strength and Spirits, Stupors, Deliriums, convulsive Motions of the Limbs, Palfies, Heat and Corrosion of the Fauces, Thirst, Fevers, Vomiting, Pain in the Stomach, cold Sweats, &c. Other Sym-

Symptoms are peculiar to this Poison ; such as not only an Erosion of the Stomach, but an Extenuation of it, in such a manner as that all its Coats taken together shall not be thicker than a Poppy Leaf in many Places, and at the same time the small Intestines are found corroded and perforated ; a sudden Swelling and Sphacelation of the Parts of the Body ; and after Death a more speedy Putrefaction than is observed in other Cases, especially in the Parts of Generation belonging to Men. If Death does not immediately follow, the Patient becomes afflicted with an Hectick Fever, Marasmus, Palsy, Tremors, and sometimes Madness. Some recommend Rock Crystal reduced to an impalpable Powder, as an Antidote against Arsenick, but I should depend much more on drinking large Quantities of Milk, Oil, or fat Broths, while the Poison remains in the *Primæ Viæ* ; but after it has got into the Blood, alexiterious Medicines are to be used, such as *Venice Treacle*, *Mithridate*, *Bezoar*, *Powder of Vipers*, *Contrayerva Root*, and such like, and afterwards a *Milk-Diet*.

Though Arsenick be a quick Poison for both Men and Brutes; it is recommended by some in Intermittent Fevers ; but, let it be never so much prepared and concreted, its deleterious Qualities are only lessened, never wholly removed ; and therefore though it may be a good Remedy for the present, it will afterwards prove a Poison, and bring on very dismal Symptoms. Arsenick therefore, in my Opinion, is worse than the Fever itself ; and, among all the Preparations thereof, there is but one which I can recommend, even to be used externally.

*Take crude Antimony, yellow Sulphur, and Crystalline Arsenick, of each two Ounces ; powder and mix them well in a Glass Crucible, and melt them*  
in

*in a gentle Sand-heat, till they come to the Consistence of Pitch, and the Fire being removed, they will concrete into a Mass of a dark red Colour, which is to be kept for Use.*

This Medicine is only to be applied externally, as being a mild and gentle Caustick, and thought to be indued with a Power of attracting poisonous or other morbifick Matter from the Centre of the Body to the Surface, like a Loadstone; and hence it has the Name of the *Arsenical Magnet*. It is likewise said to be a powerful Ripener, and is therefore applied to Venereal Buboës, with the *Emplastrum Diachylon magnum*. It is an Ingredient in the *Emplastrum Magneticum* of *Angelus Sala*, and recommended for maturating and breaking Venereal Buboës, and is thought to draw the Pestilential Virus out of them. It is likewise proper in scrophulous Ulcers, which it opens, cleanses, and incarns, without the Assistance of any other Ointment.





## S E C T. VI.

*Of Metallick Fossils.*

**B**Y Metallick Fossils, I understand Mineral Substances which have a great Affinity with true Metals, but which differ from them in this, that they are neither ductile nor malleable, but brittle, friable, or fluid. Some of these Substances contain a certain Portion of true Metal: such as the Bloodstone, Smiris, Loadstone, Magnesia, and Calmine, which are mixed with Iron; and Chalcitis, which contains some Quantity of Copper. Others cannot be reduced to any Metal, but are Substances of a peculiar Nature, which may be termed *Spurious Metals*, or *Semi-Metals*. Of this Kind are Antimony, Bismuth, Zinch, and that Metallick Fluid which from its Colour is termed *Hydrargyrum*, or *Quicksilver*.

## C H A P. I.

*Of Metallick Fossils which contain Parts of some true Metal.*ART. I. *Of the Lapis Hæmatitis, or Bloodstone.*

**L**A P I S Hæmatitis, λίθος αιμασίτης of the Greeks, Sedenege and Sadanegi of the Arabians, is a ferruginous, hard, glebous, ponderous Metallick Substance,

stance, of a dark red or yellowish Colour, and sometimes blackish, or of the Colour of Iron, and of an earthy astringent Taste. Being broken, it shews fine, long, sharp Fibres, like those of Wood. It was called *Hæmatites* in *Greek*, from its Colour, or because it is indued with the Virtue of stopping Blood.

*Pliny* distinguishes five Kinds of Bloodstone, according to the Countries where they are found, and their differing Colour and Hardness. Others divide them according to their different outward Appearance. Some Stones have an uneven and angular Surface, as those that come from *Spain*; some are clustered on the Surface, like Bunches of Grapes, from whence they are termed *Hæmatites Botryodes*, as we see in those brought from the *Hercynian Forest* in *Germany*. Others are formed in various Convolutions, like Intestines, or the Outer Surface of the Brain; and these Surfaces are very beautifully delineated by *Aldrovandus* and *Imperati*.

In Iron Mines, the Bloodstone is often found in a distinct Oar; but where-ever it is found, or wherever it grows, there are always red Stones and red Earth near it. It is likewise found sometimes in the same Places with the Loadstone, and indeed there is a great Affinity between these two, as being both justly reckoned Iron Oars. The Bloodstone is dug up in many Places of *Germany*, in *Italy*, and *Spain*, and this last is reckoned the best. That Bloodstone is to be made choice of, which is hardest and smoothest, without any Mixture of Filth, or Veins; and this Stone is carefully to be distinguished from another something like it in Colour, but softer, which Painters and Joiners make use of, called by Mistake in some Books *Hæmatitis*, but its true Name is *Rubrica Fabrilis*, or Ruddle.

Bloodstone is a kind of Iron Oar, from which Iron may be extracted; and in the Valley of *Joachim* in *Bohemia*, the Mines of these Stones are so rich, that

it is thought worth while to extract the Iron from them, which is likewise excellent in its Kind, as *Agricola* relates. This Stone is dissolved by Acids in the same manner as Iron, and with the Vitriolick Acid is turned into green Vitriol.

Both *Diascorides* and *Galen* used Bloodstone in Roughnesses or Cicatrices of the Eye-Lids; and for this Purpose they first rubbed it upon a Whetstone with Water, a Decoction of Fænugreek Seeds, or the White of an Egg; and they commend it when diluted with Milk in Suffusions of the Eyes. In all Ages it has been used in a fine Powder, from one to four Scruples in any proper Vehicle, for all Kinds of Hæmorrhages, in Spitting Blood, and in Ulcers of the Lungs, which it dries and heals. In the Fluor Albus, Cachexia, and Suppression of the Menses, it is found to be as effectual as the *Crocus Martis Aperiens*.

The Chemical Preparations of the Bloodstone are not altogether to be despised; such as its Ammoniacal Flowers, Urinous Spirit, Aperient Tincture, Styptick Liquor, Acid Spirit, and Crocus; all which are thus prepared:

*Take of the finest Powder of Bloodstone, two Pounds; powdered Sal Ammoniac, a Pound: Mix them well, and put them in an Earthen Cucurbit with a Glass Alembick, and proper Receiver fitted to it. Then sublime them in an open Fire, gradually increased. The first Substance that rises is an Ammoniacal Spirit, tintured with something of a yellowish Cast; afterwards come Citrine Flowers, then Flowers of a Saffron Colour. The Mass that remains in the Cucurbit being put into a Retort, and distilled with a great Degree of Fire, will yield an Acid Spirit, not unlike that of Sea-salt. If the Residuum be exposed to the open Air, it will dissolve into a Gold-coloured styptick Liquor,*

*of*

of great Use. But if the Residuum be calcined in a strong Reverberatory Heat, it will turn to a Crocus, of the same Virtues with the Crocus Martis Astringens.

From the above-mentioned saffron-coloured Flowers, a Tincture may be extracted with Spirit of Wine, which some Chemical Physicians prefer to the Tincture of Gold, and therefore term it the *Elixir of the Tree of Life*. The Ammoniacal volatile Spirit has the same Virtues with the volatile Spirit of Sal Ammoniac, and is even more proper to resolve Obstructions, because of the Martial Parts contained in it. Both the Flowers contain the volatile fine Martial Parts of the Bloodstone, raised by the Sal Ammoniac, and as the saffron-coloured Flowers contain more such Parts than the Citrine, they are most esteemed. They smell something like Saffron, and are therefore by *Paracelsus* termed *Aroph*, which is the same with *Aroma Phosphorum*. They open Obstructions, attenuate gross viscid Humours, and very often carry them off by Stool or Urine. The Dose is from three Grains to a Scruple; which if it exceeds, they sometimes cause Vomiting. They are ordered with very great Success in a Suppression of the Menfes, Cachexia, Obstructions in the Viscera, stubborn Fevers, and Quartan Agues. They are by some preferred to the *Flores Martiales*, because in this Oar the Metallick Parts are of a more rare Texture, and the several Principles cohere less than in Iron itself, and consequently they are more easily dissolved by the Sal Ammoniac. These Flowers may be ordered in this Manner :

*Take of the Flowers of the Bloodstone, twelve Grains ; Saffron and Myrrh, of each five Grains ; Extract of Wormwood, a sufficient Quantity for a Bolus,*

*to be taken in the Morning, in a Suppression of the Menfes.*

*Take Arum Root and White Agarick, of each an Ounce; Gum Ammoniac, half an Ounce; Flowers of Bloodstone, a Drachm; Extract of Aloes, of Cinnamon, and of Saffron, of each two Drachms; Syrup of Fumitory a sufficient Quantity to make an Opiate, of which any Quantity between a Scruple and a Drachm is to be taken in Obstructions of the Viscera, Jaundice, Schirrbus, Dropsy, and Cachectick Affections.*

*Take Peruvian Bark, an Ounce; Flowers of Bloodstone, a Drachm; Syrup of Wormwood, a sufficient Quantity to make a soft Opiate, two Drachms of which are to be taken every four Hours, in Quartan Agues, and in all stubborn Intermitting Fevers.*

Instead of the Flowers; the Tincture may be used, which has the same Virtues, and may likewise be used with more Safety in Hæmorrhages, from ten to thirty Drops in any proper Vehicle. The styptick Liquor obtained by dissolving the *Caput Mortuum*, or *Residuum*, after Distillation in the Air, is of very great Efficacy in stopping all Kinds of Hæmorrhages, either externally applied, or taken inwardly, in the Quantity of between five and twenty Drops. It likewise cures the Fluor Albus, Gleets, and Loosenesses, whether with or without bloody Stools, where the Patient's Body has been duly prepared. Lastly, whatever Efficacy is in the *Crocus Martis Astringens*, may be found in the *Caput Mortuum* of the Bloodstone.

The Bloodstone is an Ingredient in the Dysenterick Powder of *Charas*, in the Powder against Hæmorrhages

rhages and Hernias, and in the styptick Plaister of that Author.

ART. II. *Of Smyris, Loadstone, Magnesia, and Petracorium.*

**S**MYRIS, *Smyrillus*, or *Emery* of the Shops, *σμίρις* of the *Greeks*, *Smergium* of *Serapion*, *Sumbagedi* of the *Arabians*, is a ferruginous, heavy, Metallick Substance, of a Colour inclining to Black, and so hard that Lapidaries use it in cutting and polishing their Diamonds, and Smiths to polish their Iron and Steel.

Emery is of three Kinds. The Common, which is blackish, and very much used, is found in many Parts of *Europe*, especia'ly in an Island on the Coast of *Tuscany*, and in *Guernsey* in the *British* Channel. The Second is a hard, uneven sort, of a reddish Colour, like Bloodstone or Oker, but does not stain the Hands. This is by some reckoned among the Bloodstones. The Third is of a blackish red Colour, streaked with gold-coloured Veins. It is found in the Gold Mines of *Peru*, and really contains Gold. This Kind is thought by Chemists to be a Gold Oar, or rather a sort of immature or imperfect Gold, and therefore they esteem it very much, and extract a Tincture from it with Spirit of Sea-salt, with which they fix Mercury in an Instant, and give this Substance the Name of the *Miraculous Precipitate*, because they fancy they shall at length attain the true Art of making Gold by Means thereof.

Emery is recommended by *Diascorides* and *Galen* as a Dentifrice; but it corrodes the Teeth too much, and insensibly wears them away. It is not now of any other Use in Physick.

*Magnes*, or the Loadstone of the Shops, *Ἡρακλειος λίθος*, and *Ἡρακλειωτις* of the *Greeks*, *Lapis Heraclius*, from *Heraclea*,

*Heraclea*, a Town in *Lydia*, Μαγνήτις, from *Magnesia*, another Town in *Lydia*, Σιδνεϊτις, from its attracting Iron, *Magnatis* of *Avicenna*, and *Calamita* of *Rhazes*, is a ferruginous, dense, fossil Substance, of a blackish, bluish, or reddish Colour, attracting Iron or another Magnet, or repelling them, and directing its Poles always to those of the World where it is at Liberty to move. This Substance is not to be confounded with the *Magnes* of *Theophrastus*, which, he says, was white and shining like Silver, not hard, but easily made into Vessels by the Turner's Art; neither did it attract Iron. It was however named from the same *Magnesia* in *Lydia*. Another Name of the Loadstone is *Lapis Lydius*, which is likewise applied to what we call the Touchstone, by which the Truth of Gold and Silver are tried. These two Significations of *Lapis Lydius* are therefore carefully to be distinguished, because they are very different from each other, though they are both from their common Country.

Some of the antient *Greeks*, having observed the Virtue of the Magnet in repelling Iron, believed there were two Kinds of it, different from each other, one that attracted Iron, the other that repelled it.

The Loadstone is found in many Countries of *Europe*, and for the most part in Iron Mines; but the best are those that come from the *East Indies* and *Ethiopia*. It is undoubtedly a kind of Iron Oar, and in some Places in *Germany* they actually extract the Iron it contains; and when exposed in the Focus of a great Burning Glass, it likewise manifestly discovers Iron. The Virtues of the Magnet in attracting and repelling Iron, and in turning its own Poles to those of the World, are very wonderful; and especially its being able to communicate these Virtues to the Iron which it touches.

The Loadstone is not used inwardly in Physick, though *Galen* says it has the same Virtues as the Bloodstone, and also mentions its Purgative Virtue, and recommends it, on that Account, in Dropsies. *Diascorides* proposes that it be given, in the Quantity of three Oboli, to evacuate gross Melancholy Humours. Some think it possessed of a deleterious Quality, which is denied by others; but I imagine the poisonous Quality is to be understood of that other Kind of *Magnes*, mentioned by *Theophrastus*, which I take to be a kind of Native Litharge.

Under the Loadstone some rank likewise a White Stone, called by the *Italians Calamita Alba*, and *Magnes Carneus*; because, as the true Loadstone draws Iron, this is supposed to draw Flesh. It is a white Stone, marked with black Spots, which, if laid on the Tongue, sticks very strongly to it, and is no other than a kind of Rocky Marle, found sometimes in the same Mines with the Loadstone. It is said to be of wonderful Efficacy in Love Affairs, but all the Stories told of it are fictitious and idle. The true Loadstone, externally used, is drying, astringent, and consolidating. It is an Ingredient in the *Emplastrum Manus Dei*, *Emplastrum Divinum*, *Emplastrum Nigrum*, and *Emplastrum Stypticum* of *Charas*.

*Magnesia*, or *Manganesia* of the Glass-Makers, the Soap of Glass of *Merret*, is a fossil, metallick, ferruginous Substance, resembling Antimony in its shining Colour, and very brittle. *Pomet* mentions two Kinds of it; one ash-coloured, which is not easy to be got, and therefore little used; the other black, which is very common. It is used in making and purifying of Glass; for, by mixing a small Quantity of it with the Glass, whilst in Fusion, it clears it from any green or bluish Colours, and makes it  
more



more transparent and bright; and it was on that account that *Merret* termed it *Sapo Vitri*. If too great a Quantity of it be put in, it gives the Glass a purple Colour. It is used by Potters in colouring their Vessels black, as the *Zaffera*, already mentioned, is for blue. The same *Merret* says, the best Manganese is that which is hard, heavy, sparkling, and blackish, and which, being reduced to Powder, turns Lead black. It is dug in *Germany*, *Italy*, *Piedmont*, and in *England*, near the *Mendip Hills* in *Somersetshire*, famous for Lead Mines; and, accordingly, *Merret* tells us, that where-ever the Miners find Manganese, they conclude that there is Lead Oar under it; but whether it contains any Lead or not, has not hitherto been discovered. It is not used in Physick.

The *Lapis Petracorius* of *Pomet*, or *Perigordstone*, is a fossil, ferruginous Substance, black, hard, and heavy, seeming to contain some Particles of Iron. It is dug in the Mountains of *Dauphiny*, and used only in painting Earthen Vessels, and by the Enamellers.

### A R T. III.

Of the *Lapis Cadmia*, *Lapis Calaminaris*, *Tutty*,  
*Pompholyx*, and *Spodium*.

THE Name *Cadmia* has been applied to several Things. *Diascorides* understood by *καδμεία*, the Recrements which arise from Brass, while melting in the Furnace. *Galen* applied it to two Substances, one which comes from Brass, which is the same with the *Cadmia* of *Diascorides*; the other a native Substance found in the Island of *Cyprus*, which he terms *λίθουρος*, or *Stony*. *Pliny*, besides the Factitious *Cadmia* of *Diascorides* and *Galen*, mentions another by the Name of *Lapis Ærosus*, which he

fays was an Oar out of which Copper was made ; and this is perhaps the same with the *Cadmia Lapidosa* of *Galen*. The Dealers in Metals call by the Name of *Cadmia* the *Lapis Calaminaris*, used in making Copper into Brass ; and the *Germans* have given the same Name to *Cobalt* ; and therefore *Agricola*, and the more modern Writers, distinguish three Kinds of *Cadmia* ; one Metallick, one Fossil, and the third that of the Furnaces ; which Division we shall here retain.

The Metallick *Cadmia* is a Fossil Substance, containing some Portion of Copper, Silver, or of both, and is of two Kinds. First, the Native *Cyprian Cadmia*, which is a fossil Substance, or Copper Oar, as has been already said. It is likewise found in several Places of *Asia* and *Italy* ; and is probably the same that *Galen* found in the Island of *Cyprus*, though he does not mention that Copper was obtained from it by Fusion. It is now altogether unknown, or at least confounded with other Copper Oars. The other Kind of Metallick *Cadmia*, or the *Cobalt* of the *Germans*, is a Metallick Substance, from which *Arsenick*, *Zaffera*, and the *Encaustum Cæruleum* are prepared, in the Manner already described.

The Fossil *Cadmia* of *Agricola*, Stony *Cadmia* of *Schroeder*, *Lapis Calaminaris*, or *Calamin*, of the Shops, is a fossil Substance, of a middle Consistence between Stone and Earth, of different Colours ; such as a pale Colour inclining to White, Yellowish, and a blackish Red. This last is full of small ferruginous Globules like Grains of Pepper, and marked with white Veins, and is found in great Quantities about *Bourges*, and near *Saumur* in *Anjou* in *France*. The others are dug in *Germany*, near *Aix la Chapelle*, and all Kinds of it seem to partake of an Iron Oar, because the greatest part is attracted by the Loadstone. This Species of *Cadmia*  
was

was probably unknown to the ancient *Greeks*, or at least not used by them in *Physick*, since it is not mentioned either by *Diascorides* or *Galen*. It is now prescribed, by some *Physicians*, to dry running *Ulcers*, to heal the excoriated Parts of *Children*; either in a fine *Powder* by itself, or mixed with *Ointments*. It is an *Ingredient* in the *Ophthalmick Ointment* of *Renodæus*; and in the red *Drying Ointment*, the *Plaster* called *Manus Dei*, and in the *Styptic Plaster* of *Charas*.

The greatest *Quantity* of *Calamin* is consumed in making *Brass*; and *Agricola* describes two *Ways* of doing this, in the following manner:

*They take small Pieces of the best Copper and Calamin, first calcined and finely powdered, and lay them in Strata in large Pots, each of which holds about fifty Pounds. Some add Glass likewise; and some use the Cadmia of the Furnaces, instead of the Fossil Kind. These Pots are set in an arched Furnace, on Iron Stands, placed in the Middle of it, and the Fire is kindled below them. In the upper Part of each Furnace, is a round Hole covered with a Stone, by which they regulate the Fire. When the Mixture in the Pots has been thus exposed to a very great Degree of Fire, and continued Infusion, for eight or nine Hours, it is changed to Brass, and increased very much in specifick Gravity, tho' it has not yet the Gold Colour. The Pots being cooled, are taken out of the Furnace; and the Brass, which is now of the Colour of white Embers, and Cavernous like a Pumice-stone, is melted a second time, and thrown into a Mould, the Sides of which are Stone, and the Wideness or Distance between these Sides equal to the Thickness that the Brass Plates, now become of a Yellow or Gold Colour, are desired*

*fired to be of. These Plates are afterwards beat upon the Anvil, to make them perfectly uniform.*

The other Way of making Brass is, to *Take a Vessel, in which Silver is usually melted, to coat it on the outside with Clay, mixed with Filings of Iron, and to line the inside with the purest Honey. Small Copper Plates, of about a Finger's Breadth, are likewise rubbed over with the same Honey, and then covered with fine Powder of Calamin, Crude Tartar, and Charcoal made of the Lime Tree, mixed in equal Quantities. The Plates thus prepared, are thrown into the Vessel, and the Vessel covered with a Brick, over which the Coat of Clay is likewise carried, a Hole being made in the Middle large enough to admit an Iron Rod, to stir the melted Metal. The Vessel is then set in such a Furnace, as the Refiners use; and as soon as the Calamin begins to mix with the Copper, a red Smoke ascends, which afterwards becomes partly Red and partly Blue, and last of all Yellow; and this shews that the Mixture is now perfected. The Vessel being then taken out of the Furnace, the Brass is found of a perfect Gold Colour. In this Operation, the Copper takes up a third Part, or at least a fourth Part of its Weight of Calamin, and yet remains as ductile as before; for it may be drawn out into very fine Wire, or beat into very thin Leaves.*

*Cadmia Fornacia*, or of the Furnaces, is of two Kinds; the factitious *Cadmia* of the Ancients, and *Cadmia* of the Moderns, or the *Tutty* of the Shops. But the first Kind of factitious *Cadmia*, *Diascorides*, *Galen*, and *Pliny* understood to be only the Recrements of Copper-Oar, which is blown off by the Bellows in melting Copper, and sticks to the Sides of the Furnace; of which there are different Species, accord-

according to the different Figures into which it is concreted, and the Fineness and Variety of its Colours. The finest Kind, says *Pliny*, sticks in the very Edge or Border of the Furnace; and is as Light as Wood-Ashes or Embers. The best is that which hangs down from the Arch of the Furnace, called *βοτρυώδης*, from the faint Resemblance it bears to Grapes, hanging on the Vine. This is of a middle Weight, between the foregoing Kind and the following, being of two Colours, one Whittish like Wood-Ashes, which is least esteemed, the other Purple, which is more valued. It is very brittle, and much used in Medicines for the Eyes. The third Kind sticks to the Sides of the Furnace, as being too heavy to rise to the Top. It is properly a Crust, and is used to destroy Cicatrices, or the remaining Marks of Wounds. From this, two other Kinds are obtained; one of a bluish Colour and spotted, the other red. The best *Cadmia*, according to *Pliny*, was found in the Furnaces of *Cyprus*; and he informs us further, that a *Cadmia* was likewise found in the Silver Furnaces lighter and whiter; but, however, much inferior to the *Cadmia* from Copper. *Galen* says, that a Sort of *Cadmia* was made from one kind of Pyrites. But all these Kinds are now unknown in the Shops, neither do they seem to have been known to the *Arabians*, who were so little solicitous about the Substances, called by the Name of *Cadmia* by the Ancients, and which were only to be found in the melting Furnaces of the Island of *Cyprus*, that they gave the same Names without Hesitation to other Substances; whence a great deal of Confusion has arisen, and especially, because some of the latter *Arabians*, as well as those who have come after them, have endeavoured to apply to these other Substances what the Ancients said of their true *Cadmia*; and thus *Avicenna* says of the Litharge of Silver, all that *Diascorides* has said of *Cadmia*.

The Modern *Cadmia*, *Cadmia Fornacum* of *Agricola*, *Tutia* of the Shops, is a Recrement of *Calamin*, melted with Copper, and not of Copper alone, as was that of the Ancients. The officinal *Tutty* therefore may be defined a Sublimation of *Calamin* from melting Copper to the upper Part or Roof of the Furnace, where it concretes round Iron Rods placed there, into a solid Crust, which is afterwards beat off into Pieces, like the Bark of Trees, of a yellowish Colour, smooth on the inside and sonorous; of a bluish Ash Colour on the outside, and powdered as it were with very small Grains of the same Substance. This is perhaps the same with the *Tutty* of the Arabians, for *Serapion* describes a Kind of *Tutty*, which is produced and collected in the Furnaces, in which Copper is turned to a yellow Colour. But it is not certain, whether they might not likewise mean the *Calamin* itself by that Word.

*Tutty* is reckoned among the principal Ophthalmick Medicines. It deterges and dries without Acrimony, and is therefore prescribed with Success in Ulcers of the *Cornea*, *Tunica Adnata*, and Eye.Lids; and likewise in Itchings of the Eyes, inveterate Ophthalmias, and to stop an involuntary Flux of Tears and fistulous Humours. It is seldom used without Preparation, which consists in heating it red hot, and then quenching it three or four times in Rose Water, and afterwards levigating it according to Art on a Marble, or Porphyry,

*Take prepared Tutty, half a Drachm; Mouse Ear, Eye-Bright, and Rose Water, of each an Ounce. Mix them, and make a Collyrium. Or, Take Succotrine Aloes, and prepared Tutty, of each six Drachms; White Sugar, a Drachm; Rose Water, and any mild White Wine, of each six Ounces. Digest them in the Sun for forty Days,*

in a close Glass Vessel, and keep the Liquor without straining it. It is applied by dropping a small Quantity of it into the Eyes from time to time. Or, Take of prepared Tutty, a Drachm; fresh Butter, half an Ounce; make an Ointment, of which a little is to be applied to the Corners of the Eyes, and Edges of the Eye-Lids. It is an Ingredient in the Ophthalmick Ointment of Charas.

The *Pompholyx* and *Spodus*, or *Spodium*, of *Diascorides* and *Galen*, are now unknown in the Shops. They tell us, that it was made two Ways; the first, by burning melted Copper to a white, smooth Powder; and the other, by blowing off with Bellows what can be thus separated from *Cadmia*. *Diascorides* mentions two Kinds of *Pompholyx*; one nearly the Colour of Copper, and moist or fatty; the other very white and smooth. This last, he says, was made by the Copper-Smiths, in endeavouring to meliorate that Metal, which they did, by throwing into it a greater Quantity than usual of powdered *Cadmia*; but it is uncertain, whether he here means new Oar, or the factitious *Cadmia* already mentioned. However this be, the fine Dust, or Flower, that arose from this Mixture, concreted into *Pompholyx*. It was likewise made by burning *Cadmia* alone in Furnaces; for having thrown it in small Pieces into the Fire, near the Nozel of the Bellows, they blew the most fine and subtle Parts against the Roof of the Furnace; and what was reflected from thence was called *Spodium*, which is of a blacker Colour and heavier than the *Pompholyx*, and full of Earth and other Filth; and indeed was no better than the Sweepings of the Shops and Furnaces, and therefore was much less esteemed than *Pompholyx*. These Substances might probably still be had, where great Quantities of Cyprian or red Copper are melted; but they are now unknown in the Shops.

The *Pompholyx* of our Shops, *Nilil Album* of some Authors, is a fine white Flower, or Soot, which sticks to the Arch of the Furnaces and Covers of the Crucibles, in which Calamin and Copper are melted together. It is to be chosen very clean, without any Mixture, and has the same Virtues with Tutty. It dries, and is gently astringent without Acrimony; it absorbs the corroding Acrimony of the Fluids, and from thence is reputed a Cooler. It is used with Success to dry old cancerous Ulcers, and to cure Defluxions of the Eyes. From this Substance is prepared the *Unguentum Diapompholygon*.

We have already said, that the *Spodus*, or *Spodium*, of the *Greeks*, was the Ashes, or rather the Metallick Flower, collected in the Furnaces and Shops of Copper-Smiths, and that it differed from their *Pompholyx* in being heavier, and not so pure. *Pliny* has, however, distinguished several Kinds of it; the *Spodium* of Copper, which is the best of all; that of Silver, called also *Laurosis*, from Mount *Laurus*, where there were Silver Mines; that of Gold, collected in refining that Metal; and that of Lead, which was next in Goodness to the Copper *Spodium*, according to *Diascorides*. The *Spodium* of the *Greeks* was never given inwardly, but was applied externally. Besides these Metallick Kinds of *Spodium*, the *Arabians* abusing that Name, which in the *Greek* Language, is very like the Word, which signifies Ashes, added other Kinds, such as the Ashes of Plants and Animals. These *Succedanea* to the true *Spodium* were, by the *Greeks*, termed *Antispoda*; some of which are mentioned by *Diascorides*; such as the Leaves, Flowers, and unripe Fruit of the Myrtle, calcined and washed; the Leaves of the wild Olive; Bulls Glue; new-horn rough, greasy Wool; Pears or Apples, moistened with Water, and then burned and such like. The Ashes of some burnt Roots were  
by



by *Avicenna* termed *Tabascir*, which Word the Interpreters have rendered *Spodium*; and that *Spodium*, which was brought from the Eastern Countries, was undoubtedly a kind of coarse Sugar, as is proved, by very strong Arguments, by the learned *Salmasius*; and therefore it is no wonder, that, by the *Arabians*, and those who followed them, the inward Use of *Spodium* has been so much recommended. The *Arabians* were deceiv'd by the Ash Colour of coarse Sugar, and the Merchants by what was related to them, that it was the Powder of some burnt Reeds. Burnt Ivory is now commonly called *Spodium* in the Shops.

ART. IV. Of *Chalcitis*, *Misy*, *Sory* and *Melanteria*.

*Chalcitis*, *Misy*, and *Sory*, are fossil Substances, very much resembling each other, both in Original and Virtues, found chiefly in the Mines of *Cyprus*. *Galen* says, he found these Substances in the Mines, lying in long *Strata* upon each other; the lowest Stratum being the *Sory*; the middle, the *Chalcitis*; and the uppermost, the *Misy*. He likewise informs us, that in Length of Time, the *Chalcitis* changes into *Misy*; for having kept a Piece of *Chalcitis*, which he took out of the Mine, for about thirty Years, he found the outer Surface of it changed to *Misy*, the middle remaining unaltered; and by some small Alteration, which he observed in *Sory*, after a long time, he concludes, that it is likewise changeable into *Chalcitis*.

The *Chalcitis* of the *Greeks* is a fossil Substance, resembling Copper, brittle, but not stony, and variegated by a Mixture of shining Veins, finer than *Misy*, but coarser than *Sory*; and in the Fire turns to the Colour of Blood, or of *Minium*. The *Misy* of the *Greeks*, is a fossil yellow Substance, sparkling like Gold, and shining when broken, growing from *Chalcitis*,

*Cbalcitis*, as *Verdegrease* does from *Brass*; and seeming to be nothing more than an *Efflorescence* from that Substance. The *Sory* of the *Greeks*, is a fossil Substance, thicker and more compact than *Cbalcitis*, which emits Sparks by Attrition, and is of a spongy Texture, full of Holes, of a viscid Texture, black Colour, astringent nauseous Taste, and of a strong hurtful Smell. This Description agrees very well to a Substance, which the *Turkish* Women make use of to take off Hairs from their Bodies, called by them *Rusma*, which is described by *Bellonius* to be a fossil, almost like Excrement, in Appearance; but lighter, and of a black burnt Colour like Pitch, found in some Mines in *Gallo-Græcia*. The way of using it is this:

*They reduce it to a fine Powder, and mixing with it an equal Quantity of Quick-Lime, they macerate it in Water, in an earthen Vessel. When the Women are to go into the Bath, they lay it on such Parts as they want to have smooth, and let it remain for about as long time as is required to boil an Egg. Then finding by the Touch, that the Hairs are loosened and ready to fall off, they wash the Part with warm Water, and the Paste and Hairs come off together. Our Barbers use Orpiment and Quick-lime for the same purpose.*

*Melanteria* of the *Greeks* is said, by *Dioscorides*, to be sometimes found, like concreted Salt, in the Passages to Mines, from whence Copper is dug; and he observes, that the best was reckoned that which is of a Gold Colour, smooth, clean, and even, and which turns black as soon as it touches Water.

These fossil Substances are now rarely found in Apothecaries Shops, being to be had no where else than in *Cyprus*, *Asia Minor*, or *Egypt*. They are caustick, and burn to an Eschar, and are in some Degree

Degree astringent. *Chalcitis* was used in the *Thebriaca* in *Andromachus's* time; but as it can seldom now be had, *Colcothar* or Vitriol calcined to Redness is substituted for it.

## C H A P. II.

*Of Metallick Fossils of a peculiar Nature, called Metals by some.*

ART I. *Of Antimony.*

**S***tibium*, or Antimony of the Shops, *σίμιμι* of *Diafcorides*, probably the *πυρρασανον* of *Hippocrates*, *Lapis Spumæ Candidæ nitentisque, non tamen translucens* of *Pliny*; *Ailmad* or *Alamad* of the *Arabians*, is a metallick, solid, heavy, brittle Substance, of a lead Colour, with long shining Streaks, fusible by Fire, but not ductile. Native Antimony is of different kinds; some is dug up with the Appearances of polished Iron or Lead, but brittle and mixed with white or crystalline Stones. Some is composed of fine shining Lines like Needles, sometimes disposed in regular Ranks, sometimes without any observable Order, which is termed Male Antimony. Some is disposed in thin broad Plates or *Laminæ*, called Female Antimony by *Pliny*. Some is a Congeries of small Lead-colour'd Rods, got from a tender white Stone, and easily melting in the Fire like Sulphur, which enters its Composition in great Quantities. Antimony of this kind is found in several Parts of *Italy*. Some is marked with Saffron-colour'd or reddish Spots, as the *Hungarian* Antimony, mightily esteemed by Chemists, because of the Golden Sulphur, with which they imagine it to be stock'd. Antimony is sometimes found in a particular Oar,

but

but most commonly mixed with other Metals; and hence its Name may have been derived. Antimony being the same as *ἀντίμου*, an Enemy to Solitude.

Oars of Antimony are found in many Countries, and very plentifully in several Provinces in *France, Auvergne, Poictou, Britany*, and others. The Glebes of Antimony are dug out of the Earth, mixed with a stony Matter, and the pure Mineral or Metal is separated by breaking the Glebe into small Pieces, and afterwards treating it in the same manner as in refining other imperfect Metals.

The *French* Antimony consists of almost equal Parts of common Sulphur, and of a reguline Substance. The Sulphur in Antimony is discovered by the Smell and the blue Flame, which it emits, when calcined in a dark Place; and when thrown into a Crucible with Nitre, it fulgurates in the same manner as a Mixture of Nitre and Sulphur. By distilling Antimony with corrosive Sublimate, we get the Cinnabar of Antimony, which consists of the Sulphur of Antimony, and the Quicksilver of the Sublimate. If Antimony be boiled in common Water, mixed with four times its Quantity of Quick-lime or Pot-ash, the Sulphur it contains being dissolved in the Water, by means of the alkaline Salts, may be precipitated by Vinegar, or any other Acid. The reguline Substance is fusible not ductile, shining like polished Iron, and seems to consist of broad Laminæ; which, when the Regulus is rightly prepared, are disposed in a radiated Manner, so as to exhibit the Appearance of a Star on its upper Surface. This Regulus may, by being calcined in the Sun, be separated from almost all its Sulphur, and turned to an Ash-colour'd true vitrifiable Calx; which being melted by a strong Fire, is converted into a Hyacinth-coloured Glass. If to this Glass, while in Fusion, any sulphurous or other inflammable Substance, be added, it presently recovers its reguline Form  
and

and Splendor. Because of the great Quantity of Sulphur which Antimony contains, an acid Liquor may be extracted from it, in nothing different from Spirit of Sulphur. From all which Observations, it is evident, that Antimony consists of a sulphurous Acid, of a bituminous inflammable Part, and of a vitrifiable metallick Earth. The Regulus of Antimony is dissolved by *Aqua Regia*; but is only calcined by the other Dissolvents of Metals. Antimony dissolves and destroys all Metals, except Gold, when melted with them. From this Property of Antimony, many Names have been given it by Chemists; such as the Devouring Wolf; Saturn, who eats his Children; the Lead of the Wife; and the Sugar of the Sun; because Gold, melted with Antimony, is purified from all other Metals with which it is mixed, and comes out brighter and cleaner than before. Antimony is commonly thought by Chemists, to contain a true, but unripe, solar Sulphur; and hence it has been called Leprous Gold, and the *Ens primum solare*; but it shall be shewn hereafter, that the Sulphur of Metals is not different from the pure Original Sulphur, or Oil of Animals and Vegetables.

Among the Ancients, Antimony was used to dye the *Supercilia* and *Cilia* Black. Accordingly we find in Scripture, that the wicked Queen *Jezabel*, in order to charm the King her Husband, painted her Eyes with Antimony; and the Women, who used that Practice, are also reproved by the Prophets; and from thence it was, that this Mineral got the Name of *γυρακκον*. Antimony, according to *Diascorides*, is astringent, obstructs the Passages, cools, prevents Excrecences in the Flesh, cicatrizes Ulcers, stops Bleeding, and cleanses the Filth and Ulcers of the Eyes. *Galen* mentions its astringent and drying Vertue, and says, that it was used by Oculists in their dry Collyriums in that Intention. It was the Custom

Custom of the Ancients to burn it, then to quench it in Womens Milk, or Wine, and having afterwards reduced it to Powder, to make it up into little Pastils; which being perhaps of a quadrangular Figure, it was from thence called *περάζωρον* by *Hippocrates*. The Emetick Virtue of Antimony seems to have been unknown to the Ancients, or at least they seldom used it as a Cathartick. *Diascorides* indeed mentions it in one Place, as an Ingredient in a purging Medicine made of *Elaterium* and Salt; but the Antimony seems to have been there ordered only to give a Colour to the Composition. Its Cathartick Quality became generally known, about the twelfth Century, in which a *German Benedictine Monk* named *Basilus Valentinus*, published a Book called *Currus Triumphalis Antimonii*, where he extolles the Virtues of that Mineral and its Preparations, in the Cure of an infinite Number of Diseases. In the fifteenth Century *Paracelsus*, following the reigning Opinion, made the Fame of the Virtues of Antimony become still more Universal; however, Physicians disputed afterwards with great Warmth and Virulence, concerning the beneficial and deleterious Qualities of Antimony. At present, they are all agreed, that it is a very powerful and safe Medicine; and they acknowledge two Virtues in it, depending on its different Preparations, one Emetick, or Cathartick; the other Diaphoretick; for all Medicines prepared from Antimony do either purge upward or downward, or are Diaphoretick and Sudorifick. Crude Antimony is seldom used in Physick; tho' it is certain, that it possesses no hurtful Qualities, since it may be taken inwardly in the Quantity of a Drachm or two without exciting any Nausea, and is often boil'd in sudorifick and drying Apozems, without communicating to them any emetick or other prejudicial Virtue; and indeed that way of treating Antimony has no Effect at all, since it communicates nothing to the Water,

at least nothing that the Water can retain, how long soever it be boiled in it. The active Qualities of this Mineral are therefore intirely owing to its Preparations, except it be rendered Emetick by some acid Juices, which it meets with in the Stomach.

Crude Antimony taken inwardly in the above-mentioned Quantity, dissolves Viscidities in the Fluids, opens Obstructions, and is commended by some as a safe Remedy in cutaneous Diseases, in Consumptions and Epilepsies. It is likewise of great Use in fattening Brutes. The external Use of it is likewise recommended for drying Ulcers, in curing the Itch, and other Diseases of the Skin, when mixed in Ointments; in Plaisters for resolving Tumours; and in *Collyria* for Inflammations, and other Affections of the Eyes.

The most common Preparations of Antimony, are the *Hepar* or Liver of Antimony, *Crocus Metallorum*, *Vinum Stibiatum*, Emetick Tartar, Glafs of Antimony, the Golden Sulphur of Antimony, and the Flowers, Butter, and Cinnabar of Antimony, the Powder of Algaroth, the Universal *Panacea*, Bezoar Mineral, Diaphoretick *Calx*, or Diaphoretick Mineral, and the Tincture.

The Liver of Antimony, and *Crocus* of Metals, are commonly prepared in this manner :

*Take equal Parts of Antimony and Nitre finely Powdered. Mix them perfectly, and cause them to detonate in a Metal Mortar, by throwing in a burning Coal, till the Whole is sufficiently deflagrated, and reduced to an half vitrified Mass; which, from its Colour, is termed the Liver of Antimony. Reduce this Mass to a very fine Powder, and let it be washed three or four times in warm Water till it is deprived of its Salts. This Powder, afterwards dried is termed Crocus Metallorum, or Terra Sancta Rulandi. When given in Substance, from two to five Grains,*

it is a very strong Emetick; and from it is prepared the emetick Wine, by infusing it to the Quantity of three Ounces in three Pints of White or Spanish Wine, for two or three Days, shaking the Vessel often. The clear Wine swimming at the Top is given for a Vomit, from one to four Ounces.

To make Emetick Tartar :

Take Liver of Antimony, Crystals, and Cream of Tartar, of each equal Parts. Boil them in a sufficient Quantity of common Water, for six or eight Hours; then strain the Liquor, and evaporate it to Dryness. The dry Mass is emetick Tartar, which is given as a Vomit from two to six Grains.

This is by far the best Emetick, that can be prepared from Antimony, and may be given in any Form; and as the Doses of it are easily adjusted, they may be safely increased or diminished in any requisite Degree, that the Physician shall judge the Strength of the Patient, or Nature of the Disease to require; whereas the same Quantity of the Wine above-mentioned may be more or less Emetick, according to its Acidity or Ripeness. In making the Liver of Antimony, some add to the Antimony and Nitre decrepitated *Sal Ammoniac*, and thus make what is called the Opalin or Ruby-colour'd *Magnesia* of Antimony, from its red Colour, which is a much weaker Emetick than the Liver of Antimony, and does not cause Vomiting in Horses, and other Quadrupeds, but only makes them sweat, or increases Perspiration. It is given to such Brutes from one to three Ounces once every Day, for several Weeks together, to fatten them, and cure their cutaneous Diseases, or other Indispositions. *Crocus Metallorum* is likewise used to take away Spots in the Eyes, and



to cure Ulcers, Itchings and *Pfora* of the *Cornea Adnata* or Eye-Lids.

The *Glass* of *Antimony* is thus made :

*Take any Quantity of Crude Antimony finely powdered, and calcine it in a broad, flat, shallow, unglazed Earthen Dish, over a moderate Fire, stirring it continually with a Tobacco Pipe, or any other Spatula, not made of Metal, to keep it from sticking to the Bottom of the Dish. Great Care must also be taken, that the Operator do not inspire the Fumes, which it emits. When it has done Smoaking, and becomes of an Ash-colour, the Calcination is finished. If the Powder should happen to run into Lumps or Knots, they must be powdered over again.*

This is the Calx of Antimony, two or three Ounces of which being melted in a Crucible, and then poured on a Marble, and there suffered to cool, make the *Glass* of Antimony, which is of a Hyacinth-colour ; but may be made White, Yellow, Red, or Black, by the Addition of Borax, Sulphur, Sal Gem or Orpiment. *Glass* of Antimony is a very strong Emetick, but may be weakened by powdering it on a Marble, and then burning Spirit of Wine upon it, for three or four times. Thus deflagrated, it may be given in the Quantity of ten or twenty Grains, which will either vomit or purge gently, and sometimes only cause a Sweat ; on which Account it sometimes cures Intermittent Fevers, if given a little before the Paroxysm. If this *Glass* reduced to an impalpable Powder, be digested for two or three Days with Spirit of Wine, in which half an Ounce of Mastich has been dissolved, shaking the Vessel often, and the Spirit be afterwards evaporated by a gentle Heat, the remaining *Glass* of Antimony

and Mastich, incorporated in this manner, will have no emetick Quality. This Powder may be taken in the Quantity of six Grains.

The *Regulus* of *Antimony* is thus prepared :

*Take of Antimony, sixteen Ounces ; Crude Tartar, twelve Ounces ; Nitre, five Ounces ; powder, and mix them well together, and throw the Powder in small Quantities at a time into a hot Crucible. When the Deflagrations are over, throw in an Ounce of Nitre by itself, and increase the Fire, till the whole be thoroughly melted. Pour the melted Substance into a warm Brass or Iron Cone, that the Scorixæ may more easily be separated from the Regulus ; and when it is cold, take out the Mass, and separate the Regulus. If a more pure Regulus be desired, melt it a second time with the Addition of a small Quantity of fresh Nitre, and then pouring it into the Cone as before, a pure white Regulus will be obtained with the Star very perfect on its Surface.*

Of this *Regulus* of *Antimony* Cups are made, which communicate an emetick Quality to Wine, which has stood in them for a Night's time. It is likewise made into little Balls or Pills, which are both Emetick and Cathartick, though swallowed a thousand times, from whence they have the Name of the *Perpetual Pills*.

*Reguli* of Iron, Copper, Tin, Lead, Silver, and Gold, are made by melting these Metals with the *Regulus* of *Antimony*. The *Scorixæ* found above the *Regulus* in the Cone, are of a yellow or Saffron Colour, and fully impregnated with the Sulphur of *Antimony*.

The *Golden Sulphur* of *Antimony* is prepared different ways ; and, on account of its excellent Qualities,

ries, has been called by different Names. It is termed *Sulphur*, because it is inflammable like common Sulphur, and emits a fœtid Smell; but it differs from it in this, that it always retains some reguline Parts, and is therefore specifically heavier. It is called *Golden Sulphur*, because Chemists have imagined, that it came near the Nature of the Sulphur of Gold; and because, when mixed with Silver over the Fire, it gives it a Gold Colour. Chemists likewise name it *Sulphur Embryonatum*, procured from the Saturnine *Magnesia*; believing it to contain some Portion of the Sulphur of Gold, got from Antimony, which they term *Magnesia Saturnina*. Glauber calls it *Panacea*, and the *universally Purging Sulphur*; and it was given, for a long time, by *Cardilucius*, a famous *German* Chemist, by the Name of the *Lesser Centaury*. It is likewise the same Powder which has lately been so much in vogue, by the Name of *Kermes Mineral*, or *Powder of the Cartbusians*, because it was first disguised under that Title by Monks of that Order; and it is the same with *Russel's Powder*, which has been so famous in *England*. All the ways of preparing this Golden Sulphur may be reduced to two. The first and most common is, by first dissolving the Sulphur of Antimony by some alkaline Salt, and then precipitating it by distilled Vinegar, or some other Acid. The second is, by precipitating the same Sulphur of Antimony, first dissolved by an Alkali, without the Help of any Acid. The first Golden Sulphur is made of the *Scoriæ* of Antimony, prepared with Tartar and Nitre in this manner:

*Take the Salino-Sulphureous Scoriæ, separated from the Regulus, and boil them in a sufficient Quantity of common Water. Strain the Decoction thro' Cap-paper, and then pour upon it distilled Vinegar, as long as the Mixture continues turbid. A*

## 198 Of Fossil, Vegetable, and

*fine Powder will remain at the Bottom of the Vessel, the limpid Liquor being gently poured off by Inclination.*

To make this Sulphur the second Way, which is that used by the *Carthusians* in making their *Kermes Mineral*,

*Take of Antimony, four Pounds; Solution of fixed Nitre, one Pound; Rain-Water, three Pounds, and boil them for two Hours. Then the Boiling Decoction is passed through Cap Paper, and set in a quiet Place for twenty-four Hours, till a yellowish or saffron-coloured Powder sink to the Bottom of the Vessel, the Liquor remaining clear. This Liquor being poured off by Inclination, the Powder is first washed by frequent Affusions of warm Water, till it is deprived of all its Salts; and then about four Ounces of Spirit of Wine are burnt over it, and it is afterwards dried, and kept for Use.*

This Powder is looked upon as a kind of *Panacea*, or Universal Remedy. It sometimes excites Vomiting, especially when it meets with any Acid in the Stomach, and is sometimes Cathartick, Diaphoretick, and Sudorifick, according as it is determined by the Disposition of the Patient to act upon any one Humour more than on another. It is given from one to four Grains; or sometimes, when it is designed only to attenuate and divide any Viscidities in the Fluids, in the Quantity of half a Grain, repeated every three, four, or six Hours. In Acute Fevers, where there is a great Crudity and Spissitude of the Humours, it is given in small Doses with Success. It changes the crude and serous Evacuations by Stool into a more bilious Consistence, by attenuating the viscid Bile, and so disposing it to pass off by Stool.

It

It is often given with Success in the Beginning of the Small-pox and Measles, when they are apprehended to be of a bad Kind, at small Doses mixed with Bezoardick Powders or Absorbents, such as Crabs Eyes, Red Coral, Pearl, Egg Shells, Crabs Claws, and the like ; for thus it excites a Spitting and Diaphoresis, removes Anxieties, corrects the Lympha, and coagulated Serum, and raises such an Effervescence in the Blood as tends to purify it. *Glauber* confirms these Virtues by the Examples of seven Children in the Small-pox. *Frederick Hoffman* commends the Use of this Powder in stubborn Autumnal Agues, because it powerfully opens Obstructions, especially of the Liver, by which these Fevers are produced, especially when taken in the Quantity of a Grain, mixed with detergent anti-febrile Salts ; such as the Salt of Wormwood, the febrifugous Salt of *Sylvius*, vitriolated Tartar, and the like. *Schroeder* ordered it in the Quantity of half a Grain, or a Grain, three or four times a Day, in the intermitting Fevers of Children, and commends it very much in correcting the Acrimony of the Serum, and especially that of Tears, which give Pains in the Eyes, and produce very bad Ophthalmias. The same Author mentions a Woman labouring under Scorbutick Symptoms, and Defluxions of so acrid a Kind as to corrode her Lungs, and bring on a Spitting of Blood, who, by using this Sulphur of Antimony in very small Quantities, corrected the Acrimony, and stopped the Motion of this Serum, and thereby prevented the Growth of a Disease, which must otherwise have been of very fatal Consequence. *Hoffman* says it is a most effectual Remedy in such Chronical Diseases as arise from long Obstructions of the Viscera. In a Dropsy, for Instance, it is very properly mixed with the Filings or Crocus of Steel and Nitre ; in Epilepsies, with all the Cinnabars ; in the Scurvy, with the *Arcanum Duplicatum* ; in Dysenteries, with

the *Confectio de Hyacintbo*; in a Dyfury, or Complaints of the Stone, with White Nettle or Pellitory Water; and even in Pleurifies and Peripneumonias, he frequently gives it, in the Quantity of three or four Grains, in a Glafs of strong *Spanish Wine*, in *Carduus Water*, in an Infusion of Red Poppies, or in the Juice of Dendelion, or Borage. *Junkerus* observes, that this Powder has in many Patients suspended, in one Moment, the Effects of a suffocating Catarrh, sometimes by producing a gentle Vomiting, sometimes by Sweating, and sometimes without any sensible Evacuation; and he advises it to be mixed in these Cases with a certain Digestive Salt. It may be given very advantageously to Cachectick Girls, in the Quantity of a Grain mixed in ten Grains of *Crocus Martis Aperiens*, and of the *Arcanum Duplicatum*, the Dose being repeated twice a Day. This Powder may be given either alone, or mixed with a little Sugar, and diluted with Wine or Water, or any other proper Liquor. It is likewise sometimes given with Oil of Sweet Almonds, or in Conserve of Violets, Borage, &c. in Form of a Bolus.

It is however to be carefully observed, that this Powder is not to be given till the Quantity of Blood has been lessened, and all the Fluids sufficiently diluted and attenuated; for, as by the Use of it, the Blood is very suddenly rarified, and put into a kind of Effervescence; if the Vessels are before full, they must be still more distended, by the increased Heat and Motion of the Blood and other Fluids, and hurtful Congestions may be found in the Viscera. It ought therefore never to be given, till the Dangers from a Plethora are taken off, and till the Humours have been rendered fluid by great Quantities of Diluents often repeated.

The *Lixivium*, in which Antimony has been boiled, passed through Cap Paper, is recommended by some in Scabs, and other Diseases of the Skin.

The Fumes which arise from ignited Antimony, may be collected in white, yellow, and red Flowers, if proper Vessels are made use of, and, by adding powdered Glass, Sal Ammoniac, or Nitre, that they may rise in greater Quantities; and these Flowers beingedulcorated by frequent Lotions, are Emetick, Cathartick, and sometimes Sudorifick, being given from two to twelve Grains.

From the *Martial Regulus* of Antimony, the Silver Flowers known by the Name of *Antimonial Snow*, are prepared in this Manner:

*Take of the Martial Regulus, a pound; put it into a large Earthen Pot, placed in the midst of burning Charcoal: Let a Cover be perforated in the Middle, and so placed as that there may be the Breadth of two Fingers between it and the Reguline Powder; and place another Cover over the Mouth of the Pot. Give a very strong Degree of Fire for an Hour, till the Regulus is perfectly melted: Then, the Vessels being suffered to cool, the Silver Flowers are found in Form of small Spicula, in the void Space between the first Cover and the Regulus.*

These Flowers cause a Diaphoresis and Sweat, and are therefore prescribed in Malignant Fevers, and other Diseases where a Diaphoresis is required. They often cure Intermitting Fevers, given from ten to forty Grains, a little before the Fit.

The *Butter of Antimony*, called *Spuma Venenata duorum Draconum*, and the Cinnabar of Antimony, are to be made in this Manner:

*Take*

Take any Quantity of crude Antimony, and of Corrosive Sublimate; Being first powdered and well mixed, let them stand in a cool Cellar for one Night; then distil them in a Retort with a white short Neck. The Fire being gentle at first, a white heavy Liquor comes over; then increasing the Fire, the Butter sometimes runs, sometimes sticks to the Neck of the Retort, in Form of Crystals or Ice. These Crystals are melted by applying burning Charcoal to the Outside of the Retort. As soon as a reddish Soot begins to stick to the Neck of the Retort, the Receiver, with the Butter of Antimony contained in it, is to be removed, and another put in its place; then, by giving a very strong Degree of Fire, the Quicksilver will be seen to fall into the Receiver, and the Cinnabar will stick to the Neck of the Retort.

The Butter is rectified by being distilled in another Glass Retort, in a Sand Heat. It is a very powerful Caustick, and eats away all fleshy Excrescences, and stops a *Sphacelus*.

The Cinnabar, which sticks in the Neck of the former Retort, is powdered, mixed with its own *Caput Mortuum*, then sublimed by a gentle Fire. It is of a dark red Colour, and is recommended in all Diseases of the Head, especially in Epilepsies. It is likewise used in Venereal Cases, and operates by Sweat. The Dose is from six to fifteen Grains.

*Pulvis Algaroth*, or *Mercurius Vitæ*, is prepared from the Butter of Antimony, by pouring upon it large Quantities of warm Water, by which the Antimony dissolved in the Butter is precipitated in Form of a white Powder, which must beedulcorated by frequent Lotions, and then dried. It vomits and purges very strongly, being given from two to six Grains; but it is very improperly termed *Mercurius Vitæ*, since there is no Mercury in it.

The



The *Universal Antimonial Panacea* is prepared from the Butter of Antimony in this manner :

*Take of Butter of Antimony, half a Pound; Crystals of Tartar well powdered, a Pound. Pour on them a Pint of common Water in a large Matras; mix and boil them in a Sand-heat for eight Hours; and while the Liquor is hot, drop into it a Pound of Ol. Tartar. per Deliquium. After the Effervescence is over, strain the whole through Cap-paper, and evaporate it to Dryness, in a Glass Vessel, over a slow Fire. A Salt will remain at the Bottom, which is to be set in a cool Cellar, till it runs into a limpid Liquor, which must be carefully separated from the Fæces. It purges gently upward and downward, being given from eight to twenty Drops in a proper Vehicle. It differs from Emetick Tartar only in running per Deliquium.*

Antimony has neither any emetick or cathartick Quality; (all its Effect being to increase insensible Perspiration, or provoke Sweat) if its Sulphur be fixed by mineral Acids, as is seen in the Preparation of Bezoar Mineral; which is in this manner :

*Put into a Retort any Quantity of Butter of Antimony, and drop upon it Spirit of Nitre, till the Effervescence ceases. Having then digested them for twelve Hours, draw off the Spirit in a Sand-heat. On the remaining Mass, pour the same Quantity of fresh Spirit, and distill as before. Then calcine the remaining Mass in a Crucible, till it ceases to emit Fumes; wash the Powder in warm Water, and then dry it.*

This Preparation is commended by *Van Helmont* in the Plague, and other malignant and contagious Diseases,

Diseases, as a most excellent Diaphoretick, given from half a Scruple to half a Drachm.

It may be made a shorter Way, by *Pouring four Ounces of Aqua Regia on an Ounce of Regulus of Antimony, and digesting them for some Days in a gentle Heat; shaking the Vessel every now and then, till all the Regulus is turned to a very white Powder, which is to be washed and edulcorated by a large Quantity of common Water.*

*Diaphoretick Antimony, the Diaphoretick Calx of Antimony, or the Diaphoretick Mineral, is made by Deflagrating successively Crude Antimony, or its Regulus, mixed with triple the Quantity of Nitre, by which means the Sulphur of the Antimony is fixed by the acid Salt of the Nitre. The white Calx, which remains after the Deflagration, is to be well washed with warm Water, and then dried; and it may be given from ten Grains to a Drachm.*

It is an excellent Diaphoretick, when given inwardly in a sufficient Dose, resolving Obstructions, attenuating thick and viscid Fluids, and forcing them either sensibly or insensibly, through the Pores of the Skin. It is prescribed with Success in all malignant Diseases, in a Pleurisy, Erysipelas, and Diseases of the Skin; and it makes an Ingredient in the *Pulvis Cornachini*, and *Pulvis Febrifugus* of Morton.

Various Tinctures are drawn from Antimony, and Authors are of various Opinions about them. We shall give one simple, and one more compounded Tincture, as Specimens of the rest.

*Take of Sal Tartar eight Ounces; melt it in an ignited Crucible, and then immediately throw into it by Spoonfulls six Ounces of Crude Antimony. Cover the Crucible, and let the whole be calcined in a strong Fire for half an Hour; afterwards throw*

*throw the Mass into a Brass Mortar, and as soon as it hardens, reduce it to Powder. Throw this Powder into a large Matraass, and pour upon it as much rectified Spirit of Wine, as will cover it to the Height of four Fingers Breadth. Then stopping the Vessel very close, digest for several Days, till the Spirit is tinged with a deep red Colour. Afterwards filter the Tincture, and keep it for Use.*

This Tincture causes Sweat, seldom excites a Nausea sometimes, purges gently, and proves Diuretick. It is recommended in hysterical Affections and Melancholy, to break the thick Parts of the Blood, in Apoplexies and Palsies, and to open Obstructions in the Viscera, in malignant Fevers. The Dose is from four to twenty, forty, or even sixty Drops, in a proper Vehicle.

The more Compound Tincture, much celebrated by the Name of *Lilium*, or *Tinctura Lilii Paracelsi*, is made from Metallick Reguli, in this manner :

*Take of thin Copper-plates, an Ounce ; ignite them in a red hot Crucible ; and then throw in upon them half an Ounce of powdered Martial Regulus of Antimony ; and the whole being presently melted, add four Ounces of Tin, stirring the Mass now and then with an Iron Rod ; and when it is in perfect Fusion, throw it into a well-greased Cone, and it will soon harden into a reguline metallick Mass. This Mass being reduced to Powder, is to be mixed with a Pound and half of Nitre, and half an Ounce of powdered Charcoal. Throw this Mixture by Spoonfulls into a red hot Crucible ; and after each Projection, cover the Crucible, till the Fulmination is over. Calcine the whole in a very strong Fire for two or three Hours, stirring it at times with an Iron Spatula. Then pour it into a Brass or Iron Mortar ; and  
before*

*before it has time to cool, powder it well, and immediately throw it into a proper Matrafs, and pour upon it as much Spirit of Wine, as will stand four Fingers Breadth above it. Digest in a Sand-heat for fifteen Days, and the Tincture will be what is called Tinctura Lillii, or rather, Tinctura Metallorum; which is both Sudorifick and Diuretick; given from ten to a hundred Drops, in a convenient Vehicle.*

It is much commended in Malignant Fevers, Apoplexy, Palsy, Scab, Rheumatism, Scurvy, Dropsy, and a Suppression of the Menses.

Having now given a sufficient Account both of the emetick and diaphoretick Preparations of Antimony, it is proper to say something of the wanner in which both these Effects are produced by them. Vegetable Acids being of their own Nature more attenuated, than those which belong to Minerals, easily unite with the rarified Sulphur of Antimony, and thus separating that Sulphur from the Vitriolick Acid contained in the Antimony, an Emetick Compound is formed; but Mineral Acids being more dense, fix and wrap up the Sulphureous Parts of Antimony, so as not to stimulate the Stomach and Intestines, but to let them pass freely into the Blood, before they can be disengaged, and act according to their own Nature. Spirit of Wine destroys the Emetick Quality of Antimony, because of the too great Proportion of Sulphureous Parts, by which the Saline *Spicula* are so much involved, as not to be able to act on the Stomach.

Antimony is the most excellent Emetick we have, and the most sovereign Remedy in many Diseases, when rightly exhibited. In giving Emeticks, three Things are to be considered; the Patient, the Disease, and the Medicine. We ought first of all to be informed, whether the Patient vomits easily; some Persons cannot be made to vomit with any Dose  
of

of an Antimonial Medicine : Some are so weak as not to be able to bear the Fatigue and Straining of a Vomit at all ; Some are so subject to a Spitting of Blood, that, by giving them a strong Emetick, a fatal Hæmorrhage might ensue. We ought likewise to know whether the Patient has any considerable *Hernia*, in which Case violent Vomiting might produce very dangerous Consequences ; whether the Vessels be so full, as that a Rupture of any of them may be apprehended ; and, lastly, whether the Patient, if a Woman, be with Child. In all these Cases Vomits seldom ought to be ventured upon, and never without taking the greatest Precautions before-hand.

The Second Thing to be considered is the Disease itself, and especially, whether the Seat of it be in the Blood, or in the *Primæ Viæ*, which may be discovered by a Bitter Taste in the Mouth, Nausea, bilious Eructations, acid Vomiting, &c.

Some imagine that Emeticks can be of no real service when the morbid Matter has reached the Mass of Blood, or when the Disease proceeds from an *Ataxia*, or Deprivation of the Spirits, as in many Spasmodick, Hysterical, and Hypochondriacal Affections. But this is a Mistake ; for we find Antimonial Vomits are given with very great Success in such Cases ; not so much as they evacuate what was before contained in the Stomach ; as by deriving the morbid Matter from the principal Parts, the Lungs, for Instance, or *Pleura*, when threatened or actually effected, into the Abdomen, from whence it is easily and readily carried out of the Body. And for this Reason *Hippocrates* very wisely advises to have Recourse to this Remedy in the Beginnings of such Diseases. In Convulsions, an Emetick by applying a Stimulus to the Fibres, of a contrary Nature to that from whence the Disorder proceeds, very often gets the better of that morbid Cause, and thus cures the Disease. For the same Reason *Hippocrates* gave

Emeticks

Emeticks in Diarrhæas and Dysenteries, that the Tendency of these Evacuations might be directed upward, and so destroyed. In Comatose Affections, Emeticks powerfully shake the Viscera, increase the Oscillations of the Nervous Fibres over the whole Body, and accelerate the Motion of the Fluids, or restore it when lost in any particular Part, so as to make them pass through the smallest Canals to their proper Emunctories. Thus we often see one Dose of an Antimonial Emetick, prove likewise Cathartick; Sudorifick, &c. in a very plentiful Degree. In giving these Emeticks great Care ought to be taken that none of the abdominal Viscera be inflamed, because such Inflammations might very probably be increased by the Strain of Vomiting. We must not likewise be misled by all Kinds of Reaching, or Attempts to vomit; for these are many times owing to convulsive Contractions of the Stomach, which by giving an Emetick may be increased, or perhaps that whole *Viscus* be inflamed.

Thirdly, such Preparations of Antimony are to be chosen, as may be given with Safety, of which the Dose may not be too great for the Strength of the Patient, and yet may answer the Intention of the Physician. Antimonials given in Powders often disappoint Physicians, either by vomiting too much, or not at all. The Effects of Antimonial Wines are very uncertain, because of the different Qualities of Wines. But the most excellent Preparation of this Kind is Emetick Tartar, which ought always to be given, dissolved in a proper Liquor, and not in too small a Dose; because if it is not strong enough to have the desired Effect, it will be apt to fatigue and torment the Patient with fruitless Nauseas and Reachings. Too great a Dose may likewise be dangerous, by exciting too violent Contractions in the Stomach, and Strainings of other Viscera, so as to cause Spitting or Vomiting of Blood, long-continued Reachings  
without

without bringing up any thing, Convulsions, and Inflammations of the Viscera.

If from any Dose of Antimonial Preparations, either too violent or too long continued Vomitings should happen, the best Method is to drink a Glass of Water or Ptisane, acidulated with a few Drops of *Ol. Sulphuris per Campanam*, or Spirit of Vitriol; which will presently check the Emetick Quality of the Antimony, and stop the Vomiting much more safely than Opium.

While the Emetick works, the Patient ought to drink very plentifully either luke-warm Water, Whey, or Veal or Chicken Water, with a View both to dilute the Contents of the Stomach to be thrown up, and to make the Vomiting more easy and less straining. On the other hand, Oils, and all fat Substances, check the Force of the Emetick too soon, and prevent the Dilution of the Contents of the Stomach, and are therefore to be guarded against.

Besides the Medical Uses of Antimony, it is employed by several Artificers, to give the Silver Sound to Tin, in casting Bells, making Metalline *Specula*, and Types for Printing, &c. It is likewise used by Goldsmiths in refining Gold, for when melted with that Metal, it destroys all other Metals that can be mixed with it, Silver it self not excepted, and turns them to Dross.

#### A R T. II. *Bismuth.*

**B**ismuth, or Tin-Glass, named *Bismuthum Officinæ*, *Plumbum Cinereum Agricolaë*, *Marcafita Argentea Quorund.* is a Metallick, Fusible, but not Ductile Substance, very brittle and heavy, and distinguishable from Lead and Tin by its Colour, which is sometimes shining, like Silver; sometimes of a faint Purple; resembling the Regulus of Antimony; but

consisting of broader *Laminæ*, and staining the Fingers. It is prepared by Artists, by being first torrifed, and then melted into a *Regulus*. It is often found in Silver Mines, and where-ever the Miners find Bismuth, they conclude they shall find Silver, and hence they call it the *Proof of Silver*. The Mines of Bismuth are in *Bohemia* and *Misnia*. Some pretend that it may be extracted from Cobalt melted into a *Regulus*, by a particular Process, but this is not certain.

Bismuth seems to have been unknown both to the *Greeks* and *Arabians*; for the *Arabian* *Marcasite* was the *Lapis Pyrites*. It is very seldom used in Physick, though some prepare Flowers from it, which they say are Diaphoretick; but most Physicians have been afraid to use it inwardly, because of the Arsenical Parts contained in it. The Magistery of Bismuth is prepared by dissolving the Metal in Spirit of Nitre, then precipitating it with a Solution of Sea-salt in Water. This Precipitate, beingedulcorated by frequent Lotions, becomes a very white Powder, much valued by the Ladies as a Cosmetick, and much used by Dealers in Hair to improve the Colour of it when Dark or Red. Pewterers mix it with Tin to harden it, and give it a more shining Colour.

### A R T. III. *Zinck.*

**Z**INCH, named *Zincum officin.* *Zinctum seu Marcasita Pallida Schræderi*, *Zinck vel Tutenague Gallor.* is a Metallick Sulphureous heavy Substance, resembling Lead in Colour, fusible and ductile to a certain Degree, being very hard to break, inflammable, and volatile. It seems to have been quite unknown to the Antients, and even the Moderns knew very little about its Nature or Origin, till M. *Stabl*, now First Physician to his *Prussian* Majesty, explained it in his Dissertation *De Metallurgia*.  
It



It is extracted from the Lead Oar of the Mines of *Goffelaar*, which Oar is very hard to melt, though it appears neither stony nor barren to the Eye, but rich and shining. Three Substances are separated from it; Lead, Zinch, and a Kind of *Cadmia Fornacea*, which being melted with Copper, makes a Prince's, or Bath Metal.

The Furnace, in which this Oar is melted, is so disposed as to have the Side and Back Wall of Brick, but the Foreside is shut by Plates of a greyish fissile Stone, about a Finger's Breadth in Thickness. During the Time of the Fusion, this Foreside being much thinner than the rest remains considerably cooler; and they increase this Cold by often sprinkling it with Water, and covering it with wet Cloths. The Oar, which is put in the Furnace at one Time, is about twelve Hours in melting; and as soon as the Fusion is begun, Bellows are set a blowing upon it, by which the Zinch mixed with the Lead is driven in Form of Flowers or Vapour against the Brick Walls, to which it sticks, to about the Thickness of a Writing Pen, and of the Consistence of very hard and half-vitrified Grey Tartar. At proper Intervals of Time, they open the Furnace and beat this Substance off from these Walls, because otherwise, it would in time become so thick as to make the Capacity of the Furnace too small for Use.

On the front, or stony Part of the Furnace, is found not only a Substance like that just mentioned, in Form of melted Stone, but also another resembling melted Metal, with Streaks of a Substance half-burnt, or reduced to Ashes, running through it. Therefore at the End of each Operation, or Period of Melting, having removed the burning Coals from the Bottom of this Part of the Furnace, they substitute others in their room, reduced to small Pieces, and not burning. Then, by repeated Strokes of Hammers, they shake the Wall; and the Zinch

which sticks to it runs down between the Laminæ of the half burnt Substance in Form of a melted Metal, emitting a white lucid Flame, and in a few Minutes Time would all fly off in a whitish or ash-coloured Vapour, if it were not received and extinguished by the Coal Dust placed under it; for as soon as it mixes therewith, the Flame ceases, and it hardens into a Metal. When it is cold, they remove it, separate it from the Coals, and having melted it again over such a gentle Fire as is sufficient to melt Tin, it is cast into proper Masses or Pigs.

The Advantage to be made of this Metal is very uncertain, because sometimes the Workmen lose all their Labour employed about it, either because the Heat has been too great, the Bellows have been blown too fiercely, or through some other Neglect.

That Part, which sticks to the Brick Walls, from whence it is broke off at proper Intervals, as has been said, makes the *Cadmia* used in Prince's Metal; but before it is fit for that Use, it is mixed with the *Scoria* and other Refuse of Metals, and exposed in Heaps for a long Time to the open Air; where being penetrated to some Degree by the Air, or something contained in it, it rarifies a little, and swells; and then it becomes fit to communicate a Gold Colour to Copper, by being melted with it. This Substance is called, very properly, *Cadmia Fornacea* by M. Stahl; for though its Origin be different from that of Tutty, the *Cadmia Fornacea* of *Agricola*, yet its Nature and Effects are nearly the same, for both equally give a yellow Colour to Copper.

The Lead is found melted at the Bottom of the Furnace; and the Workmen are of opinion that no Part of the Zinch remains in it, because they think the Fire, to which the Lead continues so long exposed, is more than sufficient to evaporate all the Zinch.

Zinch is a metallick Substance, but sulphureous and perfectly Volatile. M. *Homberg* observed long ago, that when thrown into a red-hot Crucible, it emitted many Fumes; and when stirred with an Iron Rod, it presently took Fire, and a white shining Flame appeared like that which is seen by firing a Mixture of Nitre and Sulphur. At the same Instant, the whole Cavity of the Crucible was filled with very small, white, light, smooth Filaments, like Threads of Cotton, or of a Cob-web. If these Filaments be carefully collected, and afterwards the remaining Zinch be stirred in the same manner as before, this Operation may be continued so long, till almost the whole Substance of the Zinch shall be converted into these Filaments or Flowers. By macerating these Flowers in distilled Vinegar, M. *Homberg* prepared an inflammable Oil of very great Subtilty, which he judged to arise from the Zinch; but I should rather think was owing to the distilled Vinegar. The white Flowers taken inwardly are Sudorifick, and sometimes purge both upwards and downwards, being given from four to twelve Grains. Externally applied, their Effects are in nothing different from those of Pompholyx or *Nihil Album* of the Shops. They dry very powerfully, and without Acrimony; and gently astringe and consolidate. They are much recommended by *Barbette* as a sure Remedy in an Ophthalmia, and Flux of sharp Lymph, being dissolved in Rose-water; by another in Fissures of the Nipples, being spread on a fine Linnen Rag; and by *Emanuel Koring*, in Ulcers, arising from a long Confinement in Bed. They are likewise of Service in drying Ichorous Ulcers.

Of Zinch and Copper melted together is made the finest Kind of Prince's Metal, so called from Prince *Rupert*, who is said to have invented it. It is made in this manner :

## 214 Of Fossil, Vegetable, and

Take of Copper, three Ounces ; melt it in a Crucible, and while it remains in Fusion, add an Ounce and half of Zinck. Mix them well, and then immediately remove them from the Fire. The Mass, when cold, will be of a beautiful Gold Colour, and in some degree Ductile.

The Pewterers use Zinck in whitening and purifying Tin, mixing it in the Proportion of one to six hundred.

### ART IV. Cinnabar and Quicksilver.

THE Name *Cinnabar* was in *Diascorides's* Time given to several Substances ; but it then properly signified a very red Substance, brought from *Africa*, of an astringent Quality ; which, as *Diascorides* relates, was believed to be the Blood of the Dragon ; and *Matthiolus* with good Reason suspects to be the same with that Gummy or Resinous Juice, still called by that Name in the Shops. The same Word was likewise applied to the *Minium* of the Ancients ; or to that mineral Substance of a shining red Colour, from which *Quicksilver* was extracted ; and in after-times, the two Words *Cinnabar* and *Minium* were used indifferently. At length, as the true *Minium* was not commonly found, and consequently often adulterated with Lead Oar calcined to Redness ; that calcined Substance was alone called by the Name of *Minium*, and the Word *Cinnabar* appropriated to the other red Substance, from whence *Quicksilver* is extracted. These Names I shall here use in this common Signification ; and accordingly I divide the *Cinnabar* of the Shops into native and factitious.

The native or fossil *Cinnabar* of the Shops, called *Minium* by the ancient *Greeks*, and *Anthrax* by *Vitruvius*, is a fossil, metallick, heavy Substance, not very hard, found sometimes pure, and sometimes mixed

mixed with Stones. Of the pure Cinnabar, there are several kinds; one of a Purple Colour inclining to Red, but which, by grinding, turns to a very beautiful Red; another of a blackish or Liver Colour, resembling the *Lapis Hæmatites*; and a third of a yellowish Colour, which is commonly so rich in Quicksilver, that, when heated in the least Degree, the Metal drops spontaneously from it.

The other kind of native Cinnabar is found in a fissile Stone formed of *Laminæ*, of an Ash Colour. It has been likewise found in a white metalline Stone, and sometimes in Form of a Gold or Silver Pyrites, such as was dug up some Years ago in several Places of *Normandy*.

Native Cinnabar is found in *Hungary*, *Bohemia*, *Italy*, *Spain* and *France*; and every one knows of what Parts it is composed. Quicksilver is obtained from it, by distilling it either with Quicklime or Filings of Iron; and Sulphur may likewise be had in a small Quantity, by boiling it in strong Lixivia, and then pouring distilled Vinegar into the Decoction, the Quicksilver being first separated. Besides, a Cinnabar may be made by Art, exactly resembling the native Sort, by only subliming Sulphur and Mercury together, in the manner that shall be hereafter related. The native Cinnabar, of which Painters of old were extremely fond, is now seldom used by them, because the factitious Sort is cheaper, and answers all their Purposes equally as well. The internal Use of it is recommended by some Physicians in the Epilepsy, Vertigo, Madness, and all spasmodick Affections. In these Cases, they choose that of *Hungary* or *Carinthia*, which is of a sparkling red Colour, and free from all heterogeneous Particles; and reject the dark or yellowish Kind, as being more impure. Sometimes, however, native Cinnabar, by means of some vitriolick, or even arsenical Particles associated with it, happens to excite Nau-

feas, Vomitings, Anxieties, Heart - burns, &c, which I have myself, oftner than once, been a Witness to, even after the Cinnabar had been purged by frequent Washings; and therefore I always prefer either factitious Cinnabar, or that of Antimony, to the Native.

The factitious Cinnabar of the Shops, or Vermilion, is a red, heavy, dense Mass, friable, and marked with Silver or shining Streaks, consisting of Sulphur and Quicksilver, united by the Art of Chemistry. How this is done shall be presently shown; But we must first consider Quicksilver, as being one Part of the Composition.

Quicksilver called *Hydrargyrus*, *five Argentum Vivum Officin.* *Hydrargyrus Græcor.* *Mercurius Chemicor.* *Argentum fusum Theophrasti.* *Argentum Mobile Aristotelis.* *Vomica Liquoris Æterni Plinii*, and *Zaiba* or *Zaback*, of the *Arabians*, is a fluid metallick Substance, cold to the Touch, of a shining Silver Colour, very heavy, volatile, and which will unite with most Metals, especially Gold; to which it joins itself very closely.

Quicksilver is found sometimes in its fluid Form in the Bowels of the Earth; and in that Case, it is first well washed with Water, to clear it from Earth; then sometimes with Vinegar and Salt, to carry off all other metallick Parts; and lastly, it is passed thro' Cotton or dressed Leather, and then has the Name of *Virgin Mercury*.

It is likewise found in Glebes, or in Form of a red sulphureous mercurial Mineral, called *Cinnabar*, or of a stony Glebe, sometimes red, sometimes yellowish, sometimes dark, and sometimes of a Lead Colour.

From these Glebes, Quicksilver is extracted by simple Distillation sometimes *per Ascensum*, the Mineral being put in Retorts, and set in a strong Degree of Fire, by which the Quicksilver is rais'd in Fumes,

part

part of which sticking against the Neck of the Retort, are there collected and run down into the Receiver, and the rest are condensed directly in the Receiver; which, for this purpose, is half filled with Water.

The other Way of Distillation is *per Descensum*, which is performed in this manner, and is the most Expeditious, where the Mineral is rich. The Mineral, being beat small, is put into Earthen Vessels with very narrow Mouths, which are stopped with Moss fresh gathered from Trees. Other Earthen Vessels, like the former, but with wider Mouths, are buried in the Ground; and upon these the other full ones are inverted, their Mouths being let into those of the lower ones. In this Position their Necks are firmly cemented together with a proper Lute, the lower Vessels being wholly under Ground, the upper wholly above Ground. An Area of a sufficient Extent being thus filled, a Fire is lighted round the Vessels, by the Heat of which the Quick-silver drains through the Moss, out of the upper Vessels into the lower. At a proper time, they dig these up, and pour the Quick-silver into Bottles.

The Quick-silver Mines in *Hungary*, *Carintbia*, and *Friuli*, are very rich; there are also some such Mines in *France*, especially about *Montpelier*, and in some Places of *Normandy*.

When the Cinnabar contains a great Proportion of Sulphur, the Quick-silver cannot be extracted without adding something to absorb the Sulphur, and set the Quick-silver at liberty, and render it fluid. Such Additions consist in Wood-ashes, Pot-ash, Quick-lime, Filings of Iron, and the like, with which the Mineral is to be distilled.

Quick-silver is the heaviest of any known Metal, except Gold, which is to Mercury nearly as four to three, and therefore sinks in it, while all other Metals swim. Quick-silver may likewise be mixed or amalgamated,

gamated, as it is called, with all other Metals and metallick Substances, but most difficultly with Antimony, Iron, and Copper. It penetrates Metals, dissolves and makes them brittle; whence it is by some reckoned the first Matter of all Metals, but without any sufficient Foundation. It is therefore to be reckoned a metallick Substance *sui Generis*, fluid, heavy, divisible into very small Parts, and extremely volatile. Fire separates it into a very subtle Vapour, and in that Form dissipates it intirely; whence Alchemists have given it the Name of the *Runaway Slave*. It is likewise easily disguised many ways, and may again be restored to its pristine Form; whence it has got the Name of *Proteus*.

It readily unites with Sea-salt, and thus joined a very gentle Heat sublimes them in Form of a white, saline, crySTALLINE Mass, known by the Name of *Corrosive Sublimate*. It does not so easily join with Nitre or Vitriol. It is more easily dissolved by the Acid of Nitre, but very difficultly by Oil of Vitriol. Alcaline Salts work no Change in it; but it is in some measure fixed and extinguished by sulphureous Salts. By long Trituration with Sulphur, it is changed into a very black Mass; which being sublimed by the Force of Fire becomes an intensely red shining radiated Mass. When Quicksilver has been dissolved by Spirit of Nitre, and that Spirit again evaporated by Fire, it remains in Form of a red Powder; but if the same Solution be precipitated with *Sal. Tartari*, it appears a Saffron-coloured Powder at the Bottom. With Sea-salt, it gives a white Precipitate; with Lime-water, a yellow.

It is very difficult to analyse Quicksilver, because as soon as any considerable Degree of Fire is applied to it, it flies off, and thus baffles the Pains and Industry of the Artist. However, by being long exposed to a very gentle Fire, in a Glass Vessel with a very long Stem, it begins by degrees to be turned to



a greyish Powder, which by a long Digestion becomes yellowish, and at length red.

Thus reduced to a Calx, it is heavier than when fluid, and also a little more fixed in the Fire; but if it be urged with a strong Fire, it evaporates, leaving only a little fixed light Earth behind. If this Calx be burnt gently with Charcoal Dust, it turns immediately to running Mercury. By long Trituration, it may likewise be reduced to a greyish Powder, some Particles detached from the Body, with which it is rubbed, hindering the immediate Contact of its Particles. When exposed to the Focus of a great Burning-Glass, it presently evaporates in Fumes, without leaving any Remainder; but if the Calx of Mercury calcined *per se* is thus exposed on a Tile, it first melts into a Substance like Glass, then evaporates speedily, leaving a small Quantity of a brownish Powder behind, which afterwards vitrifies. But if the same Calx be laid in the Focus of such a Glass on a Piece of Charcoal, it melts into Glass in the same manner, then runs on the Coal, and becomes again pure Quicksilver before it evaporates. Hence it seems evident, that Quicksilver consists of a volatile, vitrifiable Earth and Sulphur, to which it owes its metalline Splendor and Fluidity; for when deprived of its Sulphur by Calcination, it loses both its Colour and Fluidity; but if these Particles of Sulphur be again restored to it, it recovers both again.

Quicksilver was by the Ancients ranked among Poisons. *Diascorides* ascribes pernicious Effects to it; and from his Authority no doubt it was that *Galen* reckoned it highly Corrosive; for he owns he never made any Trial of it himself. The Name of it is not found in *Hippocrates*, whence it is probable, that it was not in use in his Time. But before *Avicenna* it was used externally, tho' seldom internally, being still reckoned a Poison by most Physicians.

ficians. *Aëturius* ranks it, however, among Medicines; but *Mesues* applied it only for curing Cutaneous Diseases, though *Avicenna* observes that many had drank it without any bad Effect, and that it passed through the *Anus* unchanged. About two hundred Years ago, though it was still believed by some to be poisonous, it began by many to be used inwardly; they having observed, as *Fallopianus* relates, that it was given in that Manner by Shepherds to their Cattle to kill Worms, without any bad Effect; whence they concluded that it might be safely given to Men likewise, and that therefore Crude Mercury was not to be reckoned a Poison. Thus *Brassavolus* and *Carolus Musitanus* tell us, they gave it to Children troubled with Worms, from two to twenty Grains, and always with some Success; and that several Midwives gave it to Women in difficult Labours, without any bad Consequence, though perhaps not always with any visible good Effect. *Mathiolus* relates, that some Women with Child drank each a Pound of Quicksilver to procure Abortion, without any bad Sequel; and it is commonly known that the Workers in Quicksilver take this Method to cheat their Masters of considerable Quantities, by first swallowing it, and then voiding it with their Fæces, from which it is easily cleansed by simple Washing. It must, nevertheless, be owned that the Use of it, whether outwardly or inwardly, can never be long continued without Mischief; for the Miners, and others employed about it, though of the strongest Constitutions imaginable, seldom remain for four Years in that State, but are seized with Tremblings, and Palsies, and all die miserable. By an injudicious Use of it, whether outwardly taken, or inwardly, the Nerves are likewise affected, weakened, corrugated, and contracted; whence Tremblings, Spasms, Palsies, and too great an Attenuation of the Fluids, which

which often brings on a fatal Salivation, Ulcers in the Mouth and Throat, and incurable Loofenesses.

Quicksilver, judiciously administred, is however undoubtedly a most excellent Medicine; it opens the Pores, small Vessels, and Ducts of the Glands; resolves obstructed Humours, attenuates those that are too thick and viscid, especially the Lympha, and dissipates Concretions, even in the remotest Parts of the Body. On all these Accounts it is found to be of singular Service in Tumors, swelled Glands, Schirrhous Spleen, Mesentery or Liver, Ganglions, Strumæ, and other such Diseases. It likewise blunts the Acrimony of the Fluids, and hence performs Wonders in Venereal Tumors, Buboës, and Ulcers, in cutaneous Pustules, Scabs, and other Affections of the Skin; universal Remedies of the Preparatory, and especially of the Evacuating Kind, having not only gone before the Use of Mercury, but being continued along with it. For, as all these Diseases arise from a viscid Serum, become Caustick by a long Stagnation, if it be divided and reduced to a fluid State by Quicksilver, before a Passage is prepared for it out of the Body, it must either exert its Efficacy on the Part where it was first lodged; or, by removing to other more noble Parts of the Body, bring on Symptoms more dangerous than the first. Therefore, before the Patient begins to take Mercury in any Form, his Body ought to be cautiously prepared by Bleeding, to lessen the Plenitude of the Vessels; by warm Bathing, and the Use of diluting Medicines, that the Humours may become more fluid, and the solid Fibres softer; as also by Purging, that a Way may be opened for the Passage of the dissolved Humours out of the Body. These Passages are likewise to be kept open during the Time that Quicksilver is taken, lest the Humours should be intercepted in their Course, and be turned a more dangerous Way; and the Patient ought to be kept warm,

warm, lest Cold should stop or diminish insensible Perspiration, which ought likewise to be encouraged by gentle Exercise.

Quicksilver, not only taken inwardly, but also by Uñction, evacuates the Humours by Stool, Sweat, and insensible Perspiration; but the most common Method of its Operation is by the Evacuation of a mucous *Saliva*, whence it is termed a *Salivation*. This Way of Purging was entirely unknown to the Antients, and is thought the most effectual Remedy for venereal Diseases; for the Cure of which it was first used by *Jacobus Carpenfis*, a Physician of *Bologna*.

From whatever Country Quicksilver is brought, that is thought the best which is most pure, of the most shining white Colour, most fluid, and which being evaporated leaves no Remainder behind it. That is to be rejected which is of a livid or pale Colour, which does not run into Globules exactly spherical, but oblong, resembling little Worms or Tears, which are sure Signs that it is adulterated with Lead, Bismuth, or some other Metal.

Native, or Virgin Mercury, ought always to be purified before it is used inwardly, because it is possible it may be still mixed with some metallick, sulphureous, or arsenical Particles. The most simple Way of purifying Quicksilver is, by passing it through dressed Leather, by which it is purged from the more gross Parts that may be mixed with it. Some wash it with Vinegar and Salt; but it is much safer to distill it in a Retort with Quick Lime, Potash, or Filings of Steel, by which Method Mercury is obtained more pure than by any other.

Mercury is used in Physick, either Crude, that is, being only first purified, or differently prepared. Crude Mercury is given in Substance to kill Worms, from a Scruple to three Drachms; being first well rubbed with Sugar in a Glass Mortar, till it is dissolved

solved into invisible Parts, adding a Drop or two of Oil of Sweet Almonds to keep it from returning to its native Form. Decoctions of Quicksilver are likewise much used, being made by boiling a Pound of Mercury in six Pints of Water for an Hour. The clear Liquor is given both to Children and Adults for their common Drink. Quicksilver is a great Enemy to all sorts of Vermin, as well as to Worms; and it suddenly kills or banishes them, being applied in an Ointment to any Parts of the Body where they are found.

Crude Mercury is likewise given in very large Quantities in the Iliac Passion, even to two or three Pounds; and it very often succeeds in removing the Obstruction; but if the Obstruction be very great, so that the Mercury remains a great while in the Intestines, it may do them an Injury merely by its great Weight. To cure the Itch, Quicksilver Girdles are used with very good Success, when the Precautions above-mentioned are duly observed. The Quicksilver is to be beat up with the White of an Egg, till both are turned to a thick Froth, which is rubbed on a Cotton Girdle, and, when dry, is wore round the Loins.

Mercurial Ointments cure the Itch, and all Diseases of the Skin. It is used in the *Emplastrum de Ranis cum Mercurio* of *Vigo*, in the *Unguentum Neapolitanum*, and in Mercurial Pills, of which the best Form, in my Opinion, is this:

*Take good Rhubarb, Trochici, Albandal, and Agaric, of each a Drachm; Scammony, and washed Aloes, of each a Drachm and half; of Quicksilver killed in Turpentine, half an Ounce; of Syrup of Peach-Flowers, a sufficient Quantity to make a Mass of Pills. The Dose is from a Scruple to a Drachm and an half, in Venereal Complaints, Rheumatisms, and Obstructions of the Mesentery and*

*and Viscera. In the Pox these Pills are taken by some every Day, or every other Day.*

No Substance has been treated in so many different Manners by Chemists as Mercury, both for Medical and Alchemical Uses; for since they believed it to be the First Matter of all Metals, they have left nothing untried to fix it; but, though after all their Labours, they have not been able to gain their proposed End; they have, however, enriched the *Materia Medica* with many excellent Remedies. It is here to be observed, that some Chemists call the Preparations of Mercury, either by the Names of Oils or Salts, which are not to be looked upon as Principles or Substances extracted from that Metal, but as saline or oily Bodies mixed with it; for hitherto no Art has been able to reduce Mercury to its first Principles; for, being extremely volatile, it flies off, before any thing of its Texture can be discovered.

The most common Preparations of Mercury are *Mercurius Præcipitatus per se*, red, white, and yellow Precipitates, which last is named *Turbith Mineral*, Violet or black Precipitate, *Æthiops Mineral*, Factitious Cinnabar, Corrosive Sublimate, *Mercurius Dulcis* called *Aquila Alba*, and the Mercurial *Panacea*.

*Mercurius Præcipitatus per se*, or the Calx of Mercury, is made in this manner:

*The Mercury first well purified is put into a flat-bottom'd Glass, called Vas infernale, which being set in a Sand-heat, the Fire is gradually increased, and the Metal turns first to an Ash-coloured Powder, and at length becomes very Red. It causes Vomiting, purges downward, and provokes Sweat, being given from two to six Grains.*

*Red Precipitate* is made By dissolving four Ounces of crude Mercury, in a sufficient Quantity of Spirit of Nitre. The Solution is evaporated to Dryness in a Sand-heat; and the remaining Mass is of a pale yellow Colour, which by increasing the Fire to the third Degree becomes red like Coral, and is thus kept for use. It is employed externally in eating away fleshy Excrescences, or Pustules; for being sprinkled upon any Plaister, or mixed in an Ointment it corrodes mildly and without pain. Some Chemists distill Spirit of Wine, well rectified, from this Precipitate; and this Operation being several times repeated, the Medicine becomes the Arcanum Dulcificatum; and may safely be given inwardly either with Purging or Diaphoretick Ingredients, both which it assists. The Dose is from two to six Grains.

*White Precipitate* is made By dissolving two Ounces of Quicksilver in three Ounces of Spirit of Nitre, in a Glass Vessel, in a Sand-heat. In another Vessel, half an Ounce of Sea-salt is dissolved in six Ounces of common Water. And then the two Solutions being mixed, the whole becomes turbid, and the Mercury falls to the Bottom of the Glass in Form of a white Powder, till the Liquor becomes Limpid, which then is to be gently pour'd off.

This Powder taken inwardly purges downward, and sometimes vomits; and being used for a Continuance of time, it will bring on a Salivation. It may be given from four to fifteen Grains. When applied externally in Ointments and Pomatums, it cures all Diseases of the Skin, and may be mixed with these in the Proportion of a Drachm to an Ounce.

*Yellow Precipitate, or Turbith Mineral,* is made  
By dissolving four Ounces of very pure Mercury in  
Q
sixteen

## 226 Of Fossil, Vegetable, and

*sixteen Ounces of Oil of Vitriol. Distill this Solution in a Retort, till only a white Mass remains, which being powdered andedulcorated by frequent Washings with warm Water, becomes yellow, and is then dried and kept for Use. It is a very strong Emetick and Cathartick, and is chiefly used in Venereal Complaints, from two to six Grains.*

*Green Precipitate is made thus: Take of pure Mercury, four Ounces; of thin Copper-pltaes, an Ounce. Dissolve them separately in Spirit of Nitre, then mix the Solutions, and evaporate to Dryness. The remaining Mass being reduced to Powder is digested with distilled Vinegar, poured on it to the Height of six Fingers Breadth above it. When the Vinegar is tintured green or bluish, it is poured off, and more put in its Place, as long as the Mass can communicate any Tincture. Then all these Tinctures being mixed together are evaporated to the Consistence of Honey; and this Substance when cool grows hard, and being reduced to Powder is kept for use.*

It purges both upward and downward, and is reckoned by some a Specifick in a virulent Gonorrhæa. The Dose is from two to eight Grains, to be repeated every Day, or every other Day, till the Running ceases. Others reckon it an unsafe Medicine, because of the poisonous Quality of the Copper.

The *Violet* or *Black Precipitate*, called by some *Diaphoretick Mercury*, or the *Mercurial Panacea*, is usually made in this manner:

*Take of pure Sulphur four Ounces, and melt it in an earthen Vessel over a Charcoal Fire. Into the melted Sulphur throw, with great Care, six Ounces of very clean Quicksilver, stirring it constantly*



stantly with an Iron Rod; and when they are perfectly incorporated, add four Ounces of Sal Ammoniac. Let this Mass be sublimed in a Glass Vessel; and mixing the Sublimate with the Fæces, let them be again sublimed, and repeat this Operation four times; then separate the heavy blackish or bluish Mass, at the Bottom of the Vessel, from the other light, rare, yellowish Substance, which is of no Use.

This Precipitate is Diaphoretick, and much commended by some in Rheumatisms, the King's-Evil, Venereal Diseases, Asthma, Epilepsies, for Killing Worms; and for Opening all Obstructions. The Dose is from twelve Grains to half a Drachm.

*Æthiops Mineral* is prepared with four Parts of pure Quicksilver, and three Parts of Flowers of Sulphur, by rubbing them in a Glass Mortar, till all the Globules of the Quicksilver disappear, and the Mass be reduced to a fine blackish Powder, which when kept some time turns very black. It is a Remedy for Worms, in the Venereal Disease, Itch and other Eruptions, and in the King's-Evil; and is likewise recommended for the Hæmorrhoids, the Gout and Rheumatism. The Dose is from fifteen Grains to two Scruples, and it sometimes is repeated Morning and Evening, a Cathartick being intermixed every fourth Day. It seldom raises a Salivation, but always promotes a Diaphoresis, and sometimes purges. Some make this Preparation by firing the Sulphur and Mercury mixed in equal Parts; but this burning is to no purpose.

*Facitious Cinnabar* is made by Mixing slowly three Parts of Quicksilver with one Part of melting Sulphur, stirring it without Intermiſſion till all the Mercury disappears. The Mass being then cooled,

## 228 Of Fossil, Vegetable, and

*reduced to Powder, and put into a proper Vessel, is sublimed with a graduated Fire, into a red-streaked shining Mass, which has the same Virtues with Æthiops Mineral; and is sometimes ordered as a Fumigation to excite a Salivation in the Lues Venerea.*

*Corrosive Sublimate is speedily made in this manner: Take any Quantity of pure Quicksilver, dissolve it in Aqua Fortis, and distill the Solution to Dryness. With the remaining saline Mass, mix four Parts of decrepitated Sea-salt, and sublime in a Glass Matrass with a short Neck. What rises is a white saline crystalline Body, called Corrosive Sublimate, or the Poisonous Dragon.*

When taken inwardly, it proves a corrosive Poison, of the same Nature with Arsenick; but the Symptoms it causes are quicker and more terrible. It suddenly corrodes the Throat, Stomach, and Intestines; and its caustick Force is to be weakened by the same Remedies, which were mentioned in treating of Arsenick. It is used externally to consume proud Flesh, and to deterge old Ulcers. The Phagedenick Water is made of it by dissolving half a Drachm in a Pint of Lime-water. The Solution is yellowish, and to be kept for use.

Of this Corrosive Sublimate is likewise made *Mercurius Dulcis*, called *Dulcified Sublimate*, *Aquila Alba*, the *Dragon Tamed*, and *Calomel*, in this manner:

*Take of Corrosive Sublimate, sixteen Ounces; grind it thoroughly in a Marble-mortar, pouring in by slow Degrees twelve Ounces of crude Quicksilver, well purified. Continue to grind them, till the whole Quicksilver disappears, and then the Powder will be of a Leaden Colour. This Powder put into proper Glasses, to the Height of an Inch*

*or*

*or two, is sublimed by a slow gradual Fire into a white Mass, which being separated from the Fæces, and powdered, is again sublimed.*

This Preparation purges gently, divides all viscid pituitous Humours, kills Worms, and is reckoned a sovereign Medicine in Venereal Diseases. The Dose is from six to thirty Grains in Pills or a Bolus ; and if the use of it be continued for several Days, it will raise a Salivation. It is most commonly mixed with other purging Medicines, and some choose to give it in this manner every other Day, in order to cure the Pox without Spitting. It enters the Mercurial Pills, and the Aperient Cathartick Electuary of *Charas*.

The last Preparation of Quicksilver is the *Mercurial Panacea*, so called from its extraordinary Qualities ; and which may be justly named *Panacea Ludoviciana*, because the Secret was bought and made publick by *Lewis* the Fourteenth. It is made in this manner :

*The crude Quicksilver is purified by being first made into Cinnabar, and then extracted from thence in the manner already shown. Of this Mercury revived from Cinnabar, is made corrosive Sublimate, which must be thrice sublimed ; twice with Sea-salt, and once without any Addition. Part of this Sublimate is again reduced to running Mercury, by being distilled with Regulus of Antimony. Of this revived Mercury, and the remaining corrosive Sublimate, is made Mercurius Dulcis, by nine Sublimations. Lastly, this Mercurius Dulcis is put in Digestion for three Weeks, with any aromatized Spirit of Wine, and afterwards separated from the Liquor, and dried for Use.*

## 230 Of Fossil, Vegetable, and

This is undoubtedly an excellent Medicine in all Venereal Affections; and is recommended likewise in Rheumatisms, Obstructions of the mesenterick Glands, King's-Evil, the Itch, Tetter and Worms. Some use it likewise for the Scurvy; but, in my Opinion, no Preparation of Quicksilver can be proper in that Distemper. The *Panacea* more readily salivates than *Mercurius Dulcis*, because this latter often passes off by Stool.

The following are approved Forms of giving Mercurial Preparations, in different Intentions:

*Take of Æthiops Mineral, a Drachm and an half; of Coralline in Powder, a Drachm; Oil of Tansy, three Drops: Mix them, and make them into a Powder. The Dose of which is from fifteen to thirty Grains, to be given Morning and Evening, to kill Worms.*

This Powder may be made into Pills or a Bolus with Syrup of Wormwood; and when it has been continued three or four Days, the following purging Bolus is proper to be given.

*Take Mercurius Dulcis, Rhubarb, and Pulvis Cornachini, of each equal Parts; mix them, and make them into a Powder. Take of this Powder from one Scruple to a Drachm, Conserve and Syrup of Wormwood a sufficient Quantity to make a Bolus.*

*Take of Æthiops Mineral, half a Drachm; Powdered Millepedes, and Gum Ammoniac, of each a Scruple; Conserve of Marigolds a sufficient Quantity to make a Bolus, to be taken every Day for three Days for the King's-Evil, and every fourth Day take the following purging Bolus:*

*Take*

Take Mercurius Dulcis, and Gum Ammoniac, of each fifteen Grains; Trochisc. Albandal, ten Grains; Syrup of Peach Blossoms, a sufficient Quantity to make a Bolus.

Take of the Mercurial Panacea, a Drachm; of powdered Rhubarb, three Drachms; Balsam of Capivi, half an Ounce: Mix and make an Opiate, the Dose of which is a Drachm, to be taken every Morning, purging every third or fourth Day with the Mercurial Pills above mentioned, or with the following:

Take Mercurius Dulcis, and Diagridium, of each a Drachm; Trochisc. Albandal, a Scruple: Powder them, and mix them with a sufficient Quantity of Turpentine to make Pills for five Doses.

Among all the Virtues of Quicksilver, that for which it is most celebrated is its Efficacy in curing Venereal Distempers, for which it is justly esteemed the only Specifick, by expelling the morbid Matter, together with a large Quantity of tough and viscid Lympha; for the Cure of these Distempers is never to be depended on, except it is brought about either by a copious Purging, or a Salivation. To raise a Salivation, some have Recourse to Mercurial Fumigations, some use Mercurial Plaisters or Ointments, others give Mercury inwardly, differently prepared.

To raise a Salivation by Fumigation,

The Patient being first duly prepared, is placed naked in a proper Chair, or Stove, and small Pieces of Cinnabar, to the quantity of two or three Drachms, being thrown upon live Charcoal, the Steam is received through the Pores of the Skin. The Patient grows soon very warm, and sweats

*more or less, in Proportion to his Strength. This Operation is repeated every Day, or every other Day, till the Gums begin to swell and ulcerate, and the Spitting rises to a sufficient Quantity.*

Uction is thus performed :

*The Patient, duly prepared, and properly cloathed, being placed near a Fire, the Parts to be anointed are first rubbed till they are warm and red, and then the Mercurial Ointment is applied, the first Day to the Feet, Knees, and Groins; the next Day to the Buttocks, Wrists, Arms, and Shoulders; and this Method is repeated every Day, or every other Day, according to the Strength of the Patient, till he spits plentifully, that is, to the quantity of three or four Pints a Day. He ought to be anointed in a warm Place, but at a little Distance from the Fire, lest the Heat should make the Ointment run too soon. About two Ounces of Mercurial Ointment is sufficient at each time; and, by being once rubbed, some Persons will be plentifully salivated. Others require three Rubbings; but seldom more. Before each Rubbing, the Patient's Throat ought to be carefully examined, to see if any Signs of a Salivation appear. These Signs are Heat and Dryness in the Mouth and Gums, swelling in the salival Glands, frequent Spitting, an Inflammation in the Orifices of the salival Duets, Ulcers which gradually increase, and at length a copious Discharge of laudable Matter. Too plentiful a Spitting is very much to be guarded against, especially if the Salivation has been hastily raised; and if that should happen, we must presently have recourse to Purging, which is to be repeated as often as is necessary, laying aside the Cloths daubed with the Ointment.*

Some prefer Plaisters to Ointments; and it is certain, that the Effects of them are slower and milder. They are applied to the same Places, and with the same Precautions, as the Ointment. Others, in fine, are of Opinion, that a Salivation is most safely raised, and afterwards either increased or diminished, as the Physician shall judge the Patient's Strength to require, by the internal Use of the Mercurial *Panacea*; and it must be owned, that both Fumigations and Ointments are hazardous and uncertain; for Fumigations sometimes affect the Head, and produce direful Symptoms; and Ointments raise sometimes too great a Salivation, sometimes none at all; because a greater or smaller Quantity of the Quicksilver enters the Blood, according as the Pores of the Skin are wider or narrower; and this can never be known but by the Event. But the Usefulness and Excellency of the *Panacea* consists in this; that being given at first in small Doses, the Quantity of it may be increased at Pleasure, till the Patient spits the Quantity required; and this Quantity is either increased, diminished, or continued the same at the Pleasure of the Physician, without any Fear of Danger. The other Methods of Salivating are not however altogether to be rejected; for it is sometimes necessary to mix them with the Use of the *Panacea*, which being slow in its Operation, the Ointment is to be used once or twice in some Cases to bring the Spitting speedily to the desired Pitch. In Persons therefore of a very strong Constitution, the Salivation ought to be raised by Unction; and afterwards kept up by the *Panacea*; but in weak Habits, the *Panacea* alone is to be depended on; or, at least, with the Assistance of only a few Plaisters. In Cases of violent continual Pains, Nodes, or Exostoses, Plaisters are likewise to be applied; as in the pocky Itch, Herpes, Ulcers, Scabs or Pustules spread over the Body, Ointments are most proper.

Lastly,

Lastly, Fumigations are usefully mixed with Unctions, or with the *Panacea*, when there are Ulcers, Verrucæ or Condylomata, in the *Pudenda* or *Anus*,

The Method of Salivating by the *Panacea* is this :

*The Patient is first of all to be let Blood once or twice, according to his Strength, and the Fullness of his Vessels. The Day after the last Bleeding, he ought to take a purging Potion, and at a proper Distance of Time, such as two Hours or more, four Grains of Tartar Emstick dissolved in weak Broth. The next Day, he should go into a warm Bath, and repeats Bathing once or twice a Day for six or seven times.*

By these Preparations the *Primæ Viæ* are cleared of their gross Contents, the Vessels are relaxed, the Blood circulates more freely, the Juices become more fluid, and the solid Fibres softer or less rigid. We ought, however, to take care not to weaken the Patient too much, by Bleeding, or Bathing, lest he become not able to bear a due Salivation ; neither are Catharticks to be repeated, because they retard the Spitting ; for tho' Venereal Diseases may be cured by Purging, yet Salivation is much more safe.

The Patient's Body being thus prepared, the next Day after his last Bathing, he ought to take ten Grains of *Panacea* in the Morning, and five in the Evening ; the second Day, fifteen Grains in the Morning, and eight in the Evening ; the third Day, twenty Grains in the Morning, and ten in the Evening ; the fourth Day, twenty-five Grains in the Morning, and fifteen in the Evening ; and thus the Dose may be increased every Day from five to ten Grains, till the Quantity spit in twenty-four Hours amount to three or four Pints ; or the Evacuations by Stool, are proportionable to that Quantity. No more *Panacea* is from thence to be given, except the



Evacuations begin to lessen, before all the Venereal Symptoms disappear. In that Case, Recourse must again be had to the *Panacea*, beginning with the same Dose which the Patient took last, and continuing it till we are assured of a perfect Cure. If after the *Panacea* is left off, the Salivation should increase, a Cathartick ought immediately to be thrown in, and frequently repeated at small Intervals. If during the Salivation, a Looseness should happen with violent Gripings, and a Dysentery be apprehended, detergent, lenient and strengthening Clysters are to be exhibited. During the whole time of the Cure, the Patient's Nourishment ought to consist of Broths, Eggs, Panada, and other Spoon-meats, but of nothing solid.

*The Panacea ought to be given in some proper Conserve, drinking a Draught of Broth after each Dose; and for three or four Hours afterwards, no kind of Nourishment should be given. When the Effects of the Panacea are quite over, the Patient ought to be purged two or three times, and then use a Milk Diet for a considerable Time.*

Nothing can be with certainty fixed concerning the Quantity to be evacuated in a Salivation; for after the most copious Evacuations, some Patients have remained uncured; whereas others have been perfectly restored after a very slight Course. This therefore must be left to the Judgment of the Physician; as also whether the Patient has Strength to go through a Salivation, when the Venereal Disease is complicated with others. Thus in a Constitution inclining to a Hectick Fever, where the Blood being already too much dissolved, passes out of the Body in profuse Sweats; the Mercury by dissolving it still more, would undoubtedly evacuate it by all the Emunctories of the Body, and Life along with it.

In Scorbutick Affections, tho' the Juices are said to be viscid and concreted, yet the Use of Quicksilver has often been fatal; because as in these Diseases, the Salts in the Fluids are in greater Quantity and more Caustick, than in those of the Venereal kind, yet their Force and Energy is much weaken'd by the Lentor of the Fluids; but if, by the Use of Quicksilver, this Lentor is taken off, and the Juices made more fluid, the saline *Spicula* do then make very great Havock among the tender Membranes, by pricking and tearing them to pieces, whence follow those intolerable Pains, Hæmorrhages, Inflammations and Exulcerations, which arise from taking Mercury.

Quicksilver is said to be a great Enemy to the Nerves, being thought to bring on Weakness, Tremblings and Palsies; but these Symptoms are not to be attributed to Quicksilver so much as to the injudicious use of it; for by giving it in very small Doses, the coagulated Humours are unequally dissolved, so that the concreted Portions which still remain, being hurried along by the more fluid Parts, enter the smallest Canals of the Body, and there stick and form Obstructions; which gradually increasing, both in Strength and Number, the Tone of the solid Parts is weakned and destroyed.

It has been often asked on what the salivating and antivenereal Virtue of Quicksilver depends. To explain this, some have without Ground had Recourse to Acids and Alcalies; for in the Cure of Venereal Diseases, this Medicine acts neither as an Acid, nor as an Alkali, since it produces the same Effects, whether it be mixed with acid Salts, or be conveyed into the Blood perfectly crude and unmixed, as by Friction and Fumigation. Neither is their Opinion probable, who say, that the Venereal *Virus* is an Acid, since the *Saliva* of those affected with this Disease discovers no Signs of Acidity, but on  
the

the contrary shews itself to be of an alkaline Nature by turning Syrup of Violets green, raising an Effervescence with acid Liquors, and by corroding Copper. We are not therefore to imagine, that Quicksilver acts like an Absorbent or Alkali, by sheathing the acid Parts of the *Virus*, for other Absorbents would better answer that Intention. It is more probable, that all the Virtue and Energy of Quicksilver depends on two Qualities, its great Divisibility, and the spherical Figure of its Particles; by which it is enabled to penetrate the most inward Recesses of the Body, insinuate itself between all Parts of the Blood and *Serum*, and divide all Concretions found therein; not only by preventing their mutual Contact, but by increasing their Fluidity, a small solid Sphere being interposed between each two larger *Moleculæ* of the Juices. Again, as these *Moleculæ* stagnate at the Orifices of the very small Vessels, with the Globules of Mercury between them, they are there fully exposed to the Force of the Solids, and of the circulating Fluids, and thereby divided and broke to pieces, so as to be capable of passing through the smallest Canals of the Body.

Now, when we consider those Emunctories of the Body, which are capable of transmitting a thick viscid Lympha, we find them all reducible to the intestinal and salival Glands; for those of the Kidneys and Skin give Passage only to the finer Parts of the Lympha, because of the Smallness of the Vessels, of which they are composed; and, hence it is, that sudorifick Medicines have not a sufficient Effect in Venereal Complaints, because they drive through the Pores of the Skin only the thinner Parts, leaving the more thick and viscid behind, which they cannot dissolve; but the salival and intestinal Glands are capable of secreting these more concreted Parts. Therefore on taking Mercury, both or either of these Emunctoris transmit this viscid Lympha, according as it

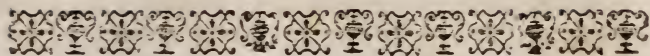
## 238 *Of Fossil, Vegetable, and*

it is found in the Body in greater or smaller Quantities. This Excretion is made most commonly and most copiously by the salival Glands, because they are most exquisitely sensible. But when the Lympha to be evacuated is very acrid and capable of irritating and stimulating even the intestinal Glands to a sufficient Degree, it passes off likewise by these; so that the Determination of this Lympha to both, or to either of these Emunctories, depends on its Acrimony; and for this Reason it is, that when the Irritation of the intestinal Glands is very much increased by a Cathartick Medicine, the Excretion is chiefly made that way, and the Salivation decreases or may be totally stopped.

Several Ointments and Plaisters are made with Quicksilver, of which take the few following Instances:

*Take of Quicksilver revived from Cinnabar, two Ounces; Venice Turpentine, half an Ounce; grind them in a Mortar, till the Quicksilver is extinguished; then add, by degrees, of fresh Lard, four Ounces; mix them well together for an Ointment in Venereal Cases. Take of the Mass for the Emplast. Diachyl. Simpl. twelve Ounces; melt and mix with it of Quicksilver killed by Turpentine, four Ounces, to make a Plaister; which being applied to the Parts above-mentioned, will raise a Salivation.*

Besides the Medical Uses of Quicksilver, it is employed in several Arts, such as Gilding of Vessels, Making of Looking-Glasses, &c. but the far greatest Quantity of it is consumed in purifying and refining Gold and Silver.



## S E C T. VII.

## M E T A L S.

**A** Metal is a hard shining Mineral Body, fusible by Fire, concrescible by cold, ductile, and capable of amalgamating or being intimately united to Quicksilver. Metals are divided into base or imperfect, and noble or perfect. Imperfect Metals are those which lose, much by being exposed to Fire, such as Lead, Tin, Iron, Copper, and they are termed Base, or Ignoble, as being not much esteemed. Perfect Metals are those which undergo all Trials by Fire without any sensible Loss, such as Gold and Silver; and these are called Noble, as being highly esteemed and greedily sought after by every Body.

## C H A P. I.

*Of Imperfect Metals.*A R T. I. *Lead.*

**L**E A D, named *μολυβδος* in Greek, or *Plumbum* in Latin. *Plumbum Nigrum Plinii*. *Raphat Arab*. *Saturnus Chemicor*. is a soft, heavy Metal, of small Value, of a livid Colour, staining the Hands black, very little sonorous, and melting by Fire, before Ignition. The *Greek* Authors often use the same

same Names indifferently to express Lead and Tin, and the *Latin* Interpreters have rendered the *Greek*  $\kappa\alpha\sigma\iota\tau\epsilon\gamma\delta\varsigma$  both by *Plumbum* and *Stannum*. *Pliny*, however, says that Term means only what he calls *Plumbum Album*, which he makes to be different from *Stannum*; which, according to him, is a kind of *Plumbum Nigrum*, found in the same Veins with Silver. But either this Distinction of *Pliny* between *Plumbum Album* and *Stannum* is groundless, or the *Stannum* of the Antients was nothing but the purer and most shining Part of Lead, or a Mixture of the *Plumbum Album* and *Nigrum*, or of the *Plumbum Nigrum* and Silver. *Agricola* mentions three Kinds of *Plumbum*; one White, which we now call Tin; one of an Ash Colour, which is our Bismuth; and a third Black, which is our Lead.

Lead is seldom found pure in the Mines; but is got from different Veins or Oars, which consist in some Mines of a black, yellow, or ash-coloured Earth, sometimes full of Spangles; in others, of a red or white Rocky Stone, in which the shining Lead is seen in squarer Cheques; in others it is found mixed with white, yellow, or green Fluors. Lead Oar contains almost always some Quantity of Silver, and in some Parts of *England* from two thousand Weight, they extract ten, fifteen, or twenty, Pounds of Silver. There are many Lead Mines in *Spain, Italy, and Germany*; neither are they wanting in *France*, but it is difficult to extract the Metal from the Oar. The richest in *Europe* are in *England*, where the Oar is disposed *stratum super stratum* with Charcoal, which being set on Fire, the Metal runs out. Sometime instead of Charcoal they use Pieces of Wood, and sometimes they mix them together, according to the Degree of Fire which is required; for a Charcoal Fire is more intense than a Wood Fire. *Agricola* relates, that from the Lead Pyrites, which contain likewise some Quantity of Silver,

Silver, a white Metal flows first of all, supposed to be a great Enemy to Silver, because it burns and destroys it; next to that comes the *Plumbum Nigrum* mixed with Silver, which by Miners is called *Stannum*. This *Stannum* being exposed to a stronger Fire, the Lead is turned into a kind of Litharge, or *Plumbago*, the pure Silver remaining behind; and that Litharge, or *Plumbago*, being afterwards melted with Charcoal, the pure Lead presently separates, and runs down.

The specifick Gravity of Lead to that of Gold is, as Three to Five. This Metal is easily burnt and reduced to an ash-coloured Calx, which by a stronger Degree of Fire turns Yellow, and then Red, being in that State termed Minium. By still increasing the Fire, this Substance melts into an Oily Fluid, which being exposed to the cold Air, concretes into a reddish or yellowish Mass consisting of several thin pellucid *Laminae*, soft to the Touch, though compact, which is termed Litharge. But if, when melted, an intense Degree of Heat be still continued, it wholly goes off in Fumes. If the Calx of Lead, Minium, or Litharge, be melted by throwing in burning Charcoal, or any other combustible Matter, they presently return to Lead. If Lead and Nitre are melted together in a Crucible, they flash a little, and if the Powder of Lead be thrown into the Flame of a Candle, it takes Fire, and turns the Flame blue. Hence it is evident that the sulphureous inflammable Principle is in Lead, though in a very small Quantity; and also that this Principle is not intimately united to the other Principles of which this Metal consists, since a very small Degree of Fire is able to separate them. Lead exposed on a Tile to the Focus of a great Burning Glass presently emits copious Fumes; then by degrees is turned to Ashes, or to an ash-coloured Calx, which almost in an Instant turns Yellow and Red, and then melts into a saffron-coloured very fluid Liquor,

R

which

which afterwards soon vanishes in Smoak. But if, before this Evaporation, it be removed from the Focus, it hardens into a red or yellowish Mass, like Orpiment, consisting of thin *Laminae*, pellucid like Talc. If this Talcous Glass of Lead be again exposed to the Burning Glass on a Peice of Charcoal, it presently melts and recovers the Form of Lead; but if a bit of pure Lead be put in the Focus in the same Manner on Charcoal, it melts, and at length is wholly dissipated in Smoak, no Glass remaining.

The Fumes thus arising from Lead, are properly the Flowers of the Metal, or the Ashes deprived of the sulphureous Principle; for if they be collected, and melted on Charcoal, they are presently reduced again to Lead, by Means of the Sulphur communicated to them from the Charcoal. From all which it is evident, that Lead is composed of a vitrifiable Earth, of the Talcous or Foliaceous Kind, and of a sulphureous Principle, which must be contained in all combustible Bodies; and this inflammable Principle is not in any great Quantity, nor intimately, united to the Earth.

Lead dissolves all other Metals except Gold and Silver, and carries them along with it, either in Fumes, or being turned with them into Litharge. Hence it is often used in refining Gold and Silver by the Cupel. It never contracts Rust by Moisture, like Iron and Copper, but is corroded by Acids, and dissolved by Vinegar, Spirit of Vitriol, and Spirit of Nitre, and the Salt remaining after the Evaporation of these Solutions has a sweet Taste. It is likewise capable of being dissolved by all oily and fat Substances. While it is turned into a Calx, though it emits copious Fumes, and consequently loses a considerable Part of its Substance, yet it increases in Weight, so that an Hundred Pounds of Lead turned to Minium weigh Ten Pounds more than before; but if that Minium be again reduced to Lead,  
it



it will not weigh near an Hundred Pounds. Minimum, melted with Sand, turns to a yellow Glass, like Amber.

From the excellent Virtues of this Metal, *Paracelsus* called it the *Fourth Pillar of Physick*. In itself, or without Preparation; it is cooling, incrassating, repellent, absorbent, and lenient. It is believed to be an Enemy to Venery, and undoubtedly calms Effervescences in the Blood, and checks the Progress of Inflammations; but is every way destructive to the Nerves. Taken inwardly, it loads the Stomach, gripes, and stops the Excretion both of the Fæces and Urine. It brings on Spasms and Tremblings, Difficulty of Breathing, and Suffocations; which direful Effects many have felt by drinking Wine recovered by Litharge after it has grown sowre. Hence it is reasonable to conclude, that Lead, and all Preparations from it, are much more proper to be used outwardly than inwardly.

Among these Preparations, we reckon, in the first place, those called Recrements, such as *Calx*, or Ashes, *Minium*, *Litharge*, *Plumbum Ustum*, and *Cerufs*; and secondly, such Chemical Preparations as are used in Physick; such as the Vinegar of Lead, the Salt or Sugar of Lead, the Balsam of Lead, and its Burning Spirit.

The *Calx*, or Ashes of Lead, and *Minium*, are thus prepared:

*The Lead is melted over a Charcoal Fire, in a clean unglazed Earthen Platter; and the Fire continued till the melted Metal turns to a blackish or ash-coloured Powder, which is then called the Calx, or Ashes of Lead. By continuing the Fire a little longer, this Powder becomes yellow, called by the French Painters Massicot; and if cal-*

*cined in a Reverberatory Furnace, it becomes very red, being then called Minium in the Shops.*

These Preparations of Lead blunt the Acrimony of the Humours, check Inflammations, and deterge foul Ulcers, disposing them to cicatrise. *Minium* is used in the *Unguentum Rubrum sive de Minio*, in the *Emplastrum pro Fracturis*, *Emplastrum Stypticum*, and *Emplastrum Matricale* of *Cbaras*. I have already observed that the *Minium* of the Antients was different from that of our Shops, the first being native Cinnabar, the other Lead calcined by a very strong Fire.

*Litharge, Lithargyrus sive Spuma Argenti Officin.* was of two Kinds among the *Greeks*, differing only in Colour. One was Yellow, called *Chrysitis*, or *Lithargyrus Auri*; the other White, called *Argyritis*, or *Lithargyrus Argenti*; and the same Distinction is still kept up. It is commonly made in those Furnaces in which Lead is separated from Silver, or where Silver is refined by Lead from the other Metals mixed with it.

When the Workmen design to separate Silver from the Lead or Copper contained in the same Oar with it, they First make a kind of Trough of Bone-Ashes, in which they melt a great Quantity of Lead; and into this melted Lead they throw the Silver Oar to be purified, and continue to blow with Bellows till all the Lead, mixed with the Copper, or Lead, contained in the Silver, swims on the melting pure Silver, like Oil. Then they gradually blow this Lead toward the Sides of the Trough, and afterwards cutting these Sides, the Vitrified Lead runs down to the Ground, and there becomes *Litharge*, sometimes of a Gold, sometimes of a Silver Colour; whence the Dealers in these Commodities

*Commodities have given out that the one was made from Silver, the other from Gold; whereas the Difference consists only in having been more or less exposed to the Fire, or in having a greater or less Mixture of Copper.*

Litharge therefore is nothing but vitrified Lead, either alone, or mixed with Copper; it is frequently used in Physick in outward Applications, being mixed with oily Substances to make the Basis of most Plaisters, by reason of the Emplastick Consistence, which this and other Recrements of Lead acquire by being mixed and dissolved by Oils. It is of a drying, detergent, and gently astringent Quality; and for this Reason is used in incarning and cicatrifying Ulcers. It is prepared by being well levigated in a Mortar with clear Water, till all the Lead which is not perfectly calcined, or other Metallick Fæces, fall to the Bottom, leaving the finer Parts incorporated with the Water; which subsiding by Rest, are separated from the Water and dried. This pure Litharge is used in the *Unguentum Nutritum, Desiccativum, Rubrum and Apostolorum*; in the *Emplastrum Palmeum, Diachylon Simplex & Compositum, Polychrestum, &c.* of Charas, and in Plaisters and Ointments of many other Dispensatories.

*Plumbum Ustum*, Burnt Lead, is a heavy blackish Powder, made by laying thin leaden Plates, and powdered Sulphur, *stratum super stratum*, in a glass Vessel, and then calcining them by the Force of Fire, they being continually stirred during the Calcination, till they are reduced to a very fine Powder, which is afterward to be washed several Times in clear Water, and dried for Use. This Medicine is used to cleanse foul inveterate Ulcers, and to dispose them to cicatrise. It is an Ingredient in the *Unguentum Diapompholygos*.

The *Cerufs* of the Shops is a kind of white Rust of Lead, made after this Manner :

*Some very sharp Vinegar being in the Summer Time put into a wide mouthed Earthen Vessel, it is afterwards closely covered by a Plate of Lead; and in Ten Days, or thereabouts, the Plate will be dissolved, a thick Sediment remaining at the Bottom of the Vessel, which being collected and dried, and afterwards ground, is made into a Mass, and kept for Use.*

*Cerufs may likewise be made by Steeping Filings of Lead in Vinegar for about ten Days; or even by infusing leaden Plates, which must every now and then be scraped, then infused again, till they are quite corroded. All the Scrapings being collected are ground, and then made into a Mass with Vinegar,*

Before *Cerufs* is used for Plaisters, Ointments, Eye-Waters, &c. it ought to be well prepared, and washed, and care ought to be taken that it be not adulterated with Chalk. It is more cooling, drying, and astringent than the other Preparations of Lead, and is used to good Purpose in Inflammations and Ulcers. It is an Ingredient in the *Trochisci Albi Rhabis*, in the *Unguentum Album* or *De Cerussa*, the *Unguentum Pempolygos*, and *Desiccativum Rubrum* of *Charas*, and in his *Emplastrum Polychrestum*, and *Emplastrum Nigrum*.

The First Preparation of Lead is the *Acetum Saturni*, for making which,

*Take any Quantity of well ground Cerufs, and pour upon it, in a Glass Vessel, as much distilled Vinegar as will stand the Height of four Finger's Breadth above*

above it. Digest them in a gentle Heat, shaking the Glass frequently, till the Vinegar turns sweet; then pour off the Liquor, and digest the Ceruss once more with the same Quantity of fresh distilled Vinegar, in the same Manner as before. Filtre the Solutions through Cap Paper, and so keep them for Use. This Vinegar, mixed with Oil of Roses, or any other Oil, and long stirred in a Mortar, becomes the Linimentum Nutritum, or Butter of Lead. It is proper for Itchings in the Skin, Tetters, or Ring-Worms, the affected Part being rubbed with it.

The Salt, or Sugar of Lead, is made by Evaporating the Vinegar to a Pellicle over a slow Fire, and then setting the remaining Liquor in a cool Cellar to crystallize; when all the Crystals are collected into one Mass, the remaining Liquor being poured off, this Saccharine Mass is dried in the Shade.

Though this Sugar of Lead is by some recommended to be taken inwardly, in Diseases of the Lungs, Spitting of Blood, Dysenteries, &c. yet, for the Reasons already given, it is much safer to confine it to Outward Applications. It is much used by Chirurgeons in Inflammations, Diseases of the Eyes, Erysipelas; &c. It blunts the Acrimony of the Humours, deterges Ulcers, and then dries and cicatrises them. It is mixed in Waters, Ointments, and Plaisters. In a Gonorrhœa, accompanied with a violent Scalding, *Saccharum Saturni*, mixed either with Rose Water or warm Milk, may be injected with good Success.

The Balsam of Lead is made of One Part of the Sugar, and two Parts of Oil of Turpentine, which being well mixed are digested in a Sand Heat,

*Heat, till the Oil turns very Red.* This Preparation is used for stubborn Ulcers, to correct sharp Humours, and Prevent Putrefaction.

The *Burning Spirit* and *Oil of Lead*, are obtained from the Sugar or Salt by Distillation, but the Virtues of these inflammable Substances are the same with those of Spirit of Wine, whatever Chemists may pretend to the contrary; for the Spirit is only the Spirit of Wine concentrated in the Vinegar disengaged by this Preparation, and the red Oil is likewise extracted from the Vinegar.

The *Mineral Mummy of Lead* of *Poterius*, is the Calx of Lead and Quicksilver amalgamated together, made in this Manner :

*Take of Mercury revived from Cinnabar two Parts, and one Part of Lead. Amalgamate them together, and continue to shake them strongly in an Earthen Vessel over a Charcoal Fire, till the whole is reduced to a black Powder. Bake this Powder in a Sand Heat, in a Glass Matrafs, till it turns yellow, and keep it for Use.*

This *Mummy* cures, in a very small Time, the Itch, Tettors, and other Diseases of the Skin, cleanses callous Ulcers, and dissolves the Callus, and dissipates Swellings in the Glands of the Breasts, being mixed in any Ointment or Plaister. It is likewise of service in Cancers, which are not arrived at their last Stage. It must, however, be cautiously and sparingly used, lest the Suppuration prove too great. But if a *Carcinoma*, for Instance, be not ulcerated, a Drachm of this Mummy, accurately mixed with an Ounce of *Emplastrum Magneticum* of *Angelus Sala*, and applied to the Tumor, will gradually dissolve it. But if there be an Ulceration, then a small Pencil of  
Lint

Lint dipped either in the Mummy alone, or mixed with Powder of Myrrh, is to be thrust into the Ulcer, the *Emplastrum Magneticum* being applied upon it. By this Means the hard Tumor gradually resolves by a gentle Suppuration, and by proper Internal Remedies used at the same time, the *Carcinoma* is healed.

A R T. II. *Tin.*

THE Word *Stannum* has been applied to several Substances, mentioned in the foregoing Article; but what we now call by that Name seems to me to be the same with the *κασιτερίς* of the Greeks, or the *Plumbum Candidum* of Pliny. It is one of the softer, and more ignoble Metals, white, shining, something livid, brittle, and sonorous, especially when united to other Substances. Tin is found in several Countries, but the richest Mines are in the Counties of *Cornwal* and *Devonshire*, in *England*.

It is commonly got from a Stony Substance, sometimes black, sometimes yellow, and sometimes white. These Stones are in some Oars friable, in others so hard that they must be broke to Pieces by Fire. In *Cornwal*, the Oar being first separated from the useles barren Stones is beaten to Pieces with Iron Hammers, a Stream of Water running continually through it during the Operation, by which all the Earthy Parts are washed away, the Metal falling to the Bottom. These Metalline Parts are afterwards ground by a Mill Stone, and then well washed with Water, to separate all Remains of Earthy Parts. Then, being well dried, they are thrown into a Furnace, and mixed with Charcoal, and melted by a strong Fire, kept up by continual blowing of Bellows. The melted Tin falls to the Bottom of the Furnace, and from thence runs out by an Opening made on Purpose into Moulds made of Sand, where  
it

it hardens into large Masses. The upper Parts of these Masses are so soft and so easily melted, that they cannot be worked without the Addition of about three Pounds of Copper and eighteen Pounds of Lead to an Hundred Weight of Tin. Various Substances are found mixed with Tin Oar; one of the Arsenical Kind, called *Mundic*, is of a shining dark Colour, dyes the Hands black, and when exposed to the Fire, flies away in Smoak. Another is soft, and of a saponaceous Nature, readily soluble in Water, but after being thus dissolved it grows very hard, being a kind of Marle, which is often found to contain Stones, sometimes pellucid like Crystal, sometimes red.

Tin is the lightest of all Metals, its specific Gravity being to that of Gold only as Three to Eight. It is easily melted, and turns very soon to a whitish Calx. Being laid on a Tile in the Focus of a great Burning Glass, it emits a thick, roapy Fume, in great Quantities; leaving a rare white fine Calx behind, which being continued longer in the Focus turns to small Crystals, or thin pellucid Filaments. This cannot be melted any more, without the Addition of some other Substance, such as Charcoal, &c. by which it is presently converted again into Tin. Filings of Tin thrown into the Flame of a Candle, will take Fire, make the Flame of the Candle blue, emit Smoak, and smell like Sulphur mixed with Garlick. Hence it is evident, that Tin consists of a Crystalline or Vitriifiable Earth, which alone is hardly fusible, and of a sulphureous Principle, mixed perhaps with some Quantity of an Arsenical Salt.

Tin is more easily melted than any other Metal, and easily adheres to them all; and on this Account is laid on Copper Vessels and Iron Plates, to preserve them from Rust. It likewise penetrates other Metals, hardens them, and makes them brittle; and it requires a great deal of Pains to separate it, when



once mixed with them, whence it has been called by Chemists *Metallorum Diabolus*. It is soluble only in *Aqua Regia*, and a Solution of it tinges a Solution of Gold with a beautiful Purple Colour. A Liquor which will perpetually smoke, or, as is commonly said, a Spirit fermenting with the Air, may be made from Tin in this Manner :

*Take of pure Tin, one Part ; of Quicksilver, three Parts : Mix them, and make an Analgama, to which add four Parts of Corrosive Sublimate, and having mixed them well together, in as small a Time as can be, throw them into a Glass Retort, to the Neck of which a Receiver is to be fitted, and a Dish set under the Receiver full of cold Water. Then distilling with a Sand Heat, a pellucid Liquor rises first, next the Spirit with great Impetuosity, and last of all, White Flowers stick in the Neck and upper Part of the Retort. Then removing the Fire, separate the turbid Liquor, and keep it close stopped in Glass Phials ; and whenever it is exposed to the open Air, it will break out in thick Fumes.*

Tin is seldom used inwardly, though its Virtues are highly celebrated by some Authors in Diseases of the Lungs and Uterus ; the Filings being taken in the Quantity of a Scruple or more, every Day for some Time.

The Principal Chemical Preparations of Tin are, the *Sal Jovis*, *Antibeticum Poterii* or *Diaphoreticum Joviale*, and *Aurum Mosaicum*.

*Sal Jovis*, or the Salt of Tin, is prepared from the Calx of this Metal, exposed for two or three Hours to a Reverberatory Heat, with the strongest distilled Vinegar, much in the same manner as the *Saccharum Saturni*. It is recommended in Suffocations

cations of the Uterus, and other hysterical Affections, from two to six Grains, frequently repeated.

The *Antibæticum Poterii* is thus made :

Take equal Parts of the best Martial Regulus of Antimony, and of the purest Tin; melt them together in a Crucible, and then throw them into a Brass Cone, well greased and warmed; separate the Scorixæ, if there be any, and under these will be found a Regulus Jovialis. Powder and mix well one Part of this Regulus with three Parts of pure Nitre, and throw this Powder by Spoonfulls, into an ignited Crucible, and calcine them together. Then let the Mass in Powder be thrown into a Vessel of warm Water, and edulcorated by frequent Washings, and afterwards dried. It will remain a white Powder, with a bluish Cast; the Dose of which is from half a Scruple to a Drachm, in beëtick Fevers, Consumptions, Spitting of Blood, and in every saline Disposition of the Blood.

For the *Aurum Mosaicum*, Take of pure Tin, an Ounce; of Mercury, revived from Cinnabar, ten Drachms; make an Amalgama, which being mixed with ten Drachms of common Sulphur and an Ounce of Sal Ammoniac, let the whole be very well rubbed and mixed together, then sublime them with a strong Fire for four Hours; a kind of Cinnabarine Substance will rise to the upper Part of the Vessels, a spongy Substance, of a Gold Colour, remaining at Bottom, which being washed in many Waters, is termed *Aurum Mosaicum*, and used both by Painters and Physicians. It is believed to be Diaphoretick, and is given from ten to thirty Grains, in hysterick and hypochondriacal Affections, and in Malignant Fevers.

## ART III. Iron.

Common Iron, called *σίδηρος* in *Greek*, *Ferrum* in *Latin*, and *Mars* by the Chemists, is an ignoble, very hard and sonorous Metal, which, when polish'd, is of a shining Colour, between white and livid; but when unpolish'd, of a black Colour. Iron is of two Kinds, common and purified. This last is termed *Acies*, *Chalybs*, or *Steel*. No Metal is so necessary for the Uses of Life as Iron, nor is any Metal found in so great Quantities, almost in every Country. There are many Iron Mines in *France*; but the *German* Iron and Steel is preferred to the *French*. It is dug out of the Earth in very different Forms. In some Mines, it is found pure, either granulated, or in Lumps; in others, it is met with in a heavy Stone, of a dark, yellow, or reddish Colour; or in a heavy yellowish or red Sand. Some Oars yield the pure Metal contain'd in them with little Trouble, requiring only to be broken into small Pieces, and so to be melted with Charcoal in the space of a few Hours. Other Oars require a great deal of Labour to melt them; and also the Addition of Quicklime, Marle or Stones, to facilitate the Fusion. The melted Metal is run into large Molds, and there hardens into long thick Masses. These Masses are melted a second time, the flowing Metal being continually stirred with an Iron Rod; and when hardened, it is beat with great Hammers, till all the heterogeneous, vitrified, or burnt Parts are separated. Iron thus prepared may be forged into any Shape, by being first ignited, and then beat on the Anvil by Hammers. All Iron is not however of the same Goodness; the toughest is the best, and that which is most brittle of the least Value. This Difference does not proceed from the  
Metal

Metal it self, but from the Mixture of earthy and vitrollick Parts.

Steel is made of Iron by frequent Fusion and Purification ; and in the Iron of some Mines this Conversion is very easily obtained ; in others, more difficultly ; and accordingly the Ways of performing it are different. If the Iron be very good, it is melted in Furnaces, and to the melted Metal are added gradually equal Parts of Salt of Tartar, or any other alkaline Salt, Filings of Lead, and Shavings of Bullocks Horns, the Metal being kept continually stirred. Afterwards the hardened Mass is beat into small Bars on an Anvil. But if the Iron cannot be thus melted, they take Bars of about an Inch Diameter, or less, and lay them *stratum super stratum* in a proper earthen Vessel, with a Mixture of equal Parts of Soot, Charcoal Dust, and Filings of Bullocks or Cows Horns, or Hairs. When the Vessel is full, it is covered and coated with a proper Lute, and set in a reverberatory Furnace. The Fire is gradually increased, till the Vessel is red hot, and continues so for seven or eight Hours. Then the Fire being suffered to go out of itself, the Iron Rods are taken out changed into Steel. This is known by breaking them ; for if the shining metalline Sparks are very small and very close together, through the whole Thickness of the Bar, the Steel is very good ; but if they are at greater Distances from each other, and have visible Pores between them, the Steel is of less Value. Sometimes these Sparks are very close together near the Surface of the Bar, but more distant toward the Center, which is a Sign, that the Calcination was imperfectly made ; and in that Case, the Stratification and Calcination is to be repeated, till the Change is thoroughly made.

Iron is the hardest of all Metals, and Steel is still harder and more rigid than Iron ; if, being ignited, it be thrown into cold Water. Its specifick Gravity

is to that of Gold nearly as three to seven. Iron long steeped in Water communicates to it a ferruginous Taste, being dissolved by the Water and turned to a yellowish Rust. This Solution may be brought about in a little time, if the Iron be successively wetted with Water, and then dried for several times; but if suffered to remain in the Water without being ever dried, it is a long time before it is corroded. This makes it so difficult to preserve Iron from Rust; for which the best way is to rub it over with some oily Substance. Filings of Iron, laid in a Heap and sprinkled with Water, will grow so hot as to set Fire to Sulphur, if the Heap be large. By calcining Iron long in a reverberatory Furnace, it is reduced to a Calx, of a dark red, or purplish Colour. When ignited in a strong Fire, till it be near melting, and then beat by the Hammer, it throws off Scales, which are nothing but half vitrified Iron. When it is melted in the refining Furnaces, a Part of it mixed with the Charcoal, or other earthy Parts, runs into *Scoriae*, which are a kind of Glass. This Metal is dissolved by all Acids, but left untouched by alkaline Salts. Filings of Iron thrown upon any Flame take Fire, and emit green or red Sparks. These Filings mixed with an equal Portion of Nitre presently make an Ebullition, and emit copious Fumes of a foetid Smell, then flash and deflagrate. If the Filings are put into Spirit of Sea Salt, or of Vitriol, a violent Effervescence and Fumes are raised. The Fumes are intirely sulphureous, and if a lighted Candle be held to them, they flame immediately; fulminating and often breaking the Vessels. Iron exposed to the Focus of a great Burning Glass on a Tyle presently melts, emits Fumes, and then becomes a brittle half vitrified Substance. But if laid on a Piece of Charcoal in the same Focus, it presently melts, as before, and then flies wholly off in Sparks. If the half vitrified

Substance

256 *Of Fossil, Vegetable, and*

Substance just mentioned be expos'd on a Piece of Charcoal, it presently recovers the Form of a Metal, that is, the shining Colour and Ductility, and afterwards is wholly dissipated in Sparks. From these Experiments it is evident, that Iron consists of a large Proportion of a bituminous Substance, which being united with a vitriolick Salt is involved in so large a Quantity of Vitriifiable Earth, as difficultly to deslagrate with Nitre. That the vitriolick Salt is likewise in a considerable Quantity, is evident from the Solubility of Iron in Simple Water, from the Taste of the Water in which Iron has been dissolved, and from the Heat conceived by Filings of Iron sprinkled with Water, which arises from the Action of these Salts on the Metallick Earth. There is however some Difference between the Sulphur contained in Charcoal, and that contained in Iron; since Iron restored by the Mixture of Charcoal-Sulphur, and expos'd to the Rays of the Sun in the Focus of a Burning Glass, flies off entirely in Sparks. Iron therefore consists of a bituminous inflammable Principle, a vitriolick Salt, and a vitriolick vitriifiable Earth. This Earth united with any inflammable Substance by Fire will become Iron, which accordingly happens in burning any inflammable Bodies, in the Ashes of which Iron discovers itself to the Magnet, though before no Signs of Iron are discoverable in these Substances, even when reduced to the finest Powder.

Iron is the most useful of all Metals for Human Life; for besides the innumerable Kinds of Instruments made of it, it furnishes excellent Remedies in many Diseases. The Medicinal Virtues of Iron taken inwardly were not unknown to the Antients. *Diascorides* attributes to it an astringent Virtue, and recommends it in uterine Hæmorrhages. He likewise orders Wine or Water, in which a red-hot Iron has been quenched, in the Cæliac Passion, Lientery,  
and

and Dysentery, and for restoring weak Stomachs. Physicians do now acknowledge a two-fold Virtue in Iron, one Aperient, the other Astringent; for it is observed to cure a Suppression of the Menfes, to open Obstructions of the Liver, Spleen, and other Viscera, to stop Hæmorrhages and Diarrhæas, and to strengthen the relaxed Fibres of the Intestines. On these Accounts it is reckoned the Grand Specifick in Hypochondriacal Affections, and all kinds of Chloroses. Some attribute an Aperient Virtue to some Preparations of Iron, and an Astringent Virtue to others; but the Truth is, all these Preparations are both Astringent and Aperient, though not in the same Degree.

For Medical Uses, Iron is preferable to Steel, and the Filings of Iron reduced to an Alcohol, or impalpable Powder, is preferred by many to all other Preparations in promoting the Flux of the Menfes, and in removing Obstructions of the Viscera, being given from twelve Grains to half a Drachm; once or twice a Day, in Pills, Lozenges, or Boles.

*Take of Filings of Iron, finely powdered, and passed through the Searce, half an Ounce; of powdered Cinnamon, half a Drachm; of the Mucilage of Gum Tragacanth, a sufficient Quantity to make Pills. The Dose of these Pills is a Scruple, to be taken in the Morning on an empty Stomach, and repeated four Hours after Dinner, drinking afterwards a Glass of Wine and Water.*

*Take of finely powdered Filings of Iron, an Ounce; of Cinnamon, a Drachm; of Cloves a Scruple; of white Sugar dissolved in any pleasant Simple Water, and then boiled to the Consistence of a solid Electuary, four Ounces; Mix them together, and make Lozenges, the Dose of which is two Drachms Morning and Evening.*

## 258 Of Fossil, Vegetable, and

Take of fine Filings of Iron, two Drachms; of the Powder of dried Arum Roots, three Drachms; Crystals of Tartar, two Drachms; Gum Ammoniac, Myrrh, Cinnamon, and Nutmeg, of each a Dram; Powder of Saffron, half a Drachm; Syrup of Wormwood, a sufficient Quantity, to make an Opiate or soft Electuary. The Dose of which is two Drachms, to be taken Morning and Evening in a Chlorosis.

Filings of Iron tied up in a Linnen Bag are likewise prescribed to be infused in aperient Apozems and alterative Broths; and Steel Wines are made with them in this manner:

Take of pure Filings of Iron, an Ounce; of any strong Wine, a Pint. Digest them in a warm Place for twelve Hours, shaking the Vessel every now and then. The Dose is four Ounces, to be taken twice a Day alone, or it may be mixed in Apozems and Ptisanes, in the Quantity of a Spoonful in each Draught.

Of the Filings of Iron and Tartar are made Steel Waters in the manner already mentioned in the Chapter of Mineral Waters.

The medical Preparations of Iron are reckoned either Aperient or Astringent. Of the first kind are the *Crocus Martis Aperiens*, the Salt or Vitriol of Iron, *Riverius's Salt of Iron*, soluble Tartar of Iron, the aperient Tincture of Iron, and the *Flores Martiales*. Of the second kind, are the *Crocus Martis Astringens*, and the astringent or antiphthical Tincture of Iron.

The *Crocus Martis Aperiens* is the most simple and most excellent Rust of Iron, made by exposing Filings of Iron to the open Air in the Spring, till it be wholly turned to Rust by the Dews and Rains. This Rust reduced to a very fine Powder, is kept  
for



for use. The Dose is from ten Grains to two Scruples. Others prepare this *Crocus* with Sulphur in the following manner :

*Take of Filings of Iron and powdered Sulphur, equal Parts; mix 'em together, and moisten them with Water, and make them into a soft Paste, which is to be laid on a Tyle, in a warm Place, for four or five Hours, to ferment. The Paste thus disposed, first begins to be hot, then gradually swells, cracks in several Places, emits Fumes, dries and calcines of itself. Then the Tyle, or earthen Dish, is set upon live Coals, the Mass being continually stirred with an Iron Rod, till all the Sulphur is burnt away. The remaining Powder is of a purple Colour, called, Crocus Martis Aperiens cum Sulphure paratus. The Dose is from fifteen Grains to a Drachm.*

The Salt or *Vitriol of Iron* is thus made :

*Take of pure Filings of Iron, three Ounces; of Oil of Vitriol, four Ounces; and of clear Spring Water, ten Ounces. Digest them together, till the Iron is perfectly dissolved; then let the Liquor being separated by Inclination from the Fæces be evaporated to a Pellicle, and set in a cool Place to crystallize. The Crystals are of a green Colour; and these being taken out, the remaining Liquor is to be evaporated and crystallized a-fresh; and all the Crystals being first well dried are to be kept for Use. The Dose is from two Grains to a Scruple, in a proper Vehicle. If given in too large a Dose, this Salt excites Vomiting. It is recommended not only as serviceable to open Obstructions, but to kill Worms.*

*Riverius's Salt of Iron* is made, *By digesting in an Iron Pot, set either in the Sun, or in some*

*other warm Place, equal Parts of Spirit of Wine and of Oil of Vitriol. After standing for several Days, a saline Concretion is obtained, which is to be well dried, and kept for Use. The Dose is from half a Scruple to a Scruple. It opens Obstructions, strengthens the Viscera; and Riverius recommends the long-continued Use of it in hypochondriacal Affections, Chloroses, and Obstructions of the Liver and Spleen.*

The *Tinctura Martis Aperiens* is thus prepared :

*Take of rusty Filings of Iron, twelve Ounces; white Tartar, two Pounds; boil them in an Iron Pot with a sufficient Quantity of Rain Water, for twelve or fifteen Hours, stirring them sometimes with an Iron Spatula. Then strain off the Liquor, and evaporate it to the Consistence of a Syrup. This Tincture or Extract, as it may be called, is prescribed with Advantage in a Suppression of the Menses, Green Sickness, Dropsy, and other Diseases arising from Obstructions. The Dose is from one Drachm to two or more in alterative Broths, or any other convenient Liquor.*

*Tartarum Chalybeatum Solubile* is made, *By dissolving a in Pint of the Tincture last mentioned four Ounces of Soluble Tartar; and then evaporating the Solution to Dryness. The Powder that remains is of a saline Nature and dark Colour, and must be carefully preserved from Moisture. The Dose is from ten Grains to a Drachm, in a proper Vehicle.*

The Flowers of Iron called likewise *Mars Diaphoreticus*, or *Flores salis Ammoniaci Martiales* are thus prepared :

*Take*

Take of *Rust of Iron*, twelve Ounces; of powdered *Sal Ammoniac*, eight Ounces; mix them well; then sublime them in an earthen Cucurbit, with a Glass Head, in an open Fire. Yellow saline Flowers will arise, the Dose of which is from two to twenty Grains. They are powerfully attenuating and aperient, sudorifick, diuretick, and a little cathartick; and if given in a large Dose they excite a Nausea. They are successfully prescribed in stubborn Fevers, in an Asthma, in hypochondriacal and other chronical Diseases.

The *Crocus Martis Astringens* is made, By first turning Filings of Iron to Rust, by sprinkling them a sufficient Number of times with Vinegar; then by calcining this Rust in a reverberatory Heat, till it turns to a very red Powder. It is given successfully in Diarrhæas, Dysenteries and Hæmorrhages of all Kinds. The Dose is from fifteen Grains to a Drachm, in form of a Bolus, Lozenges or Pills.

The *Astringent Tincture of Iron*, or *Tinctura Anti-phthisica*, is thus prepared:

Take of the *Vitriol of Iron*, an Ounce; *Terra foliata Tartari*, two Drachms; powder them separately, then mix them by degrees in a Glass Mortar, rubbing them constantly during the Mixture, till they turn to a kind of soft Paste, of a red Colour. Then pour upon them gently four Ounces of rectified Spirit of Wine, which will presently acquire a red Colour, and is then to be poured off by Inclination from the Faces. The Dose is from ten to thirty or forty Drops.

It stops Hæmorrhages, Gonorrhæas, and the Fluor Albus in Women. It cleanses and dries Ul-

cers in the Lungs, and is often prescribed with Advantage in Consumptions, mixed with equal Parts of Balsam of Capivi. In this Preparation, I have rejected the *Sac. Saturni* commonly used, and have substituted in its place the *Terra foliata Tartari*, which extracts the Tincture full as well, and is free from all the Inconveniences which attend the inward Use of Preparations of Lead.

Having thus given a sufficient Account of the medical Preparations of Iron, it will be proper to say something concerning the Virtues of this Metal, and the Cautions to be observed in the Use of all the Medicines prepared from it. We have already observed, that Physicians have ascribed two kinds of Effects to Iron, one Aperient, the other Astringent. Hence Chemists have tortured it various ways into *Croci, Tinctures, Salts, &c.* by which the aperient or astringent Qualities might be extracted; but it is worth Observation, that the astringent Preparations are often found to prove cathartick and diuretick; that the Aperient often stop Fluxes; and the Preparations of both kinds promote the Flux of the Menses, and suppress them when immoderate. If we inquire into the Cause of these various Phænomena, it will be found to be intirely in the Stypticity of Iron; which, according to the different Dispositions of the Body of the Patient produces different and even contrary Effects. Therefore though Iron may often act as an Aperient; yet even then it acts only by its Adstriction. To conceive this, we are to consider, that the morbid State of the Blood is of three kinds. The first is the glutinous State, in which the Blood deprived in a great Measure of its spirituous Part swims in a thicker Serum; and thus sticks in almost all the small Vessels, creating Obstructions almost every where, and consequently Cachexies. The second State is a thick Blood, deprived of a great Quantity of its Serum, whence it is

said

said to be Adust or Melancholick. In this State it easily stagnates in the small Vessels, and produces scirrhus and scorbutick Obstructions. Thirdly, the Blood may abound with too great a Quantity of Serum, and thereby open to itself Passages and Channels, into which the Blood does not naturally flow. All these morbid States are owing to the undue Contraction of the Vessels, and their undue Action upon the Fluids, without which Action these Fluids cannot circulate. Thus when the Serum is too thick, the Elasticity of the Vessels is too small to propel the Blood as it ought to be; and hence follow Leucophlegmacies, Chloroses, Suppression of the Menses, Cachexies and other Diseases of the same kind. When the Quantity of Serum is too small, the Blood, if we may so say, becomes solid, and thus eludes the Force of the Vessels, forming very stubborn Obstructions, such as Scirrhus's, and others of that kind. These Obstructions are often followed by Hæmorrhages difficult to be cured, as is seen in Dropsies. Lastly, when the Vessels are continually bathed in a great Quantity of thin Serum, they lose their Elasticity, and the Blood being too much diluted, relaxes and weakens the solid Parts, passes in unusual Channels, and thus produces Diarrhæas, Diabetes, Hæmorrhages, Dropsies, &c.

What can be the Effect of Iron in all these Cases is evident from its Taste; which in crude Iron, as well as in all its Preparations, is Styptick, contracting the Fibres of the Tongue, Palate, and of the whole Mouth; whence follows a more copious and frequent Discharge of Saliva. Hence we may easily judge, what will be the Effect of all martial Preparations taken inwardly; namely, to constringe the Fibres, to restore and increase their Elasticity; by which Effect, the Fluids stagnating in the Intestices of the Fibres will be expelled; the inspissated Juices broken to peices, and made more fluid; and the Motion

of all the Fluids accelerated. The same Effects are produced in the Fluids. The fibrous Part of the Blood is constricted, and the Serum squeez'd out of it; and that either to the Advantage or Prejudice of the Patient, according to the State of his Solids and Fluids; and therefore great Judgment is required in prescribing Iron, and its several Preparations.

In cachetick Cases, such as Leucophlegmacy, Chlorosis, Suppression of the Menfes, and other Diseases in which the Blood is glutinous and viscid, the Preparations of Iron are of sovereign Use; for by its astringent Quality it brings the Fibres of the solid Parts into Contacts, expresses the Serum contained in the Interstices between them, and throws it into the Vessels. Thus the Blood is dissolved, the Elasticity of the solid Fibres restored, the viscid Juices attenuated, and a due Circulation every where restored. Iron is far from being of the same Benefit in scirrhus, scorbutick, or melancholick Affections; for the Blood being in these Cases too much deprived of Serum, the Vessels already too tense are further corrugated by the Action of Iron, and their oscillatory Motion thereby impair'd. Hence the inspissated Blood moves still more slowly, the fibrous Part being gradually more compacted and deprived of its Serum. In such Cases therefore Iron is hurtful, and though it be called Aperient, it can neither resolve these kinds of Obstructions, nor stop the Hæmorrhages arising from them. Excessive Evacuations, whether by Stool, Hæmorrhage, continual Sweats, Dropsies, or other Affections, proceeding from too large a Proportion of Serum, are accurately to be distinguished by Physicians. Iron is of Service in all such Diseases, as it strengthens the solid Fibres, expels the redundant Serum, and restores the Elasticity of the Vessels; but if these Evacuations arise from stubborn Obstructions, as is usually the Case in Hectick Fevers, all Preparations of Iron are hurtful

ful ; for by separating the serous from the fibrous Part of the Blood, and forcing that Serum out of the Body, they increase both the Evacuations and Obstructions. Thus though the Use of Iron may be proper in the beginning of a Dropsy, it is always hurtful in Dropsies of long standing ; because in such the excessive Flux of the Serum having already left the fibrous Part of the Blood almost dry, would be so much increased by the Use of Iron, that the Patient gradually deprived of the Use of all his Limbs would speedily fall a Sacrifice to that Medicine thus injudiciously applied.

Thus all the good and bad Effects of Iron are owing to its Stypticity ; by this alone it binds and opens. But it is not to be thought, that all Stypticks perform the same Effects with Iron in proportion to their Stypticity, Iron having this peculiar to itself, that, through all the Stages of Circulation, it preserves this Quality, whereas vegetable Stypticks are so much changed in the *Primæ Viæ*, that the Blood and small Vessels are hardly affected by them ; whereas Iron is only opened by the Juices of the Stomach and Intestines, and thereby disposed to Action, as it enters the Blood, by which its Efficacy is diffused through the whole Habit, its astringent Virtue being every where exerted. It ought however to be observed, that Iron is better prescribed in Substance, than when impregnated with Salts ; for when united with Salts, it is not so easily penetrated and dissolved by the Juices of the Stomach. Lastly, Exercise is extremely proper during the Use of Martial Medicines, in order to distribute the Particles of the Iron through the whole Habit, to restore the oscillatory Motion of the solid Fibres, and to accelerate the Motion of the Blood.

ART IV. *Copper.*

**C**opper, *Cuprum* in Latin, *χαλκός* in Greek, and *Venus* in the Language of the Chemists, is one of the ignoble Metals, softer than Iron, sonorous, of a red Colour, shining when polished, fusible and ductile to a very great Degree. It is sometimes found pure in the Mines, in form of small Rods, Branches, Globules or Masses of other Figures; but most commonly it is contained in a kind of Pyrites, or particular Oar. This Pyrites is in some Mines of a shining Gold Colour, but is not on that Account to be esteem'd richer, because that Colour is owing to a combustible Sulphur. Other Copper Oars are yellow, violet or purple, and some are blackish and mixed with Gold-Colour'd Sparks, or Veins intermingled with green. Copper is seldom found alone, but is generally accompanied with some other Metals, such as Silver, Iron, or Lead, and with a large Quantity of combustible Sulphur, very difficult to be separated from it. Copper Oar is differently managed according to the other Substances mixed with it. If it abounds with Sulphur, it undergoes repeated Calcinations till all the Sulphur be exhaled. The Copper Oar of *Goslaar* in *Germany* is first broke into Pieces of the Size of a Man's Fist, then burnt in an open Firé, made of Wood and Charcoal mixed together; and being then broken into smaller Pieces, it undergoes two Torrefactions more. Afterwards it is melted into a stony red Substance, called *Lapis Cupri*; which having suffered another Torrefaction, and being after that melted again, becomes black Copper; which after a fifth Torrefaction, becomes quite free from its Sulphur, but still contains Silver. This Silver is extracted in this manner. They mix with the Copper about four Parts of Lead, or more or less, according as the Lead they use is more or less free from Silver.



These Metals thus mixed are melted together by a very vehement Heat, and then pour'd out into Moulds, where they harden into a kind of flat Cakes. These Cakes covered with Charcoal in a proper Furnace are heated with a gentle Fire, till the Lead and Silver melt, and leaving the Copper fall down into a Vessel set to receive them. The Copper remains unmelted like a Sponge or Honey-Comb; and in this State is termed *Æs pauperum*; and is by repeated Fusions brought to be malleable, and every way fit for use. In this last Operation, some *Scoriae* appear, which are specifically heavier than the Mass consisting of Copper, Silver and Lead. These *Scoriae* are afterwards melted with a Mixture of Litharge, and by that means the several Metals it contains are separated. There are some Springs of Copper-waters, of which Vitriol is made by boiling, and Copper may be præcipitated from them, by means of Iron, which has made some Persons imagine, that these Waters turned Iron into Copper. There is a famous Spring of this kind near the Carpathian Mountains, the Waters of which corrode Iron thrown into it, and in place thereof substitute Copper; so that a Horse-Shoe, for instance, that has lain several Days in this Water shall, when taken out, appear not to be Iron, but Copper.

The richest Copper-mines are in *Sweden* and *Germany*. Copper is softer than Iron, but harder than Lead or Tin. It ignites or becomes red hot in the Fire before it melts. Its specifick Gravity is to that of Gold nearly as four to nine. When exposed to Moisture, it contracts a Rust of a green Colour, which when handled has a very unpleasent Smell, and an austere sharp nauseous Taste. It is soluble in Water, and is apt to be corroded by all Oils and Salts. A Solution of Copper by acid or fixed alkaline Salts is green; but when made by urinous Salts, it is of a beautiful blue Colour. Filings of  
Copper

268 *Of Fossil, Vegetable, and*

Copper thrown into the Flame of a Candle burn, and emit a greenish Flame, but do not sparkle; When melted with Nitre, they flash a little. If we take one Part of Filings of Copper and something above two Parts of corrosive Sublimate, and distil them after being well mixed in a Glass Retort, the Quicksilver disengaged from the Salts comes over in running Mercury; but the Copper remains at the Bottom intimately united to the Salts, in form of a yellowish or reddish Resin; sometimes transparent, sometimes opaque; which by the Flame of a Candle may be melted, and set on Fire, the Flame it gives being of a green Colour. Copper calcined long by a very strong Fire, till it has lost all its Sulphur, turns to reddish Ashes; which being exposed on a Tyle to the Focus of a great Burning Glass turns to an intensely red Glass almost opaque. If this Glass be melted on a Peice of Charcoal in the Focus of the same Glass, it recovers its Form of Copper. From these things we may conclude, that Copper contains a large Quantity of combustible Sulphur, though not so much as Iron; and that the metallick Substance is a red vitrifiable Earth. Copper exposed to the Fumes of Quicksilver, or of Arsenick, acquires a Silver Colour which is not permanent; melted with *Calamine* or *Zinck*, it turns of a yellow or Gold-colour; the different ways of doing which have been related in the Articles concerning *Cadmia* and *Zinck*. Copper, because of its great Ductility and shining Colour, is much employed in domestick Uses; but is seldom used inwardly as a Medicine, because this Metal, and especially its Rust, are reckoned Poisons; and any kind of Food, or even Water, that has stood long in Copper Vessels, is very pernicious. The Symptoms produced by this Poison are Pains in the Stomach and Intestines, excessive Vomitings, Irritations to Stool, Ulcers in the Intestines, sometimes Difficulty of Breathing, and spasmodick

Spasmodick Contractions of the Limbs, and lastly Death itself, if the Quantity of the Poison be great.

The Remedies proper in such Cases are the same as for corrosive Sublimate and Arsenick; first to drink a great Quantity of Milk, Oil, or melted fresh Butter; then to drink warm Water till the Patient vomit plentifully. Clysters made with Oil, Butter or fat Broths, are likewise proper; and lastly, strengthening Cordials and a milk Diet.

Various Recrements of Copper were prepared by the Ancients, and employed in Medicines, such as *Ærugo*, *Flos Æris*, *Æs Ustum*, *Squamma Æris*; but the *Ærugo*, or Verdigrease, is the only Recrement now in use. It is a green Rust raised in Copper Plates; the Method of raising it, taken from the Memoirs of the Philosophical Society of *Montpellier*, is as follows. The Husks, Stones, &c. of Grapes, being first dried, and after dipped in some strong Wine, are laid for nine or ten Days in wooden or earthen Vessels, till they begin to ferment. Then being squeezed together with both Hands, they are formed into Balls, which being put into proper earthen Pots, and Wine poured upon them, till about half is covered, the Vessels have a straw Lid thrown over them, and are set in a Wine Cellar; where the Balls are left in Maceration for twelve or fifteen Hours, being turned every four Hours, that the Wine may penetrate every Part of them. Afterwards the Balls being raised about a Finger's breadth above the Surface of the Wine, and set upon wooden Bars, the Vessels are shut again, and left in that State for ten or twelve Days more. After which time, the Balls emit a strong and penetrating Scent, and are then fit for dissolving Copper. For this purpose, they are broke and bruised with the Hand, that the outer Part of them, which is driest, may be exactly mix'd with the inner, which is still moist with Wine; then they are stratified with Copper  
Plates

Plates in the same Vessels upon wooden Bars, the Plates making always the lowest Stratum, and the Balls the uppermost. The Plates are four Inches long and three broad; and if the Copper be new, they must be previously buried for four and twenty Hours in Verdigrease, and then heated a little in the Fire. The Vessels being filled in this manner and shut close, are left without any further Management till the Verdigrease is made, which happens sooner or later, according to the Nature of the Copper. Some Copper yields its Rust in six or seven Days; some requires twelve or fifteen Days. The Verdigrease being compleatly extracted, the Plates covered therewith are taken out of the Vessels; and their Edges being moistened with the strongest Wine, they are wrapt up in Linnen Cloths, dipped in the same, and laid in a Wine Cellar for three Weeks. By this, the Makers tell us, the Verdigrease is nourished, and then it is scraped off from the Plates with Knives, and kept for Use.

Verdegrease is used by Painters and other Artists, but is seldom prescribed inwardly by Physicians. It is often used outwardly to deterge and dry Ulcers, to eat away fungous and callous Flesh. It is an Ingredient in the *Balsamum Viride Metensium*, *Unguentum Viride*, *Unguentum Ægyptiacum*, *Unguentum Apostolorum*, and *Emplastrum Divinum* of Charas.

*Flos Æris Officinar.* is nothing but Copper reduced to small Grains like Millet Seeds; which is done by pouring cold Water upon melting Copper, which thereupon immediately flies every way into Grains, which are collected and kept for use.

*Æs Ustum Officin.* is Copper reduced to a *Calx* or *Crocus*, either by itself, or mixed with Sulphur or Salt, by a long Calcination in a reverberatory Furnace. It is drying and astringent with a certain Degree of Acrimony.

*Squamma Æris Officin.* is little different from the *Æs Ustum*, being only the Particles of Burnt Copper that fly off while it is hammer'd. These *Squamme*, or instead thereof the Filings of Brass, mixed with Sulphur and the Powder of *Florentine* Orrice, and wore in the Shoes, cures stinking Feet; but this Practice may be attended with great Inconveniency; for by checking suddenly that stinking Sweat, Diseases of a worse kind may ensue.

The most usual Medicines prepared with Copper are the *Green Precipitate*, described among the Preparations of Mercury; and the *Ens Veneris* of Mr. Boyle, which is made in this manner:

*Take of Colcothar, made with blue Hungarian or Copper Vitriol, well calcined and washed, two Drachms; of Sal Ammoniac, four Drachms; mix them well, and sublime the Flowers three times by cobobating them on the Caput Mortuum. The Dose is from one to six Grains. These Flowers are much commended by Boyle in the Rickets; and are said to be a powerful Remedy in a virulent Gonorrhœa.*

The *Tinctura Cærulea*, or *Collyrium Cæruleum*, is made from Copper, Sal Ammoniac, and Lime-Water. It is used for Diseases of the Eyes, to stop Gonorrhœas, and to deterge and dry Ulcers.

The Chemists imagine, that a red Sulphur is contained in Copper, called by *Helmont*, *Ignis Veneris* and *Sulphur Philosophorum*, which he says prolongs Life. They try to extract this Sulphur for two Reasons; first to obtain thereby a sovereign Remedy in all Diseases, and a present Anodyne in all Pains. Secondly, To deprive Copper of its red Colour, and make it a white Metal resembling Silver. But I can find no other Sulphur in Copper, except that bituminous Inflammable Substance common

mon to all Metals, and indeed to all combustibile mixt Bodies. In giving such large Encomiums to this Sulphur, the Chemists therefore only shew their own Ignorance, for the red Colour of Copper is owing to the Earth, not to the Sulphur contained in it; and it is perfectly vain to pretend to extract a fixed Sulphur from that Metal; for these red Tinctures are only the Copper itself divided into very small Parts, and suspended in different Menstrua, as appears by precipitating these Particles. They have likewise vainly endeavoured to rob Copper of its red Coat, as they term it; for what they call white Copper, does not owe that Colour to the Loss of its red Sulphur, but to the Addition of a white Earth, found in the fixed alkaline Salts, which they make use of. This *Becherus* has very justly observed.

## C H A P. II.

*Of Perfect Metals.*A R T. I. *Silver.*

Silver called *Argentum* in *Latin*, ἀργυρος in *Greek*; *Luna* by Chemists, is a noble or perfect Metal, of a shining white Colour, sonorous and ductile, but yet more imperfect than Gold. As it is found in the Mines, it is distinguished into Natural and Rude. Natural Silver is that which is dug up pure and unmixed, being found either in the Clefs and Fissures of Rocks or Stones, or mixed with Sand or Earth without Stones. It is met with in very different Forms; sometimes in Branches, fimbriated in small Filaments like the Hairs of a Man's Head, granu-

granulated, or resembling the Leaves and smaller or larger Twigs of Trees. It has likewise been found in large Masses; such as that mentioned by *Olaus Wormius*, which, as taken out of a Mine in *Norway*, weighed an hundred and thirty Marks.

Rude Silver is that which is found in Oars; and must be refined by Fire. These Silver Oars are in some Mines red, being mixed with Arsenick; in some, of a Lead Colour, owing to the Sulphur contained in them; in others, black, purple, Ash-coloured, &c. according to the different Substances mixed with the Silver. It is often found in Gold, Copper, Tin and Lead Oars, in different Quantities. There are Silver Mines in many Countries; *Italy*, *Germany*, *Hungary*, *Norway*, *England*, &c. but the richest are those of *Potosi* in *Peru*, and those of *Mexico*. Almost all the Lead Mines in *England* contain some Silver; but the richest are those of *Cardiganshire* in *Wales*, where two thousand Weight of Lead Oar yeilds from ten to twenty Pounds of Silver:

Silver is easily separated from Lead; nothing being required but to melt the Lead in Moulds made of Ashes, and placed in a proper Manner in the Furnaces. The Fire is then continually blown with Bellows, till the Lead being vitrified is absorbed by the Moulds, the Silver remaining behind. The Extraction of Silver from the *Peruvian* and *Mexican* Oars, is much more difficult; because these Oars are extremely hard, and also mixed with bituminous, sulphureous, arsenical or vitriolick Substances, which carry off with them a considerable Part of the Silver, or burn it to *Scoriae* along with themselves. Therefore according to the different Nature of the Oars, the Workmen pursue different Methods. If the Oar be too hard to be broken to pieces with Hammers, it is burnt in a moderate Fire, both to make it brittle, and to discover more exactly what Substances are

T

mixed

mixed with the Silver. They next grind this Ore in Mills to a fine Powder; and if the heterogeneous Substance be Sulphur or Antimony, they mix with the Powder Rust or Scales of Iron. If it contains Iron, they add Sulphur or Antimony, and thus calcine all these Substances together; and then a sufficient Quantity of Quicksilver is added. If the Quicksilver runs not into Spheres, but into small oblong livid Parts like little Worms, it is Proof that the Ore contains Lead or Tin. To separate these Metals, they use certain Compositions called *Magistries*, the Basis of all which is *Æs Ustum*, or calcined Copper. Thus the Silver Ore, being intimately mixed or amalgamated with the Mercury, is rubbed and washed for a long time in Water; and whatever Substance cannot unite with the Quicksilver, is carried off by the Stream of Water, the Amalgama remaining pure and entire behind. This Amalgama is afterwards squeezed in Linnen Cloths, to press out the Quicksilver; and the Silver Cakes or Loaves that remain, are exposed to the Fire in earthen Vessels, to evaporate any Quicksilver that still adheres to them. Afterwards the Metal is melted into Masses, adding about one fifth Part of Copper as an Alloy. We have already shewn the Method of separating Copper from Silver, when it is in great Quantities. When the Quantity of Copper is small, it is separated by Lead in a Cupel, made of Bones calcined to Whiteness, or of Ashes washed till no Salt remains in them. These Ashes, or powdered Bones, being wrought into a Paste with Water, are made into Cupels, and then very well dried. These Cupels are set on live Charcoal in a Furnace, and about four or five Parts of Lead are melted in them. To this melting Lead one Part of Silver to be refined is added, and when both Metals are in perfect Fusion, the Fire is increased, by continually blowing till the Lead is vitrified, and driven to the

Sides



Sides of the Cupel, and by the Addition of a proper Quantity of Quicksilver, is either absorbed, or flies off in Fumes, the pure shining Silver remaining alone in the Cupel.

If Gold be mixed with Silver, the way of separating this Metal, called in *French par le Depart*, is different from all the former. If the Quantity of Gold be very considerable, as much Silver must be added as to make it four times the Weight of the Gold. Then they are melted together, and thrown into *Aqua Fortis*, which dissolves the Silver, and leaves the Gold untouched in form of a black Powder, or Mud; from which the Solution being poured off by Inclination, it is frequently washed, and then melted. The dissolved Silver is precipitated by the Affusion of about twelve or fifteen Parts of common Water, and at the same time immersing Copper Plates, to which the Silver sticks, like an Ash-coloured Powder; which being dried is melted into Masses or Lumps.

Silver is harder and less ductile than Gold; and its specifick Gravity is to that of Gold a little less than as five to nine. It is likewise lighter than Lead. It never contracts Rust, grows black by the Fumes of Sulphur, is dissolved by *Aqua Fortis*, but not by *Aqua Regia*. It is not destroyed by Lead, but being long exposed to a strong Fire with Antimony, is something diminished by the sulphureous Part of that Metal. When exposed to the Focus of a great burning Glass, either on a Tyle, or on a Peice of Charcoal, it flies all off in Smoke, but very slowly, and is never turned to Glass, as the other Metals hitherto mentioned; because the sulphureous Principle, to which Metals owe their Ductility, Shining, and Opacity, is so closely united with the metallick Earth, that they sooner fly off together, than they can be separated into their Principles.

## 276 Of Fossil, Vegetable, and

The Solution of pure Silver is limpid, and its Crystals are of no Colour; but if it contains any Copper, the Tincture is greenish or bluish. The Taste of these Crystals is intensely bitter. Silver made to mix any way with common Salt melts into a semidiaphanous Mass resembling Horn, which for that reason is called *Luna Cornea*, which it is very difficult to reduce to Silver, because being volatile, if it be exposed to a strong Fire, it flies almost all off in Vapour.

The *Arabians* attributed to Silver the Virtue of strengthening the Head and Brain, and of recruiting the Animal Spirits. These Virtues have been exaggerated by the Chemists. Hence, in many compound Medicines of the *Arabians* of the cephalick and strengthening kind, Silver is an Ingredient; and among the Chemists we find *Tincturæ Lunares*, *Luna potabilis*, *Diaphoreticum Lunare*, *Bezoardicum Lunare*, &c. However, as we dare not maintain, that Silver is quite destitute of medicinal Virtues; so we cannot affirm, that these cephalick and strengthening Qualities belong to it. It is an Ingredient in the *Confectio de Hyacintho* and *Pulvis Lætificans* of *Charas*; and is often used instead of Leaf Gold, to cover Bolus's and Pills.

The most usual chemical Preparations of Silver are the *Lunar Crystals* and the *Lapis Infernalis*. The Lunar Crystals, called also *Catharticum Argenteum*, are thus prepared:

*Take of pure Silver, an Ounce; Spirit of Nitre, four Ounces; make a Solution, and evaporate one third; then set the Remainder in a cool Place, and Crystals will be found, which being carefully separated, the remaining Liquor is again to be evaporated to an half, and then set to crystallize as before. Dissolve all the Crystals in clear Water, adding an Ounce of purified Nitre; Evaporate this Solution, and crystallize again as before.*

*fore. These last Crystals are to be kept for Use by the Name of Luna Hydragoga, or Vitriolum Lunæ Purgans. The Dose is from three to eight Grains. This Medicine is recommended in the Palsy, and Ascites, being reduced to a fine Powder, and made into Pills with Crumbs of Bread. These Pills have been called Pilulæ Lunares Boylei, and powerfully evacuate the Water in Dropsies.*

The *Lapis Infernalis*, or Perpetual Caustick, is thus made :

*Take of pure Silver, an Ounce ; of Spirit of Nitre, three Ounces : Make a Solution, and evaporate the Pblegm in a Sand Heat to one Half. Pour the Remainder into a large Crucible, set in a moderate Charcoal Fire, so as to boil. When the Ebullition is over, and the Mass appears to be sunk, increase the Fire, and it will appear fluid like Oil. Then throw it into Metalline Tubes, first warmed, and when it is hardened, keep it for Use, well guarded from a Moist Air. It is a notable perpetual Caustick, soon corroding and consuming both the Flesh and Bones, to which it is applied.*

Several blue or Sapphirine Lunar Tinctures are highly celebrated by Chemists ; but are very improperly said to be Tinctures of Silver, being in reality Tinctures of Copper, and therefore not fit for internal Use. The Tincture of Silver is altogether limpid and diaphanous, but its Virtues are hitherto unknown. The Women prepare a Water or Wash of the Solutions of Silver and Quicksilver, wherewith to die their Hair black. The best of that kind is thus made :

*Take of granulated Silver, an Ounce ; of Aqua Fortis, two Ounces : Make a Solution. Dissolve likewise,*

278 *Of Fossil, Vegetable, and*

likewise <sup>take</sup> apart six Drachms of Quicksilver in six Ounces of Aqua Fortis. Mix the two Solutions, and add to them as much common Water, as will so far weaken them, that the Liquor will not corrode Copper, or raise Bubbles on its Surface. Keep this Liquor two or three Months before it is used.

A R T. II. *Gold.*

**G** O L D, *Aurum* in Latin, χρυσός in Greek, Sol, by the Chemists, is the most noble, most perfect, and heaviest of all Metals; ductile, sonorous, and of a reddish Yellow Colour. It is sometimes found Pure and Unmixed in the Earth, in Rivers, and in the Clefts and Fissures of Stones, either in Dust, or larger Pieces. The Oars, from which Gold is extracted by Fire, are sometimes a kind of Pyrites, of an Ash or Purple Colour. It is often found with Orpiment, and is likewise sometimes hid in the Mines of other Metals, especially of Silver, from which it must be separated by various Contrivances. There are many Rivers, among the Sands of which Gold is found in small Grains; and there are large Gold Mines in *Norway*, *Hungary*, and *Guinea*; but the richest are in *Peru* and *Mexico*. It is extracted from its Oar much in the same manner as Silver, by Torrefaction, beating to Pieces, mixing with Quicksilver, Washing, &c. It is separated from Silver and the other Metals, with which it is mixed in the Cupel, by Means of Lead, or by Cementation; from Silver alone, by that Method called in *French*, *Le Depart*, or *L'incart*, or in the dry Cupel, by Antimony.

The Way of separating Gold from other Metals by Lead, was shewn in the foregoing Article. Cementation is performed in this manner;

The Gold, being formed into thin Plates, is put into a Crucible with the Cement Powder, stratum superitratum, the Powder making both the Upper and Lower stratum. The Crucible being full, is covered with a Lid with a small Hole in the Middle, and the Joints are well luted; then it is exposed to a strong Fire for six or eight Hours, till it is all over red-hot. Afterwards the Fire being extinguished, the Gold Plates are cleared from the Dust with a Hare's Foot washed in Urine and dried. The Cementing Powder is made of one Part of Sal Ammoniac, two Parts of common Salt, and four Parts of powdered Bricks, well mixed together.

This Method of Refining does not altogether separate the other Metals from Gold, but renders it soft and ductile. The Method of separating Silver from Gold, *par le Depart*, was shewn in the last Article. Quartation, called *L'incart* in French, is performed almost the same Way, with this Difference only, that three Parts of pure Gold are to be added, and the Solution is to be performed with *Aqua Regia*, by which the Gold being dissolved, the Silver remains untouched.

Gold is purified with Antimony, when the Quantity of Silver mixed with it is so small as to be neglected; in which Case Antimony destroys the Silver, reducing it to *Scoriæ*, and leaves the Gold Pure.

One Part of Gold is first of all melted with two or three Parts of Antimony, then kept boiling in a Cupel, by a continual gentle blowing of the Bellows, till all the Antimony vanishes, leaving the Gold perfectly free from Silver.

The Difference between the Purification by Lead and by Antimony is this, that the greatest Part of

280 *Of Fossil, Vegetable, and*

the Lead being vitrified, it penetrates the Cupel, whereas the Antimony all flies off.

Gold is the heaviest of all Metals, and of all known Bodies; but withal so soft and ductile, that it may be extended to 652590 times its first Bulk. In all common Fires, it remains fixed; and even when exposed in the Focus of the greatest Burning Glass, it suffers that Heat for a great while before it begins to evaporate. It never contracts Rust, and is dissoluble only in *Aqua Regia*. It is capable of being penetrated by Mercury, and its Texture so far opened as to be turned into a soft Amalgama. It may be calcined by common Sulphur, if set on Fire and flaming. When dissolved by *Aqua Regia*, it may by Oil of Tartar *per Deliquium* be precipitated into a blackish Powder, which being gently heated, either by Fire or by Attrition, flies off into the Air with a great Noise; whence it has the Name of *Aurum Fulminans*. The same Effect will happen by using Spirit of Sal Ammoniac, or any other urinous Spirit, instead of Oil of Tartar; but then the Fulmination requires a greater Degree of Fire.

The Analysis, or Resolution of this Metal, we have hitherto attempted without any Success. The Sulphur and Earth seem to be so strictly united in it, as not to be separable by the common Powers of Fire; and in the Focus of the greatest Burning-glass, intire Parcels of it fly off, without any apparent Resolution into its Principles.

The Use of Gold in Physick was unknown to the ancient *Greeks*. The *Arabians* first talked of its medicinal Virtues, and mixed it in their Compositions, being previously reduced to thin Leaves, upon a Perswasion that it comforted the Heart, and exhilarated the Spirits; and that therefore it was proper in Palpitations of the Heart and in Melancholies. The Chemists add further, that a most powerful fixed Sulphur is contained in Gold, which if it be  
mixed

mixed with the Blood preserves it from all Corruption, and restores and revivifies human Nature in the same manner as the Sun, the great Original of this Sulphur, enlivens all Nature. Many Authors are of a quite different Opinion, because the Effects of Gold are found not to answer these great Pretensions; and it may be reasonably questioned, whether Gold be at all useful in Physick. Leaf Gold is an Ingredient in the *Confectio Alkermis Regia*, the *Confectio de Hyacintho*, *Pulvis Diamargaritæ Frigidus*, *Pulvis Lætificans* and *Pulvis Pannonicus*, all of *Charas*. It is likewise used to gild Pills and Bolus's.

The Virtues of the chemical Preparations of Gold are equally dubious, because they seem to derive their Energy not from the Gold, but from the Menstrua and other Substances mixed with it. Whence we may conclude, that the most valuable and most precious of all Metals is the most useles in Physick, except when considered as an Antidote to Poverty.

The Tincture of Gold, or *Aurum Potabile*, made in the best manner is this :

*Take of pure Gold, half a Drachm; of Spirit of Salt, two Ounces; make a Solution, and pour upon it of the limpid essential Oil of Rosemary, an Ounce; shake the Mixture well, and the Spirit of Salt will subside, deprived of its yellow Colour, which is retained in the Oil that swims at the top. Separate this Oil from the Spirit by Inclination. Mix it with four or five Drachms of Spirit of Wine highly rectified; digest them for a Month, and the Mixture will acquire a purple Colour. This Tincture is Diaphoretick and Sudorifick, and is recommended in malignant Fevers. The Dose is from three to fifteen Drops.*

But

282 *Of Fossil, Vegetable, and*

But after all, this is not a genuine Tincture of Gold, being only the Gold divided into very small Parts by the *Spicula* of the *Aqua Regia*, swimming in the Oil of Rosemary; neither do we know any radical Tincture of Gold, which may not by evaporating the Oil be reduced to a Powder, and by melting the Powder into Gold. The chief Virtues of this Tincture are owing to the Oil of Rosemary.

The *Aurum Fulminans* is esteemed not only for its fulminating Quality, but also for the medicinal Virtues attributed to it; and is prepared in this manner:

*Take of Spirit of Nitre, an Ounce; dissolve therein a Drachm of Sal Ammoniac; throw into this Solution a Drachm of Gold-dust, and dissolve it by a moderate Heat. Then pour into the Solution by Drops Oil of Tartar per Deliquium, till the Ebullition ceases. The Gold will be precipitated like a yellow Mud. Then having poured off the Liquor by Inclination, wash and eduleorate the Powder, and dry it in the Shade.*

This Powder, even by a gentle Attrition, goes off with a violent Noise, and taken inwardly is thought to be Diaphoretick; but it may more truly be said to relax the Intestines, as was observed by *Ludovicus* and *Koning*, who affirm, that this Preparation being given in Fevers, in which the Patient inclines to a Diarrhæa, promotes that Discharge, and on that account sometimes proves fatal.

Lastly, the Chemists tell us very wonderful things about the *Philosophers Stone*, or an Universal Tincture, which being projected on the ignobler Metals, penetrates their Parts so intimately, without any visible Shew, that they are in an instant changed to a Metal, that has the Colour and Weight of Gold. They amuse us likewise with an universal Medicine, which



which cures all Diseases, and purges the Blood from all Disorders by a kind of Irradiation ; so that Life and Health may be preserved for a very long time, if not to Eternity. As I know nothing of this universal Medicine, I can say nothing about it. And for the Philosophers Stone, the Materials from which it is to be prepared are hitherto undetermined, as well as the Method of preparing it, whatever impertinent, ignorant Pretenders may boast. By these Pretensions, however, they have found the Secret, if not of making Gold, yet of getting Gold already made into their Clutches ; and for that reason every prudent Man ought to beware of them.



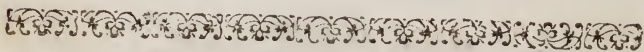


## PART III.

### *Vegetable Substances.*



THE Vegetable Substances shewn in a Course of the *Materia Medica*, may be reduced to seven Kinds, *viz.* Roots, Barks, Woods, Leaves and Flowers, Fruits, Juices, Fungus's and other Excrescences. Each of these Heads shall be the Subject of a particular Section; and in each Section we shall observe an alphabetical Order.



## S E C T. I.

### *Roots.*

1. *Radix Acori.* Acorus Root.

THREE Kinds of Acorus are used in the Shops. The first is called *Acorus Verus*, *falso Calamus Aromaticus Græcorum & Offic.* C. B. P. It is brought from *Flanders, Holland,* and the *East-Indies*. By a chemical Analysis it yields a considerable Quantity of acid Spirit, a little volatile urinous Salt, some gross Oil, some essential Oil, some

ſome Earth, and a ſmall Portion of fixed alkaline Salt. The Principle, which predominates in this Plant, is like a volatile urinous Salt mixed with an eſſential Oil, and accordingly it is carminative, aperient, attenuant, emmenagogue, diuretick, diaphoretick, alexipharmack, cordial; and is ſucceſſfully uſed in Cholicks and malignant Fevers, being given in Powder, from half a Drachm to a Drachm; and in Infuſion, from half an Ounce to an Ounce. This *Acorus* is not the *Calamus Aromaticus* of the ancient Greeks.

The ſecond Kind is named *Acorus Indicus vel Aſiaticus Officin.* It differs from the former only in Size, and in being of a much ſtronger Smell. It comes from the *East-Indies* and from *Canada*; and its Virtues are the ſame with thoſe of the firſt kind.

The third Kind is the *Acorus Adulterinus, ſive Pſeudacorus Officin.* being the Root of the *Iſis Paluſtris Lutea Tabernemont.* It is very little in Uſe at preſent, but was formerly ſubſtituted for the *Acorus Verus.* *Dodonæus* ſays, it is very aſtringent.

2. *Anchuſa Orientalis.* Alkanet of the *Levant.*

*Lemery* ſays, this Root is likewise called *Alkanet* of *Conſtantinople.* It is, in all probability, the Root of one Species of *Echium*; the common kind of which is named in *English Vipers Bugloſs*; and it is uſed in the Countries, where it grows, to give a red Colour to Silk and Cotton Stuffs.

The common Alkanet, *Anchuſa Offic.* is brought from *Languedoc* and *Provence*, being the Root of the *Bugloſſum Radice Rubra, ſive Anchufa Vulgatiſſima.* The Bark is of a red Colour; and the whole Root is aſtringent, proper in Hæmorrhages of all kinds; and is likewise uſed by Dyers. Apothecaries alſo employ it to colour their Ointments, particularly the *Unguentum Roſatum*; but for this purpoſe, it muſt be boil'd in Oil, for it does not readily communicate  
its

## 286 Of Fossil, Vegetable, and

its Tincture to Water. The Ancients used it as a Cosmetick, as is mentioned by *Galen*.

### 3. *Beben*. Been.

Authors distinguish two Sorts of *Been*, white and red, but both are different from the *Arabian Been*, which is the *Glans Unguentaria Offic*.

White *Been* is a Root, which *Rauwolfus* found at the Foot of Mount *Libanus*, and which *Tournefort* brought from the *Lesser Asia*. The Plant, to which it belongs, is named *Jacea Orientalis Carthami facie* J. R. H. according to *Vaillant*. It is cordial, antispasmodick, and good to kill Worms.

Red *Been* is imported in round Slices. Some believe it belongs to a Species of *Limonium*, or Sea Lavender; but its Origin is not certainly known. It is supposed to have the same Virtues with the former, and moreover to be astringent.

### 4. *Butua sive Pareira Brava Lusitan*. Pareira Brava.

This Root is commonly about the bigness of the little Finger; though sometimes larger. It is of a brown Colour, wrinkled both ways on the Surface, but its inner Substance is fibrous like the *Thymelæa*. *Zanoni* says, that when cut transversely, it represents the Sun and his Rays; but this Conceit is without Foundation. It is of a sweetish Taste, with a disagreeable Mixture of Bitter, and without any Smell. Authors pretend, that this Root comes from *Brazil*, for this reason, because we get it from the *Portugueze*; but it is much more probable, that it is of *East-India* Growth, for a Surgeon sent it from *Surat* to *M. de Jussieu*, by the Name of *Boutua* Root, and wrote, that it grew along the Coast of *Malabar*.

This Root is much celebrated by the *Portugueze*, as an Alexipharmack, and an Antidote against all poisonous Plants. It is undoubtedly a very good Diuretick, and very proper in nephritick Cholicks.

The

*The Way of using it is to boil about a Quarter of an Ounce, scraped or rasped, in two or three Pints of Water till reduced to a Pint; of which, the Patient is to drink a Glass every half Hour, in a warm Bath, his Body being before prepared by Bleeding and Clysters.*

A small Quantity of the Syrup of the five opening Roots may be added to the Decoction; and by this Method alone M. *Geoffroy* cured the great *Abbé Bignon* of a Stone Cholick, and made him void a very large Stone. When given in a large Dose, it heats considerably. It seems to act by dissolving the slimy Matter contained in the Kidnies and Bladder; and has been given with great Success, mixed with Balsam of *Capivi* in *Gonorrhæas*, after sufficient Evacuations. The Decoction already mentioned has likewise done Wonders in hepatick Cholicks, arising from an Obstruction of the Orifice of the Gall Bladder, a Glass being drank every three Hours, to the Quantity of a Quart. The *Portugueze* use this Root, powdered, for *Quinseys*, and Diseases of the *Thorax*.

There is likewise another Root, called *White Pareira Brava*, said to come from *Brasil*. It is more woody than the former, composed of Fibres, of which some are longitudinal, the rest orbicular. The Bark of this Root is white, but the Substance within yellow, like *Liquorish*.

5. *Contrayerva Offic. Drakena Clus. Contrayerva.*

The first of these Names was given to this Root by the *Spaniards*, from its *Alexipharmack* Quality; for *Contrayerva* in *Spanish* signifies *Counter-Poison*. The second Name was given it by *Clusius*, in Memory of the famous *Drake*, who brought it from *America*, and sent it to that great *Botanist*. It is reckoned *Sudorifick*, *Alexipharmack*, *Astringent*,  
and

and good in Epidemical Dysenteries. The *English* put *Contrayerva*, *Cochineal*, and a little *Nitre*, into *Ptifanes* for the *Small-pox*. The Dose of the Root in Substance is from half a *Drachm* to a *Drachm*; and in Infusion from half an *Ounce* to an *Ounce*. The Plant that comes nearest it is the *Caapia* of *Piso*.

6. *Costus sive Costum Officin.* Costmary.

We are still ignorant of the *Costus* of the Antients, of which the *Greeks* had three Kinds. What now goes by that Name is of an acrid, bitterish Taste, and of a Smell like *Violets*, but more disagreeable. It is named *Costus Iridem redolens* C.B.P. and is an Ingredient in the *Theriaca Andromachi*. *Pliny* distinguishes two Kinds, the *White* and *Black*; and the *Arabians* had likewise two Kinds, one *Sweet*, the other *Bitter*. The Dose of our *Costmary* is from twelve *Grains* to half a *Drachm*, and in Infusion from two *Drachms* to half an *Ounce*. It was antiently used as a *Perfume*. Hence this Line of *Propertius*;

*Costum molle date & blandi mibi thuris honores:*

It was likewise employed in *Sacrifices*.

7. *Curcuma & Terra merita Offic.* *Cyperus Indicus* *Diascorid.* *Turmerick.*

We have two Kinds of *Turmerick*, the *Long* and the *Round*. The *Long* is most used in *Physick*; and is the Root of a Plant called *Cannacorus Indicus sive Curcuma Officin.* The *Indians* make use of both Kinds to season their *Victuals*, as the *Europeans* do *Saffron*; they employ it likewise in *dying* and *painting* *Stuffs*. The *Long* Kind is a good *Stomachick*, *Antiscorbutick*, and *Antihysterick*, and very proper in the *Jaundice*. The Dose is from twelve *Grains* to half a *Drachm*.

8. *Cyperus*

8. *Cyperus Offic.*

There are three Sorts of *Cyperus*. The first called *Cyperus rotundus Orientalis Major* C.B.P. is Carminative, Emmenagogue, Stomachick, and Diuretick. *Hippocrates* recommends it in Diseases of the Uterus, and *Simon Pauli* in Ulcers of the Bladder, mixed with the *Schænantbe*.

The Second Kind is named *Cyperus Rotundus nostras, & Vulgaris* C.P.B. which is less Aromatick, and of less Efficacy than the former.

The Third Kind is the *Cyperus Odoratus Radice longa*, or *Cyperus Longus Officin.* Its Virtues are of the same sort with the other two, but it possesses them in a less Degree.

9. *China Offic. Chinna vel Schinna Tabernæmont.*  
China Root.

China Root is of two Kinds, Oriental and Occidental; but we are as yet uncertain what Plant it belongs to. Many Authors, and *Kæmpfer* among the rest, say it is a Species of *Smilax*; but others pretend, that it is a *Senecio*, which is in the *Leyden Garden*, and about which *M. Ruyfch* once promised to publish some new Observations.

Soon after the Pox broke out in *Europe*, Physicians brought this Root into very great Vogue for the Cure of that Disease. They used it in Sudorifick Ptifanes, and the Emperor *Charles V.* having taken it with Success, several Treatises were written concerning its Virtues; among which we have an elegant Piece of the great *Vesalius*, then Physician to that Emperor. But as this Ptifane did not continue to have always the desired Success, Mercury was substituted in its Room. It has likewise been much used in Sudorifick Ptifanes with *Sarsaparilla*; and *Lignum Vitæ*; and its Name is taken from the Country from whence it is brought,

10. *Galanga Offic.* Galangal.

The Galangal Root is either Small or Great. The Small Kind is the Root of a Plant called *Lagondi Indorum Herman*. It is Carminative, Stomachick, Cordial, Alexipharmick, Emmenagogue, and Diuretick. It is given from fifteen Grains to half a Drachm, in Substance; and in Infusion from half a Drachm to two Drachms; and is an Ingredient in many Compositions.

The Second Kind, called *Galanga Major*, is the Root of a Plant named *Banchale Indorum Herman*. and is brought from *Java* and *Malabar*. It is not used in Medicine, but the Makers of Vinegar employ it to give Strength to that Liquor.

11. *Hermodaetylus Officin.* Hermodactil.

The Hermodactil is the bulbous Root of a kind of *Colchicum*, called *Colchicum radice siccata alba C.B.P.* which is different from the Root of the common *Colchicum* in that it remains white when dried. This Root was used commonly among the Antients as a Cathartick, but its Action is very slow, tedious, and fatigueing. It is better when corrected with Aromatics, and is now sometimes mixed with Jalap, in Rheumatisms. The Women in *Egypt* eat roasted Hermodactils to make them fat.

12. *Jalappa seu Jalapium Officin.* *Mechoacanna nigra quorund.* Jalap.

Jalap is the Root of a kind of Night Shade, called *Jalappa Officin. fructu rugoso J.R.H.* It was unknown to the Antients, and also in *Europe*, till the Discovery of *America*. It is one of the best Purgatives which we now have, and is used with great Success in Obstructions of the Viscera of the Abdomen; being given in a Bolus in the Quantity of twelve or fifteen Grains, with *Mercurius Dulcis*. It may



may likewise be joined with the *Peruvian Bark*, in the Proportion of twenty-four Grains to an Ounce of Bark, and made into a soft Electuary with three Ounces of Syrup. A Drachm of this Electuary will purge very well; and hence we see that the Bark assists Jalap in its Action; for in a Dose of this Purge there is about three or four Grains of the Root. It may be advantageously given in this Manner in habitual Intermitting Fevers, accompanied with a bad Habit of Body.

The Resin of Jalap ought to be given in very small Doses; that is, from five to twelve Grains at most; and it ought to be remembered, that if this Resin is not either very well dissolved or mixed, it sticks to the Folds of the Intestines, and raises great Heats and other Disorders: Therefore it is always better to give it in Substance. This Resin loses its Virtue by being long kept. If given in the Quantity of fifteen or twenty Grains, it purges very briskly; and *Simeon Pauli* compares it on that account to Scammony. *Wepfer*, in his Treatise *De Cicuta Aquatica*, mentions some Experiments made with Jalap Root on Dogs; the Event of which was, that the Dogs died, and their Intestines were found to be perforated.

13. *Ipecacuanba, Radix Brasiliensis.*

We have three Kinds of *Ipecacuanba*, the Grey or Ash-coloured, the Brown, and the White; which last, called also *Pseudipecacuanba*, M. *Tournefort* discovered to have no Virtue, and is perhaps that kind mentioned by *Piso*; so that, properly speaking, we have only two Kinds of *Ipecacuanba*, that of *Brasil*, and that of *Peru*, called *Bexuguillo*. The Plant which produces this latter sort is unknown; and the Root itself was not known in *France* till the Year 1672. One M. *Le Gras*, who was not a Physician, brought it first over, and gave it to M. *Craquenel*, an Apothecary,

thecary, but it succeeded very ill in his Hands, he having given it in the quantity of two Drachms for a Dose, which was too great. In 1687 M. Garnier attempted to re-establish its Credit; in order to which he applied himself to the elder *Helvetius*, who made several successful Trials of it. After which the King purchased of *Helvetius* the Secret and Manner of giving it, and made it known to all the World; and it was afterwards of great Service in the Armies and Hospitals. This Root is given from fifteen Grains to half a Drachm, and we ought in no Case to exceed a Drachm. It never fatigues the Stomach, and is the best *Succedaneum* for the Emetick Tartar. It is the best Specifick in Dyfenteries hitherto known, acting in such Cases not only as an Emetick, but also deterging Ulcers in the Intestines, by a Mucilage contained in it like that of Marsh-Mallows, by which it in some measure supplies the villous Coat of the Intestines, when corroded and destroyed by the Disease. It also powerfully shakes and evacuates the Glands of that Viscus. Its best Effects are in old Dyfenteries, after many other Medicines have been tried, and the Body has by these been sufficiently prepared; then the first or second Dose generally produces visible good Effects; or, if they should happen to miss, it ought to be continued every Day in the quantity of three or four Grains, acting in that Case as an Alterative.

This Root has an Emplastick and Deterfive Quality joined together; and, though it does not appear sensibly Acrid, it produces in those who powder it an Oppression in the Thorax, Difficulty of Breathing, and Spitting of Blood. It is likewise offensive to the Eyes, increases the Discharge of the Lacrymal Glands, and, when the Tears do not find ready Vent, the Eyes swell. These Effects are probably owing to the Mucilaginous Quality of this Root. The Analysis of Ipecacuanha is to be seen in the

*Memoirs of the Academy of Sciences for the Years 1700 and 1701.*

The same Cautions ought to be observed in giving Ipecacuanha, as in giving Emetick Tartar. It is taken in Substance finely powdered, either mixed in a Liquid, or incorporated with a proper Syrup into an Opiate. It may likewise be given in Infusion or Decoction.

14. *Iris Florentina.*

Florentine Orice, or Flower-de-Luce.

This is the Root of a Plant called *Iris Alba Florentina C.B.P.* It is reckoned proper to attenuate the Lympha, which stuffs the Bronchia and Glands of the Intestines. It is often joined with Hydragogues in beginning Dropsies, to scower the Glands of the Mesentery; and a kind of *Ratafia* is likewise made of it for the same Purpose. It is good in Asthmas, joined with other Medicines; and is an Ingredient in the *Theriaca* and *Mithridate*.

15. *Mechoacanna Officin. Rhabarbarum album quorund.* Mechoacan.

This is the Root of a Species of *Convolvulus*, named by Ray, *Convolvulus Americanus Mechoacanna dictus*. It is distinguished from Briony Root by being more viscid, being without Acrimony, and of a faint nauseous Taste. It is said to be a strengthening Purge, being given in Substance from half a Drachm to an Ounce; but is not purgative in Decoction. The *Spaniards* prepare from it a white *Fecula*, called by them *Lac Mechoacannæ*, half an Ounce of which is a Dose, powdered and mixed in Broth. Since Jalap has been discovered, *Mechoacanna* has been but little used.

16. *Nardus*. Spikenard.

The *Greeks* had five kinds of Spikenard ; but we know but three, the *Indian*, *Celtick*, and *Mountain* or *Spanish*.

The *Nardus Indica*, or *Spica Nardi*, is the Root of a Plant of the *East Indies*, named by *Breynius* *Gramen Cyperoides Aromaticum*. What looks like the Filaments of the Root are not properly such, but the Remains of the decayed Leaves. It is a very good Attenuant, is used in Cholicks, and promotes Sweat and the Menstrual Discharge. It is an Ingredient in many Electuaries, and other Compositions used externally ; such as the *Oleum Spic. Unguentum Nardinum*. *Galen* relates, that he cured an Emperor of the Cholick in his Stomach by rubbing that Region with this Ointment. This Spikenard may be given inwardly, from half a Drachm to a Drachm ; and in Infusion from half an Ounce to an Ounce and an half.

The *Nardus Celtica* is a small knotty Root, brought from the *Tyrol* and belongs to the Plant named *Valeriana Celtica*, *I. R. H.* It has nearly the same Virtues with the *Indian Nardus*.

The *Nardus Montana*, or *Hispanica*, is the Root of a Species of *Valerian*, which grows in the Mountains of *Leon* in *Spain* ; but we are not certain what the Ancients called by this Name. It is not much used in Physick, but its Virtues are like those of the two former.

17. *Nisi*. *Gen-seng Sinenfium*. *Garen-toguen Hiroqueorum*.

This Root belongs to a Species of *Araliastrum*, according to *Sarassin* and *Vaillant*. It is said to be found in the North Part of *China*, and in *Canada*. Father *Laffiteau*, a Jesuit, now Bishop of *Sisteron*, wrote a Treatise about it ; in which he calls it *Aureliana*

*liana Canadensis, Sinensibus Gen-sing, Hiroquæis Garen-toguen.* Botanists have been divided in their sentiments about the Original of this Plant. *Hollon* thought it an *Opium*; and *Kæmpfer* believed it to be a *Sisarum*. Whatever be in that, that which comes from *Canada* is certainly known and demonstrated every Year in the Royal Garden. We owe the Discovery of it to the Jesuits. The *Oriental* Kind grows in the *Northern* Part of *China*, in the Peninsula of *Corea*, and in *Tartary*; and the Names both of this and of the *Occidental* have been given it from some Resemblance it is supposed to bear to the Human Body, being nearly of the Figure of the *Mandrake*.

The *Gen-sing* of *Canada* differs from that of *China*, in being neither so yellow nor so bitter. Its Taste is very agreeable, and it has been used with Success in Fevers. In *Tartary* and *China* it is highly esteemed, being purchased for twice its Weight in Silver, and is thought to retard the Effects of Old Age, and to recruit decayed Strength. They infuse it in Wine or Broth, to the quantity of half a Drachm or a Drachm. By its bitter Aromatick Taste, it discovers it self to be attenuant, strengthening, and deobstruent. *Laffiteau's* Treatise was published at *Paris* in 1718, and in that Year is an Account of it in the *Memoirs of the Royal Academy*.

18. *Pyrethrum Officin.*  
Pellitory of *Spain*.

There are two kinds of this Root in the Shops, both described by *Lemery*. It is extremely acrid, and on that account is chewed to evacuate the Glands of the Throat, and in Palsies of the Tongue. It is likewise used as a Sternutatory in Lethargies, but is seldom given inwardly.

19. *Rhabarbarum seu Rheum Officin.* Rhubarb.

We do not certainly know the Plant, of which Rhubarb is the Root. It is probably a Species of *Lapathum*, called by *Herman Lapathum Sinense*. It is brought from *China*, but *Muntingeus* pretends that he cultivated it in *Holland*, in his Book *de Vera Herba Bullanica*.

It is one of the best and mildest Catharticks in the whole *Materia Medica*. It operates very well on the Bile, and on all the Viscera of the Abdomen, and at the same time strengthens the Nervous Fibres. On these Accounts it is proper in weak Stomachs and Intestines. It is given in Substance from twelve Grains to half a Drachm, and in Infusion from half a Drachm to a Drachm and a half; and in a small Dose, it becomes an excellent Alterative. It purges the Bile very effectually, and has a greater Force than any other Purgative in opening Obstructions of the Liver. It is found, by certain Experience, to evacuate the Bile preferably to any other Fluid. On this account it is the *Panacea* of Children, and also because it strengthens the Stomach, and carries off all sorts of Matter that stagnates therein. It is a very good Remedy for Worms, and is given to Children subject to Chronical Diseases, in a Ptisane called Rhubarb-Water. The Use of Rhubarb is, however, dangerous when the Kidnies or Bladder are suspected to be inflamed, because it heats considerably; and for this Reason it is improper in Hæmorrhages. It is very good in Loosenesses, because it purges and strengthens at the same time. In Cachexies it ought to be given in small Quantities for a considerable time,

20. *Rhaponticum Officin.*  
True Rhapontick.

This Root has been very well described by *Prosper Alpinus*. It is very like Rhubarb, but may be distinguished from it by its leaving a mucous Taste in the Mouth, its Mucilage being diluted by the Saliva; and because when it is cut it appears regularly marbled, of a Red, White, or Yellow Colour; and these Colours are disposed in a radiated Manner. It is less purgative than Rhubarb, requiring a double Quantity to produce the same Effect. It is likewise a little astringent.

21. *Saleb, vel Serapius Turcar. & Officin.*

This is the Root of a kind of *Orebis*, or *Satyriou*, which grows on the Mountains of *Bursia* near *Constantinople*. The *Turks* pretend that it is very effectual in restoring decayed Strength, and exciting Venerery. It is also said to prevent Abortion, and is used both in Substance and in Infusion.

22. *Sarsaparilla, Salsa-Parilla, or Zalsa Parilla Officin.*

This is the Root of a Plant called by *Caspar Baubinus*, *Similax Aspera sive Zarza Parilla*. It was formerly used in *America* for Venereal Diseases, and afterwards in *Europe*. It is given with Success in all Cases where the Lympha is to be attenuated and divided, as in the Rheumatism, Gout, &c. It may be mixed with *Lignum Vitæ*, *Sassafras*, &c. in desiccative and sudorifick Decoctions; but, when boiled by itself, an Ounce is sufficient for a Quart of Water.

23. *Sima Ruba.*

This is the Root of a *West India* Plant, which produces the *Cayan Wood*, remarkable for being  
very

## 298 *Of Fossil, Vegetable, and*

very light. The Root and Bark are said to be excellent Astringents, proper in all Sorts of Loosenesses, and especially in Dysenteries. The Dose of the Root is an Ounce, cut in small Pieces; and of the Bark two Ounces; boiled in three Pints of Water to a Pint. This Decoction the Patient uses for his common Drink, till he is cured.

### 24. *Serpentaria Virginiana Viperina; Aristolochia seu Pistolochia Virginiana.* Snake Root.

This is a fibrous Root, brought from *Virginia* to *England*, and from thence to *France*. *Plukenet* distinguishes three Kinds of it. It is used by the Natives of *Virginia* to cure the Bite of the Rattle-Snake. In *Europe* it is given as a Diaphoretick in the Small-pox, Measles, &c. and to kill Worms. It is likewise Emmenagogue and Diuretick. The Dose is from ten Grains to a Drachm; and it is an Ingredient in the Countesses Powder.

### 25. *Turpethum Officin.* Turbith.

This is the Root of a Plant named *Convolvulus Indicus Alatus Maximus foliis Ibisco nonnihil similibus, Angulosis*. Raii Histor. & *Turpethum repens foliis Altheæ vel Indicum C. B. P.* It is brought to us from *Zeylon, Malabar*, and other Parts of the *East Indies*. It is a slow Purge, and is therefore joined with other quicker Purgatives. It is recommended in the Gout and Palsy, being mixed with Jalap. The Dose is from a Scruple to a Drachm.

### 26. *Zedoaria Officin.* Zedoary.

We have two Kinds of this Root, one named *Zedoaria Longa C. B. P.* the other *Zedoaria Rotunda C. B. P.* But they are both the Roots of the same Plant, the Body of which is round, and the Protuberances, or Ramifications, long. The Plant they belong



belong to is a kind of *Colchicum*, described by *Herman* in the *Paradisus Batavus*. They are brought from the *East Indies*, and have an aromattick, camphorated Taste. They are reckoned attenuant, detergent, emmenagogue, carminative, anthelmintick, cordial, alexipharmic, stomachick, diuretick, &c. The Dose is from five Grains to half a Drachm in Substance, and it may be used in Infusion like Tea. Some correct *Opium* with this Root. *Simeon Pauli* pretends it is the best Carminative now known, and values it as a Grand Specifick for voiding Wind. *V. Acta Hafniæ.*

27. *Zinziber seu Zingiber Officin.* Ginger.

This is a tuberous, knotty Root of a Plant named by some Authors *Iris Latifolia Tuberosa*, *Zinziber dicta*, *flore albo*. It grows in the *East Indies*, and is now cultivated in the *Caribbee* Islands, from whence we have it. When the green Root is eaten in any considerable Quantity, it is Purgative. The *Indians* eat it as we do Cresses. When dry, it is very aromattick and attenuant, and is used to correct some Catharticks, such as *Agaric*, &c. It strengthens by its oily Part, and enlivens the Blood, and is likewise good in the Scurvy. It is an Ingredient in many Compositions. The Dose is from three to ten Grains. The Confectioners in *England* and *Holland* preserve it with Sugar; which Preserve is called *Zinziber Conditum*, Candied Ginger, and is carried to Sea as a Remedy against the Scurvy. Candied Nutmegs are used for the same Purpose. Though Ginger is a very Acrid Root, it is very apt to turn carious.

LIBRARY OF THE  
FOUNDED 1827  
UNIVERSITY OF MARYLAND

## S E C T. II.

## B A R K S.

1. *Cassia Caryophyllata*, & *Cinnamomum Americanum* Officin. Canelle Gerofflée Gallor.

**T**HIS is the Bark of a Plant named by *Hernandes*, *Canninga*, and by *Herman*, *Myrtus Arborea Americana*. It is seldom used in Physick. The Taste of it is acrid and aromatick, and its Virtues are the same with those of Cloves; instead of which it is often sold in Powder by the Druggists, as being much cheaper. However, this is a very harmless Imposition.

2. *Cassia Ligna*, *Cassia Odorata*, & *Hylocassia* Officin. Woody Cassia.

We have two Sorts of this Bark, differing from each other in Degrees of Fineness. It differs from Cinnamon, in that when chewed it becomes mucilaginous, and at length entirely melts in the Mouth, which Cinnamon never does, and has likewise a more aromatick Taste. The finer Sort is the second, or inner Bark, of the *Carua Hort. Malabar*. and the coarser, the second Bark of the Tree that produces the *Malabathrum*, or *Indian Leaf*. Some ancient Authors named this Bark *Darfennum*, and hence several Apothecaries have been ignorant enough to take it, when mentioned in Prescriptions, or Dispensatories, for Arsenick. It has the same Virtues with Cinnamon, but in a lesser Degree. It is a little astringent, and for that Reason proper in Fluxes.

3. *Cinnamomum Officin. Cassia Zeilanica* C. B. P.  
Cinnamon.

The Tree, which produces Cinnamon, grows without Culture in the Island of *Zeylon*, and the Trade thereof is entirely in the Hands of the *Dutch*, who are Masters of the Coasts of that Island; and the King of *Zeylon* dare not sell it to any but them. This Tree has two Barks; the first called in *Latin*, *Liber*, has but the sixth Part of the Virtue of the other, which lies within it. The Berries, by Coction and Expression, yield an oily Substance, of which Candles are made for Persons of the first Rank; and from the Neck of the Root they draw a delicious kind of Camphire, very rarely to be met with in *Europe*, which has a Smell made up of that of the common Camphire, of Cinnamon, and of Cloves. The old Trees yield a Resin of a very agreeable Smell, resembling that of the Oil of Rose Wood; and Travellers relate, that when they are within twenty Leagues of *Zeylon*, they smell the Cinnamon Trees.

Cinnamon is an excellent Stomachick and Cordial, Digestive, Attenuant, Emmenagogue, &c. It corrects the bad Qualities of resinous Purges, and strengthens the Stomach when weakened by too much Purging. The essential Oil of Cinnamon is good for the Tooth-ach, being dropped into the Hollow of rotten Teeth, where the Pain is seated. The Oil of Cloves has the same Effect. Of this Oil and Sugar is made a very pleasant kind of *Elæo-Saccharum*, very effectual in many Cases, being first diluted with Water. The Golden Powder of *Zell* is made of this *Elæo-Saccharum*, mixed with a little Cinnabar, to give it a red Colour. It is given in Canary Wine, to strengthen the Stomach, and recruit the decayed Spirits, and makes an excellent Ratafia.

4. *Cortex Winteranus, Canella Magellanica; Cinnamonum Magellanicum.* Winter's Bark.

There are two Kinds of this Bark, the *Cortex Winteranus Verus*, and *Cortex Winteranus Spurius; sive Costus Corticosus Officin.*

The true Kind is the Bark of a Tree called by *C. Baubin Laurifolia Magellanica Cortice Acri.* It is outwardly of a greyish or ash Colour, and brown within; and of an acrid Taste and Smell. *Winter*, whose Name it bears, was Companion to the famous *Drake.* He found it on the Coasts of the *Magellanic Straits*, at a Time when his Soldiers and Sailors having eaten of a poisonous Animal, called the *Sea-Lion*, were seized with a kind of Scurvy, which made them break out in Blotches all over their Bodies, but by the Use of this Bark they were happily cured. This Bark is much used, especially in *England*, as a good Stomachick, and some pretend that it cures Intermitting Fevers, taken in the quantity of a Drachm, before the Fit.

The second Kind is the Inner Bark of the *Cinnamonum sive Canella alba tubulis albis C. B. P.* It is of a white Colour, very brittle, not mucilaginous, and of an acrid Taste; but its Virtues are less than those of the first Kind, with which it is often confounded in the Shops; and *Lemery* himself did not well perceive the Difference there was between them. It grows commonly in *Jamaica*, and is used in *England* as a Stomachick. *Sir Hans Sloane* has described both Kinds.

5. *Cortex Ligni Guaiaci.* Lignum Vitæ Bark.

This Bark shall be described in the next Section, with the *Lignum Vitæ* it self.

6. *China Chinæ. Kina Kina. Cortex Peruvianus Officin.*  
The *Peruvian*, or Jesuite's Bark.

This Bark is brought from *Peru*, and there are three Kinds of it: The first is of a bitter, refinous Taste, and not so Red as the common Sort; the second, less than the first, is covered with a Moss; the third is the finest, and imported in small Pieces.

The *Peruvian* Bark is uneven and thick, its Colour resembling that of Cinnamon, Coffee, or Rust of Iron. It is of a bitter Taste, and has no Smell but what comes from the Wood. The Name *Kina Kina* is taken from the Count of *Cinchon*, who was Vice-Roy of *Peru*, when this Medicine was discovered. The Tree to which it belongs is not as yet sufficiently known. It is said to have Leaves like the Plumb-Tree, and Flowers like the Orange-Tree. *Herman* says, it is a high large Tree, like the Lime-Tree, and that it bears Berries. It grows in the Inland Part of *Peru*, on the Mountains near *Loxa*, or *Loja*, in the Province of *Quito*. The *Spaniards* say that the Use of its Bark was discovered in the following Manner.

Near the Town of *Loxa* was a Lake surrounded by *Quinquina* Trees, before the *Spaniards* settled in that Country. These Trees being by an Earthquake, or some other Accident, thrown into the Lake, communicated a bitter Taste to the Water; so that the Inhabitants, who used to drink it, were obliged to leave it off. However, an *Indian* who had a violent Fever upon him, and consequently a great Drought, finding no other Water, was forced to drink of this, by which he was perfectly cured of his Fever. He related this Adventure to some of his Friends, who having made the same Experiment, were likewise cured. Upon this, they set themselves to discover what had given this febrifugous Quality to the Water of the Lake, and found, in the first place,

place, that a great number of Trees had fallen into it; and, secondly, that after a certain Time, these Trees, being rotted in the Water, it lost its bitter Taste, and, at the same time, its Virtue. Whence they concluded, that this Virtue was owing to the Trees. Afterwards they tried all the Parts of them infused in Water, and thus discovered that their whole Virtue resided in the Bark. The *Spaniards* having conquered their Country, this invaluable Medicine was kept a great Secret; and they obliged themselves, by Oath, never to discover it to their Conquerors, hoping thereby to see them all perish by the Epidemical Fevers that then reigned in the Country. The Secret was inviolably kept, till the Year 1640. when a *Spanish* Soldier quartered in an *Indian's* House, who had got into the good Graces of his Landlord, was seized with a severe Ague. The *Indian*, touched with Compassion, and fearing, perhaps, that he should have a worse Guest, if this Soldier happened to die, brought him the Bark, which having taken, he was soon perfectly cured. The Soldier, surprized at such an unexpected good Effect of an unknown Remedy, made use of all his Address to discover the Tree to which this Bark belonged, and at length succeeded. For some time he contented himself with curing his Fellow Soldiers, but never told them by what Means. But the Vice-Queen, Wife of the Count *De Cinchon*, then Vice-Roy of *Peru*, being seized with an Intermitting Fever, which had so far baffled the Skill of her Physicians, that her Life was despaired of, and this Report having reached as far as *Loxa*, the Soldier, who was Master of the Secret, told his Commanding Officer, that if he would allow him to go to *Lima*, he would cure the Vice-Queen. The Officer having informed himself of the Cures he had performed in that Country, readily gave him not only leave to go, but also Letters of Recommendation and proper Cer-

Certificates. Being arrived at *Lima*, he was admitted to make Trial of his Medicine, on this Condition, that he was to take as much himself as he gave to his Patient. This he easily agreed to; and having succeeded in a very little time, he was amply rewarded, and then prevailed on to discover the Secret; which the *Spaniards* made use of from that Time forward with so great Success, that the Physicians were astonish'd and half starv'd. In 1649 Father *de Lugo*, a Jesuite, then Procurator General of his Order, and afterwards a Cardinal, brought some of this Bark to *Rome*, and the Society began to bring it into Reputation in *Europe*; by which they got a great deal of Money in a short Time. They sold it for more than the Weight in Gold; and to disguise it the better, never parted with it but in Powder. From that time it was called the *Jesuites Powder*, because these Fathers were the sole Masters of it, and had brought it into use. Two Drachms were at that time thought sufficient for the Cure of any intermitting Fever, because they never gave it, till after many other Medicines had been made trial of. The Physicians were divided in their Opinions about it; some looking on it as a divine Medicine, while others believ'd it dangerous, and even fatal in many Cases. Many Treatises were written, some for it, others against it; but the *English* Physicians having at length made several Experiments with it, that might be depended on, it came to be greatly in vogue in *England*; and the famous *Morton* wrote his *Pyretologia* in its Defence. In 1679 a Person named *Tabor*, who, to make himself more considerable, changed his Name to *Talbot*, came into *France*; where having cured the Dauphin of a stubborn Quartan Ague, by this Medicine, it gained a great Reputation, and the King purchas'd his Secret, and made it publick. It was then termed the *English Remedy*, and consisted of an

Infusion of the Bark in Wine. There was a little Treatise publish'd at that time, with this Title, *The English Remedy for Fevers*.

The Bark is an infallible Remedy for all intermitting Fevers, if the following Circumstances be observed.

1. The Patient ought to lose some Blood, and to be purged before he takes the Bark; and if he is of a dry Habit of Body, he ought to be kept for some time to a liquid Diet; because before the depuratory Fermentation is begun, the Fluids ought to be well diluted.

2. The Bark made use of ought to be compact or solid, of a reddish Colour, like Cinnamon, of a faint Smell, a little musty; bitter and astringent to the Taste, and not kept too long.

3. It ought to be given in large Doses. For instance, a Drachm of powder'd Bark may be taken at a time, in a Glass of white Wine or Water, and repeated every three Hours, till the Time of the Return or Paroxysm be over. It may likewise be given in Infusion or Decoction. An Ounce boiled in a Quart of Water, till reduc'd to a Pint, being drunk by large Draughts in the Interval between two Fits.

4. It ought to be continued for a long Time after the Fever has ceased, gradually diminishing the Dose and the Frequency of repeating it. This is a sure way to prevent a Return.

This Remedy appears sometimes to fail; that is, the Fever returns, after a certain Quantity of it has been taken; but this is never owing to Want of Efficacy in the Bark, but from Ignorance of the true Method of taking it. Thus, if the Body is not sufficiently prepared, it cannot act as it ought, because of the Obstructions it meets with in the *Primæ*  
*Vicæ*



*Via* and in the Blood-vessels. If the Bark be bad, nothing is to be expected from it; and if the Dose be too small, or not continued for a sufficient Time, it only deadens the Fever for a time, but does not radically destroy it. It is therefore a groundless Prejudice that the Bark fixes Agues, or that the Use of it is ever attended with bad Consequences, especially in the Stomach, as many pretend. The Patient is seldom thoroughly cured without some kind of Crisis, especially by Stool or Urine. This latter is the best, and the Physician may be assured that his Patient is safe, if he makes a greater Quantity of Urine than usual. The Bark has likewise been given in Clysters with Success; but then the Quantity usually taken by the Mouth ought to be tripled.

This admirable Specifick is likewise a good Alterative, and consequently proper in an infinite Number of Cases where there is no Fever; for it strengthens the Stomach, excites the Appetite, &c.

This Medicine is not hurtful to weak Lungs, as some imagine, Experience having often shewn the contrary; and it has often prov'd very successful in Catarrhs and other Kinds of Fluxions, even when accompanied with Spitting of Blood, as in the Case of the late Marechal *Talard*. But in these Cases other Pectoral Medicines are to be joined with the Bark.

Some join with the Bark given in Fevers, dried Arum Root, Sal Ammoniac, Cinnamon, &c. Sal Ammoniac is the most proper of any, being mixed in the Quantity of half a Drachm to two Drachms of Bark.

7. *Kina-Kina Aromatica Palo de Calenturas. Casca-*  
*rilla, Cortex Eleterii sive Scacarilla Offic. Cor-*  
*tex Peruvianus griseus sive spurius.*

This Bark is of a greyish or Ash Colour, of a Taste like Cloves, and of an agreeable aromattick

Smell, something like Amber. *Juncherus, Valentini*, and other *Germans* say, it is the Bark of the *Canella Magellanica, Laurifolia Cortice Auri*, C.B.P. confounding it with the *Cortex Winteranus*, which is a Mistake. We are not as yet throughly acquainted with the Tree, which produces the true *Cascarilla*. It yields a very agreeable essential Oil, which used formerly to be mixed with Snuff to give it a fine Smell. But lately the *Germans*, and especially *M. Stahl*, have recommended this Bark as an excellent Medicine in Diseases of the Thorax, and as a good Stomachick. *Apenus* a *German* Physician has written a Treatise about it, in which he praises it in malignant Fevers, the Plague, Dysenteries, and Weakness of the Intestines.

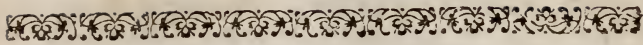
8. *Costus Caryophyllatus*.

This is the first Bark of the *Cassia Caryophyllata* above mentioned.

9. *Cortex Tamarisci*. Tamarisc Bark.

This Bark is order'd in Aperient Decoctions, to remove Obstructions of the Viscera of the Abdomen, to promote the Flux of the Menses, &c.





## S E C T. III.

## Woods.

1. *Agallochum* & *Xylo-Aloes* Officin. *Pao Agula*.  
Aloes Wood.

**C** *Baubin* distinguishes three kinds of this Wood. The first, called *Agallochum præstantissimum Calambac Indorum*, is the most resinous Part of the Wood, and melts on the Fire. The second is the *Lignum Aloes vulgare* Officin. called also *Lignum Ætites*. It always looks as if it were worm-eaten, and containing a great Quantity of resinous Matter is burnt in the Country where it grows instead of Candles. The Juice got by cutting the fresh Wood is very caustick and poisonous, and it sometimes deprives the Workmen of their Sight.

The third kind is the *Calambour*, called likewise *Lignum Ætites*, because of its Colour. It is brought from the *Philippine* Islands, and is used to make Snuff-boxes, Heads of Canes, &c.

*Aloes Wood* is a powerful Cordial and Stomachick. It is given in Substance from a Scruple to a Drachm, and in Tincture from one to two Drachms. The Monks in the *East Indies* make it into Beads; and it yields by Distillation a very agreeable Essential Oil, which is a good Sudorifick.

2. *Acajouanum Lignum*.

This is not the Wood of the Tree that bears the *Acajou* Nuts. It is of a red Colour, and never touch'd by Worms, which renders it very proper for Furniture; but it is seldom used in Physick.

3. *Arundo Saccharifera.* The Sugar Cane.

See Sugar, in the Section of Juices.

4. *Aspalathum Officin.*

We are not throughly acquainted with the Tree to which this Wood belongs; and as the Antients, especially *Pliny* and *Galen*, have varied very much in their Accounts of it, the same thing may be said of them. The *Arabians* have called by this Name a large thorny Tree, which they have not described.

5. *Brasilianum Lignum.* *Brasil Wood.*

This is the Wood of a Tree called *Pseudo-Santalum rubrum Brasiliæ*, C. B. P. It is used by *Dyers*, in dying Red, as the yellow *Brasil Wood* is for that Colour.

6. *Calamus Aromaticus verus Officin.*

This is the true *Calamus* of the most antient *Greeks*. *Fuschius*, *Brassavola*, and several other Authors, have given this Name to the *Acorus verus*, mentioned in the first Section; but *Prosper Alpinus* and other Physicians, more exact than the former, have discover'd that the true *Calamus* is a Reed; whereas the *Acorus* is a Root. This Reed is of an Aromatick and very pungent Taste.

7. *Campechianum Lignum.* Log-wood.

This Wood, sometimes called *Jamaica Wood*, does not grow in that Island, but upon the Coast of the Bay of *Campechy*. It is chiefly employ'd in dying.

8. *Cedrinum Lignum.* Cedar-wood.

This is the Wood of a Tree named *Larix Orientalis fructu rotundiore obtuso*, J. R. H. *Cedrus Libani*,

*bani*, J. B. It is of a red Colour, something resinous, and of a strong agreeable Smell. It is said never to rot, and is therefore much valued for Furniture, and is sometimes used by Physicians as a Sudorifick.

9. *Citrinum Lignum. Lignum Jasmini.*

This is the Wood of a Tree called by Sir *Hans Sloane Nerion Arboreum foliis angustissimis*. It is of a close Texture, very resinous, and burns like a Candle, smelling, while it burns, like Jessamin.

10. *Colubrinum Lignum.*

This Wood comes from a Kind of *Solanum*, which produces the small *Nuces Vomicae*. It is brought from the Islands of *Timor*, *Ceilon*, &c. and is of a very bitter Taste. It is a strong Purgative and Emetick, taken in Infusion from a Scruple to a Drachm; and in Substance from ten Grains to a Scruple. But tho' it purges the *Europeans* so much as often to throw them into Convulsions, the *Indians* support it perfectly well. It is likewise used to kill Worms, according to the Observations of *Antonius de Hyde*.

11. *Ebenus Officin. Ebony.*

The Tree which produces this Wood is very tall and thick, and grows in the Island of *Lucon*, one of the *Philippines*. It is a black close Wood, smooth to the Touch.

There is a kind of Ebony which is red, called *Grenadilla*, or *Portuguese* Ebony; and another green sort, named by *C. Baubin Ebenus Americana spinosa*. None of them are much used in Physick; some, however, look on the black sort as sudorifick and drying, and say it may be used in Decoction as *Lignum Vitae*.

12. *Fætidum Lignum. Kasulai Malabarorum.*  
Stinking Wood.

This Wood is brought from the Islands of *Timor* and *Salor*. It is of a very offensive Smell, but that Smell is confined to the Wood; from which, however, may be drawn a very agreeable Essential Oil, which taken inwardly causes Sweat.

13. *Guajacum Lignum; Lignum Sanctum, Palus Vitæ.*  
*Guajacum* Wood, or *Lignum Vitæ*.

This Wood is either of a whitish or brown Colour. *C. Bauhinus* distinguishes three sorts of it, *Guajacum magna matrice, propemodum sine matrice, & folio Lentisci*; but these are no more than so many Varieties of the Wood of the same Tree, as Father *Plumier* has observed. This Wood was formerly used for the Cure of Venereal Diseases; the Patients being kept under an exact Regimen, and drinking plentifully of strong Decoctions made of it, for thirty Days. This Method succeeded very well in hot Climates, but did not in *Europe*; for which Reason the Physicians were obliged to call in the Assistance of Mercury; but the *Lignum Vitæ* Diet-Drinks continue still to be very much in use during Mercurial Courses.

14. *Literatum Lignum. Lignum Sinense.*  
Letter'd Wood.

This Wood brought from *China* is sometimes mark'd with Letters, from whence it has its Name, but it is very little used in Physick.

15. *Nephriticum Lignum Officin.*

This is a close, yellow or reddish Wood, which turns brown when long kept, and loses the greatest Part of its Virtue. It is a very good Aperient  
and

and Diuretick, and one of the best Antinephriticks known in Physick. It acts without causing any Inflammation in the Kidneys or Bladder. It is used in Infusion, being suffer'd to lie in the Water till it turns it yellow or bluish, which is generally in two or three Hours time. This Infusion pour'd into a Glass Phial, and placed between the Eye and the Sun, is yellow; but blue when the Eye is between the Sun and it.

16. *Rhodium Lignum.* Rose-Wood.

The Tree which bears this Wood is believed by *Herman* and others to be a *Cytisus*. It is brought us from the *Morea*, where it grows; being very resinous and of a pleasant Smell, resembling that of Roses. The *Hollanders* being in quest of some Ships which perished on the Coast of *New Holland*, in the thirty third or thirty fourth Degree of Southern Latitude, found on that Coast a great Quantity of this Wood. It is also much esteemed in *China*, where its Infusion in Water is believed to cure or prevent many Diseases. An Essential Oil is got from it, which has so much the Smell of Roses, as to be often substituted for their essential Oil; but the Smell of the first kind is never so strong as that of the other. This Oil is sometimes used by Barbers, to make their Water smell agreeably. When the Antients termed this Wood *Lignum Rhodium*, we know not whether they intended to express that it grows in the Island of *Rhodes*, or smells like a Rose.

17. *San-Lucianum Lignum.* Santa Lucia Wood.

This is the Wood of a Tree named *Cerasus Racemosa Sylvestris, fructu non eduli*, C. B. P. It is brought us from *Lorraine*. It is very tender, and has some Smell, but is little used in Physick.

18. *San-Marthanum Lignum.*

This is a kind of red *Brasil* Wood, used in dying, and which comes from *St. Martha*, near *Carthagena*, in the *Spanish West-Indies*.

19. *Santalum Officin.* Saunders.

There are three sorts of *Saunders*, the White, Red, and Yellow. It is brought from *Siam* and from the Islands of *Timor* and *Salor*; but Botanists are not agreed to what Tree it belongs. According to *Herman* it is called *Sircanda*, and bears Berries. The White kind comes from the young Trees, the Red and Yellow from the old ones; the former of these two being the outer Part of the Wood, the other that next the Pith. The Labourers, who cut this Wood, are often seized with malignant Fevers and Deliria of a very singular Kind, the affected Person generally imitating the Actions of that Trade to which he was brought up; and they have also a *Fames Canina* of a very terrible Kind. See *Bontius de Medicina Indorum*. The Yellow Saunders is most proper for Physical Uses. It is Resinous, of an agreeable Smell, and excites Sweating. The White has not so strong a Smell, and the Red has none at all; but it may be distinguished from *Brasil* Wood by its Roughness in the Mouth, when tasted; and accordingly it is a little astringent. All the Kinds, especially the Yellow, enter into many Compositions; sudorifick Decoctions are likewise made of them.

20. *Sassafras Offic.*

According to *Herman*, this is the Wood of a *Virginian* Tree, which has Leaves like the Fig-tree, and is called *Pavane* by the Natives. It is of a reddish Colour covered by a red Bark. It also grows in *Brasil*, and *Piso* makes three Kinds of it.

It



It has a very agreeable Smell ; but that of the Bark is strongest, and very like the Smell of Fennel. This Wood is sudorifick, diuretick, attenuant, and especially proper to remove Obstructions in the Kidneys and Uterus. It is likewise recommended in the Gout and Rheumatism as a Sudorifick. The Dose in Substance is from half a Drachm to a Drachm ; and in Infusion or Decoction from one Ounce to two Ounces. It yields an Essential Oil by Distillation.

21. *Sassafras spurium, sive Lignum Anisatum.*

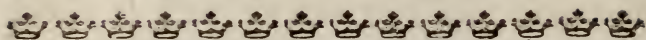
This is the Wood of a Tree called *Anisum Peregrinum*, C. B. P. and it likewise bears the Seeds called *Semina Badian*. The Wood is of a yellow Colour, and differs from the true Sassafras likewise, in being harder and more resinous, and in smelling like Aniseeds.

22. *Violaceum Lignum. Lignum Polyxandrinum.*

This is a heavy, close Wood, of a beautiful Violet Colour, marbled and shining, and capable of a very fine Polish. The Smell is pleasant. The *Dutch* bring it from the *East-Indies*, and it is used to make Cabinets and other Pieces of Furniture. Another sort of Violet Wood is likewise brought from *Holland*, of a more reddish Colour, employed for the same Purposes as the former, but neither of them are used in Physick.

23. *Xylo-Balsamum.*

This is the Wood of the Shrub that yields the Balsam of *Mecca*, and passes for a powerful Cordial, Cephalick and Alexipharmick. It has been ordered in many Compositions ; but as it is very hard to be procured, Apothecaries generally substitute for it, either yellow Saunders, or Aloes Wood.



## S E C T. IV.

*Flowers and Leaves.*1. *Alcanna Offic. Kenna Turcar. & Mauror.*

**T**HIS is the Leaf of the *Ligustrum Ægyptiacum*, C. M. P. and when reduced to a yellow Powder, is used for a Cosmetick by the Natives; namely, by the Men to dye their Beards red, and by the Women, to dye their Nails of the same Colour; in order to which, they make it into a sort of Paste, with Juice of Lemons. Its Medicinal Virtues are Emmenagogue and Hysterick; and accordingly it is used in the Eastern Countries, to cause Abortion, and to bring away dead Children.

2. *Dictamnus Creticus Offic. Dittany of Crete.*

This Leaf has always been look'd upon as an excellent Vulnerary and powerful Cordial; it is likewise an Emmenagogue, Diuretick, &c.

3. *Carthamus Officin. Bastard Saffron.*

This is the Flower of the *Carthamus sive Cnicus*, J.B. It is brought from *Provence* and from *Germany*, in some Parts of which it is used as Seasoning for their Food, in room of the true Saffron. A *Fæcula* is prepared from it, of a fine red Colour, in this Manner:

*They boil the Flowers in a Lixivium of Pot-ash; then having strain'd the Liquor through a Flannel Bag, they let it settle till it deposits its Fæcula.*

This

This was formerly used by the Ladies as a red Paint; but *Carminé*, which is prepared from *Cochineal*, is now substituted for it, as being of a finer Colour.

#### 4. *Crocus Officin.* Saffron.

Saffron is the Extremity of the *Pistillum* of a bulbous Plant cultivated in the Province of *Gatinois* in *France*, and in many other Countries. Its Virtues are to enliven the Blood, and remove Obstructions of the Viscera. It is also recommended in Diseases of the Thorax and Brain, and for expelling the morbid Humors in malignant Fevers. It likewise brings on Sleep, mitigates violent Pains, and is commonly an Ingredient in Resolvent Cataplasms and Collyriums. It enters many Compositions; such as the *Tberiaca*, *Pilulæ Ruffi*, &c. *Dioscorides* and *Avicenna* say, that three Drachms of Saffron are mortal; but *Etmullerus* observes, that in *Hungary* and *Poland* they eat an Ounce at a time; however, taken in too great Quantities, it causes the Head-ach, Drunkenness, Convulsions, Deliriums, and other Accidents, which may prove mortal, if not speedily remedied. *Amatus Lusitanus* tells us, that it has been found to cause the *Rifus Sardonicus*. The common Dose is from six Grains to a Scruple. A deeper Tincture is to be extracted from Saffron by Water, than by Spirit of Wine; which shews that it contains a saline and a gummy Part.

#### 5. *Cassine Vera Floridanorum.*

This Leaf is used as Tea. It comes from *New France*; and another Species of it, call'd *Apalacbine*, from *Mississippi*. It is used with Succets in the Gout; but perhaps its principal Virtue is owing to the hot Water. The *Paraguay* is a sort of *Apalacbine*, used by the *Spaniards*, especially by those who work in the Mines.

6. *Folium Indum, Malabathrum Offic.*

This is the Leaf of a kind of wild Cinnamon-tree, brought us from *Malabar* and other Places of the *East-Indies*. These Leaves are distinguish'd from the true Cinnamon Leaves, by their being less aromattick. Their Virtues are cordial, alexipharmick, &c.

7. *Juncus Odoratus, Scœnanthe Officin.*  
Squinanth or Camels Hay.

This is a kind of *Gramen* which grows in great Plenty in *Arabia Felix*, and other Parts of the East. The whole Plant, and especially the Flowers, have an aromattick Taste; which is therefore preferred to the other Parts, though *Galen* chose the Stalk. Some use a kind of Tea made of these Flowers, to raise Sweat; and the whole Plant was esteemed by the Antients to be Cordial, Stomachick, Cephalick, &c. It is an Ingredient in the *Theriaca*, and named by *C. Baubin*, *Juncus Odoratus Rotundus*.

8. *Senna Officin.*

The antient *Greeks* and *Romans* were ignorant of this Drug; the *Arabians* having been probably the first who used it in Physick. It is of four kinds.

1. *Senna Alexandrina, sive foliis acutis, C. B. P.*  
This is the true Oriental *Senna*, smoother to the Touch, and not so green as that of *Tripoli*, and its Infusion is of a pale Colour. The Leaf is of a pretty strong Consistence, and shaped like the Point of a Spear. This is the best sort of *Senna*. It purges Phlegm in a particular manner; but as it is apt to gripe, it ought to be given with Caution to those who have weak Viscera, or are of an inflammatory

tory Habit of Body. It is usually mixed with Carminatives, such as Coriander Seed, Cinnamon, &c. or more effectually with Alcaline Salts. It ought to be well cleaned from its Stalks, and then the Dose in Substance is from a Scruple to a Drachm; and in Infusion, from two Drachms to half an Ounce. Some have endeavoured to correct *Senna* with the *Scrophularia Magna Aquatica*, but that is now left off, common Tea having the same Effect. Some Physicians order *Senna* by the Name of *Folia Orientalia*.

2. *Senna Tripolitana*. This kind is greener, larger, rougher, and of a more disagreeable Smell than the former. It does not yield so much by Infusion; that is, a greater Quantity is required to make the Infusion of equal Strength, but it is of a greener Colour.
3. *Senna Italica, sive foliis obtusis*, C. B. P. *Senna Florentina*, J. B. It is distinguish'd from the true *Senna*, by the Largeness and Roundness of its Leaf. This Leaf is likewise much thinner and more brittle than the other. It is a very weak Cathartick, but gripes violently, and therefore is seldom used.
4. *Senna de Mocha*. The Leaves of this kind are longer and narrower than those of the true sort, its Smell stronger, and it gripes more violently. It is not used in this Country.

The *Folliculi* of *Senna* are likewise in use; but of these in the next Section.

9. *Thea Sinensium, Tcha Tsia Japonens.* Tea.

This is a Leaf brought from *China* and *Japan*, an excellent Account of which is given by *Kamffer*,

*Pfer*, in his *Amœnitates Exoticæ*. The fresh Leaf is said to affect the Head, and to intoxicate; but it loses these Qualities when dried and prepared: The *Japaneze* first bruise the dried Leaves in Stone Mortars, and then throw a sufficient Quantity into boiling Water, and suffer it to infuse but a very little while. The greatest Advantage of Tea, considering the Quantity of it that is drank, seems to be that it prevents the hot Water from relaxing the Stomach to too great a Degree, because it is a little astringent; all the other Effects of this fashionable Liquor seem to be owing to the hot Water. Tea boiled in Milk, in the Quantity of two Drachms to a Pint, has been found to stop a Looseness, the Dose being repeated two or three times. Green Tea drank too freely is prejudicial to weak Lungs. They who are subject to this Disease ought therefore to chuse *Bohea*, and to mix Milk with it, in order to make it more laxative.

The *European* Tea is the *Veronica*, and the *American* the *Apalachine*, already mentioned.



## S E C T. V.

## F R U I T S.

1. *Acajou Nux.*

**T**HIS Nut grows at one End of a kind of Apple, which is the Fruit of a Tree called in *Brasil*, *Acajaiba*. It is nearly of the Size of a Chesnut, and shaped like a Kidney; and, contrary to all other Fruits, it grows on the Outside of the Apple. It contains a Kernel of a very pleasant Taste, something like that of a Filbert. This Kernel is inclosed in a double Husk or Shell, and between the two is a Diploe, or cellular Substance, filled with a very acrid, corrosive Liquor, of a red Colour, and very proper to take off Freckles or Sun-burn from the Face. But Women ought never to use it in the time of their Menses; because in that case it often causes an Erysipelas; though even that may be cured by a Wash made of Brandy and Water.

2. *Anacardium Offic.*

This is a Seed about the Size of a Duck's Heart, and, like the *Acajou*, contains a pleasant Kernel, and very acrid Liquor. It is brought us from the *Philippine* Islands, and Authors are very much divided in their Opinions concerning its good or bad Qualities; but these Differences proceed from not distinguishing between the whole Seed, and the Kernel alone; which last, well cleaned, can contain no hurtful Quality; but otherwise the Liquor contained in the cellular Substance of the Husk, though eaten

Y

with

with the Kernel, must produce Inflammations, and other Disorders.

In some old Dispensatories we find a Composition named *Confectio Anacardina*, which is not now in Use. *Hoffman*, in his Treatise of Officinal Medicines, tells a very surprising Story concerning this Confection; namely, that by the Use thereof, a young Man, who was before so dull and stupid as not to be capable of learning any thing, became in a short time a very great Genius, and comprehended every thing that was taught him with Ease. It was thought very proper to help the Memory, and was likewise recommended to quicken the Motion of the Blood, and on some Occasions said to cause a Fever; which shews that the whole Nut, not the Kernel only, was an Ingredient in this Confection.

### 3. *Amomum Racemosum.*

This Fruit is an Ingredient in the *Theriaca*, and is sometimes mixed with strong Purgatives, to qualify them a little. Each Fruit is divided into three Cells, and is of a very pungent Taste. It is brought from the *Philippine* Islands, and is reckoned Carminative, Alexipharmick, Stomachick, &c.

### 4. *Anisum Sinense, Semen Badian, Fruetus Stellatus.*

This is a Fruit contained in a Shell which is of the Figure of a Star; the Kernel is flat, and of a very agreeable Taste, something like Anniseed. It is highly esteemed in *China*, and all over the *East*. It is used to cure any bad Taste in the Mouth, as a Preservative against the Effects of bad Air, and also for the Stone and Gravel. The *Indians* likewise steep this Fruit in Water, and afterwards ferment the Infusion; and thus make a kind of Vinous Liquor. The *Dutch* in the *East-Indies*, as well as the Natives of these Countries, mix this Fruit with their Tea and Sherbet.

### 5. *Aracus*



5. *Aracus Aromaticus, Vanilla Officin.* Vanillio.

This is the Fruit of a Mexican Plant, named by Ray *Volubilis Siliquosa, Plantaginis folio, Mexicana*: Two Kinds of it are brought from *Hispaniola*; one with a narrow Pod, which is most commonly used; the other with a longer and broader Pod, not so much esteemed. It is used in Chocolate, both as a Perfume, and to assist the Digestion of the Cacao; however, Chocolate made without Vanillios is much less heating, and much more wholesome. The *Spaniards* use it likewise from half a Drachm to a Drachm, in some Cordial Water, or in Milk.

6. *Areca Officin.* Fanfel Pinang Bontiv

This Fruit is a kind of Cocoa Nut, containing a woody Kernel, inclosed by two different Substances. The *Indians* chew the *Areca* rolled up in a *Bitel* Leaf, to help Digestion, and to strengthen the Gums; as *Kæmpfer* relates. When fresh it is a little Astringent; and of this Fruit the Extract is made, which in our Shops is called *Terra Japonica*. To this Extract they sometimes join that of another Plant, named *Lycium*, and also calcined Shells.

7. *Baccæ Bermudenses, Pilulæ Saponariæ Anglorum.*

This Fruit, when fresh, is of a black Colour, inclining to red, and something transparent. As it grows old it turns still blacker. It contains a yellowish Kernel, the Taste of which is disagreeable. This Kernel steeped in Water raises a Froth like Soap, and this Infusion is used in *Chloroses*, and in Obstructions of the Liver.

8. *Ben sive Glans Unguentaria Officin.*

This Fruit was termed *Glans Unguentaria*, because it yields an Oil by Expression, used by Perfumers, in perfuming other Oils, and never turns rancid: It is thought proper in the Itch, and some other

## 324 *Of Fossil, Vegetable, and*

cutaneous Diseases, as being a good Detergent; and it is sometimes mixed with Bismuth and white Præcipitate. Some say, that this Oil mixed with a Hazel Nut, or Filbert, and taken in this manner, will purge upward and downward; and it is certain that the Fruit itself, made into an Emulsion, is purgative.

### 9. *Becuiba Nux.*

This Nut is as large as a Nutmeg, and of a brown Colour. It consists of an oily Kernel, inclosed in a woody brittle Husk. A Balsam is drawn from it, very much esteemed in Rheumatick and Paralytick Cafes. It is brought from *Brazil*.

### 10. *Cacao Officin.*

We have two Sorts of Cacao, that of the Islands, and that of *Caracca* or *Nicaragua*, and of each there is a large and a small Sort. About thirty Nuts (as they are called) are commonly contained in one Fruit. Chocolate is made by first torrefying these Nuts, to attenuate the Oil they contain, and afterwards they are made into a Paste, which ought to be of a brownish Colour, not black. Chocolate thus made sweetens the Blood, and being mixed with Milk without any Spices, may be given very properly in Consumptions. It is therefore to be remembered, that Chocolate has very different Effects in heating, or in only nourishing and strengthening, according to the Degree of Torrefaction it has undergone, and the Spices mixed with it; and good Judges say, that the two Kinds of Cacao mixed together make the best Chocolate.

### 11. *Coffee Officin. Cabve Tartar.*

Coffee is the Fruit of a Tree which grows in *Arabia Felix*, and is brought to us from *Mocha*. The Flower of this Tree is like the Jessamine Flower, and the Leaf like the Bay Leaf. The Tree is called

called on these Accounts by M. De Jussieu, *Jasminum Arabicum Lauri folio, cujus Fructus apud nos Coffè dicitur*. We may distinguish two Kinds of Coffee, one small and greenish, like Horn; the other large, and yellowish. This latter Sort is the least valued, and grows in the Island of *Bourbon*. Coffee enlivens the Blood, cures Head-achs, sometimes promotes the Menfes; and therefore they who are subject to large Hæmorrhages or an Erysipelas ought to abstain from it; for till then they can never be cured. It is likewise hurtful to vapourish People, and to those of a bilious Constitution; but agrees well enough with the Phlegmatick. It certainly accelerates the Motion of the Blood, and has been often observed to cause Bleeding at the Nose.

### 12. *Cardamomum Officin.*

There are three Kinds of Cardamoms. 1. *Cardamomum Majus*, which grows in a Husk or Pod, about the Size of a Fig; and is called *Malaguetta*, or Grains of Paradise. 2. *Cardamomum Medium Matthiol.* This Kind, as well as the former, are little used in Physick. 3. *Cardamomum Vulgare Officin. Minus Matthiol. & Bontii* This Kind is much used, the Seed being commonly first separated from the Husk. It is attenuating and cordial, and enters into many Compositions of these Kinds. It is used by the *Indians* to season their Food. The *Chinese* have a 4th Sort, which they use in the same manner as the *Indians* do the third.

### 13. *Carpobalsamum Officin.*

This is the Fruit of the *Xylobalsamum* mentioned in the third Section. It is nearly of the same Size with Cubebs, and is aromatick, cordial, stomachick, &c. The Juice of this Tree is termed *Opo-balsamum*.

14. *Caryophylli Aromatici.* Cloves.

Cloves are the Foot-stalks or *Calices* of the Flowers of the Clove-tree, pluck'd before they are full blown. The Fruit which succeeds these Flowers, when suffer'd to ripen, are in some Dispensatories termed *Autophylli*; and the *Hollanders* preserve them with Sugar. Cloves kept in a Cellar or any other damp Place, will increase very much in Bulk and Weight. They contain a great Quantity of Essential Oil, and are heating to a very great degree; they ought therefore to be used sparingly.

15. *Cassia Fistula, seu Solutiva Officin.*

The *Arabians* first imploy'd *Cassia* in Physick; for neither the *Greeks* nor *Romans* seem to have known it. There are at present three sorts of *Cassia*. (1.) *Cassia Alexandrina, sive Orientalis*, which is the best of all, and therefore commonly order'd in Prescriptions; but being very rare, the second sort, or the *Cassia Americana* is generally substituted for it. This kind is more disagreeable, more acrid and griping than the former; but as it was transplanted from the *Levant* into the *American* Islands, it ought not properly to be reckon'd a different kind. The third kind is the *Cassia Brasiliensis Purgatrix*. This, while green, is astringent, but when ripe, purges more than either of the other sorts; and M. *Tournefort* observes, that its purgative Quality, compared with the *Alexandrian Cassia*, is as two to one. It is likewise much larger, and the Pulp much more acrid.

*Cassia* is a good and mild Cathartick, especially when Purging is on any account judged necessary, where the Patient is threatned with an Inflammation, either in the Thorax or Abdomen; because it abates the Acrimony of the Fluids. It is charg'd with operating slowly, and generating Wind; but both these

these Inconveniencies may be prevented by giving it in Decoction; and when taken in this manner, it is not hurtful even to Hypochondriacks. It is often mix'd with Tamarinds and Manna very properly. The Dose in Substance is from half an Ounce to an Ounce and an half; and in Decoction from two to four Ounces. When given in the Quantity of one Drachm in the Evening, it just keeps the Body open. It is often join'd with Emetick Tartar, to moderate the Effects of that Vomit. In fine, it is a proper Purge in all inflammatory Cases; which cannot be said of any other known Cathartick.

16. *Cocci Orientales, Cocculæ Officinar.*

This is a Fruit almost round, of a dark Colour, brought from the *Levant* and the Coast of *Malabar*, and belonging to a Tree named *Solanum Racemosum*. Taken inwardly, even in the Quantity of four Grains, it causes Hickups, Nausea's and Faintings, and in a greater Dose, is poisonous. The Powder of it sprinkled on the Head, kills Vermin, and when made up into a Paste with common Flower and new Cheese, it will intoxicate Fish, so that they may be catch'd with the Hand. Some Persons are afraid of eating such Fish; but Experience has proved that their Apprehensions are without Foundation.

17. *Colocynthis Officin.* Coloquintida.

Coloquintida is brought from several Places of the *Levant*, and particularly from the Island of *Crete*. The Pulp of this Apple is very bitter and purgative, but the Seeds have neither of these Qualities in so great a Degree, except they have touch'd the Pulp; for then they become very bitter. Coloquintida taken in a large Dose, is one of the most violent Purges now known. It not only often brings away pure Blood, but also produces violent

Cholicks, Convulsions, Ulcers in the Intestines and fatal Hypercatharres. When the Pulp is taken in Substance, it sticks to the Coats of the Stomach and Intestines; and therefore it has been judged convenient to divide it as much as is possible. Thus having first reduc'd it to a fine Powder, it is made up into Lozenges called *Trochisci Albandal*; but even these are hurtful to Persons of weak abdominal Viscera. When it is thought proper to give it in Clysters, it ought to be boil'd in a linnen Rag, that no large Pieces of the Pulp may mix with the Decoction. These Clysters are often ordered in Apoplectick Cases. Some say that Coloquintida will purge Children, by being reduced to a Paste with Ox Gall, and applied to the Navel.

18. *Cubebæ Officin.* Cubebs.

We do not know the Plant which produces this Fruit. They are brought from the Island of *Java*, and other Parts of the *East Indies*. They are round, like Pepper, of a greyish Colour, and aromatick Taste. They are recommended in a Hoarsness and Loss of Voice, especially when the Tonsils are stufed and obstructed. The Dose is from ten to twenty-four Grains in Substance, to be chewed; or from a Drachm to a Drachm and an half in Infusion.

19. *Folliculi Sennæ.*

These are the Fruit of the Senna Tree, and purge in a less Degree than the Leaves. The common Dose is from three to six Drachms in Infusion or Decoction.

20. *Myrobalani.*

There are five kinds of Myrobalans, termed *Citrinæ*, *Chebulæ*, *Belliricæ*, *Emblicæ*, and *Indæ*. The yellow are the most valuable, and most in use. They purge gently, and strengthen the Intestines at the same

same time; and therefore are very proper in Diarrheas and Dyfenteries, and make a good Succeda-neum for Rhubarb, only the Dose must be larger; and they may likewise be very conveniently mix'd with Rhubarb.

21. *Nux Moschata.* Nutmeg.

Nutmegs are of two sorts;

1. *Nux Moschata subrotunda, sive Nux Myristica Clusii, sive Nux Moschata Femina.* This kind is the best, and most commonly used. The whole Fruit is much of the Size and Figure of our Peaches; but the Pulp is closer. The Kernels yield a fine Oil by Expression, and the Film or Coat by which it is immediately inclosed, is the Mace. Both Nutmeg and Mace are strengthening, cephalick, stomachick, cordial, &c. They help Digestion, take away stinking Breaths, resist Corruption, &c.

2. *Nux Myristica Mas, sive oblonga, C. B. P.* This kind resembles the former in Colour and Consistence; but it has but little Smell or Taste, and is of an oblong Figure. Both Kinds are imported by the *Dutch*, chiefly from the Island *Banda*. It is a common Practice in *France*, to carry a Piece of Allum and a male Nutmeg together, in a Satin Bag, hung about the Neck, as a Preservative against the Gout and Costiveness.

22. *Nux Vomica.*

This is a flat, roundish Fruit, cover'd with a thin silver-colour'd Skin, which incloses a hard Kernel. The Tree that bears this Nut, grows in the Island of *Ceylon*, and along the Coast of *Malabar*, being named *Caniram Hort. Malebarici*, and *Malus Malabarica fructu orbiculato, &c. Raji Hist.* The Wood of this Tree is the *Lignum Colubrinum*, mentioned above. The Fruit is of a bitter Taste, and is a Poison for Brutes, such as Dogs, Cats, &c. Some pretend

### 330 *Of Fossil, Vegetable, and*

tend that it does not poison Men, but this is not to be depended on. It is probable that its poisonous Quality is owing to its great Bitterness, which makes an insupportable Impression on the Nervous System; and accordingly we find that all bitter Drugs are Poisons for some kind of Animals. Thus bitter Almonds kill Birds, &c.

#### 23. *Nux Vomica legitima. Faba Sancti Ignatii. Faba Purgatrix.*

This is the Fruit of a Tree that grows in the *Philippine* Islands. Its Substance is like Horn, and its Taste very bitter. It is described by Father *Camilli*, in the Philosophical Transactions. The *Indians* of the Island of *Lucon* look upon it as an universal Remedy; but it is too rough a Purge for the *Europeans*; for tho' it often carries off Fevers, yet it causes Convulsions and other Disorders, and therefore ought never to be given to those who have weak Bowels. It may be given in Powder from ten Grains to a Scruple, in a Glass of Wine, or of any simple cordial Water; and then it commonly operates by Sweat, and thus cures intermitting Fevers, &c. The Dose may be repeated ten or twelve times.

#### 24. *Piper Indicum.* Pepper.

The ripe fresh Fruit is about the Size of a large Currant, or small Gooseberry, and of a red Colour, which in drying turns to black. The common White Pepper is only the Black stripp'd of its outer Skin. This is done by first steeping it in Sea Water, then drying it, and rubbing it in Sand. There is however another kind of Pepper, which is naturally white, but which in all other respects is like the black.

Pepper is very good in Indigestions, a few Corns being swallowed before Meals; and it very often  
has



has been found to keep the Body open, in those who were otherwise costive, when taken in this manner.

25. *Piper Longum. Macro-Piper. Long Pepper.*

This is the Fruit of a Tree which grows on the Coast of *Bengal*. It has the same Qualities with common Pepper, but is not so pungent.

26. *Piper Jamaicense. Jamaica Pepper.*

The Tree that bears this Fruit, grows in *Jamaica*. The Grains or Berries are about the Size of Juniper Berries, and of an Aromatick Taste, which partaking of that of all the other Spices, it has by the *English* been called *All-Spice*. It is used to season Food, and is esteemed good for the Scurvy. The Essential Oil drawn from it is very much valued.

27. *Piper Æthiopicum Officin. siliquosum, J. B.*  
*Nigrum oblongum, J. B.*

The Negroes use this in the room of common Pepper.

28. *Ricini Americani majoris Grana.*

These Seeds are distinguish'd from the *Grana Telli*, by a small black Speck at one End, which the others have not. They purge violently; but if the Skin, with which they are cover'd, be carefully taken off, they lose their purgative Quality, and may be eaten with Safety. From not knowing this Secret, new Comers into *America* are often catch'd by the Natives. These Seeds are an Ingredient in the *Pilulæ Magistrales* of *Rotrou*, which are esteemed in Scrophulous Cafes.

29. *Ricini Americani minoris Grana. Avellana Purgatrix Riverii.*

This is a much more mild Cathartick than the former, and that Quality resides intirely in the Skins;

### 332 *Of Fossil, Vegetable, and*

Skins; for when these are taken off, the Seeds may be freely eaten. An Oil drawn from this Fruit is said to purge Children, by being rubb'd on their Navels, and thereby to kill Worms.

#### 30. *Telli Grana, seu Tellia Officin.*

This is a very violent Purgative, both upward and downward, in so small a Quantity as two Grains; and therefore it is seldom used in *Europe*. The Cathartick Quality is said by *Herman* to reside in the Pellicle that separates the two Lobes.

#### 31. *Ricini vulgaris Grana, seu Grana Palmæ Christi Kiki.*

These Seeds are much less purgative than the former Sorts. Ten or twelve Grains will only purge gently. The *Oleum Ricinum*, a great Resolvent, and recommended in Rheumatisms, is drawn from them. This Oil is likewise used in many Cutaneous Diseases.

#### 32. *Staphidis Agriæ semen.* Staves-acre.

These Seeds are triangular, blackish on the Outside, white within, and of a bitter Taste. They purge strongly, taken in the Quantity of twelve or fifteen Grains, and they are likewise recommended to kill Vermin.

#### 33. *Semen Zina, Semen Cinæ, Semen sanctum, Semen Zedoariæ, Semen contra vermes, Semen Santonicum, &c.* Worm-Seed.

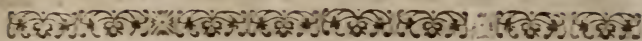
*Lippi* names the Plant that bears these Seeds, *Absynthium breve Santonicum, Memphiticum, &c.* *Tavernier* and *Kæmpfer* say, they come from the Kingdom of *Boutan* in *Asia*; and *Kæmpfer* has related the manner in which they are gathered. The Taste of them is bitter; they cut the thick Phlegm lodged in the  
Stomach,

Stomach, and are excellent against Worms; but even in these Intentions, Rhubarb is better.

34. *Tamarindi Officin.* Tamarinds.

This is the blackish Pulp of a Pod, something like common Beans. The Pulp lies between two Husks or Shells; one of which is woody, the other tough and membranous. The Tree which bears this Fruit, grows in *Ægypt* and in both *Indies*, and is described by *Tournefort*, in the *Memoirs of the Royal Academy* of 1699. We owe the Knowledge of this Purgative to the *Arabians*; for neither *Greeks* nor *Romans* knew any thing of it. The Dose in Substance is from an Ounce to an Ounce and half; and three or four Ounces in Decoction. Some Physicians order a Tamarind Whey, *Serum Lactis Tamarindinatum*, as a gentle Purge in inflammatory Dispositions, Cholicks, &c. and Tamarinds are very properly mix'd with Cassia. They may likewise be given as an Alterative, in the Quantity of half an Ounce; and they are very proper to be mix'd with Ptisanes, and other Liquors, given to quench Thirst in Acute Distempers.





## S E C T. VI.

*Juices.*

THE Juices of Plants may be divided into two general Classes, Artificial and Natural. The Natural Juices are of three kinds, Resins, Gums, and Gum-Resins; and each of these again are either Solid or Liquid.

---

## C L A S S I.

*Juices extracted from Plants by Art.*1. *Acacia Vera Officin.*

THIS is the Juice of a Plant named *Acacia fo-*  
*-liis Scorpioidis Leguminosæ*, C. B. P. It is im-  
 ported in Cakes of four, five, or six Ounces, which  
 when recent are of a reddish Colour, but grow hard  
 and black with Age. It is extremely rough and  
 astringent, and consequently proper in Hæmorrhages,  
 Diarrheas, Dysenteries, &c. It is given in Substance  
 from a Scruple to a Drachm; but the *German Aca-*  
*cia*, or inspissated Juice of Sloes, is often substituted  
 for it. It is also used as a Gargle to brace the sali-  
 val Glands and Uvula when relaxed, and as a repel-  
 lent *Collyrium* in an Ophthalmia. It is likewise used  
 in *Egypt* to strengthen the Gums, and fasten the  
 Teeth; and they put it into astringent Baths. It is  
 an Ingredient in the *Theriaca*.

2. *Hypocistis Officin.*

This is the inspissated Juice of a kind of *Orobanchæ* or *Parasite* Plant, which grows on the *Cistus Ladanifera*. It is hard and black, tho' as it is imported it generally looks white, because the Lumps are powder'd with Starch, to keep them from sticking together. It has nearly the same Virtues with the *Acacia*, being something more astringent, tho' not so acerb.

3. *Glycyrrhizæ succus.* Liquorish.

This Juice is made near *Tortosa* in *Catalonia*, and is brought to us in beautiful shining brittle Lumps wrapt in Bay Leaves. The way of preparing it is this ;

*The Liquorish is first dried and cut in small pieces, then boil'd in Water. This Decoction, being first filtred, is evaporated to the Consistence of an Extract, which is what we call its inspissated Juice.*

It is a good Emollient and Healer, proper in Coughs, and for promoting Expectoration, because the viscid Parts which it contains sheath and blunt the acrid Salts. It ought to be given in small Quantities, and often repeated, being otherwise disagreeable to the Taste.

4. *Aloes Officin.*

We have three kinds of Aloes, *Succotrina*, *Hepatica*, and *Caballina* ; and they come from three different Plants. The first comes from the *Aloe Succotrina Spinosa, angustifolia, flore purpureo, Breyn.* which grows in *Zocotra*, an Island in the Straits of *Babel-Mandel*, where they formerly prepared the Aloes by expressing the Leaves, and then letting the expressed Juice stand in a quiet Place, till an  
oily

## 336 Of Fossil, Vegetable, and

oily Substance rose at the Top. This Substance they took off, and evaporated it to the Consistence of an Extract.

The *Hepatick Aloes* is that which is now commonly found in the Shops, being got from the Plant named *Aloe vulgaris*, C. B. P. It was termed *Hepatick* from the Colour, which is like that of a boil'd Liver. This is likewise brought from *Asia*; according to M. *Herman*.

The *Caballine* or *Horse Aloes* comes from a Plant named *Aloe Guineensis* &c. *Commel*. It is brought from *Guinea* and from *Barbadoes*, and is very common in *England*. It is easily distinguish'd from the other kinds by its Coarseness and insupportable Smell. The Name *Caballina* was given it, because it was judged to be proper only for Horses.

The *Succotrine* and *Hepatick Aloes* are both very good Purges, but they rarify the Blood, and thereby cause Hæmorrhages, and other undesigned Evacuations, to those who are subject to them. This Medicine ought therefore never to be given to Women with Child, to those who are subject to Piles, &c. Again, Aloes, after its purgative Effect is over, is constipating; and therefore to such Persons as are inclined to be costive, Cassia is preferable. The Dose is from four Grains to half a Drachm. The Resinous Part extracted by Spirit of Wine, will purge violently; and the Gummy Part extracted by Water is a good Vulnerary, especially in Ulcers of the Bladder and Kidneys. The Tincture of Myrrhe and Aloes is used to prevent Mortifications in Wounds.

### 5. *Opium Officin.*

Opium is an inspissated Juice of a blackish brown Colour, sometimes reddish, of a bitter Taste, and a very disagreeable Smell. The *Greeks* distinguish'd two kinds of it; one got by wounding the *Papaver album*

*album Officin.* the other by Expression. The Opium which we have is of the first kind; and as it was cultivated formerly in *Egypt* near the City of *Thebes*, it has got the Name of *Opium Thebaicum*. If we may believe *Kæmpfer*, all the Opium now used in the East is what transudes spontaneously from the Plants in *Natolia* and other Places. But *M. Tournefort* and several other modern Travellers could find no such Opium among the *Turks*; all that they met with being the same with what is brought to us in soft Lumps. They likewise observe that the sober People among the *Turks* seldom take above a Drachm in a Day; and a few Grains of that Quantity is always mix'd in their Coffee. In the Empire of the Great Mogul, Opium is sold as commonly in the Shops as Tobacco with us. The Inhabitants prepare it in different Manners, and mix it with different Ingredients, such as Rhubarb, the Extract of Rhubarb, and the like. Some add to it other Narcotick Substances, such as the *Datura*. This last is generally the Artifice of Quacks, by which they who take this Mixture, are thrown into pleasing Dreams, which they take for Extasies, and believe to be real. *Kæmpfer* relates many wonderful Effects of this Preparation, which he terms, *The Indian Nepenthe*.

The Effects of Opium are always Narcotick; whether taken inwardly, or applied externally; and it has been found to cause Sleep when given in a Clyster, better than when taken by the Mouth. When applied to the Eyes and Ears, it has caused Blindness and Deafness; and *Galen* relates that an Opium Plaister laid on a Gladiator's Head by a Stratagem of his Enemy, kill'd him in a little time afterwards. This Author likewise says, that he never used Opium, except in very pressing Cases: Opium does not make the Pulse quicker or harder than it was before; but only greater, and heats very much; which is a sure Proof, that it dissolves and rarifies

the Blood; and this appears likewise from its causing an Itching in the Skin, and sometimes Sweat. It is observed of the *Turks*, who are kill'd in Battle, that as soon as their dead Bodies are moved from the Places where they fall, they begin to bleed, their Blood being made more fluid by the Opium which they take. By this Rarefaction of the Blood in the Vessels, the Nerves, which lie near these Vessels, are compress'd; and thus the Course of the Animal Spirits is stopp'd, as is likewise the Secretion of many Fluids, such as the Bile and Urine, which occasion Costiveness, and the making of very little Water. Opium, in all probability, acts by its Narcotick Sulphur, which divides and rarifies in an extraordinary manner the sulphurous Parts of the Blood; and accordingly we observe all Vegetables which contain an Oil of this kind, such as Nutmeg, Saffron, &c. produce in the Body an Effect of the same nature with that of Opium. Neither is it at all unfeasible, that Sulphurs should be capable of a very great degree of Rarefaction, since the Smell of Musk or Ambergris may extend through so large a Space. *Pitcairn* was of opinion, that the Effects of Opium were owing to its volatile Salt; but it seems to contain that Principle in too small a Quantity for such Operations.

When a Person has taken too great a Quantity of Opium, the first thing to be done is, to empty the Vessels by copious Bleeding, if the Patient's Strength can bear it. The next thing is to drink acid Liquors, such as Vinegar, Lemonade, Syrup of Barberries, and such like, which coagulate the Blood, and thus give the Vessels room to contract. Smelling to Vinegar and all Aromaticks, is likewise proper; and if the Stupor be very great, Scarifications ought to be made, and Vinegar and Salt sprinkled upon the scarified Parts. Blisters and sharp Clysters answer the same Effect.



The Rules to be observ'd in taking Opium, are these ;

1. If the Patient be Plethorick, he ought not to take Opium, till he has lost some Blood.

2. It ought not to be given in the Time of the Menfes, Lochia, &c. of Women, nor during the usual Flux of the Hemorrhoids in Men, because it stops all these natural and healthful Evacuations. Neither ought Opium to be given in every Diarrhæa, because if it be critical, the Stoppage thereof may be very hurtful. It must likewise be very improper in a Suppression of Urine ; and the general Rule is, that when the Suppression of any one Evacuation by Opium is foreseen, other Evacuations, especially by Bleeding, ought to succeed.

3. Opium ought never to be taken on a full Stomach, because it hinders Digestion, and proves commonly emetick. The Digestion ought therefore to be compleated at the time of taking it ; and the same thing is to be said of all other Narcoticks, which given unseasonably and for a long Continuance of Time, quite destroy the Appetite, bring on Hiccups, Nauseas, and habitual Vomiting.

4. Persons who begin to take Opium, ought to venture only on a very small Quantity at first, because the Effects of the same Quantity on different Persons are very different ; and there is no way to determine but by Experience how much any Person can bear. Half a Grain has been found to cause Sleep for twenty-four Hours together, to a Person who afterwards required half a Drachm to produce half that Effect. For it is a certain Observation, that they who accustom themselves to take Opium habitually, must often increase the Dose, otherwise it gradually loses its Effect on them ; and M. *Geoffroy* knew a Woman who took seventy-two Grains every day, meerly to ease the Pain of a cancerous Breast. The common Quantity among the *Turks*

is a Drachm in a Day; but some among them take a much greater Quantity.

The Ancients were extremely cautious in giving Opium; but in the beginning of the last Century *Felix Platerus*, a learned Physician of *Basle* in *Switzerland*, began to bring the Use of it into Vogue. *Silvius de le Boe*, Professor of Physick at *Leyden*, perfected what *Platerus* began; and from that Time many of the most famous Physicians in *Europe*, such as *Sydenham* and others, found by certain Experience that it was one of the most valuable Medicines in the World, when prudently administred, in calming the too violent Motion of the Blood, easing Pain, &c.

There are however still some very great Men, who continue Enemies to Opium, and among these *M. Stahl* has declar'd himself, in his Dissertation *De Imposturis Opii*. They are afraid to use it for the ends just mentioned, for fear of suspending the Crises which commonly happen after violent Pains, such as those of the Gout and Rheumatism, and in acute Distempers, in which the Fluids are violently agitated; they apprehend, that by giving Opium to diminish these Motions, they only throw a Veil over the Distemper, which hinders them from observing its true Genius, and the Tendency of Nature in the Course of it. Of this they cite Pleurifies as an Example, and they are certainly in the right not to give Opium in that Disease.

But notwithstanding all the Strength of these and other Reasons against the Use of Opium, and the Authority of those who advance them; this Medicine is undoubtedly very proper on many Occasions, as in great want of Sleep, too great Motion of the Fluids, occasion'd by purgative and other Kinds of Medicines, in great Defluxions, stubborn Coughs, &c.

6. *Saccharum Offic.* Sugar.

Sugar is the Essential Salt of the *Arundo Saccharifera*, or Sugar Cane; the different Kinds of which are these,

*Muscovado*, the first Sugar, got from the Juice of the Canes.

*Cassonado*, Sugar refined from the former by the Whites of Eggs, Lime-water, &c. which being more oily than the more refined sorts, is to be preferred for all inward Uses. It is likewise most proper for Confectioners, because it does not candy so easily.

Loaf Sugar, *Cassonado* still further refined and clarified in different degrees. It has the same Qualities with the former, but in a less degree for inward Use. They both cut Phlegm, promote Expectoration, and animate the Blood; but they excite Vapours and the Tooth-ach. They who use much Sugar, are liable to Fevers and to rotten Teeth. In *Brasil*, the Skimmings of Sugar are given to the Hogs, by which they are soon fatten'd, and their Flesh becomes very delicate.

*Sugar Candy*, or Crystals of Sugar, is of three kinds, white, yellow, and red; which are only the three former sorts, boil'd to a due Consistence. White Sugar Candy comes from the Loaf Sugar; yellow from the *Cassonado*, and red from the *Muscovado*. Sugar Candy is most proper in Colds, because it melts slowly, and thereby gives time to the Saliva to mix with it, and thus to blunt the Acrimony of the Phlegm.

*Red Sugar*. This was used very much formerly in Loosnesses; but at present Oil of sweet Almonds and other Things of that kind are substituted for it.

*Syrup of Sugar*, or *Molosses*, is the glutinous Part which drains from Sugar, and was formerly used for the red Preserves or Sweet-meats; but it gave them

## 342 Of Fossil, Vegetable, and

a disagreeable burnt Taste. In the *West-Indies* they ferment and distil it; but the Brandy or Spirit which it yields is unpleasent and very intoxicating. A much better Spirit might be made of refined Sugar.

To these we may add the *Saccharum Acernum*, Maple-Sugar; which is the Product of *Canada* and *New England*, in which Countries the Natives collect the Juice that runs from a kind of Maple-trees, by Incision, and then evaporate that Juice to the Consistence of Sugar, which while it remains unctuous, is better for internal Use than any other kind; and the famous *Syrup of Maidenhair of Candia* is made with it. As it is brought to us, it is of a greyish Colour, and tastes like other Sugar. With this Sugar the Inhabitants of these Countries prepare likewise a sort of Liquor which is their common Drink; and likewise make Brandy and Vinegar from it.

### 7. *Tartarus vel Tartarum Offic.* Tartar.

*Tartar* consists of the acid, oily, and earthy Parts of Wine; and the Lees of Wine are Tartar attenuated and divided into Wine by Fermentation. Tartar may therefore be called the Essential Salt of Wine. *White Tartar* contains the greatest Proportion of Acid, and *Red Tartar* most Oil and Earth.

Under this Head may be reckon'd

1. *Cineres Clavellati*, Pot-ash; one kind of which consists of the earthy Part of the Lees of Wine, burnt to Ashes, which by melting afford a Salt like Salt of Tartar.

2. *Kali, Soda*. This *Soda* is made by calcining different Plants. In hot Countries they chuse the *Kali majus cochleato semine*, C. B. P. and at *Alicant*, the *Kali Hispanicum supinum, foliis brevibus*, Dn. de Jussieu. It contains a small Portion of Salt, like Sea Salt, mix'd in a great Quantity of Alcaline Salt; and

and Crystals may be obtain'd from it in Cubes like Sea Salt.

3. *Fel Vitri, Sal seu Axungia Vitri.* This is the Sea Salt of the *Soda*, which is easily soluble in Water; and of this Solution the Farmers make a Wash for Horses Eyes.

8. *Heliotropium.* Turnsol.

We have two kinds of this Juice, one in Lumps, the other in Rags. The Plant which produces it grows in *Languedoc*, and is a kind of *Ricinoïdes*, called by *C. Baubin Heliotropium Tricoccum*. The Juice being express'd, linnen Rags are impregnated with it, and then expos'd to the Vapour of Urine, which gives them a red Colour. These Rags are exported to *Holland*, where they extract the Lumps from them by a Method, which is hitherto a Secret. It is probable however that they are a kind of *Fæcula*. The Tincture of *Heliotropium* or Turnsol serves in Chemistry, to try Acids and Alcalis, but is not used in Physick. There is a third sort of Turnsol brought from *Portugal*, which is used by the Scarlet Dyers.

9. *Indigo.*

This Juice is brought both from the *East* and *West-Indies*, made up in different Forms. The most esteem'd is that of *Guatimala*; which is the *Fæcula* of a Plant termed *Emerus Americanus siliqua incurva*, J. R. H. Some Physicians have recommended Indigo in the Jaundice, taken in the Quantity of a Drachm; but others look upon it as a Poison, and in *Saxony* the internal Use of it is prohibited.

10. *Alciot sive Uruba Indorum.*

This Juice is got from two different Plants; the first is named *Mitella maxima tinctoria*, J. R. H. and *Orleana foliis capaceis*, H. L. Bat. The other is a

## 344 *Of Fossil, Vegetable, and*

Shrub of the same Name with the Juice. From these two Plants infused and long macerated the Juice is obtained in form of an Extract. The *Indians* use it to paint their Bodies red, and the *Spaniards* use it in dying; and formerly it was mixed with their Chocolate.

### 11. *Amylum Offic.* Starch.

This is the *Fæcula* of Wheat, which is first steep'd in Water till it swells, and then bruised in the same Water by Mens Feet. Then they pass the whole thro' a Searce, and the strain'd Liquor being evaporated, a *Fæcula* is left at the Bottom, which being dry'd is Starch; and when thus made, it may be used inwardly in Diseases of the Breast, and applied to the Eyes. But when made, as it often is, with Bran, mix'd with Nitre and Alum Water and Vinegar, it ought not to be used inwardly.

### 12. *Terra Japonica.*

We have one kind of *Terra Japonica* from *Malabar*, and another from *Pegu*. The Manner of preparing it is this.

*The Areca Nuts, before they are quite ripe, are bruised, and a strong Decoction made of them. This Decoction pour'd off by Inclination, having stood for some time, is mix'd with the Powder of calcined Shells, and then deposits a Fæcula.*

Another Decoction and *Fæcula* is made of a Plant called *Catechu*; and these two *Fæculæ* mix'd make the simple *Terra Japonica*. In *Spain*, it is prepared with Aromaticks, which makes it very heating; which it is not of it self, and therefore the simple Kind is to be preferred for all Physical Uses. It is a mucilaginous, astringent Substance, very proper in Inflammations and Swellings of the Tonfils, &c. It  
strenghtens

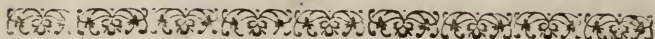
strengthens the Stomach and helps Digestion, and is very proper in Loosenesses. The Dose is from half a Scruple to fifteen Grains, repeated several times a Day. Half a Drachm boil'd in a large Quantity of Water makes likewise a very proper Drink in a Diarrhæa or Lientery, even when other Medicines have failed.

13. *Sago.*

This is a Paste in small Grains, or a kind of *Vermicelli*, prepared from a Tree named *Arbor palmam referens farinifera*, C. B. P. The Pith of these Trees being well beat in a Mortar with Water, forms an Emulsion, the *Fæcula* of which dried is Sago. It is a very kindly and nourishing Food, never fermenting in the Stomach, and very proper in Hæctick Fevers. It is very much used in *England*.

14. *Cacavi Monaid. Manibot Theret. Cassada.*

The Plant of which *Cassada* is the Root is a kind of *Ricinoides*, and not a *Juca*, as almost all Authors pretend. This Root, eaten fresh and with all its Juice, is a certain Poison; but when dry, it may be safely eaten. In the *West-Indies* they rasp this Root; and having squeezed out the Juice from the Meal, they make it into a Paste, and then into thin Cakes, which they bake partly in the Sun, and partly over a Fire; and these Cakes are the common Bread of the Country. The *Indians* ferment the Juice, and then make it into Vinegar, which becomes very harmless, tho' poisonous before Fermentation.



## S E C T. VI.

## C L A S S II.

*Juices which flow from Vegetables naturally.*

**T**H E S E Juices, as has been already said, are of three Kinds, Resins, Gums, and Gum-Resins.

Resins, are inflammable Substances, soluble in Spirit of Wine, but not in Water.

Gums dissolve in Water, but not in Spirit of Wine, and when burnt, the greatest Part of them turns to a Coal.

Gum-Resins are Substances, of which one Part is soluble in Water, and the other in Spirit of Wine.

Each kind is divisible into Liquid and concremented Juices.

## A R T. I.

*Liquid Resinous Juices flowing from the Bark of Trees.*

1. *Balsamum Judaicum, Syriacum, Hieruchuntinum, Constantinopolitanum, e Mecha, &c. Opobalsamum Officin.*

**T**H I S is a resinous Liquor, which at first is of the Consistence of Oil of sweet Almonds, but by Age becomes like Turpentine, loses much of its Smell, and grows sometimes blackish. When fresh, it is of a very agreeable aromattick Smell, and of a Taste like Citron Peel. The Plant, from which it flows,



flow, is called *Balsamum Syriacum folio Rutæ*, C.B.P. *M. Lippi*, sent by *Lewis* the 14<sup>th</sup> Ambassador to the Emperor of the *Abyssines*, being in *Egypt*, was at great pains to discover this Plant, and the ways of procuring the Balsam from it. The Substance of what he could find out is, that there are three Ways of collecting it, and that there is some Difference in the Liquors collected each way. The first runs of it self from the Tree; the second, by Incisions; and the third is got by boiling the Tops of the Trees. The Balsam, that rises first after a gentle Decoction, is very good and much esteemed; but what is got afterwards, is the coarsest sort, and of least Value. The first kind of Balsam is sent entirely to the Seraglio of the Grand Seignior; the other sorts are suffer'd to be exported. This Balsam is not now to be found in *Judea*, which was its ancient native Soil, and where it was very common before the Destruction of *Jerusalem*; but soon after that, the *Jews* destroyed all their Trees, lest the *Romans* should have made Advantage of them. At present it is found near *Mecca* and *Grand Cairo* in *Egypt*, from whence it is carried to *Constantinople*, where it is in great esteem. In *Asia* it is given in the Quantity of two Scruples, as a Diaphoretick in malignant Fevers; and it is undoubtedly an excellent Medicine for deterring Ulcers in the Lungs, Kidneys and Bladder, and even for dissolving pulmonary Concretions. But the Use of it ought to be avoided in inflammatory Dispositions of these Parts, even though ulcerated. It ought likewise never to be given when there is an Erysipelas in any Part of the Body whatever. It is used with good Success in Gonorrhæa's and the *Fluor Albus*; being given from ten to twelve Drops early in the Morning fasting, the Patient's Body having been well prepared, and the Running having continued some time. It is used externally in Wounds without Contusion, as a Detergent.

The Ladies in *Asia* use it as a Cosmetick, and especially in the Seraglio of the Grand Seignior. In *France* the Ladies formerly prepared a kind of *Lac Virginale* with the yellow Balsam of *Mecca*, dissolved in Spirit of Wine; but they were soon tired of this Method, because it leaves a Crust on the Face. The true Manner of preparing this Cosmetick, is as follows;

*Take Balsam of Mecca, and Oil of Sweet Almonds, of each equal Parts. Mix them well together into a kind of Nutritum. On three Drachms of this Nutritum in a Matrajs pour six or seven Ounces of Spirit of Wine, and leave them in Digestion, till a sufficient Tincture is extracted. Then separate this Tincture from the Oil, and pour about an Ounce of it into eight Ounces of the Aqua Fabarum, or any other Water of the same kind.*

This Mixture is a *Lac Virginale*, which will answer all the Intentions of a Cosmetick without any Inconveniency. The Balsam of *Mecca* is an Ingredient in the *Tberiaca* and *Mithridate*.

2. *Balsamum Copaiba.* Balsam of *Capivi*.

When this Balsam is new, it is of the same Colour and Consistence with Oil of Sweet Almonds, and smells like the *Calambour* Wood; but the Taste is a little acrid and bitter. It is brought from *Brasil* by the *Portugueze*, and is the Product of a Tree called *Copayva*, *Pison*. being got in three different manners, as the former. The first Kind is the best and clearest; and this Balsam is at present very much in use, being given in the same Cases with that of *Mecca*, and with the same Restrictions, only the Dose may be made something larger. *Fuller* says, that when given in the Quantity of two Drachms, it purges very well, and gives a very bitter

bitter Taste to the Urine. A Liniment may be made with two Parts of Spirit of Wine, and one Part of this Balsam, very proper to be used in Rheumatifms, Palfies, &c.

3. *Balsamum Peruvianum.* Balsam of Peru.

We have two kinds of this Balsam, one red, the other whitish. This last is brought us in Shells; and, when fresh, has an agreeable Smell like *Benjamin*, is very liquid, and of a yellowish white Colour. It flows by Incision from a *Mexican Tree* named *Arbor Balsamifera, Hernand.* The other kind is of a much browner Colour, and sometimes smells of Smoak; being procured by boiling the Bark and Tops of the same Tree, the Balsam swimming at the top. This Balsam is recommended for the same Uses with the two former, but the Balsam of *Capivi* is more in vogue.

4. *Balsamum Tolutanum.* Balsam of Tolu.

This Balsam is of a solid Consistence, and is likewise imported in Shells. It is of a yellow Colour, transparent, and of an agreeable Smell, especially when burnt. Being held in the Mouth, it has no Acrimony, in which it differs from all the rest; and for that reason it is preferred in *England* for internal Use, being given from six to eight Grains. It has its Name from the *American Province* where it grows, which lies between *Carthagena* and *Nombre de Dios*.

5. *Liquidambar Offic.*

There were formerly two kinds of this Juice, one resinous, of a yellow Colour, and a Smell like *Storax* or Ambergrease; the other thicker, and not so fine. They were much used in Perfumes, but at pre-

present are unknown, tho' some believe that they come from a Tree named *Acer Virginianum*, *Herman*.

6. *Styrax Liquidus*. Liquid Storax.

There are two kinds of *Storax* in the Shops; the one is of the Consistence of Oil of Sweet Almonds, of a very pleasant Smell. This is the true Liquid *Storax*. The other seems to be a Composition of the first Kind, mix'd with something else. It is of a more solid Consistence, and is by some Authors said to be wholly factitious, tho' it is most commonly used. The Tree which yields the Liquid *Storax*, grows in the Plains of the *Red Sea*, being call'd by the *Arabians Mio* or *Rosa Mallos*. The Bark of this Tree is boiled in Sea Water, and the *Styrax* rises to the Surface of the Decoction, such as it imported. It is an excellent external Remedy in Wounds threatened with a Mortification; and in this Intention chiefly it enters into several Ointments and Plaisters. The *Turks* use it as a Perfume.

7. *Terebinthina Offic*. Turpentine.

The Name of Turpentine has been given to all the Resinous Juices of four different Trees, and consequently is of four kinds.

The first comes from the *Terebinthus Vulgaris* C. B. P. This, called the *Terebinthina de Cbio*, or *Cypria*, is of the Consistence of Honey, of a very pleasant resinous Smell, and the best of all Turpentine for internal Use. It gives a violet Smell to the Urine, even when given in a Glyster. It is an excellent Diuretick, and very proper in Ulcers of the Kidneys, Bladder, and Uterus. In Gonorrhæas, it is commonly made into a Bolus with prepared Crabs-Eyes, or any other Absorbent. It may likewise be taken in the Yolk of an Egg, from half a Drachm to a Drachm. All these Precautions are  
neces-

necessary only to shun the disagreeable Taste, and Sugar and powdered Liquorish may be used for the same Purpose. It is likewise often given in Glysters, being first dissolved in the Yolk of an Egg, and then mixed with the Decoctions. It is thus administered in Stone Cholicks, but the Intestines ought previously to be unloaded by purgative Glysters. The Dose, in this Manner, is from an Ounce to an Ounce and an half. Turpentine, like all other Balsams, is to be avoided in inflammatory Dispositions of all Kinds.

The second Sort is the *Terebinthina Veneta*, *Venice* Turpentine, which comes from the Larch Tree, or *Larix folio deciduo* C. B. P. This Tree grows on the Alps and in the *Tirol*. The *Venice* Turpentine is of a Whitish Colour, with a Cast of Green. The Taste of it is sharper, and the Smell stronger than of the former Sort; but it is much more commonly used in these Countries, because the other is difficult to be got. It has the same Virtues, but is not altogether so proper for internal Use. From this Turpentine *Colophony* is made, being nothing but the *Caput mortuum*, remaining after Distillation.

The third Kind, called *Terebinthina Argentoratis*, *Strasburgh* Turpentine, is got from Fir-trees. It is very much used in *Germany*, but though its Virtues be equal to that of *Venice*, the Taste is more acrid and unpleasant.

The fourth, called *Common Turpentine*, is got from Pine-trees. It is not used in Medicine; but is many other ways useful in Life, because from it are made the common Sorts of Resin, Pitch, Tar, &c. These are,

1. *Resina Pini Alba*, White Resin, which turning yellow or reddish, is termed *Resina Pini Fusca*, or *Thus femina* *Offic.*

2. *Pa-*

2. *Palimpiffa*, the black, or burnt Pitch.
3. *Zopiffa*, Pitch pick'd off from the Vessels.
4. *Pix Burgundica*, *Burgundy Pitch*, which is a Mixture of Refin, Oil of Turpentine and common Pitch.
5. *Piffelæum*, Oil of Pitch or Tar.
6. *Piffa*, another Sort of Tar.
7. *Pix Nigra*, black Pitch, which when dry becomes brittle and transparent, and is then called *Pix lucida*.

The Smoke of all these Substances produces a Soot called *Fuligo Picea*, as that called *Fuligo Oleaginosa* is made by the Smoke of burnt Lees or Sediment of Olive-Oil. This last Soot sticks to the Fingers when handled, and by this it may be distinguished from the former.

#### 8. *Balsamum Ipecuebæ*.

This Balsam is used in *Brazil* for Rheumatisms: See the Sect. of Fruits.

#### 9. *Oleum Cacao*.

This Oil is of a middle Consistence between Hogs Lard and Wax, and of a white Colour. It is made by bruising the *Cacao* Nuts in a Mortar, and then boiling them in Water; the Oil which swims at the Top like a Cream is taken off and purified. It softens the Skin, and is a very good Ingredient in Pomatums, for Chaps and Fissures in the Lips and Nipples.

#### 10. *Oleum*

10. *Oleum Palmeum.*  
Palm Oil.

This Oil is of a white Colour, and is got from the Fruit of a Tree named *Palma Conifera* C. R. P. It is recommended as a Liniment in Rheumatifms and Palfies, to soften the Parts in reducing Luxations, and for strengthening the Nerves.

A R T. II.

*Concreted Juices, which distill from Trees, whether Resins, Gums, or Gum-Resins.*

1. *Afa fætida, stercus Diaboli, Σιλαειον Græcor.*  
*Lafer Latinor.*

**M**ANY Authors have doubted whether our *Afa fætida* be that of the Ancients, which was by them called the Food of the Gods. But when we consider first the Description of *Dioscorides*; and, secondly, the Relations of Travellers, who say, that the *Persians*, *Indians*, and other Eastern Nations use, *Afa fætida*, in Sauces, and call it also the Food of the Gods, there can be Reason to question, but that ours is the same with the *σίλειον* of the *Greeks*, and *Lafer* of the *Latins*, mentioned by *Petronius*.

*Afa fætida* is a Gum Resin, brought to us in Lumps of different Colours, white, yellowish, blue or brown, which last is the worst Colour of all. It has a very strong fetid Smell; and we are obliged to *Kæmpfer* for a very exact History of the Tree, which produces it, of the Manner of gathering it, &c. In general, this Tree is of the Umbelliferous Kind, growing plentifully in the Province of *Labir*, in the Dominions of the Great Mogol, and

## 354 *Of Fossil, Vegetable, and*

in that of *Chorasán* in *Persia*. In the Months of *July* and *August*, the Country People make Incisions in the Roots of these Trees, thro' which the Juice drains. It is whitish and thin at first, but by drying soon becomes thicker, and of a brown Colour; and in this Form it is gathered and preserved for Use.

*Asa fetida* is an excellent Remedy in all Hysterick Disorders, whether only smell'd to, or mixed with what is taken inwardly. It is also reckoned a good Sudorifick and strengthens the Stomach. The Dose is from twelve Grains to half a Drachm, but with a View to the Stomach only it must be given in smaller Doses. Externally, it is a good Resolvent; and in that Intention, is an Ingredient in the *Ceratum de Galbano*, and is sometimes tied to the Bits of Horses Bridles.

### 2. *Bdellium Offic.*

There are two kinds of this Juice in the Shops; one in great Lumps of a red Colour, and bitter Taste; the other very hard, brittle, a little bitterish, and of a strong Smell. Both sorts are brought from *Africa*, and undoubtedly come from *Abyssinia* or *Ethiopia*; but we are ignorant of the Plants which produce them. *Bdellium* is a good Sudorifick, Emmenagogue, and Attenuant; and it likewise is an Ingredient in the *Emplastrum Diachylon*, *Unguentum Apostolorum*, &c.

### 3. *Benzoinum, Asa Dulcis Offic.*

This is a resinous, inflammable Substance, sometimes of a reddish, sometimes of a pale Colour, and generally very foul. When it is cover'd with white Spots, it is called *Benzoinum Amygdaloides*. It is of an agreeable Taste, a little acid, and is much used in Perfumes. It is not certain that this Juice was known to the Ancients. It is brought from the *Philippine*



*lippine* Islands, from *Siam* and *Sumatra*. *M. Grimm* has described the Tree which produces it, and the Manner of preparing it, in the *Ephemerides Naturæ Curiosorum*, An. 1. Dec. 2. It is very proper in Asthmas, to attenuate the Phlegm which oppresses the Lungs, and in Ulcers of that Viscus; but the Flowers of Benjamin are preferred for Internal Use.

4. *Camphora, Capbura Officin.* Camphire.

Camphire is found in several Places of the *East Indies*; but the two principal Kinds are those of *Borneo* and *Sumatra*. It is likewise produced in *Japan*; and there is a very precious Sort in the Island of *Ceylon*, which comes from the Roots of the Cinnamon Trees. The Camphire of *Borneo* is very rare, and in the *Indies* one Pound of it is reckoned worth a hundred Pounds of that of *Sumatra*, and therefore the *Hollanders* import only this latter Sort, which, for Medical Uses, is very little inferior to the other.

Camphire is a resinous Substance, very light, of a whitish Colour, and so inflammable, that when once set on Fire, it will burn on the Surface of Water. The Smell of it is very aromattick and penetrating, and when exposed to the Air, it soon wastes. The Tree that produces it in *Sumatra* is by *Breynius* named *Arbor Camphorifera*; and by *Kæmpfer*, *Laurus Camphorifera*. Besides what distils naturally from the Trees, they likewise obtain it by distilling the sliced Roots with Water, in an Alembick, the Head of which is made of Straw, so that all the Humidity evaporates through the Head, and the Camphire sticks to it. It is at first of a greyish Colour, but in refining it the *Dutch* bring it to a white Colour, and it is then transparent. It is refined by Sublimation, in a Sand Heat.

Camphire, taken inwardly, is Cordial and Sudorifick; and likewise Anodyne, in as much as it

## 356 *Of Fossil, Vegetable, and*

removes Obstructions, which cause Pains. It is excellent in the Hysterick Passion, both taken inwardly and applied outwardly; and some Authors have said, that the Quantity of one Grain applied to the Navel has cured a Fit of the Vapours. It is likewise a powerful Resolvent, by its penetrating and attenuating Quality. Camphorated Spirit of Wine, made by dissolving Camphire in that Liquor, is very proper to discuss an Erysipelas, and other Inflammations of that kind. It is likewise a good Ingredient in Collyriums in an Ophthalmia, and powerfully attenuates the thick Humours which are the Causes of Rheumatisms. When carried in ones Pocket, it is a great Preservative against the Effects of bad Airs; and Plaisters with Camphire and Opium have done Wonders, where all other Remedies have failed. The Antients believed that Camphire was an Enemy to Generation, but that Conceit was very contrary to Truth.

### 5. *Caranna seu Caragna Officin.*

This is generally termed a Gum, but very unjustly, because it is dissoluble only in Spirit of Wine, which is the Property of resinous Substances. It is a soft Body, of a greyish Colour, with a little Cast of Green, brought from the Province of *Mechoacanna* in *America*, being the Product of a Tree named *Caranna Monaid*. *C. B. P.* and *Arbor insaniæ Caragna nuncupata Hernand.* It is a powerful Resolvent, and in that Intention is used for Rheumatisms, for Defluxions of the Eyes, and for the Tooth-ach. For this last Distemper a Plaister of *Caranna*, of the breadth of a Shilling, is to be applied to the Temples on the aching Side of the Head, and if the Nerve is not bare, this generally removes the Pain. *M. Fagon* used to make a Plaister of this Resin for Head-achs, which he applied to the whole Scalp, first well shaved.

### 6. *Copal*

6. *Copal Officin.*

The Natives of *America* give the Name of *Copal* to all odoriferous Gums which are transparent. The Gum we commonly call by that Name is not much used in Physick, but is in great Esteem with the Varnishers, who dissolve it in *Oleum Spicæ*. It has been sometimes employed in Fumigations for violent Defluxions of the Head, and in *Cucuphas* for the same Purpose.

7. *Gummi Anime Officin.*

The *Indians* call by this Name all odoriferous Resins that are of a Red Colour; and by this Colour they are distinguished from *Copals*. What we use is probably not the same with what the Antients called *Cancamum*. Ours has the same Virtues with *Copal*, and is used in the same manner in Perfumes and Fumigations.

8. *Elemi Officin.*

This is a Resin, because it is soluble only in Spirit of Wine. We have two kinds of it, one called *Elemi Legitimum Æthiopicum*, which is at present very rare; the other is brought in Lumps from *America*, which is of a strong Smell, something disagreeable, and of an acrid bitter Taste. It is an excellent emollient and detergent Vulnerary, and a great Strengtheners of the Nerves. It is an Ingredient in the *Emplastrum Andreae à Cruce*, the *Balsamum Arcæi*, &c.

9. *Euphorbium Officin.*

This is a Gum Resin, which distils in milky Drops from a Plant called *Euphorbium Antiquor*. *C. B. P.* It is so violent a Purgative that it cannot safely be taken inwardly; but when dissolved in the Yolk of an Egg, and afterwards diluted with Oil of sweet Almonds, some venture to give it as a Clyster,

## 358 *Of Fossil, Vegetable, and*

in the Quantity of twelve Grains, in Lethargick Cafes, and stubborn Palfies. It is likewise used in some Snuffs, mixed with Tobacco, but it would be better to mix it with Juice of Liquorish. *Euphorbium* may also be used to separate the carious Parts of Bones.

### 10. *Galbanum Officin.*

This is a Gummi-Resinous Substance, which distils by Incision, from the Plant named *Ferula Galbanifera*. It is a very good Anti-hysterick, Emmenagogue, and forcing Medicine; and even when applied in a Plaister to the Navel, will cure Hysterical Convulsions. It is likewise sudorifick, when taken inwardly; and, when outwardly applied, it softens and digests Tumours, and brings them to Suppuration. For inward Use it ought to be strained, but not for outward. It is the Basis of the *Ceratum de Galbano*, and is an Ingredient in the *Emplastrum Matricale*.

### 11. *Gummi Ammoniacum.*

We do not know the Plant which yields this Gum. It is a powerful Resolvent, and Purgative in a small Degree. It removes Obstructions of the *Viscera*, especially of the *Uterus*, and thus is both a good Emmenagogue and Aperient, when given from a Scruple to half a Drachm; and is very proper to be mixed with Preparations of Steel, and Flowers of *Sal Ammoniac*, in Pills or Bolus's. Outwardly applied it is a good Resolvent.

### 12. *Gummi Arabicum.* Gum Arabick.

It is soluble in Water, but not in Spirit of Wine. It flows naturally from the *Acacia Ægyptiaca*, sometimes like small Worms, whence it is called *Vermiculatum*. It is emollient and diuretick, and used in many Compositions for Diseases of the Thorax, because it sheathes the sharp Parts of the Serum in  
the

the *Bronchia* by its mucilaginous Parts; and, by the same Means, becomes useful in Diseases of the Kidnies, Uterus, and Bladder. On this Account, it is given in a Dyfuria, Strangury, Heat of Urine, &c.

13. *Gummi Nostras.* Cherry-tree Gum.

This is supposed to have the same Qualities with Gum Arabick.

14. *Gummi Guajaci.*

This Gum runs through the Cracks of the *Lignum Vitæ* Tree; and some Physicians make use of nothing but it and the Mercurial *Panacea*, for the Cure of Claps.

15. *Gummi Gutta, Cambogium, Gutta Gambe, Gutta Gamandra.* Gamboge.

This is a Gum Refin, which flows from two different Plants in the *East Indies*; but, notwithstanding all that is said by *Herman*, and by the Authors of the *Hortus Malabaricus*, we are still uncertain what these Plants are. This Gum communicates a fine dark Gold Colour to the Water in which it is dissolved. It purges very well in the Quantity of four Grains; but, from six to eight Grains, it purges and vomits violently. It is reckoned particularly serviceable in Dropsies, by evacuating the Watery Parts of the Fluids; and as it has no Taste, a very small Dose of it, such as a Grain or two, dissolved and mixed with Sugar, is very fit for Children. It is worthy Observation, that though this Gum is so very purgative, yet the Fruit of the Tree to which it belongs is perfectly harmless, and is eaten in the Country like Oranges.

16. *Gummi Hederæ.* Ivy-tree Gum.

This Gum comes from a Plant named *Hedera Arborea*. It is neither Caustick nor Depilatory, as

the Ancients imagined, but a powerful Resolvent and Discutient, in which Intentions it is an Ingredient in several Plaisters, and in the *Unguentum Dialtheæ*.

17. *Labdanum seu Ladanum Officin.*

This is a soft resinous Substance, of a blackish or brown Colour. It is imported in Lumps and Cakes, rolled up much in the same manner with small wax Candles; but this latter sort is least esteemed, being mixed with some other Substance. It flows from a Tree named *Cistus Ladanifera Cretica flore purpureo*, *J. R. H.* In the Time of *Diascorides* it was gathered from the Hairs of the Goats, which fed among the Trees which produce it; but at present, according to *M. Tournefort*, the Greek Monks gather it from the same Trees with a sort of Rakes. The Greek and Turkish Ladies carry little Balls of *Ladanum* to smell to, as ours do Nofegays or Oranges. It is an excellent Balsamick in Dyssenteries and Hoarseness; and being likewise astringent, it strengthens the Stomach and Intestines, and when applied outwardly in Plaisters, is useful in the same Intentions. The *Emplastrum stomachicum* of *Charas*, of which *Labdanum* is the Basis, has been used with great Success to stop habituated Vomiting. It is also an Ingredient in the Prior of *Cabriere's* Plaister for *Hernias*.

18. *Manna Officin.*

This is the Product of a kind of *Fraxinus*, or wild Ash, which grows in *Calabria*, named *Fraxinus Rotundiore folio*, *C. B. P.* It is a melleous Juice, of a solid Consistence when dry, and in the middle of the little Lumps there are sometimes small Straws or Rushes, and when broken, they appear porous and crystalline; And as this cannot be imitated by Art, such Manna may be depended on to be genuine. The other Kind is often mixed by the Druggists with a small Quantity of Scammony, to make it more purgative; but as Scammony is not always proper

proper, where Manna is prescribed, the former kind ought to be preferred. In a large Dose Manna causes Thirst, by dissolving and præcipitating the salivary Secretions; but this Accident is remedied by proper Drinks. Manna purges off the ferous Humours more and better than any other Cathartick, and is therefore successfully used in Dropsies, mixed with aperient Salts, the Activity of which is moderated by Manna. The Dose is from one Ounce to four Ounces, given in Broths or other Drinks. It is sometimes ordered by the Name of *Mel Aereum*, because some have believed it to be a Dew. It was first discovered by the *Arabians*, having been unknown to the ancient *Greeks* and *Romans*.

19. *Mastiche Officin.* Mastich.

Mastich is a Resin of a transparent Gold Colour, and when burnt, of a very agreeable Smell. It may be chewed, like Wax, whereas *Sandaracha* breaks under the Teeth, and by this these two Substances may be distinguished. It flows from the *Lentiscus Vulgaris*, *C. B. P.* which is cultivated with great Care in the Island of *Cbio*, and it is there forbidden, under Pain of Death, to cut any of the Trees. The *Turkish* Ladies chew Mastich to preserve their Teeth, and strengthen the Gums. It is used inwardly, from half a Scruple to a Drachm, in Diarrhæas, Hæmorrhagies, &c. being an excellent Astringent and Stomachick. It is an Ingredient in many purgative Compositions, as a Corrector, and makes the Basis of the *Emplastrum de Mastiche*, &c. In Defluxions of the Teeth it is ordered to be chewed to cause Spitting; and mixed with a small Quantity of Opium it is a Plaister, and applied to the Temporal Artery of the pained Side of the Head, it generally cures the Tooth-ach.

20. *Myrrha Troglodytica Officin.* Myrrhe.

Myrrhe is brought from *Æthiopia* and *Arabia Felix*; but we are ignorant of the Tree from which  
it

it flows. It is an excellent Stomachick, good in Indigestions, Aperient, Deobstruent, Emmenagogue, Astringent, Vulnerary, &c. and is used in Loosenesses, to destroy the Acrimony of the Humours in the Intestines. Outwardly applied it is a powerful Resolvent, and the *Tincture of Myrrh and Aloes* is a good Vulnerary, and prevents Mortifications. Myrrh put into the White of a hard Egg, in the place of the Yolk, and laid in a cool Cellar, resolves into an Oil *per deliquium*. It is an Ingredient in many Compositions, such as the *Emplastrum Divinum*, *Emplastrum Sticticum*, *Theriaca*, &c. It is generally chosen unguled, that is, marked with small white Specks, in the Shape of Nails. The Ancients mention a Liquid Myrrh, which we are ignorant of; there is, however, some Ground to think that it is an oily Liquor found in the Body of the Tree; and this was the Myrrh offered by the *Magi* to our Saviour, because it was very precious, and an Ingredient in the richest Perfumes.

21. *Olibanum Officin.* *Thus Mas, Mamma Thuris, Olibanum Mammosum, sive Testiculosum.*

The Tree that produces this Incense grows in the Heart of *Africa*, but we know not what it is. It is a good Sudorifick, and has by some been ordered in Pleurisies in the Quantity of a Drachm, being first baked in an Apple, by the Fire-side, and then eaten. This Medicine ought to be taken in the Beginning of the Disease, after the Patient has been blooded once or twice. This Method was followed for a whole Year at the *Hotel Dieu*, by *M. Hangard*, Physician of that Hospital, with surprising Success; but the next Year it had scarce any Effect at all. *Olibanum* is likewise Cordial, and very serviceable in Hæmorrhages when mixed with proper Astringents. Externally, it is Resolvent, Emollient, &c. and resists Putrefaction. It may  
likewise



likewise be used as a Fumigation to raise Sweat, in Rheumatifms, either alone or mixed with Amber.

22. *Opoponax Offic.*

This is a Gum Refin, got from a Plant named *Panax Heracleum*, J. B. As it flows through the Cracks of the Trees, it is of a yellow Colour, but by Age it turns red. It is of a sharp, bitter, disagreeable Taste. Outwardly applied, it is emollient, attenuant, and resolvent; but internally it is purgative, uterine, antihysterick, carminative, &c. The Dose is from twenty Grains to a Drachm, and it is an Ingredient in many Compositions.

23. *Sagapenum Offic.*

The Tree that produces this Gum Refin, is believed to be a *Ferula*. It is purgative, attenuant, aperitive, and proper in Obstructions of the Mesentery, in Vapours, and to provoke the Menfes. The Dose is from twenty Grains to a Drachm. Outwardly it has the same Qualities with the foregoing.

24. *Sandaracha Offic. Vernix Arabum.*

This is a Gum Refin, which flows from the *Cedrus Lycia major Dodon*. It is attenuant and resolvent, but is seldom used in Physick, though very much by the Varnishers, being first dissolved in Spirit of Wine. It is likewise used to embellish Writings, being first scatter'd on the Paper, and afterwards rubb'd with a Wolf's Tooth; for by this means the Paper continues to bear Ink, and all Erasures disappear. It is sometimes confounded with Juniper Gum, and is very different from that kind of Orpiment, which was the *Sandaracha* of the ancient Greeks; of which above.

25. *Sanguis Draconis Offic.* Dragon's Blood.

This is the Juice of the *Draco Arbor Clusii*, and is now brought from the *Canary Islands*. When bruised, it gives a fine red Colour, and was the Cinnabar of *Dioscorides* and the ancient *Grecians*. Taken inwardly, it is a very good Astringent and Dryer. The late *Helvetius* melted it with powder'd Alum, and then made them into Pills for Diarrheas, Hæmorrhages, &c. But the Patient ought first to be prepared by Bleeding, &c. It is entirely soluble in Spirit of Wine. The *Dutch* counterfeit it with Gum Arabick and Alum, dissolved in Water, with *Brasil* Wood, to give it the true Colour; but this factitious kind ought not to be taken inwardly, though it is very proper for Painters.

26. *Sarcocolla Offic.*

The Plant that produces this Juice, is unknown. It is detergent, astringent, consolidating, and an Ingredient in many drying Collyrium's, which are very successfully used in small Ulcers of the Eyes, after those made with *Florentine* Orice and white Vitriol; and to make it into a Collyrium, nothing is required but to dissolve it in Plantane Water.

27. *Scammonium, seu Scammoneum Offic.*

## Scammony.

We have two sorts of Scammony in the Shops, that of *Aleppo*, and that of *Smyrna*. The first is the best and most purgative, and is got from a Plant named *Scammonea Syriaca*, C. B. P. which is a Species of *Convolvulus*. It is a very strong Cathartick, but causes great Irritation, and even Inflammations in weak Habits. It is given in Substance from two to twelve Grains; but ought never to be used when there is the least Suspicion of Inflammations in any  
Part

Part of the Abdomen. It is likewise a very ticklish uncertain Purge. Sometimes it has no Effect at all, sometimes it causes fatal Super-purgations; and which is most remarkable, it sometimes does not operate at all the first Day, but brings on an unsupportable Tenesmus and Hypercatharsis the next. It is very proper to dilute it with some oily viscid Substance, such as the Yolk of an Egg, or an Emulsion made with sweet Almonds and the cold Seeds. Prepared Scammony, or *Diagridium*, is a very proper Ingredient in the *Pulvis Cornachini*, which purges without any of the bad Effects of Scammony. *Madame Grimaldi's Powder* seems to be nothing but the *Pulvis Cornachini* disguised. Scammony is the Basis of many purgative Compositions, such as the *Diaphænicum*, the *Diaprunum*, *Confectio Hamech*, &c.

#### 28. *Styrax Calamita Offic.*

This is a resinous Juice of a reddish Colour, very agreeable Smell, like that of Benjamin, and of a pretty solid Consistence. It comes from the *Styrax folio Mali Cotonei*, C. B. P. It is sometimes very foul, and therefore ought to be chosen shining and transparent. It is a very good Cordial, Antipestifential, and Strengtheners; and when outwardly applied, it is discutient. The Tincture of *Styrax* made with Spirit of Wine, added to that of Benjamin, makes a very good *Lac Virginale*, or Cosmetick Wash.

#### 29. *Tacamabaca Offic.*

This is a resinous Substance, of which there are two kinds, one in Shells, and one in Lumps. The first is most esteemed, and is sometimes named *Tacamabaca sublimis*. It is of a very agreeable Smell, like that of Lavender and Angelica, and is brought from

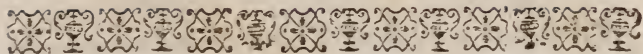
366 *Of Fossil, Vegetable, and*

from *Madagascar* and *New Spain*, being the Product of a Tree named *Tacamabaca populo similis fructu & colore Pæoniæ*, J. B. *Tecomaboica*, *Hernand.* It is used externally in the same Intentions with the Gum *Caragna*, and likewise resolves Tumors, strengthens the Nerves, and cures the Head Ach, when applied in a Plaister to the Scalp.

30. *Tragacanthum Offic.*

This Gum flows from a Plant named *Tragacantha Cretica flore albo, lineis purpureis notato*, J. R. H. It is Emollient and Anodyne, and is therefore reckon'd very proper to abate the Acrimony of the Serum of the *Bronchia* and Intestines, in Coughs and Diarrhæa's. It is likewise Diuretick, and a good Corrector of many sharp Catharticks. A Lohoch may be made of it by first making it into a Mucilage of the Consistence of an ordinary Syrup, and then by mixing with this Mucilage Conserve of Marshmallows, or any other of the same kind, with a few Drops of Oil of sweet Almonds. This Lohoch is suffered to melt in the Mouth, in Diseases of the Thorax. The Mucilage of this Gum is likewise the Basis of the greatest Part of Pectoral Lozenges.





## S E C T. VII.

*Fungi and other Excrescences.*

1. *Agaricus levis sive fœmina, & Agaricus mas.*  
Agarick.

**T**HE female Agarick is a *Fungus*, which grows on the Larch Tree. It is a porous, light Substance, cover'd with a yellow Bark, but within it is white; at first chewing, of a sweetish Taste, but afterwards bitter. Its Whiteness and Lightness distinguish it from the male kind. It is a slow Purger; but as it evacuates the serous Parts of the Fluids very effectually, it is very proper in an Asthma, &c. The Dose is from a Scruple to a Drachm, suspended in a Bag in purgative Decoctions; but it ought never to be given to weak Stomachs. The Male Agarick is not used in Physick, but is employed in Dying. It is of a yellowish Colour, and heavier than the former. When soften'd in a Lixivium of Salt Petre, and afterwards dried, it makes a good sort of Tinder.

2. *Auricula Judæ, Fungus Sambucinus.*  
Jews Ear.

This is a kind of Mushroom, which grows on Elder. Outwardly applied, it is a good Resolvent, being boil'd in Milk; and when boil'd in Vinegar, it makes a good Gargle for Swellings in the Throat, but is never used inwardly.

3. *Tubera Cervina, Boleti Cervini.*

These are a kind of Truffles or Mushrooms, of the Size of a Filbird, found in *Germany* on the Surface of the Earth. When fresh, they have an astringent Taste, but by drying they become more acrid. They are recommended in Hysterical Affections, and to increase the Milk of Nurses, being taken from a Scruple to a Drachm, but at present they are very little used.

4. *Lycopodii Pulvis, Sulphur vegetabile.*

This is a fine yellow Powder, issuing from the Stalks found among the *Muscus Terrestris*, or *Lycopodium*. It is gather'd in the Autumn, and when dried, easily takes Fire and fulminates. It is used in *Germany* for Epilepsies in Children, being given from ten to thirty Grains. It is likewise recommended in Dysenteries, intermitting Fevers, and in the Stone.

5. *Bedeguar Offic.*

This is a spungy Excrecence of the Sweet Briar, produced by the Sting of Insects. In *Italy* they lay the Powder of this Sponge on Parts bit by venomous Creatures after Scarification.

6. *Poco Sempie, Skinkia Offic. Agnus Scythicus seu Tartaricus, sive Borometz. Muscus Aureus.*

Two very different Things have been called by the Name of *Borometz*; the first is a kind of Fur much esteem'd, found near the *Caspian* Sea, which is really the Skin of an Animal like a Sheep, as is observed by *Kæmpfer*. The other is a kind of *Filix Arborea* or Fern, which grows near *China* and in *Japan*, resembling the four Feet and Navel of a little Lamb, and is cover'd with a fine Moss or Down. Hence arose the Fable of its being a *Zoophyta*;

*phyta*; which is accounted for and explained by *Kæmpfer*. Father *Plumier*, and several other Travellers have brought the Plants themselves into *Europe*. The Down that grows upon it, is celebrated for an Astringent, and especially in spitting of Blood, being held for some time in the Mouth; and it is certain that it has some times succeeded.

#### 7. *Galla Orientalis Offic.* Galls.

There are several sorts of Galls; the first and best is termed the *Aleppo Nut*, or *Galla Spinosa*; the second is white; the third smooth and round; the fourth of an irregular Figure; and the fifth has a kind of Crown. All these Galls are owing to Insects, which first prick the Oak Trees, and then lay their Eggs in the Wound. These Eggs swell with the Excrecence, and first turn to Worms, then to Flies; which having perforated the Galls, make their Escape. And as some Eggs are unfruitful, and remain in the Gall, they are observed to yield a volatile Salt.

Galls are very astringent, and are by some given inwardly in Dyfenteries. They have likewise been recommended in Intermitting Fevers; but the Foundation of their febrifugous Quality depends on too few Instances to be relied on.

#### 8. *Cardui Hæmorrhoidalis Capitula.*

This is an Excrecence or Tumor of the *Carduus Vinearum Repens Sonchi folio*, C. B. P. They lie like Knots along the Stalk of the Plant, and are likewise owing to the Eggs and Juice of Insects. They are said to be a Preservative against the Hæmorrhoids; but this is without Foundation.

9. *Grana Kermes Offic. Coccus Infeetorius, Grana Tinctoria. Kermes Berries.*

These are Excrefcencies of the *Ilex Cocciglandifera*, C. B. P. They are much used by Scarlet Dyers. They were firft proved to be Excrefcences by M. *Fagon*; but their Origin has been fince more fully explained by Count *Marsigli*. They are gathered in *Languedoc* near *Montpelier*, and are generally fo full of fmall Worms and other Infeets, that they deferve to be reckon'd Animal rather than Vegetable Subftances.

In Medicine, they are eſteemed to be greatly cordial and ſudorifick, being very full of volatil Salt. They are given in Powder, in the Quantity of twenty-four Grains, every fix Hours, to prevent Abortion from any Strain or Hurt; for this Powder ſtrengthens both Mother and Child, and ought to be continued for ſome Days. They are the Baſis of the Syrup and Confection of *Alkermes*.

10. *Coccinella Offic. Coccus Indicus Tinctorius. Cochineal.*

This is altogether an Animal Subſtance, being a kind of Bug with fix Legs, which ſticks on the *Opuntia major*, or prickly Pear, and ſeveral other Plants, from whence the *Indians* remove them to the *Opuntia*; and when they are come to their full Growth, they kill them with cold Water, and afterwards dry them. Cochineal is uſed in all the ſame Intentions with Kermes; and beſides the common Scarlet is the Baſis of that beautiful Colour called Carmine, which is uſed by Painters.





## PART IV.

*The Animal Kingdom.*1. *Cantbarides Offic. Muscæ Hispanicæ.*

THESE Flies are very common in Spain, and in some other Places. They act not only on the Membranes of the Bladder, but likewise sometimes on the Stomach; and the Patient often vomits them up, before he feels any Heat of Urine, which afterwards becomes almost intolerable. A famous Instance of which was in a young Man, to whom they had been given inwardly on a Love account. They are the Basis of Vescicatories, and when thus applied, they attenuate and divide the Blood. These Vescicatories raise Blisters on the Skin, full of Serum, which being burst, the Suppuration is kept up by Pear-tree Leaves, or Plaisters which contain some suppurating Ingredients. They are used in Defluxions of the Eyes, Teeth, &c. in Lethargies, and in all Obstructions which proceed from a thick viscid State of the Serum. They are applied to the Shoulders, Thighs, and several other Parts of the Body. By mixing with the Blood and Urine, the Parts of these Flies often cause Suppression and Heat of Urine, as is well known; and therefore when Vescicatories are applied in Apoplexies, Deliriums

riums or Lethargies, it ought carefully to be observed whether the Patient makes Water freely, though he is not perhaps in a Condition to express his Pain; and if he does not, he ought to drink Emollient Püfanes or Emulfions; or Milk, or Oil of sweet Almonds ought to be injected into the Bladder through the Urethra. *Groenveldt* a *Dutch* Physician, who practised in *London*, wrote a Book *De tuto Cantharidum usu interno*; in which he pretends that by adding Camphire as a Corrector, and making the Patient drink Emulfions plentifully, the bad Effects already mentioned might be prevented. His Project failed at that Time, and he had full Time to repent his Rashness in a loathsome Prison. But the internal Use of the Tincture of Cantharides has since been very common in *England*. In that Country likewise Vesicatories of Cantharides are frequently applied in Fevers with very great Success.

2. *Scincus Marinus Offic.* Skinck.

This is a kind of small Crocodile or Lizard found on the Banks of the *Nile*, and in other Parts of *Africa* and *Ajia*. It is an Ingredient in the *Mithridate* and *Diasatyryon*, because the Flesh of this Animal is supposed to excite Transpiration, Sweat, and Lust.

3. *Vipera Offic.* The Viper.

The yellow poisonous Liquor of the Viper runs into the Wound made by that Animal through the poisonous Phangs, in which there is both an Hole and a Slit near the Point. The Symptoms that attend this Bite, are very well described by many Authors; but the Cure consists in making immediately a strong Ligature on the Part; then scari-fying and burning it with a hot Iron; or making a larger Incision, to be filled with Gunpowder, which is presently to be set on Fire. This is the Method practised with Success by Hunters, who  
happen

happen to be bit by mad Dogs. The Flesh of the Viper either in Substance or in Broths is thought to purify the Mass of Blood. The best way to make these Broths, is to cut the Viper into small Pieces, and with these to stuff the Body of a Chicken, which is afterwards boiled as usual. The Powder of Vipers is given from ten to thirty Grains, either in a Bolus or some proper Liquor. The Dose of the Volatile Salt is from six to ten Grains in a Bolus. The *Oleum Viperinum* is recommended to discuss Tumors and Rheumatifms.

#### 4. *Castoreum Offic.* Castor.

The best Castor is that of *Dantzick*; that of *Dauphiné* is likewise very good; but what comes from *Canada* is worth nothing. The Beaver, of which this Medicine is the Inguinal Glands, is found along the *Rhone*, the *Rbine*, and in *Poland*, *Russia* and *Canada*. It is reckon'd a powerful Antihysterick, and particularly adapted to cure hysterical Convulsions of the Abdomen, even when held to the Nostrils, or applied to the Navel. Some think the internal Use of it dangerous; but it is freely given by others. It likewise calms the Irritations and convulsive Motions of the Nerves; resists any malignant Disposition in the Fluids, and enlivens the Blood. The Dose is from three to ten Grains.

#### 5. *Moschus Offic.* Musk.

The Animal which produces Musk, is a kind of Wild Fox, which is said to have Bags under his Belly, in which the Musk is form'd. The Musk of *Tonquin* is the most valuable; but it is likewise found in the Northern Part of the *Mogul's* Country, in *Tartary* and in *Bengal*, from whence we have it. The *Arabians* used Musk as a great Cordial; but at present it is left out in almost all the Compositions in

which they directed it, as being prejudicial to Persons of both Sexes subject to Vapours; and as it likewise heats very much, it is very little used in Physick. Cotton impregnated with Musk is very good in that kind of Deafness, which is owing to too great Thickness and Viscidity of the Fluids.

6. *Zibethum sive Catus Moschatus.* Civet.

The Animal which yields Civet, is a kind of wild Cat, called by the Ancients *Hyæna*. There are two kinds of it; one that comes from *Holland*, and another that comes from *Guinea*, which is browner than the former. When Civet is mixed with Musk and Ambergrease, or lowered by a Mixture of any other Powders, it has a very fine Smell; but alone, the Smell is disagreeable. It is very little used in Physick. Some rub Childrens Navels with it, to cure their Cholicks, and it was formerly applied to the *Pudenda* of Women in Hysterick Fits; but this last Practice is not only useles, but hurtful.

7. *Vesiculæ Moschatae Orientales.*

These Bags are got from a kind of Musk Rats in the *East Indies*, and they are said to be situated as those of the Civet Cat.

8. *Sanguis Hirci Alpini, seu Rupis Capræ.*

We have three different Substances, that are generally termed *Sanguis Hirci*, or Goats Blood. The first is that mentioned in the Title. The second comes from the *Ibex* of *Gesner* and *Aldrovand*; and the third is Kids Blood, *Sanguis Hædi*. That which is brought from *Switzerland*, is a powerful Sudorifick, and is recommended in Pleurisies; but it ought never to be given till the Vessels have been well emptied. *Helmont* talks of very great Miracles to be performed with this Medicine.

9. *Priapus Balæneæ vel Ceti.*

This is a kind of hard Cartilage, which is found in the *Penis* of Whales. It is recommended by Authors as a good Sudorifick, Diuretick, and an Exciter to Venery; but it is very groundlesly said to be Lithontriptick.

10. *Cornu Cervi Offic.* Harts Horn.

This is a moderate Cordial and Astringent; its volatile Salts being mixed and qualified by a mucilaginous Substance, made into a Gelly with Water, it is very proper in Diarrhæas. In Substance from twenty Grains to a Drachm, it is gently sudorifick, and may safely be given in malignant Fevers, the Small-pox, Measles, &c. The Tips of the Horns, penetrated by the Steam of boiling Water, turn into a soft Substance, which when the Skin is taken off, is white, and then goes by the Name of *Cornu Cervi philosophice præparatum*. For this Preparation nothing is required but to suspend the Horn at the Top of a Cucurbite, in which Plants are distilled. It is a good Absorbent, with some Share of active and volatile Principles. Shaved Harts Horn is put into Ptisanes, as an Astringent.

11. *Ebur Offic.* Ivory.

The Qualities and Ways of using Ivory, are the same with those of Harts Horn. Ivory is likewise calcined as a good Antidysenterick. This goes by the Name of *Spodium Eboris*, and *Ebur Ussum*.

13. *Dens Apri.* Boars Tooth.

This is reckon'd a good Sudorifick, being powder'd and taken from one to two Drachms.

13. *Mandibulæ Lucii Piscis.* The Jaw Bones  
of a Pike.

These are absorbent, and pass with some for a good Sudorifick, being taken in the Quantity of a Drachm in Carduus Water. They are by others recommended in Pleurisies.

14. *Cornu Rhinocerotis.* Unicorn's Horn.

There are four kinds of Land Animals called by the Name of *Monoceros*, *Rhinoceros*, or Unicorn. The first is called by *Gesner*, *Orix Bisulca*, *sive Strepsiceros*, *id est*, *Lupus Marinus*. The second, *Afinus Indicus Monoceros*. The third is the Unicorn, painted like a Horse, with a Horn in his Forehead, said by fabulous Authors to be found in the remote Parts of *Æthiopia*. The fourth is the true *Rhinoceros*, found in *Africa* and in the Island of *Java*, described by *Bontius*. The Horn, or rather Tusk of this Animal is turned up toward his Nose, and in a young Animal is about a Foot and an half long. This Horn is sudorifick, in the same manner as other Horns, but it has not all the other Qualities attributed to it, both formerly and at present, by the *Indians*, who make Cups of it for their King, imagining that nothing drank out of such Cups, can be poisonous. Some Authors recommend it in Epilepsies of Children. Another kind of Unicorn's Horn belongs to a kind of Whale found in *Davis's Straits*, and on the Coasts of *Greenland* and *Ice-land*, in the Icy Sea. This is a white contorted Horn from seven to sixteen Foot in Length; but Authors are not agreed about the Manner where it is plac'd in the Animal. It is esteemed a powerful Cordial, and proper in Hæmorrhages, Diarrhæas, &c. in the Quantity of twenty-four Grains. Others order Pieces of it to be worn about the Neck.

15. *Os è Corde Cervi.*

This is a Cartilage found at the Basis of the Heart of the Stag, which officies in their old Age, and is look'd upon by some as a Cordial ; but in Shops, to which it is order'd, the Bone in the Heart of Oxen is often substituted for it, as being of equal Virtues. This Bone is an Ingredient in many Compositions.

16. *Os Sepiæ.* The Bones of the Scuttle-fish.

This Fish is a kind of *Polypus*. It has a Bag in its Neck, containing a black Liquor, like Ink, which it emits to trouble the Water, when pursued by other Fishes. The Bone recommended in Physick as a good Diuretick, is found about its Middle ; others make a Powder of it for cleaning the Teeth.

17. *Bezoar Orientale & Occidentale Offic.*

Oriental Bezoar is a Stone of different Colours, but most commonly brown or Olive-colour'd, disposed in different Strata. When thrown into the Fire, it gives a volatile vinous Smell, like all other Animal Substances. It comes from the Kingdom of *Boulan*, and from other Places of the *East-Indies* and *Persia*, mentioned by *Kæmpfer*. It is formed in the Stomach of a kind of wild Goat, called *Cervi-Capra*, or *Capri-Cerva*. In the Heart of this Stone, some heterogeneous Substance is always to be found, which makes the Nucleus or Basis of it ; and round this a slimy Matter gradually hardens in different Layers, as in the human Calculus. It is moderately cordial, containing a volatile Sulphur and Salt in a pretty large Quantity ; and there is no Danger in the Use of it, of heating the Patient too much. It is given from ten to twenty Grains in Fevers, &c. and likewise in Epilepsies of Children, after having emptied the Vessels.

Occidental

Occidental Bezoar is likewise found in the Stomach of an Animal named *Capricerva Occidentalis*, a kind of Goat of *Peru* and *Mexico*. It is commonly white within, and yellowish on the Outside; but is less esteemed than the former. Wee see often fossile Bezoars, which are brought from the *West-Indies*, in room of the true Animal kind, but which have no Medicinal Virtues. They are easily known, both by not being disposed in Strata, and by not emitting an urinous burnt Smell in the Fire.

18. *Lapis Bezoar factitius, sive Lapis de Goa.*  
Goa Stone.

This is a Composition of the five precious Fragments, Coral and Leaf Gold, mixed up with Gum Tragacanth. It is commonly of a blackish Colour, and is made by the Jesuites in *Goa*. It is much used by the *Europeans* who live in the *East-Indies*, in the same manner as *Bezoar*, and is particularly recommended as a Sudorifick in Rheumatisms.

19. *Ægagropila Offic. Pilæ Damarum.*  
German Bezoar.

This is a little Ball found in the Stomach of Does and Goats in *Germany*, which some have pretended to be form'd by the *Doronicum* or *Leopard's Bane*, on which these Animals feed; but it is now certain that it consists only of Hairs, which they swallow; and the like Balls are found in the Stomachs of Cows, Hogs, Boars, &c. and consequently are of no medicinal Virtue; tho' from the false Opinion concerning their Original, some have celebrated them in Loosenesses, Hæmorrhages, &c. because of the Plants from whence they conceived them to be formed. They have likewise been recommended in a Vertigo, because the Goats which produce them climb



climb very steep Rocks without being giddy. *Vid. Velschium de Ægagropilis.*

20. *Hippolithos.*

This Stone is found in the Bladder of Horses, and may be used as Bezoar, because it contains a volatile Salt, and provokes Sweat.

21. *Calculus Cystidis Felleæ.* Gall Stones.

These Stones burn quite away in the Fire, being only concreted Bile; and the Gall of Animals brought to a due Consistence by the common Methods, will answer all the Intentions in which they have been celebrated, and especially the *Pedra del Porco*, which is nothing more than the Gall Stone of an *East-India* Porcupine.

22. *Margaritæ & Uniones Offic.* Pearls.

These are a kind of Bezoar bred in Oysters, and accordingly they consist of several Strata, and are really stony Concretions. The best Oriental Pearls are found in the Island of *Ormuz* in the *Persian* Gulf. They are likewise gathered in the Gulf of *Mexico*, in the Province of *Costa Rica*, and in several other Places of *America*; but these Occidental Pearls are less esteemed than the former. Small Pearls, commonly called Seed Pearls, are likewise found on the Coasts of *Scotland*. Sometimes they are found from two to seven in one Oyster; which shews how unjustly they are termed *Uniones*, as if there were only one in each Shell. *Valentini*, on the Credit of one *Kregger*, pretends they are the Eggs of these Animals, but this deserves Confirmation. When thrown into the Fire, they give an urinous Smell in a small degree. They may sometimes be whitened by taking off the outer *Stratum*, when yellowish, but this diminishes their Size. Pearls are a very good Absorbent, being levigated  
on

## 380 *Of Fossil, Vegetable, and*

on the Porphyry like Crabs Eyes; but they have likewise other Qualities, since they yield a volatile Salt by the Retort, being on that account Cordial and Depuratory.

### 23. *Mater Perlarum Offic.* Mother of Pearl.

This is not the Shell in which the Pearl is found, as is commonly said, but a Shell of another kind, called *Concha Margaritifera*, tho' it produces no Pearls. It is found in the *Mediterranean*. This is Absorbent and Cordial, in the same Degree with Pearls; but then only the purest and most shining Parts of the Shells must be used, being first well le-  
vigated on the Porphyry; and these by the Retort yield a volatile Salt.

### 24. *Oculi sive Lapides Cancrorum Offic.* Crabs Eyes.

These are Stones found in the Stomach of Crabs, Crayfish, Lobsters, &c. and are found in great Plenty on the Coasts of the *Baltick*. They are not found in the Bodies of these Animals, except at certain times of the Year; for in the Months of *June*, *July*, and *August*, in which they cast their Shells, no Stones are to be found in them. The Stones are form'd in two Bags, one on each Side of the Stomach. These Animals cast their Shells about the Month of *July*; and what is surprizing, this Change reaches not only to the Shells by which they are covered, but also to the Membranes of their Stomach; for if after the outward crusty Shell is changed, we examine their Insides, we find the old Stomach consumed and digested by a new one; which being compleatly formed, a milky Juice fills the Bags above-mentioned, out of which the Stones, falsely called Crabs Eyes, are formed, which in the next Change serve to nourish the Animal. This Change of their internal Parts was first observ'd  
by

by *Van Helmont*, and afterwards by *Sachi*, *Wepfer*, and others; but the best Account we have of this whole Affair, is that of *M. de Reaumur*, in the *Memoirs of the Academy*, 1712, 1718.

Crabs Eyes are absorbent, and likewise contain a small Quantity of a volatile Principle. They are prepared by Levigation on the Porphyry; but in some Constitutions, tho' reduced to the most impalpable Powder, they cause an *Erysipelas* and other Disorders, especially to Women, of which *M. Geoffroy* has seen several Instances. They are likewise in a small Degree Diuretick.

25. *Chelæ Cancrorum Offic.* Crabs Claws.

These are used much in the same manner with Crabs Eyes; but they contain an Ammoniacal Salt, which the other has not. They are an Ingredient in the Countess of *Kent's Powder*.

26. *Lapis Manali.*

The Stone of the Sea Cow.

This is the *Os Petrosum* of that Animal, which some recommend to be worn about the Neck, as a Preservative against Hæmorrhages.

27. *Dentali seu Dentalium Offic.*

This is a small Shell or oblong Conical Tube of a white Colour, which incloses a Sea Worm. It is found on the Coasts of *England*, and is Alkaline, Absorbent, Cordial and Astringent. There is another kind of *Dentali* found on the Coast of *Normandy*, which is no more than a small Heap of Sand, in which a Worm hides it self.

28. *Eutali, Eutalium Offic.*

These are Tubes or Shells almost like the former, but longer and cylindrical, and serve likewise to contain a kind of Sea Worm, having the same Virtues with the *Dentali*.

29. *Tubuli Marini, in quibus Vermiculi delitescunt.*

These are the pretended Skins of Serpents brought from *Malta*, but are in reality nothing but Shells or Tubes in which Worms are lodged.

30. *Umbilicus Marinus Belliricus, seu Belliculus Marinus.*

This is the Cone of a Shell, in some measure representing a Navel, and which the Animal opens and shuts at pleasure. It has the same Virtues with Crabs Eyes, and is besides hung by the good Women about their Childrens Necks, to preserve them from the Cholick.

31. *Unguis Odoratus, seu Blatta Byzantina Offic. Onix Dioscorid.*

This is not a Nail, but a Substance like Horn, with which a Fish shuts its Shell at certain Times. This Fish is described by *Romphius*, under the Name of *Purpura Murex*. It is named *Unguis Odoratus*, from its Figure and agreeable Smell; which Smell is not however natural to the Shell, but acquired by its being imported with the *Schœnanthe*. The Antients reckon'd it a powerful Cordial, and such it certainly is in some degree. When burnt, the Smell of it is good in the Vapours.

32. *Lapis Colubrinus, Pedra de Cobra de Cabelos Lusitanor.*

This is an oval black Stone with greyish Specks, and which being porous, sticks to the Tongue. But probably it is a Composition, the Basis of which is calcined Bones; and notwithstanding all that Authors have said about it, it is to be reckon'd no more than a simple Absorbent.

33. *Folliculi Bombycini.* The Cod or Bags of Silkworms.

Both the white and red Bags may be used indifferently, as being equally stored with volatile Salt. They are the Basis of *Goddard's Drops*, and Ingredients in several other Cordial Compositions, such as the *Confectio de Hyacintho*, when made in the best Manner.

34. *Folliculi Araneorum.*  
The Cod or Bags of Spiders.

M. *Bon*, President and Member of the Royal Academy of *Montpelier*, caused Gloves and Stockings to be made of these Cods, and likewise a sort of Drops, in imitation of those of *Goddard*, because they contain a great Quantity of Volatile Salt.

35. *Ichthyocolla Offic.* Isinglass.

This is drawn from the Intrails, Fins and Tail of a large Fish, called according to some by the same Name, and *Huso* according to others, found in the *Volga*, *Danube*, and some other great Rivers. It is an Ingredient in some Agglutinant Plasters, and is likewise reckon'd emollient and resolvent. Wine-Merchants use it in fining their Wines; for which purpose they beat up a sufficient Quantity of it with Wine, and afterwards throw this Mixture into the Cask, where it first forms a Skin or fine Network on the Surface, and then precipitates to the Bottom, carrying along with it all the grosser Parts of the Liquor; so that the Filtre may in this Case be said to pass through the Liquor, and not the Liquor through the Filtre. This is a very harmless way of purifying Wine, which is more than can be said of the other Methods.

36. *Gluten Taminum.* Glue.

Glue is made of the Shreds of Ox Skins, cut in small pieces, and boil'd to a Gelly, being sometimes mixed with the Cartilages and Tendons of the same Animals, and afterwards evaporated and dried. Beef may be managed in the same manner, to make Portable Soupe, requiring nothing afterwards but to be diluted with a due Quantity of boiling Water. This Soupe may be sent by the Post, and is very convenient at Sea; and in the time of the Plague at *Marseilles* many Persons lived upon it.

37. *Nidi Alcyonum seu Hirundinum.*

Nests of *Indian Swallows*.

They are found on the Rocks on the Coasts of *China* and *Japan*. They are of a Substance much like *Gum Tragacanth*, and when mixed in Broth or warm Milk, they swell and make a thick Soupe, much esteemed in these Countries, as a Restorative, especially in Diseases of the Lungs. They are also reckoned delicious Food for Persons in perfect Health.

38. *Cera flava & alba Offic.* Wax.

This is a resinous Dust which Bees pluck from Flowers. The white Wax is only the yellow well wash'd and exposed to the Air. But there is besides a natural kind of white Wax, made by a kind of Flies in *China*, which is very rare. There is another kind of Flies in *Guadaloupe*, which yield a black Wax, but they have not hitherto found the Secret of whitening it. Yellow Wax is most proper for Medical Uses, being a very good Resolvent, and proper in Diseases of the Skin. It likewise serves to give Consistence to Plaisters and Cerates.

Honey

Honey has excellent Qualities, being a natural Soap, very advantageous in Diseases of the Thorax.

39. *Gummi Lacca Offic.*

This is a kind of Gum Resin gathered by Ants in the *East-Indies* from Flowers, which they afterwards carry to the Branches of Trees to make their Nests, in which they probably lay their Eggs; because these Nests are disposed in Cells, in some of which a small Grain is found, which is red when bruised, being the Worm out of which these wing'd Ants are afterwards form'd; and it is on account of these Grains that we rank this Gum Resin among the Animal Substances. It is brought to us in Grains formed by straining it through a Linnen Cloth, after having dissolved it in warm Water; in Cakes made by melting the Grains into one Mass; and in Sticks, which is the Gum stuck round the Branches of Trees by the Ants. *Lacca* is the Basis of Sealing Wax, which is made in the *East-Indies*, by mixing it with Vermillion; but in *Europe*, by mixing Cinnabar, Colophony and Benjamin, in melted *Lacca*. *Lacca* is brought chiefly from the *Molucca* Islands, and also from *Madagascar*.

40. *Mumia vera Offic.* Mummy.

There are two kinds of Mummy; the first of which has its Original from human Carcasses dried by the Sun and Sands in the Deserts of *Africa*, such as those of *Zara*, *Lybia*, &c. where the Winds sometimes bury whole Caravans in the Sands. These Bodies by drying become of the Consistence of Horn, and very light. These are called white Mummies, but are not used in Physick. The second sort are the Embalmed Bodies found in *Egypt*, which are very rare, and seldom to be met with among the Druggists; in place of which they sell

## 386 *Of Fossil, Vegetable, and*

us Parts of Bodies embalmed with Myrrh, Aloes, Incense, &c. by the Jews. This Mummy is reckon'd a good Resolvent of coagulated Blood after Falls or Blows, and a good Antiseptick; acting not only by its Bituminous and Balsamick Parts, but also by the volatile Salts of the Carcass from which it is made. By dissolving it in Spirit of Wine, we easily obtain a Tincture which contains its Balsamick Qualities.

### 41. *Ungula Alcis.* Elks Hoof.

This contains a volatile Salt, like that of the other Parts of Animals, and in this respect may be useful in the Epilepsy, but not on account of the Fable related by Authors, that the Elk is a *Russian* Animal, very subject to Convulsions, and cures it self by scratching its Ear with its left Foot; the Hoof of which Foot was upon that account preferred to the right, and recommended to be taken inwardly in Powder, or worn about the Neck in Epilepsies.

### 42. *Sperma Ceti Offic.*

The Nature and Origin of this Substance has been long disputed; but we are now satisfied that it is a fatty Animal Substance, found in the Brain and circumjacent Parts, especially in the Diploe of the Cranium, of a Whale named *Orca* or *Ryaris*. It likewise sometimes swims on the Surface of the Sea, near the Shores on which these Whales have struck, and where their Carcasses have putrified. According to the *English* Accounts, *Sperma Ceti* is prepared by boiling the Brains of the Whales in a strong Lixivium, till all the Humidity being evaporated, a white solid Matter, like Soap, remains. This being cooled, they take off the Oil which settles at Top, and having melted the solid Mass a second time, and suffer'd it to cool, they divide it  
with



with Knives. into *Laminæ*, in which Form it is imported. It is likewise made at *St. John de Luz*, at *Amsterdam*, and elsewhere. *Sperma Ceti* is an excellent Emollient and Pectoral, especially when melted over the Fire with Oil of sweet Almonds. The other Ways of using it, both inwardly and outwardly, are too commonly known to need being mentioned.

F I N I S.





THE  
INDEX.

A

- A** Cacia vera, 334.  
Acajou Nux, 321.  
Acajouanum lignum, 309.  
Acid Salt, its Nature, 12. Acid Salts, of three kinds, 23.  
Acori radix, 284.  
Ægagropila, 378.  
Æs ustum, 270.  
Æthiops Mineral, 227.  
Agallochum, 309.  
Agaricus, 367.  
Agate, 78.  
Agrimony, its Chemical Analysis, 35.  
Alcanna, 316.  
Alkali, whence derived, 13. Alkalies, why they dissolve Sulphurs, 17.  
Aloes, 335.  
Alum, the several Kinds of it, 114. The Ways of making it, 115. Its Nature, 117. The Chemical Analysis of it, *ibid.* Its Virtues, 145. The several Preparations of it, 120.  
Amber, 142. whence gathered, 143. which to be preferred, 144. its Virtues, 118. the several Preparations of it, 146.  
Ambergrease, 138. its Uses, 140.  
Amethyst, 84.  
Amomum racemosum, 322.  
Amylum, 344.  
Anacardium, 321.  
Anchusa Orientalis, 285.  
Animal Substances, the Principles to be obtained from them, 29.

Anisum

## The I N D E X.

- Anisum Sinense, 322.  
Antimony, the several Kinds of it described, 189. its Virtues, 191. the Preparations of it, 193. Glass of Antimony, 195. Regulus of Antimony, 196. Golden Sulphur of Antimony, *ibid.* Lixivium of Antimony, 201. the Martial Regulus of Antimony, *ibid.* Butter of Antimony, 202. Cinnabar of Antimony, *ibid.* the universal Antimonial Panacea, 203. Bezoar Mineral, *ibid.* Diaphoretick Antimony, 204. Tinctures of Antimony, *ibid.* of the Effects produced by Antimonial Preparations, 206. Antimony made use of by several Artificers, 209.  
Aqua Fortis, 104.  
Aqua Regia, 105.  
Aracus Aromaticus, 323.  
Arcanum Duplicatum, 104.  
Areca, 323.  
Armenian Bole, 61.  
Arfenick, how prepared, 166. its Nature, 168.  
Arfenical Juices, 159.  
Arundo Saccharifera, 310.  
Afa Fætida, 353. Dulcis, 354.  
Aspalathum, 310.  
Auricula Judæ, 367.

### B

- Baccæ Bermudenses, 323.  
Balsamum Peruvianum, 349.  
Balsamum Copaiba, 348.  
Balsamum Ipecuebæ, 352.  
Balsamum Judaicum, 346.  
Balsam of Sulphur, 155.  
Balsamum Tolutanum, 349.  
Barks used in Physick, 300.  
Bathing, warm, when useful or prejudicial, 45. Cold Bathing, a powerful Remedy in some Cases, *ibid.* to whom disserviceable, 46. artificial Warm Baths, 52.  
Bdellium, 354.  
Becuiba Nux, 324.  
Bedeguar, 368.  
Behen, 286.  
Ben five Glans Unguentaria, 323.  
Benzoinum, 354.  
Bezoar Mineral, 203.  
Bezoar Orientale & Occidentale, 377.  
Bismuth, 209. where found, 210. the Preparations of it, *ibid.*

## The INDEX.

- Bistort Roots, the Analysis of them, 36.  
Bitumens, how produc'd, 17.  
Bituminous Juices, 133.  
Bitumen Judaicum, 137.  
Blatta Byzantina, 382.  
Bodies, their Principles in general, 5. in particular, 9. their  
Diversity arises from the different Combination of their  
Principles, 20.  
Bolus, its Nature and Use, 61.  
Borax, 128. different from the Chryfocolla of the Antients,  
130. its Use, 131.  
Brasilianum Lignum, 310.  
Brass, how made, 181.  
Burdock Leaves, their Chemical Analysis, 34.  
Butua, 286.

### C

- Cacao, 324.  
Cadmia, 179. Cadmia fornacea, 182.  
Calamus Aromaticus verus, 310.  
Calculus Cistidis felleæ, 379.  
Campechianum lignum, 310.  
Camphora, 355.  
Cantharides, 371.  
Caranna, 356.  
Cardamomum, 325.  
Cardui Hæmorrhoidalis capitula, 369.  
Carpobalsamum, 325.  
Carthamus, 316.  
Caryophylli Aromatici, 326.  
Cascarilla, 307.  
Cassida, 345.  
Cassia Caryophyllata, 300.  
Cassia Fistula, 326.  
Cassia Lignea, 300.  
Cassine vera Floridanorum, 317.  
Castoreum, 373.  
Cedrinum lignum, 310.  
Cera flava & alba, 384.  
Cerufs, 246.  
Chalcitis, 187.  
Chalk, 63.  
Chelæ Cancrorum, 381.  
Chemical Mixtures, their Effects, 30. *seq.*  
China Officin. 289.  
Chryfocolla, 128.

# The I N D E X.

- Chrysolithos, 82.  
Cinnamomum, 301.  
Cinnabar of Antimony, 202. native, 214. the several Kinds of it, 215. its Uses, *ibid.* factitious Cinnabar, 216. how made, 227.  
Citrinum lignum, 311.  
Clay, its Nature, 55. the Clays used in Physick, 56.  
Cobalt, 166.  
Coccinella, 370.  
Cocci Orientales, 327.  
Coccus Tinctorius, 370.  
Coffee, 324.  
Colcothar, 112.  
Colocynthis, 327.  
Colubrinum lignum, 311.  
Contrayerva, 287.  
Copal, 357.  
Copper, described, 266. its Nature, 267. its bad Qualities, 268. Remedies against them, 269. Recrements of Copper, *ibid.* Preparations of Copper, 271. Ens Veneris, *ibid.* Tinctura Cærulea, *ibid.*  
Cornu Cervi, 375.  
Cornu Rhinocerotis, 376.  
Cortex Ligni Guaiaci, 302.  
Cortex Peruvianus, 303. Spurius, 306.  
Cortex Tamarisci, 308.  
Cortex Winteranus, 302.  
Costus, 288.  
Costus Caryophyllatus, 308.  
Crocus, 317.  
Crocus Metallorum, 193.  
Crystal, 77.  
Cubebæ, 328.  
Curcuma, 288.  
Cyperus, 289.

## D

- Dens Apri, 375.  
Dentali, seu Dentalium, 381.  
Diamond, 83.  
Dictamnus Creticus, 316.

## E

- Earth, a Principle in Bodies, 8. elementary Earth the same with the *Caput Mortuum* of the Chemists, 11. its Nature, *ibid.*

# The INDEX.

- Earths, are either Sands, or Clays, 55.  
Earth-worms, their Chemical Analysis, 37.  
Ebenus, 311.  
Ebur, 375.  
Elemi, 357.  
Emerald, 80.  
Emeticks, the Cautions requisite in giving them, 206 *seq.*  
Emetick Tartar, 194.  
Euphorbium, 357.  
Eutalium, 381.

## F

- Fat, how formed, 19.  
Fire, the active Principle in Bodies, 8, 9.  
Flos *Æris* Officin. 270.  
Foetidum Lignum, 312.  
Folium Indum, 318.  
Folliculi Araneorum, 383.  
Folliculi Bombycini, *ibid.*  
Folliculi Sennæ, 328.  
Fossil Coal, 148.  
Fungus Sambucinus, 367.

## G

- Galanga, 290.  
Galbanum, 358.  
Galla Orientalis, 369.  
German Seal'd Earths, 59.  
Gluten, 384.  
Glycyrrhizæ Succus, 335.  
Gold, where found, 278. how separated from other Metals, 279. its Nature and Virtues, 280. first brought into Medicinal Use by the Arabians, *ibid.* Aurum Potabile, 281. Aurum fulminans, 282.  
Grana Kermes, 370.  
Guaiacum Lignum, 312.  
Gums, how formed, 24.  
Gummi Ammoniacum, 358.  
Gummi Anime, 357.  
Gummi Arabicum, 358.  
Gummi Guaiaci, 359.  
Gummi Hederæ, *ibid.*  
Gummi Lacca, 385.  
Gummi Nostras, 359.  
Gutta Gambe, 359.

# The I N D E X.

## H

- Health, the Means of preserving it, 1.  
Heliotropium, 343.  
*Helmont, Van*, his Experiment on the Willow, 8.  
Hermodactylus, 290.  
Hernia's, how cured, 91.  
Hippolithos, 379.  
*Homberg, M.* his sedative Salt, 113.  
Honey, wherein it consists, 24.  
Hyacinth, 79.  
Hypocistis, 335.

## I

- Jalappa, 290.  
Ichthyocola, 383.  
Jet, 147.  
Indigo, 343.  
Inflammable Substances in Animals and Vegetables, wherein they consist, 18.  
Ipecacuanha, 291.  
Iron, its Description, 253. whence procured, *ibid.* its Nature, 254. its Medicinal Virtues not unknown to the Antients, 256. preferable to Steel, 257. Forms of giving it, *ibid.* Preparations of Iron, 258. Crocus Martis aperiens, *ibid.* Salt of Iron, 259. Tinctura Martis aperiens, 260. Tartarum Chalybeatum solubile, *ibid.* Flowers of Iron, *ibid.* Crocus Martis astringens, 261. Tinctura Antiphthifica, *ibid.* of the Virtues of Iron, 262. all the good and bad Effects of Iron are owing to its Stypticity, 265.  
Iris Florentinus, 293.  
Juices, which naturally flow from Vegetables, of three kinds, 346.  
Juncus odoratus, 318.

## K

- Kermes Grana, 370.  
Kermes Mineral, 198.

## L

- Labdanum, 360.  
Lapis *Ætites*, 68.  
    Armenius, 76.  
    Belemnites, 70.  
    Bezoar factitious, 378.

## The INDEX.

Lapis Bezoardicus Fossilis, 69.

Cadmia, 179.

Calaminaris, 180.

Ceratites, 73.

Colubrinus, 382.

Glossopetra, 72.

Hæmatites, 171.

Heraclius, 176.

Judaicus, 71.

Lazuli, 74.

Manali, 381.

Petracorius, 179.

Prunellæ, 102.

Sardus, 78.

Lavacrum Minerale Solis, 105.

Lead, described, 239. where found, and how extracted from the Ore, 240. its Nature, 241. Preparations of Lead, 243. Minium, how formed, *ibid.* Litharge, 244. Burn'd Lead, 245. Cerufs, 246. Acetum Saturni, *ibid.* Salt or Sugar of Lead, 247. Balsam of Lead, *ibid.* Burning Spirit and Oil of Lead, 248. *Poterius's* Mineral Mummy of Lead, *ibid.*

Lemnian Earth, 56. its Virtues and Chemical Analysis, 57. the Inconveniencies arising from too long Use of it, 58.

Lignum Literatum, 312.

Lilium Paracelsi, 203.

Lime, how made, 65. its Uses in Physick, 66.

Liquid Amber, 349.

Litharge, 244.

Liver of Antimony, 193.

Loadstone, 176.

Lycopodii Pulvis, 368.

## M

Magnesia, 178.

Mallow, the Analysis of it, 36.

Malta-Earth, 59.

Mandibulæ Lucii Piscis, 376.

Manna, 360.

Margaritæ, 379.

Marle, the Kinds of it used in Physick, 60.

Mastiche, 361.

Mater Perlarum, 380.

Mechoacanna nigra, 290. Official. 293.

Medicines, what is meant by the Name, 1. are simple or compound, 2. their Division, *ibid.* 3. their Virtues how discover'd,



## The INDEX.

- discover'd, 26. *seq.* Rules concerning the Manner of discovering them, 38.
- Melanteria, 188.
- Mercurius Vitæ, 102.
- Metals, are bituminous Substances, which have undergone a long Digestion, 18. described, 239.
- Metallick Fossils, 171, 189.
- Mineral Waters, are cold or hot, 47. their Virtues on what depending, 48. the saponaceous Spring of *Plombiere*, *ibid.* of Waters impregnated with Salts, 49. artificial saline Waters, of the same Virtues with the natural ones, 51. of sulphureous Waters, 52. of Waters impregnated with Metallick Particles, 53.
- Minium, 243.
- Misy, 187.
- Mixed Bodies, their Effects, when thrown into the Bodies of Men and Animals, 33.
- Moschus Officinal. 373.
- Mumia vera, 385.
- Myrobalani, 328.
- Myrrha Troglodytica, 361.

## N

- Naphtha, 133.
- Nardus, 294.
- Nephriticum Lignum, 312.
- Nidi Halcyonum, 384.
- Nifi, 294.
- Nitre, not the *Natrum* of the Antients, 94. whence obtained, 95. how made, 97. its Virtues, 98. the Preparations of it, 102.
- Nux Moschata, 329.
- Nux Vomica, 329. legitima, 330.

## O

- Oculi Cancrorum, 380.
- Oil, its Nature, 16.
- Oleum Cacao, 352.
- Oleum Palmeum, 353.
- Olibanum, 362.
- Onyx, 78.
- Opal, 83.
- Opium, 336. the Effects of it, 337. Rules to be observed in taking it, 338.

# The INDEX.

- Opopalsamum, 346.
- Opoponax, 363.
- Orpiment, 160.
- Os e Corde Cervi, 377.
- Os Sepiæ, *ibid.*

## P

- Palimpissa, 352.
- Panacea duplicata, 104.
- Pareira Brava, 286.
- Peruvian Bark, 303. its Virtue discover'd by Chance, 41, 303. Rules to be observ'd in giving it, 306.
- Petroleum, 133. its Nature and Use, 134, 135.
- Philosopher's Stone, 282.
- Pissa, 352.
- Pissasphaltum, 135.
- Pisselæum, 352.
- Piper Indicum, 330. longum, 331. Jamaicense, *ibid.* Æthiopicum, *ibid.*
- Pix Burgundica, 352. nigra, *ibid.*
- Plants, Principles to be obtain'd from them, 28.
- Poco Sempie, 368.
- Pompholyx, 185.
- Priapus Balænxæ, 375.
- Prince's Metal, how made, 213.
- Pulvis fulminans, 105.
- Pyrethrum, 295.

## Q

- Quicksilver, its Description, 216. where found, *ibid.* how extracted from Glebes of Cinnabar, 217. its Nature, *ibid.* 218. may be reduced to a Calx, 219. by the Antients reckon'd a Poison, *ibid.* the ill Effects of an injudicious Use of it, 220. its Virtues, 221, 223. it ought to be purified, before inwardly used, 222. Preparations of Quicksilver, 224. Red Precipitate, 225. White Precipitate, *ibid.* Yellow Precipitate, *ibid.* Green Precipitate, 226. Black Precipitate, *ibid.* Æthiops Mineral, 227. Factitious Cinnabar, *ibid.* Corrosive Sublimate, 228. Calomel, *ibid.* Mercurial Panacea, 229. Forms of giving Mercurial Preparations, 230. the only Specifick in Venereal Distempers, 231. on what the salivating and anti-venereal Virtue of Quicksilver depends, 236. is employ'd in several Arts, 238.

Realgar,

# The I N D E X.

## R

- Realgar, 163. how corrected, 165.  
Refins, how formed, 24.  
Refina Pini alba, 351.  
Rhabarbarum, 296.  
Rhaponticum, 297.  
Rhodium Lignum, 313.  
Ricini Americani majoris grana, 331. minoris grana, *ibid.*  
Ricini vulgaris grana, 332.  
Ruby, 83.

## S

- Saccharum, 341.  
Sagapenum, 363.  
Sago, 345.  
Sal Ammoniac, 121. of two kinds, 122. how prepared, 123. its Virtues, 124. how purified, 125. the volatile Salt, urinous and acid Spirits of Sal Ammoniac, how obtained, *ibid.* when properly applied, 126. the Chemical Uses of Sal Ammoniac, 127.  
Sal ex duobus, 104.  
Sal Polychrestus, 103.  
Sal Volatile oleosum of *Sylvius*, 126.  
Saleb, 297.  
Salivation, how raised, 231 *seq.*  
Salt, has no just Title to be called a Principle in Bodies, 7. how formed, 9, 12. is of three kinds, 12. Acid Salt, wherein it consists, *ibid.* Acrid, or Alkaline Salt, its Nature, 13. *Sal falsus*, the third kind, compounded of Acid and Alkaline united together, 15. Salt, the most simple of all mix'd Bodies, 20. The Salts of Plants, differing from one another, 22. Of Alimentary Salt, 84. Sal Gem, 85. Sea Salt, 86. its Virtues, 88. the Decrepitation of Salt, 89. Spirit of Salt, *ibid.*  
Salt-Petre, whence obtained, 96. how distinguish'd from other Salts, 98. its Virtues, 99. the several Preparations of it, 102.  
Sandaracha, 363.  
Sanguis Draconis, 363.  
Sanguis Hirci Alpini, 374.  
San-Lucianum lignum, 313.  
San-Marthanum lignum, 314.  
Santalum, *ibid.*  
Sapphire, 80.  
Sarcocolla, 364.

# The I N D E X.

- Sardonyx, 78.  
Sarfaparilla, 297.  
Sassafras, 314. spurium, 315.  
Scammonium, 364.  
Scincus marinus, 372.  
Semen Santonicum, 332.  
Senna, 318.  
Serpentaria Virginiana, 297.  
Silver, described, 272. where found, 273. how separated from the Ore, *ibid.* its Nature, 275. Preparations of Silver, 276. Lunar Crystals, *ibid.* Lapis Infernalis, 277. Tinctures of Silver, *ibid.*  
Silverweed, the Analysis of its Roots, 36.  
Sima Ruba, 298.  
Smyris, 176.  
Sory, 187.  
Sperma Ceti, 386.  
Spirit, not properly a Principle in Bodies, 6.  
Spirit of Salt, 89. its Virtues, 90.  
Spirit of Sulphur, 157.  
Spirit of Vitriol, 111.  
Spodium, 185.  
Squamma Æris Offic. 271.  
Staphidis agricæ femina, 332.  
Steel, how made, 254. Steel-wine, 258. Preparations of Steel, *ibid.*  
Stones, the several Sorts of them, 65. the several precious Stones, that are used in Physick, 78. their Virtues, 81.  
Styrax Calamita, 365.  
Styrax liquidus, 350.  
Sulphur, does not deserve the Name of a Principle in Bodies, 6. how formed, 9, 16.  
Sulphur of the Shops, is native or factitious, 149. how distilled by M. *Homborg*, 151. three different Substances to be obtained from it, 152. artificial Sulphur, how made, 153. its Virtues, *ibid.* the Preparations of Sulphur, 155. *seq.*  
Sulphureous Substances, are fixed or volatile, 19.  
Sympathetick Powder, 114.

# The INDEX.

## T

- Tacamahaca, 365.  
Tamarindi, 333.  
Talc, 67.  
Tartarum, 342.  
Telli grana, 332.  
Terebinthina, 350.  
Terra Japonica, 344.  
Thea Sinensium, 319.  
Tin, where found, and how extracted, 249. its Nature, 250. a Liquor perpetually smoking may be drawn from it, 251. Preparations of it, *ibid.* Sal Jovis, *ibid.* Antihæcticum Poterii, 252. Aurum Mosaicum, *ibid.*  
Toad-flax, the Analysis of its Leaves, 37.  
Topaz, 82.  
Tragacanthum, 366.  
Tubera Cervina, 368.  
Tubuli Marini, in quibus Vermiculi delitefcunt, 382.  
Turbith Mineral, 225.  
Turpethum, 298.  
Tutty, 184.

## V

- Vegetable Substances, used in Physick, 284.  
Verdegrease, 270.  
Vesiculæ Moschatæ Orientales, 374.  
Violaceum lignum, 315.  
Vipera, 372.  
Vitriol, the several Sorts of it, 106. how made, *ibid. seq.* its Chemical Effects, 108. its Virtues, 109. the Preparation of Vitriol, 110. Gilla of Vitriol, *ibid.* Spirit of Vitriol, 111.  
Vitriolated Tartar, 112.  
Umbilicus Marinus Belliricus, 382.  
Unguis Odoratus, 382.  
Ungula Alcis, 387.

## W

- Water, strictly deserves the Name of a Principle, 8. its Nature, 10. wherefore fluid, 11. Simple or Mineral, 42. what Water the best, *ibid.* its Usefulness, 43. commended by some as a Remedy in Fevers, *ibid.* of Mineral Waters, 47.

*The* INDEX.

X

Xylo-Balsamum, 315.

Z

Zedoary, 298.

Zibethum, 374.

Zinch, 210. the Manner of collecting it, 211. its Nature, 213.

Zinziber, 299.

Zopiffa, 352.











