Hydrologia chymica: or, the chymical anatomy of the Scarbrough, and other spaws in York-shire. Wherein are interspersed, some animadversions upon Dr. Wittie's lately published treatise of the Scarbrough-spaw. Also, a short description of the spaws at Malton and Knarsbrough. And a discourse concerning the original of hot springs ... with the causes and cures of ... diseases ... Also, a vindication of chymical physick ... Lastly ... an appendix of the original of springs; with the author's ternary of medicines; and the epilogue ... of the essence of the Scarbrough-Spaw / [W. Simpson].

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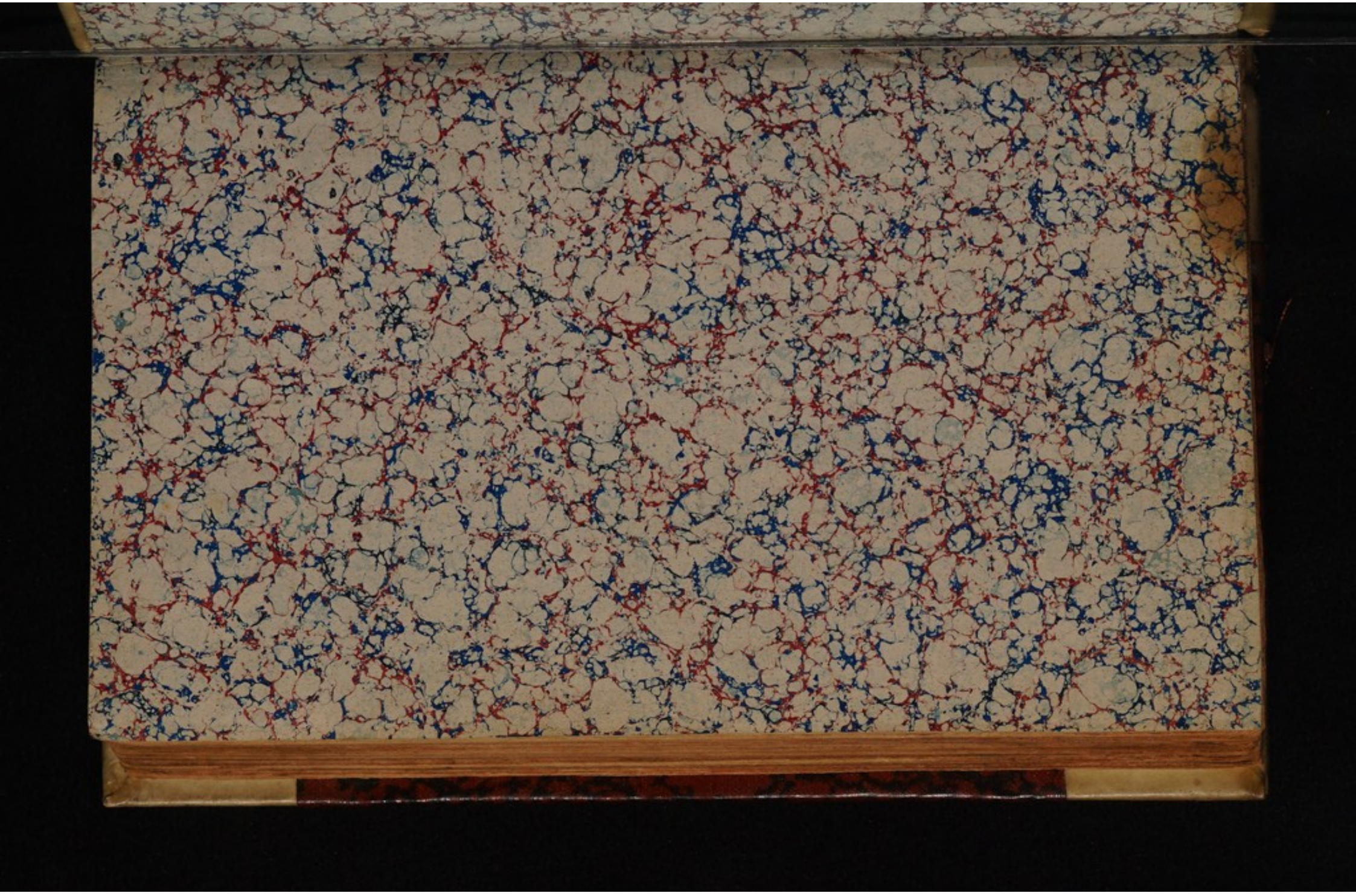
CHYMICA

LONDON
1669









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Hydrologia Chymica:

OR, THE

CHYMICAL ANATOMY

OF THE

SCARBROUGH,

And other

SPAWS in YORK-SHIRE.

Wherein are Interſperſed,

Some ANIMADVERSIONS upon Dr. WITTIE's lately Publiſhed Treatiſe of the *SCARBROUGH-SPAW.*

Alſo, a ſhort Deſcription of the *SPAWS* at *Malton* and *Knarsbrough.*

And a Diſcourſe concerning the Original of Hot-Springs and other Fountains: With the Cauſes and Cures of moſt of the ſtubborneſt DISEASES (either Chronical or Acute) incident to the Body of Man.

Alſo, a Vindication of CHYMICAL PHYSICK; where a probable way is propounded for the Improvement of Experimental Philoſophy: With a Digreſſion concerning an Univerſal Character. Likewiſe a ſhort Account of the Principles of all Concretes, whether Vegetable, Animal or Mineral.

Laſtly, is ſubjoyned an *Appendix* of the ORIGINAL of SPRINGS; with the Author's *Ternary* of Medicines: And the Epilogue to the whole, of the Eſſence of the *SCARBROUGH-SPAW.*

By *W. Simpſon, Philo-Chymico-Medicus.*

Ex Aqua Omnia.

London, Printed by *W. G.* for *Richard Chiſwel* at the *Two Angels* and *Crown* in *Little-Britain.* 1669.

15637

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To the Reader.

Candid, Friendly Reader,

HAving made to my self, some experimental essayes of the Mineral Ingredients of the *Spaws* of *Yorkshire*, amongst which that of *Scarborough* I found to be most eminent, being better Saturated, and more impregnated with Mineral *S*alts, than the rest; and meeting with Dr. *Wittie*'s Booke, being a description, cheifly of that *Spaw*, did not a little wonder to see a draught of such Mineral ingredients, most of which I had not observed to be therein. I say, not being satisfied herewith, it put me upon bringing his constituent Principles of the *Spaw*, to the Test; and to make a further scrutiny into the natural ingredients of that Spring, that upon more throughly made experi-

ments, I might the better be convinced, whether I was in an error or no; or whether indeed, those five *Mineral Ingredients*, that Dr. *Wittie* had ascribed to that *Spaw*, were the *Essential Principles* thereof: To which purpose I made some *Animadversions* upon his deposited *Principles*.

The first sheets whereof, I shewed to some ingenuous acquaintance of mine, (who longed to see some Experimental Trial of the *Minerals* of this *Spring*) with which they seemed to be taken, and gave me encouragements to go on, and to compleat (if I could) what I had begun. Those few first sheets I let lie *dormant* by me all the Winter; in the Spring I revived them, and set down some *Experiments* I had made the last Summer; also I made some fresh *Experiments* of the *Mineral Earth*, found upon the Bank near the *Spaw*, *&c.* and after I had finished the

the discourse of the *Mineral Ingredients* thereof, I saw a necessity of treating of Diseases; (*viz.*) which were curable by the *Spaw*, which not: and what observations I have made therein, whether they be consonant or not to truth, and the late discoveries made, by the *Experimental Practice* of *Physick*, is left to thee (Judicious Reader) to determine. I confess, I have not been so large in my discourse of Diseases as I might have been, or as a matter of that nature did require, not intending to swell this peice into a large volume; nor indeed was I willing (at present) to put down all my *Observations* thereon, reserving many of them to another seasonable opportunity, as occasion shall offer and these find acceptance. I have, I confess, in this *Treatise* made some large digressions, and have not wound my self back again by so uniform

a clew, as I could have wish'd: And indeed upon a review I espie some discernable flaws, and chinks in the junctures thereof; which are now too late to amend, nor could it be perform'd, unless it were by taking some parts thereof in peices, and cementing them afresh, which now cannot be done: yet they are such as a running eye will not easily discover. As to that digression, of the improvement of Philosophy by a Universal Character, it was (I confess) done before I had seen any thing of Dr. *Wilkins*'s Book to the same purpose; who certainly hath design'd such a clear Methodical draught thereof, as that without doubt, he hath outdone all that ever we heard of, that went before him: Which if it take, and get footing in the world, will (without a peradventure) prove the most facil direct road, to the improvement of the

natu-

natural parts of man, in the true outward *Scientifical* knowledge of things, by this Universal Character. For by this invention, Children (and others) will be train'd up, not in the knowledg of letters, or words alone; but in the true *Characteristical* knowledge of things themselves, according to their most External distinguishable *Signatures*: which if it take, will save posterity a great deal of time, which we have with little fruit spent at the Schools.

As to the *Appendix* concerning the Original of Springs, when I sent my papers to the press, I had then no thoughts to have discours'd thereof at this impression; but finding that I had an opportunity given by the necessary delayes of the Press (taking more time to do it in, than I at first expected) I set upon it: but coming too late to be inserted in its right place, *viz.* immediately before the

discourse of Hot-Springs, the Press being gone beyond that part, was forc'd to bring it in as an *Appendix*

To which are annexed other little additions, which before were omitted, and therefore refer to the Page, and line of the book, where they should follow. As to our *Ternary* of Medicines, which answer the general Indications in Physick, for the cure of most Diseases; as also our *Epilogue*, of the Essence of *Scarborough Spaw*, I shall refer what I have said therein, to matter of Experiment it self. If any reflections have happen'd, they are more then I wish had been, but I hope, they will not be found immodest; for he that writes concerns of this nature, had need lay a good foundation of Experiments, so that being thereby backed (as I may say) or strengthned, he need not much fear the Counter-assaults of others. And in as much as

it

it is truth evinced by matter of Experiment, that I contend for, therein I find satisfaction, in what I have done; and truly I have meted no other measure than I would expect in case any Writings of mine should be found as equally naked and fenceless, and consequently as exposable to future Criticisms: For any other hath the liberty of disproving what I have wrote, and that by good reason too, so he do it fairly, by more demonstrable matter of *Experiment*. The same liberty hath Dr. *Wittie*, if he please but to grant himself it, in vindication of what he hath Wrote; yea, and in defence of his *Methodical Art* too. As to this *Chymical Practice* of *Physick*, of whose vindication I have succinctly wrote, many *Physicians* now at this time (and more and more daily) do make it their way of administrating help to the Sick; so that (doubtless) in a little time, it will gain much

much ground, upon the World, and will at length naturally worm out the *Galenical* Method. For an active plodding *Genius* is now at work, which is bringing all former received opinions to the Test, and examines them by matter of Fact, in *Experiments*; and what is found consonant to *Truth*, made forth by collateral *Observations*, is approved, the rest (as frivolous and uncertain) is rejected. And as to what I have propounded, in order to the raising a Structure of *Natural Philosophy*, by the Collection of *Experiments* of all sorts, *&c.* though it may seem to be but an *Utopian Product*, better discoursed of then performed; yet may it probably, and not unaptly, be looked upon as a direct, even Road, toward a real *Science* of *Experimental Physiology*: to the promoting and perfecting of which, the *Pyrotechnical Art* is of no small use,

by

by *Anatomizing* and taking in pieces the Bodies of *Concretes*; thereby not only viewing their primitive conſtituent *Principles*, but alſo the great variety of new *Products*, reſulting therefrom, by the mediation of *Fire* and *Ferments*: ſo that no ſmall inſight is got hereby, into the hidden *Secrets* of *Nature*, which is ſeen to diſplay her ſelf wonderfully, in the great variety of *Productions* in the *Mundane Syſtem*, amongſt which, the Medicinal *Concretes*, whether *Vegetable*, *Animal* or *Mineral*, are not of the leaſt concern. All which (by this noble Art of *Chymiſtry*) are laid open to view, their Inſides turn'd outwards, their *Feculencies* ſeparated, their *Heterogeneities* compoſed or removed, their *Virulencies* corrected, their *Crudities* maturated, and their Medicinal Virtues exalted and enobled; either into *ſpecifical* Medicines; or into ſuch as generally

nerally abſterſe the Primary *Digeſtions* and *Sanguineous Veſſels*; or laſtly, into *Chatholick Medicines* (ſuch I mean) whoſe virtues are of a larger extent, reaching not only to the *abſterſion* of the Veſſels, and removing the *Heterogeneities*, which ſet the Blood and other Juyces of the Body (in their ſeveral parts) into a ſpurious *Fermentation*: but alſo doth illuminate (if I may ſo ſay) the *Aura vitalis*, with a *balſamick Ray*, which puts a new Spring into the *Digeſtive Powers*, which have been enfeebled by the ſtrong aſſaults of a powerful *Diſeaſe*: For the *Ferments* I look upon as the Springy Powers, that contribute to the *Fabrick* of the *Sanguineous* and *Nervous Juyces*, with the Inhabitants thereof, the *Vital* and *Animal Spirits*. As to Chymical Authors, there are not many that I much value: Thoſe who give *Recipes Verbatim*, with large *Encomiums* thereon, are

moſt

most to be suspected, Such are *Amynsicht*, *Crollius*, *Beguinus*, *Lybavius*, *&c.* Some of which admire *Petit Preparations* like *Panacea's*, and give of them such large Descriptions, as if they were *Arcana's* in earnest; Others take *Processes* out of *Paracelsus*, who leaving (perhaps) the *Menstruum* undiscovered, wherewith the *Preparation* should be made, make their own conjectural additions of *Menstruums*, never thought on by the first Author of the *Invention*; the most Candid and Experienced of whom is *Hartman*, *Rhenanus* and *Quercetane*: But of all that write Chymical *Recipes*, the very best and most solid Writer, that I meet with, is (in my judgement) the ingenuous *ZVELFER*; witness his ANIMADVERSIONS upon the *Augustane* DISPENSATORY, and his *MANTISSA HERMETICA*, and his *APPENDIX*; though indeed they

they do not altogether so much respect a through enumeration of most *Chymical Experiments*, as a rational and judicious Correction of the *Pharmacopæan Preparations*. Not much inferior to him is the ingenuous *Le Febure* in his *Compendious Body of Chymistry*, who hath wrought pretty much; yet hath therein put down more than he hath wrought. The best of them, for a general Collection of *Recipes*, out of the *farraginous* mass of *Writers*, is *Schroder*: But in order to the more noble Chymical *Arcana*, *Essences*, Maturated *Magisteries*, and complete Medicinal *Elixirs*, none that I meet with out-strips *Paracelsus* and the profound *Helmont*. As for *Paracelsus*, he was, no doubt, Master of great Chymical *Secrets*, witness the Liquor *Alkahest*, or *Circulatum Majus*, his *Mercurius fixus Diaphoreticus*, otherwise called *Aurum Horizontale*; also the *Arcanum Corallium*,

Tinctura

Tinctura Lilii, *Mercurius Vitæ*, and the fixt tinging Oyls of Metals. The last of which (I find) he hath much borrowed out of *Isaac Holland*, and probably had the knowledge of the rest, from some *Arabian* Philosophers themselves, or their Books; for amongst them was the *Liquor Alkahest* most known: which was the *Medium* by which, most of his Mineral and Metalline *Arcana's* were performed; as his Preparation of the *Ludus*, his *Tinctura Lilii*, his *Sulphur Veneris*, *&c.* yea, and of Vegetables too, witness his Preparation of the true *Elixir Proprietatis*, which was (as *Helmont* saith) made by the help of the *Alkahest*; and so Prepared, did cure the *Asthma*, *Epilepsie*, *Apoplexie*, *Palsie*, *Atrophy*, *Tabes*, *&c.* And as for *Helmont*, he goes so far out of the road of vulgar Chymists, as that he scarce gives any *Recipes*; what he gives is *Sparsim*, and wrapt up occasionally

casionally amongst his Writings, without any formal Processes; his best *Arcana's* are but darkly set down, his choice Preparations are only cursorily inserted, and the very *Basis* of his *Grand Solvent*, but barely hinted: so that a Physician (if he expect any help by him) ought to read him often, and to compare his Writings, and thereby he will find no small Light to guide him in his *Chymical* Researches. And though *Helmont* be accus'd, for defacing the *Galenical Structure* of *Physick*; and not setting up a better in its place, by giving (as it were) a *Chymical Dispensatory*: yet he is not much to be blam'd herein, if we consider, first, That he not only pulls down the *Galenical Theory*, but rears up a better, whereby Diseases may the better be known, from their Essential Causes, and by their natural *Symptoms* and *Products*; but also gives considerable hints of more

more noble *Preparations*, whereby Diſeaſes may probably be Cured, much more effectually than by the common *Methodical Practice* of *Phyſick*; for it would have been accounted no leſs then Imprudence in him, to have communicated to the World, the proceſs of (ſuppoſe) the *Alkaheſt*, in a few lines plainly, and that in a quarter of an hour, which had coſt him the Pains and Study of moſt part of Thirty Years: This would have made ingenuous Perſons idle, by putting that into their hands of a ſuddain, which ſhould have been the reſult of many Years Tryals. But he (like a Philoſopher) acteth more wiſely, obſcures his expreſſions, and vails his hints to ſuch noble *Arcana's*, thereby inciting Ingenuity putting an edge and vigour on the, otherwiſe ſatiated, and therefore dull deſire, to further attainments. Beſides, ſuch foreſtalling of Ingenuity, would

prevent the Invention of other intermediate *Menſtruums* and curious *Preparations*, that might be, and are occaſionally found out, by ſearch, and unwearied *Tryals*. Therefore our profound Author is not at all to be diſliked, that he hath not reduced his Medicinal *Arcana's* into a *Methodical Diſpenſatory* It's enough that he hath given us ſuch fair hints, which may be ſufficient ſpurs to our Ingenuity, to ſet us to work; that when we find out any thing of real worth, by our own induſtry, we ſhall be able to put a value thereon.

But to conclude, No flattering *Encomiaſticks* ſhall uſher in this work, nor *pedantick Rapſodiſts* attend theſe lines; nor need we *Caſta Napæarum*, to adorn our *Water-Nymphs*; nor let the Reader expect our contemplation upon our *Water-Works*; nor yet any *Chronogram* or *Anagram* to ſound abroad our fame; nor ſhall we court

great

great Patronages to cast a favourable aspect upon it : *Prævalet ipsa veritas, imo in æternum prævalebit.* For if the substance of the Discourse, and what the Piece it self offers, give not matter of entertainimẽt for the Reader, whose *Genius* bends that way, without such previous antick *Stage-Playes* : Or if it sound not Harmoniously in the Readers Ear, without such pratling School-Boy-*Preludes*, let it be thrown by, and for ever buried in Oblivion.

If I have writ any thing in this following *Tractate* (Judicious Reader) worth thy while, it is well : If thou have but as much pleasure in reading, as I had in writing, it is enough : If it find any encouragement abroad, it may probably brood again. Peruse and censure not, till thou hast run it through; and then do as thou seest cause.

Farewel,

Thine

W. S.

HYDROLOGIA-CHYMICA:

OR

The ANATOMY OF *SCARBROUGH SPAW.*

BEING

Some Animadversions upon Dr. WITTIE's Discourse of *SCARBROUGH SPAW.*

Pars Prima.

SECT. I.

HAving lately seen a Tractate, Intituled, *Scarbrough Spaw*, or the Description of the Natures and Virtues of the *Scarbrough Spaw*, Written by Dr. *Wittie*, being the second Edition by the same Author; who therein undertakes to Discourse of the Nature of that, and other Mineral Waters; to omit all prolixity, we will examine his deposited Principles of that Mineral Spring.

2. He tells us of five Ingredients of which this water partakes, and hath its Virtues from, which are the Constitutive principles of this Spring as he supposeth, and those are, Vitriol, Iron, Allom, Nitre, and Salt; with these he currently passeth along through his book, where he hath occasion to elucidate the Virtues of the Well, and make all the five *Volens nolens*, contribute to this Spring.

3. First, as for Vitriol, the Doctor might have distinguished whether he understood it to be *Vitrioelum martis*, or *veneris*, *viz.* the Vitriol of Iron or of Copper; for if it be of Iron, then is one of the principles, *viz.* Iron Superfluous, because the Iron would be the Metalline part of the Vitriol, in as much as every Vitriol is made of an Essurine Salt, dissolv'd in the Subterraneal veins of a Spring, which passing along the Minera of a Metal, doth *lambere venam*, licks upon that Vein of Metal, whether Iron or Copper, which it partly dissolves into it self, and carries it (as I may say) in its belly to the visible appearance of a Spring; which evaporated, gives a Vitriol, either of Iron or Copper, according as the Metal was that it passed through.

4. But if the Vitriol in *Scarbrough Spaw* be of Copper, then would the operation of the water be most what Emetick, or Vomitive, because the body of Copper being dissolv'd by an Essurine liquor (save that of the *primum ens Salium*, or liquor Alkahest of *Paracelsus* and *Helmont*) becomes desperately Emetick, and can but with very great difficulty, by the Chymical Art, be separated from that Essurine Salt, which hath coagulated it self thereon.

5. Again, If it was such a Vitriol, the other ingredient of Iron would by their mutual imbraces be ting'd, and almost transmuted into Copper, which I have found by a strong decoction of Iron in Vitriolin

olin Water; but to omit that, Let us suppose that there were a Vitriol of *Venus* dissolved in this Spring, and in so small a proportion, as being mixed in a great quantity of water, *viz.* of 3 or 4 Quarts, which is the quantity Patients frequently drink, as not to work frequently by Vomit, but most what by Stool; and that thePurgatives property was from the mixture of this Vitriol and other Ingredients, named by the Doctor.

6. This being granted in favour of his Ingredients or Mineral Principles; then let us see what will be the sequel, *viz.* whether or no, we may not lay by as useless, one of his Principles I am now discoursing of, *viz.* Iron, as an impertinent and insignificant Ingredient, I mean, as to the body of it.

7. For if the Essurine salt dissolved in the Water-Spring, meet with a Vein of Copper in the bowels of the Earth (which Essurine Salt is always required for the making a Vitriol, of what sort soever) fretting thereon dissolves it, and at the same time that acidity is coagulated upon the metalline dissolv'd parts [*Solutio & coagulatio fiunt unico instanti; una eademque res solvit ac à solvenți coagulatur*] and so both together become dissolv'd in the solitary Spring Water, in an almost indissolvable nexure; then, and not till then, is the action of that Essurine acidity terminated, so as it can act no more; and though it should, in the secret meanders of the Earth in its incircling perambulation, meet with a Vein of Iron, yet could it take nothing thence, because it had already lost its sting, I mean, its fretting Salt had satiated it self in *coro metallico*, in the embraces of an already espoused Metal.

8. *Mars* cannot be dissolv'd and appear in the form of a liquor, without a dissolvent; but this

dissolvent, *viz.* the Essurine acidity, being already satiated and turned into a Vitriol, to make up one of Dr. *Witties* precanious Principles, is not at leisure to make another of them, unless we grant such an indulgence to Nature, which she never was yet so kind to her self as to take, I mean to dissolve Mineral or Metalline Body, without an agent proper for that purpose.

9. So that indeed we find a flaw in the main Timber of his Building; an inconsistency of two of his chief Principles of this Mineral Water, Vitriol and Iron; that which makes the one, disannuls the other; so that certainly they are not of the Fraternity of this *Spaw*, however we come to find them thus thrust in by head and shoulders.

SECT. 2.

1. THe Doctor undertakes to discourse of Vitriol, and first he gives us an account of th several sorts, not such as he had seen, but such as h saith (*Sect.* 12.) late Writers name, *viz.* three sort *viz. Roman* Vitriol or Copperas; which two do not understand to be *Synonima's*, for *Roma* Vitriol is factitious, and adulterated with other mi tures, to make it shoot into curious figures, and t heighten the colour for pleasing the Eye, having great quantity of the sluggish body of Copper it, which is the main Ingredient, but very langu as to Spirits, wherewith natural Vitriol is more r plete, as by distillation of both we have found; a *Helmont* (mentioning a distillation of it) saith, *dedit p rum spiritus ignavi acidi: cessavity mox infra pauc horas omnis spiritus, &c.* as for Copperas it is a nat most proper to most sorts of natural Vitriols, *cup*

rosa

roſum i.e. cuprum eroſum: The ſecond ſort is *Cipryan* Vitriol, partaking of the nature of Braſs, Copper I ſuppoſe he means; for Braſs is an artificial Metal from Copper, by the addition of *lapis calaminaris*. The third ſort, he ſaith, is found in *Liguria* ſomewhat black, by which Iron may be turned into Braſs or Copper called *Colcotar*; where by the way take notice, that the Mineral Salt, being ſeparated from the Vitriol either of *Mars* or *Venus*, the remaining *crocus* or *calx* of both may be and is called by the name of *Colcotar*, the one being a red colour, *viz.* that of the Vitriol of Iron, the other a yellow colour like *Occar*, *viz.* that of the Vitriol of *Venus*, when both their Mineral Salts are ſeparated by an artificial menſtruum known to us, and that without any force or violence of fire; both of which ſorts I have by me.

2. To me all natural Vitriols ſeem to be reducible indeed to three, *viz.* to that of Iron, Copper, and *Vitriolum album*; that of Copper admits of great variety according to the degrees of plenty and purity of the Eſſurine Salt, which is (*Sulphuris emerionati partus innaturus*) an unripe birth of a Sulphur *in fieri*; being far removed (as *Helmont* ſaith) from a Metallick nature, and nearer to the *primum ens*, which indeed gives the medicinal virtue to Vitriols; I ſay, according as Mineral Vitriols or Metallick Solutions, are enriched more or leſs with this Eſſurine Salt, *propria ſponte illi innatum*, ſo are they reckoned to be better or worſe, as to Medicinal uſe. The beſt of which are accounted the *Cyprian*, *Hungarian*, or *Goſlarick*, or *Dane* Vitriol, being pretty well ſaturate, with plenty of this Eſſurine acidity.

4. Natural Vitriols I ſaid, becauſe many artificial Vitriols may be made; among which *Roman* Vitriol, and

viride eris may be numbred; which last being cristaliz'd by Solution, Filtration and Evaporation, may be brought to fine Cristals by the addition of Allom, *&c.* which may much resemble the *Roman* Vitriol.

SECT. 3.

FIrst, He is pleased to reckon up four ways, whereby Water may imbibe the nature and virtue of a Mineral or Metal.

1. By receiving its Vapour; his instance is, Water standing somewhile in a brass or iron Kettle, will taste of the brass or iron: to which I say, *viz.* That no metallick body, as such, doth or can give a Vapour to a simple elementary Water, as long as the Water is homogeneal in its parts. Minerals indeed, being Metals in *solutis principiis*, may, whilst such, give an dour (for so I had rather, and think more properly call it, than a Vapour) to Elementary Water; as for instance, Antimony and its Preparations, *viz.* either the *crocus metallorum* or reguline part, can give an emitick property to Water or Wine.

So natural Vitriols, which are but their Metals *in fieri*, or *in primo ente reserato*, can communicate the like emetick odour (though indeed there is some small Solution) in Water.

2. But take the complete perfect Metals of these Minerals, and we shall find them such compact bodies, as they have no Vapours, nay scarce any odour, to any simple Elementary Water; for instance, take Lead, which is the Metal of its Mineral Antimony, being the complete Metalline Body of that Mineral, boyl Water *ad ævum* in it, so as it be simple Water, and hath not undergone the least degree of putrefaction (for then begins an analytical resolution, set a work

work from a ſpurious acidity) and you ſhall find the Water to have contracted no ſaturnine impreſſion at all; but if the leaſt acidity either from the Air, or admixture of any acid liquor whatever, impregnate this Water, it ſhall make a Solution of the Metal, and turn it ſelf ſweet, more or leſs, according to the degree of the ſharpneſs of that acidity, till at laſt it come to a *Saccharum Saturni*, or Sugar of Lead.

After the ſame manner, the perfect Metals (perfect I mean *in ſpecie*) of Iron or Copper, being by frequent fuſions brought to their higheſt degree of Metallin compaction, do no longer give any ſolution of parts, odour, or vapour to ſimple Water, as they did whilſt *in principiis ſuis* viz. in their Minerals or Vitriols; the which daily experience evinceth. Do we not frequently boyl our Water for Broth, and moſt of our potable Liquors, in Iron, Copper or Braſs Veſſels, and that without the leaſt taſte of any of the Metals? which Metalline Veſſels as ſuch, may, though made of Silver or Gold, give no more vertue, ſapour or vapour, than the Metals or Glaſs would do to the ſame Liquors boyled therein; if any taſte happens, it is from ſome aduſt food burnt to the bottom, or ſides of the Veſſel, or the like ſluttiſh uncleanneſs.

3. In vain therefore are all our decoctions of Silver or Gold in Water, Milk, or Broth; the Cordial help thence expected as frivolous; for all compact Metalline bodies, muſt have proper and peculiar *Menſtruums* to unlock them, if any medicinal *Arcanum* be thence expected.

4. The Doctor tells us, That by this way of vapour, the *Scarbrough Spaw* partakes of Vitriol, and of Iron: That Vitriol may diſſolve in ſimple Water, we have before granted; but that it ſhould give a va-

pour to the Water, I understand not. To make a Body resolve it self into vapours, or minute parts of the like nature with the whole, is required, as I apprehend, either an intrinsick or extrinsick heat, or fire; which of these two, the Vitriol of *Spaw* water hath, the Doctor would have done well to have assign'd: If he intend an intrinsick, *Ubi iste focus, ille vulcanus ubi*; what Rule acts it by, that it should so constantly and strongly resolve the Vitriol into minute vaporous parts, which according to the nature of a vapour, should take wings, and quickly flie from this Fountain, and yet the Carkass of Vitriol to remain; for he saith nothing to the contrary, but that it is actually and substantially Vitriol still; if so, then the vapour is Vitriol, and the Vitriol a meer vapour; for the way and means by which he makes the Water partake of Vitriol, is by its vapour; and yet this vapour is Vitriol, being one of his assigned principles: What to make of this, or how to make it hang together, really I cannot tell.

5. If he understand an extrinsick heat, it must surely be from the Sun, which it must either resolve the Vitriol into a vapour, where the spring appears *sub dio*; or if its heat penetrate the Superficies of the Earth, he must assign how deep its Rayes pierceth; and that the Vitriol must of necessity be wrought upon at such a depth within ground, which he may do well for satisfaction, and strengthning his principles, (lest they run to ruine) assign its place, and manner of conversion into vapour, otherwise one of his props will of necessity fall under him.

6. As Vitriol (how true judge) so Iron, he saith, gives it self by a vapour to the Water; which that it doth not as a compact body, of that Metal we have already sufficiently asserted, inasmuch as Iron being a

solid

ſolid body, is not at all apt to vapour; and if it ſhould, whether or no that were yet Iron, which according to his Theſis muſt of neceſſity be, becauſe a conſtitutive principle; ſo that conſequently Iron, before it become an Ingredient of the *Spaw* muſt be reſolv'd into a vapour; but by what Agent, I wiſh the Doctor would ſignifie: And when it is a vapour, how comes it to reaſſume a body, which it muſt do to make it a real principle? and what is it that bears up the body of the Iron in the Water, that it falls not like other Iron, or a *Calx* to the bottom? What makes the difference betwixt it and a *Crocus*, which, if put into Spring water, ſinks to the bottom like Sand, and gains no ſolution? Theſe things he ought to have been clear in, before he impoſed that upon the World, as an Ingredient of this Mineral Water.

7. But to make up the matter, he tells us, That not only by Vapour, thoſe two bodies, Vitriol and Iron become principles; but alſo ſomething of the concrete juyces, and ſubſtance of them both, are given to the Water. Here the Doctor would almoſt make us believe, That he was inclinable to Philoſophiſe; for he is got as far as the concrete juyces, *viz.* the Metals *in principiis ſolutis*, or *in fieri*; which indeed whil'ſt ſuch are communicable to any current vein of Water, which glide along the Surface, or pervades the more ſoft body of the Mineral; at leaſtwiſe to a current of Water that hath but got the leaſt actuation from an Eſſurine Salt; but that he ſpoils all again, by bringing in Vitriol and Iron as two diſtinct things, which, as we ſhewed before, are but one in any ſubterraneal Mineral ſolution.

8. Had the Doctor ſpoken of the Minera of Iron, and ſo to have been in its concrete juyce, and omitted that of Vitriol; or had he ſpoke of Vitriol as the Minera

Minera of Iron, and so have understood of its concrete juyce, rejecting the body of Iron as impertinent, we should then have thought he had Philosophis'd in good earnest, as having thence some permanent principles, from whence he might have rais'd a noble Structure of Theory.

9. From the vapours of Vitriol (he saith) the Waters hath its inky smell, and acid taste; and here, methinks, his vapours flies at random, it's a thousand to one but they may in a little time quit their paces from this Well, and leave it to be possest by some other more natural Native: I cannot pass the Notion without a smile: But to be serious; First, What is it that gives an inky smell, or rather makes Ink? Is it not a solution of Vitriol precipitated, or made opacous by the addition of Galls, whose stipticity makes the diaphaneous texture of the Particles in the vitrioline solution desert their former posture, and muster in a confus'd opacous manner, filling those interstices with solid Particles, which before were kept transparent by the fluid parts of Water equally contempered, and not a vapour from the Vitriol, since there wants an heat in either Agent which might procure a vapour.

10. From the concrete juyces of Vitriol, Iron and Allom (saith the Doctor) I think it hath its azure sky colour, by which it seems, as if precarious Philosophy were in fashion with the Doctor; for in many places of his Book, you will find his Assertions and Solutions of *Phenomena's* (if I may so call them) to be meerly precarious [I think] and all for want of a good *apparatus* of Chymical, or other sorts of Experiments; the want of which doth ever and anon make him, *inter multa vacillare*, as not having *Ariadnes* clew of Experiments to guide and extricate himself

ſelf from Labyrinths, he is ever and anon falling foul upon thoſe two Rocks of Vitriol and Iron; and I wiſh he ſuffer not Shipwrack upon them, and in the concluſion loſe them too.

11. That it wants not the ſubſtance of Iron, is (he ſaith) apparent, in that after it hath been boyled, and put into Oken Veſſels for ſome while, there appears a reddiſh Sand inclining to yellow, which he ſaith is nothing elſe, but *Mater ferri*, or Rubrick.

12. If ſo, then what becomes of his other grand principle Vitriol? for every Vitriol hath a *Colcotar*, or *Terra Metallica* in it, which may be made either yellow, red, or purple, according to the ſeveral ways of ſeparating its connate vitrioline Salt, as I have before hinted, how will he diſtinguiſh between the *Colcotar* of his aſſigned Vitriol, and this *Mater ferri*, being according to his Aſſertion both diſtinct Ingredients? ſurely all the Art he hath, can ſcarce hinder, but they will coincide, and forfeit their marks of diſtinction; and ſo we may further Query, how came the Doctor to know that both Vitriol and Iron were Ingredients, ſeeing the badges of diſtinction claſh? but ſurely he took them in, pitying to ſeparate Kinſmen.

SECT. 4.

1. THe ſecond way whereby water may imbibe the nature and virtue of a Mineral or Metal, is (he ſaid) when ſome of their juyce is diſſolv'd in the Water, and that is while the Minerals are but young, *in fieri*, or *in ſolutis principiis*. Here indeed the Doctor hath ſpoke like a Philoſopher, and hath hit the nail exactly on the head; for this is the

the most probable way of all for Minerals or Metals, whilst *in succo primitivo, in ente primo solubili*, to communicate themselves and virtues to current streams of subterraneal Channels of Water, they are only then fit to propagate themselves for Medicinal help in Springs, that thence become and are truly called Mineral Waters.

2. Nay, if the Metals themselves should be forc'd to open their treasures for Medical *Arcana's* for the health of Man (with which they are doubtless nobly inriched) it must be by a reduction of them, by some powerful *Menstruums* into their *prima entia*, into their first liquid principles and juyces, whereby they would notably penetrate our very constitutions, and therewith, *quadam Symphonia colludere, abstergendo penetrando ac illum inando Archeum vitalem ex morbis tum acutis tum cronicis solvendo.* But *non nobis liceat esse tam differtos.*

3. The third way, he saith, is by corrosion of the substances of the Minerals mentioned by *Gallen*, and this is performed by the help of the concrete juyces, which corrode and extract Mineral Substances; here we find a *Galenical* way of solution of Minerals in Waters, and so indeed it seems; for as its out of their road to discourse of these Mineral solutions, so their notions must be confus'd because not grounded on true chymical experiments, which they are not at leisure to take notice of.

4. For you see the Doctor saith, that these concrete juyces, corrode and extract Mineral Substances, which tacitly involves no less than a contradiction; in as much as these concrete juyces are Minerals *in fieri*, or as he saith *in principiis solutis*, and yet he would have those Minerals to corrode and extract Minerals, the same body extract the same body. In every extraction

traction is required a *Menſtruum* or *Solvent*, and a body to be diſſolv'd; but here, according to his Theory, the *Solvent* and *Solvable* are both one, the Agent and the Patient the ſame; which how he could ſolve from claſhing, gladly would I learn.

5. But he goes on further to illuſtrate this his implicite contradiction, telling us, that this very way of extraction, is done by ſuch as have imbibed Vitriol at the firſt; for they do thereby (ſaith he) become hungry and corroſive, and ſo the fitter to take into them any other Mineral that lies in their way: thus he thinks he carrys it away clearly; but ſtay, you may remember we told you (*Sect.* 1. *No.* 7.) that an Eſſurine Salt diſſolv'd in a Water Spring, meeting with the Minera of any Metal that it can work upon, turns it into a Vitriol, and that either pertaking of Iron or Copper, according to the nature of the Minera it meets with, which done, its diſſolving property is terminated, and can ask no more; therefore the Water having, according to the Doctors ſuppoſition, imbibed Vitriol, is not at leiſure to make any further corroſions, or extractions, and ſo the Water would prove barren, as to any other Minerals.

6. To confirm all, as he thinks, he ſeconds his Theory with an Example, which deſerves an exemplar remark upon it; it's thus, An Example whereof, ſaith he, we ſee in *Aqua fortis*, which will corrode the ſubſtance of another Metal, and convert it into its own nature; and there methinks the Doctor was no great Chymiſt, if he had, he would ſurely have bluſht to have own'd that *Aqua fortis* having corroded a Metal, ſhould convert the Metal into its own nature.

7. For diſſolve either Copper or Iron, Silver or Gold, or any other Metal in an *Aqua fortis*, and you ſhall have all the Metal again (*idem numero & pondere*)

re) either by precipitation with a *Lixivium* or Oyl of *Tartar per deliquium*, or by evaporating the corrosive *Menstruum*, then edulcorating, and firing strongly in a crusible until it flux, and you shall have it return'd you the same Metal as at first.

8. So that the Metal corroded by the *Aqua fortis* was not (according to the Doctors fallacious assertion) converted into the nature of the *Aqua fortis*, having its parts only forcibly severed by the freting corrosive, reunitable, after the separation of the *Menstruum*.

9. But it seems the Doctor is willing to take principles upon trust, and therefore his conclusions and examples (which should indeed be the most demonstrative) prove invalid and unsatisfactory, to a judicious eye that takes no notice of vulgar principles further than consonant to truth.

10. He supposeth (as far as I can gather from his manner of writing) that because when a Metal is dissolv'd in an *Aqua fortis*, it seems to the eye to be all liquid, and as it were turn'd into the form of the very *Menstruum*, that therefore it is converted into the nature of the *Aqua fortis*; which it's true a vulgar judgment, instructed no otherwise than by natural Opticks, would apprehend as the Doctor doth, that it, *viz.* the Metal, is converted into the nature of the *Aqua fortis*; but let the same eye proceed, and view it when the *Menstruum* is separated, and it is reduced *statu quo prius* by fire, being forced thereby to depositi its corrosive mask, will confess it was but *deceptio visus* all this while, *viz.* that the Metal howsoever corroded by the *Aqua fortis*, was the same Metal still.

SECT. 5.

SECT. 5.

THe fourth and laſt way whereby water imbibes the nature and virtue of a Mineral or Metal, as he ſaith, by confuſion, changing the ſubſtance of ie Mineral into Water: This ſolution I muſt needs onfeſs is very confus'd, jumping ſo narrowly with ie precedent, as that it ſcarce miſſeth it an hairs redth, and therefore muſt needs bear the name of onfuſion, *fruſtra fit per plura quod fiat per pauciora*; or here he is of the ſame judgment as before; that Mineral may be converted (to uſe his own term) nto Water.

2. But it may be there is a myſtery wrapt in it, erhaps Dr. *Wittie* deeply Phyloſophiſeth, and we re not aware of it; for now that I recollect my lf, I remember *Paracelſus* and *Helmont* tells us of ieir grand Liquor *Alkaheſt*, which *Helmont* ſaith, *unĉta naturæ corpora penetrando ſubtilliandoque tranſmutat*; and further ſaith, that by it, (*viz. primum us ſalium*) *omne corpus* (*puta Saxum*) *lapidem, emmam, ſilicem, arenam, marcaſitam argillam, rram lapides coctos, vitrum, calcem, Sulphur, &c.* much more Minerals, ſuch as the Doctor means) *ranſmutari in ſalem actualem, æquiponderante ſuo orpori, unde factus eſt. Et quod iſte ſal aliquoties ohobatus in ſale circulato* Paracelſi, *ſuam omnino xitatem amittat tandem tranſmutetur in liquorem, ui etiam tandem in aquam inſipidam tranſit, & quod ſta aqua æquiponderet ſali ſuo, unde manavit*; by vhich Liquor tranſmuting all bodies, whether Stones, Metals or Minerals into a Salt, which cohobated vith *Paracelſus*, *Sal circulatum* (which by the by, is *primum ens Mercurii Liquidum cum primo*

ente

ente salis factum) is at length transmuted, or turn into an insipid Water.

3. Yet certainly if he had had such a *Menstruum* we should have heard of it ere this, but I see not t least foot-step yet in his Book that might give t least hint thereof; by which I gather he is not so we vers'd amongst Pyrotecnick Writers, as to insinua so secret and Phylosophical transmutation of Min rals into Water.

4. It is so far I fear from a Phylosophical, as th I doubt it may prove a Rustical notion, *viz.* to judg a Mineral or Metal transmutable into Water, b cause it so seems to be to a vulgar eye; the body the Celestial Sun to be no bigger than a Bushel, or Cart Wheel at the most, because appearing no big ger to the same common eye.

5. He would confirm this vulgar Doctrine (Vu gar I call it, because fited only for Rusticks, whol reason outstrip not their sense; but for a profes Physician, should me-thinks have the pole of hi reason more elevated) I say he would by the instan ces of Salt, Nitre and Allom confirm this his Doctrin (to be found no where but amongst vulgar errors instancing and saying, that Salt and Nitre will both so perfectly turn into Water (and Allom a so, al though it is not so fusible as the other) a little being put to them, as if they were nothing else.

6. By which I perceive the Doctor doth really be lieve that when Salt or Nitre is dissolv'd in Water that they are no longer Salt or Water, but really transmuted, or (as his own term is) converted into Water. O facile transmutation! what need we cast about, at such far distances to inquire after the possi bility and truth of transmutation of Metalline or Mineral substances, when the Doctor hath got them

so

so near at hand, can turn Mineral substances into Water; and every whit as easily reduce them into what they were before.

7. For he hath given a positive resolve of the Quere of transmutation, having absolutely determined, that these Salts do perfectly turn into Water, according to his own words, a little Water being put to them; which through resolution of the point, is totally exclusive of either his *magis* or *minus*, so that according to his opinion, Salt put into Broth becomes Broth, and Sugar dissolv'd in White-wine or Sack, becomes White-wine or Sack; whereas any of these Liquors evaporated or distill'd, he will find besides the whole body of the wateriſh part saved in the receiver, the body of Salt or Sugar left entire in the distilling vessel, the very same as before.

8. This peripatetick notion, I look upon no otherwise than that other analogous to it; where in the same *Sect.* he saith that Water would evaporate into Ayr, supposing a transmutability of Elements, as if Water when evaporating were not as really Water, though its parts undergo a large extension, as when the parts are united in a fluid body, in that texture of parts which the body of Water makes up; for save in a receiver, that which he imagines evaporates into Ayr, and you shall find, and so shall he too, that it is no way distinguishable from that it was before, Water still and not Ayr; so Salts, Sugars, or what else dissolvable in Water, are the same as at the first, though appearing under the form of Water.

9. For whatsoever is dissolv'd in Water, if upon the superfusion of any other Liquor of a different property, the parts of the first dissolvable begin to alter their position, they either precipitate speedily, or make the Liquor opacous and in time precipitates,

leaving the water either partly acuated with the additional Liquor, or else insipid, having all the saline parts coagulated one upon another, which being wash't or dulcified, gives you the very same dissolvable Concrete you first took in hand.

10. As for instance, Dissolve Vitriol in water, filter it so as it become a clear solution, upon which pour a *Lixivium* of salt of Tartar, and you shall find immediately the first dissolvable, *viz.* the vitrioline colcotar together with part of both the salts, *i. e.* the acid connate salt of the vitriol and lixivial salt precipitated; after precipitation, the supernatant Liquor contains in it a *neutrum*, or *tertium quid*, from both the foresaid salts, which it will make to appear by filtration and evaporation in the form of a *Tartarum vitriolatum*; the Sediment which was precipitated gives the *Terra vitrioli*, or metalline earth of vitriol; all which happen from a complication of heterogeneous parts in the first dissolvable, *viz.* vitriol, having in it a metalline earth (only to be made apparent, in the form of a metal by force of fire) and an essurine acid salt, which salt, meeting with a lixivial salt, lets go its first dissolvable, and coagulates it self upon the last.

11. But take a single salt, as suppose salt of Tartar, or the fixt salt of any vegetable, dissolve it in water; upon which strong solution, pour distilled Vinegar, Oyl of Vitriol, Spirit of Nitre, or Spirit of Salt, or any of them, or the like acid saline Liquors; and you shall find that after a strong ebullition and boyling which they cause by fretting one upon another, causing a very intense heat, that in the mutual and as it were hostile action of the salts one upon another, they precipitate each other to the bottom, and leave the supernatant Liquor in a manner insipid: But to return.

12. H

12. He concludes this laſt manner of ſolution in confuſion, by an example of the *Spaw* water; five quarts whereof being evaporated over the fire, there will be found in the bottom of the Veſſel, an ounce of an aſh-coloured blackiſh Sediment, a conſiderable part whereof is Nitre, Allom, and Salt, the reſt the ſubſtance of Iron and Vitriol: This is, according to his laſt Hypotheſis, confuſion in good earneſt; for here all the Ingredients are confuſed, and jumbled together: and by what Art the Doctor will learn to ſeparate them, that they may indeed appear to be ſo many as he ſpeaks of, I know not, I think it would puzzle all his method to extricate them.

13. One Argument more I ſhall produce againſt his two Ingredients in the body of Iron and Vitriol, and this ſhall be *inſtar omnium*, as being demonſtrative, and confirm'd by *Autopſia*; An ingenious Friend of mine, whom I ſhall not otherwiſe name, than the Chymical Apothecary of *York*, had a parcel of this aſh-coloured Powder, which remained in the bottom of the Veſſel after the diſtillation, or evaporation of the water of this *Spaw*, given him by Dr. WITTIE himſelf; This he put into a crucible, and gave a very ſtrong calcining fire (as ſtrong as for the calcining of Vitriol into Colcotar) and that for the ſpace of almoſt three hours, and all this while without the leaſt appearance of any red colour, or the leaſt footſtep of either Colcotar or Vitriol, or Crocus of Iron, it became fixt and permanent in the fire, and loſt little of its weight; it alſo became whiter in colour.

14. Now for certain, if there had been any thing of Vitriol or Iron in it, the diſcovery would have been made, and it forc't to confeſs its nature, by its yellow, red, or purple colour, with ſo great force of fire.

15. This fixt Powder having thus indured the higheſt degrees of heat, was diſſolved, filtred, and evaporated, which when dry, became a moſt pure white clean Salt; that part of it which would not diſſolve, and conſequently not paſs the filter, being dryed, was an almoſt inſipid aſh-coloured Powder, ſomewhat whiter than that which was firſt taken: Thus we diſcard theſe two Pillars of his *Spaw*, viz. Vitriol and Iron, as to the body of them.

SECT. 6.

1. AFter the Doctor hath declar'd theſe ſeveral wayes, whereby Waters are impregnated with Minerals; and we as cloſely followed him, to ſee whether it were ſo or no: He proceeds to tell us the nature and virtue of theſe Minerals; firſt of Vitriol, he ſaith, it is eminently hot, of a biting and aduſtive quality, and yet is alſo ſtiptick and aſtrictive, and therefore dries up ſuperfluous humidity, *&c.* according to the account that he receives from *Galen*, *Diaſcorides*, *Serapio*, *Paulus*, *Oribatius*, *Ælius*, *Actuarius*, *Fernelius* (enough to tire one in the naming) it is a very ſhort abreviary from ſo great a number of Authors, concerning that Mineral, which well underſtood, and the Remedies thereof neatly prepared, would make up, as *Paracelſus* ſaith, a fourth Column of Medicine.

2. But methinks the Doctor's long experience *in re medica* ſhould ere this have furniſhed him plenty of obſervations, of the worth and virtue of ſo noble a Mineral (unleſs *inopem ſe copia fecit*) he hath ſuch ſtore that he knows not where to begin; Theſe biting and aduſtive, ſtiptick, and aſtrictive qualities of Vitriol, muſt ſurely belong to it, either as it is an intire body,

body, of Vitriol, or to the conſtitutive parts and principles of it.

3. If theſe his aſſigned qualities, as he calls them, belong to Vitriol intirely as ſuch, then he muſt needs mean the common Vitriol; if he mean any other ſort, why did not he for diſtinction ſake name it? But what Phyſician uſeth to preſcribe common Vitriol unprepared for his Patient, being crudely given, a very nauſeating and violent emetick to the ſtomach, and not a proper Medicine for an honeſt man to uſe; and I believe the Doctor himſelf never gave it, unleſs it was to try an experiment; and if he had given it, I am apt to think it as difficult to have learn'd thence his forced qualities.

4. If theſe qualities are aſcribed to it, as conſidered reſolv'd into its conſtitutive parts, then he would have done well to have anatomiz'd it, and told us to which parts, ſuch and ſuch virtues and qualities did belong; whether it was to the Salt, to the Oyl, to the Spirit or Phlegm, to the Colcotar, or to any Arcana's ſingly or jointly, thence prepar'd, and then we ſhould have had ſome diſtinct knowledge of what he propounds.

5. It's probable he takes Vitriol to be a ſimple Mineral Salt, not admitting it to be compounded of thoſe Ingredients, which muſt neceſſarily go to its natural *geneſis*, and hence depends all his grand miſtakes concerning that concrete; but why do I trouble my ſelf or the Reader, in expoſtulating thoſe properties of which the Doctor is ſo barren, as what he gives us, is not from himſelf, but from *Gallen*, *Diaſcorides*, *Serapio*, *&c.*

6. Iron is the next, which he ſaith is dry in the third degree; here we ſee that as the *Galleniſts* have their degrees of the four qualities, by which they feel

and handle as it were the virtues and properties of Vegetables; so likewise it seems they reach with them to fathom the nature of Metals: I would only Query how they come to know that Iron is dry in the third degree? Is not Iron as well as other Metals liquid or dry, fluid or permanent, according as they undergo the force of fire in fusion? which while so in a crucible makes them liquid and fluid like water, by actuating their Mercurial part, which involving the Sulphur of the Metal, makes it flow together with it, as if it were nothing else but *Mercury*, which when cool again, is *in statu quo prius.*

7. But what this third degree of dryness is, of which Iron is found to be, I know not, I wish the Doctor knew himself, and if he could to certifie these dry notions; he saith also that it is stiptick, drying up the superfluous humidities of the body, somewhat like to Vitriol: This wonted discourse of *Galleniſts* ever and anon to these exotick qualities, make no solid satisfactory Solutions of Philosophical Queries.

8. For if a man should ask them, how Iron, even the very body of Iron given in filings sometimes, or any good Preparation of Iron, as for instance, *Saccharum Martis, viz.* Sugar of Steel, become very frequently Medicines proper to Cure (if rightly managed) the Dropsie, Scurvy, *Cachexia*, *defectus Menstruorum*, *&c.* it's very probable their answer will be, That they do it by their drying quality, by exiccating the superfluous humours of the body; now these notions of qualities, are mostwhat grounded upon sense; as for instance, in this very particular, the most superfluous humours in the Dropsie, are, in a *Gallenical* sense, comparable to a mixture, suppose of Water and Meal in order to making of Bread, if

if the Water out proportion the Meal, it's no way at present to be corrected but by addition of more dry Meal, and that so much as will bring it into a due consistence, so drying up the superfluous moisture.

9. Thus analogically the superfluous humours of hydropick and scorbutick bodies are as we say to be dryed up by those Medicines, which having drying qualities be exiccating in such and such degrees, soke up these moist Distempers, and so effect their Cures? which moist notion a few Queries will easily pump dry: As,

10. First, how do these dry qualities act? are not the superfluous humours of these moist Distempers mostwhat in the blood, diluting and making it too waterish? how must therefore these drying qualities reach the corrigible moisture? are they not first to pass the stomach and its ferment, which no doubt must have pretty store of moisture, proper for the absolving its own peculiar functions? and doth the Doctor think these drying qualities will not bait and take a sup in the road? sure enough if they be dry they will: Doth he imagine they can pass the stomach, that *culina humorum*, without acting upon its moisture, unless he grant they act electively, saying to themselves, This is not the moisture the Doctor sent us to dry up, but we must pass into the blood and other humours of the body, to dry up what is superfluous there.

11. But if he say that there are also superfluous moistures in the stomach, which feed those of the blood and other parts, and therefore must also be dryed up; which suppose we grant, yet while these drying qualities are acting, drying up the moisture they meet with, what should hinder but they should also dry up the natural innate moisture of the stomach, and

ſo cauſe by their ſtiptick quality a clinging of the Membranes of the *Oeſophagus* and *Ventricle?* ſeeing moiſture as ſuch, whether in *equilibrio humorum*, or in exorbitancy, is the proper object for theſe qualities to work upon, unleſs he will ſay they act electively, which would be abſurd enough.

12. So that by that time thoſe qualities (if any ſuch there be) had got through the ſtomach, they would be ſo tempered with a competent moiſture, as that they would loſe themſelves, and become no qualities, and the expected Cure to be done by them would be left to ſuch as ſhould come after.

13. Again, the Doſe of ſuch drying Medicines, how large ſhould they be to imbibe and dry up ſuch great quantities of ſuperfluous humours, as is ordinarily to be found in dropſical bodies? ſurely if they ſhould give Steel in ſo great a quantity, as to dry up ſo great a bulk of ſpurious humidities; when it had done its work, it would certainly reſtagnate in the veſſels, and cauſe greater obſtructions then was before.

14. As for *Saccharum Martis*, it is commonly given in a Vehicle, either of Wine or Water, and how this ſhould dry is another Query; for me-thinks it were enough to daſh the drying quality of Steel with the very moiſture of the Vehicle it is given in, and for this Sugar of Steel thus given in a Vehicle, to exiccate ſuperfluous humidities, is as much as if they ſhould ſay, a moiſt body ought to dry up a moiſt body, which how contradictory, it's enough to name; ſo likewiſe thoſe decoctions of *Sarſaparilla*, *China*, and *Guaiacum*, which they ſo much cant to to be drying decoctions, are altogether as irrational as the former, for to call the decoctions of theſe Diaphoreticks forenamed drying decoctions, implies

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no leſs than a palpable contradiction; for the operation of theſe Diaphoreticks, are drying only *à poſteriori*, by carrying through the pores of the body, by inſenſible tranſpiration or ſweat, that ſuperfluous *latex* which cumbers the blood, and not that they actually dry by a poſitive quality.

15. But that I may give you one ſleight hint, concerning the manner of the operation of Iron in the Cures of the formerly named Diſeaſes, and that without taking cognizance of any drying or ſtiptick qualities; it is thus, Firſt we muſt preſuppoſe there are ſeveral digeſtive ferments in the body, which if regular and uninterupted in their functions, are the Authors of tranſmuting edible food, from one manner of juyce or liquor into another, until it terminate in nutrition, coming for a ſupply of the continual waſting and tranſpiring ſpirits, which ſo long keeps an œconomy and harmony of parts, ſubſervient to the health and vivacity of the body.

16. If theſe digeſtions by any occaſional cauſe of inordinacy of living, perturbations or paſſions of the mind, *ex in equale partium robore ab origine nato*, or any other eſſential or accidental cauſe of Diſeaſes, become irregular, degenerating from their primitive intentions, perverting their original juyces, thence a ſpurious acidity becomes exorbitant (although a chiliferous acid ferment is peculiar to that digeſtion of the ſtomach) *extra lares ſuos fertur in alienam menſem reliquarum digeſtionum*; fluctuates in the veſſels, being too much heightened or decocted in the ſtomach it ſelf, cauſing Heart-burnings, Pains and Gripings, and ſometimes Vomiting, deſcending into the inteſtines, cauſeth the Collick and Illiack Paſſion; this getting into the veins and arteries, becomes the intrinſick Minera of Feavers, *& mortis inopinati.*

17. The

17. The ſame vitiating the ſpirituous Liquor of the *genus nervoſum*, gives the ſeminary of Apoplexies, Palſies, Spaſmes, and Convulſions; alſo coagulating it ſelf upon the bowels, cauſeth obſtructions, thence œdematous and ſcirrhous tumours of the Spleen or Liver, and lays the ground-work for Apoſthumations in other parts; the ſame acting diverſly upon different parts vitiates their ſpermatick elementary Liquor, diſtends the fibres of the parts beyond their natural tone; perverting their periſtaltick motion, whereby the ſuperfluous watry parts, ſhould be percolated from the Blood by Urine, Sweat, and inſenſible tranſpiration; which diſtention (and ſometimes flagging of the fibres, having original often from the ſame) dilutes the Blood, by retaining what ſhould be ſeparated thence, whence come Dropſies.

18. The ſame ſpurious acidity or *Sal reſolutum*, vitiating ſeveral digeſtions, defedates the Blood, and floteing in divers parts too and again, gives the beginings to the Scurvy, cauſeth alſo obſtruction of the *Menſes*, and having vitiated the moſt of the digeſtions, produce a *Cachexia*, or a totally corrupted and vitiated habit of body, concerning which the noble *Helmont* ſaith, *Cujus (viz. ſalis excrementii) ſive uterus, hepar, lien, renes panchreas, meſenterium vel ſtomachus fodina ſit, ingentes parere laborantibus moleſtias*: Which premiz'd,

19. We ſay that Steel ſometimes given in filings, or in the form of *Crocus Martis*, may precipitate and coagulate this *Tartarum reſolutum*, or *Sal excrementiitium*; I mean this ſpurious acidity that had faſtened it ſelf in the bowels of the Spleen and Liver, altering the tone of the Fibres, diluting the Blood, letting forth the potulent part of the Blood, not by the natural way of Urine, Sweat, and Tranſpiration, but

but either by an unnatural back-door, thrusting it between the *Peritonium* and *Omentum*, whereby restagnating in the *Abdomen*, swels the belly of hydropical Persons, or running along the Vessels with the Blood into the habit of the body, amongst the small capillary Veins, which are subservient for the last digestion, *viz.* Nutrition or Assimilation, restagnates there, being carryed in greater Vessels, swels the legs, but being amongst the lesser, cause that sort of Dropsie we call *Ascites*.

20. I say the manner of operation of Steel, whether filings, *Crocus*, or Sugar of Steel, is by coagulating this excrementitious Salt, which because acid, is therefore partly Mineral; for as soon as Steel aforesaid enters the stomach, and so passeth from the first to the second digestion in the intestines, as it passeth along, the spurious Salt runs head-long towards it to dissolve it, but instead thereof is coagulated thereon, spending its activity upon the Steel, loseth its accuteness or sting, and so is carryed away with the Steel by Stool; hence the excrements of those that have taken Chalibeat Medicines are black, and that for no other reason, but that the corrosive fretting Spirits, and spurious acid juyces of the body (those grand authors of pains and torments) are precipitated upon the Chalibeate body, which by coagulation thereon grows black.

21. Hence it is that those corrosive fretting, pontick, and acid juyces, which vellicate and prick the Nerves, in whatsoever part of the body they are found, and twinge the Fibrous parts of the Membranes, throughout the whole body, *utpote patrones dolorum ac torminum*, are I say dinted, softned, and sweetned, by the taking in such fixed bodies of the Metalline compage of Steel, or of animal or vegetable

table Stones, or petrefied concretions, in whoſe texture is wrapt up a fixt Alkaly, *viz.* for inſtance, Crabs Eyes, Coral, and Pearl.

22. All which petrefied animal or vegetable concrete juyces, as alſo *teſtacea quævis*, together with the body of Steel, being taken into the humane body, do coagulate the preternatural acid juyces upon themſelves, and do ſo alter the texture of the whole maſs of humours, that whereas before by their fretting nature, they cauſed the floting to and again through the body, divers Pains, Swellings, Indiſpoſitions, *&c.* they are now become ſweet, and circulate in the body in a due proportion, proper for the functions of the ſeveral digeſtions.

23. Even after the ſame manner as we ſenſibly perceive, that when they are put into any ſort of acid Liquors, as Vineager or the like, though their powders fall to the bottom, yet they give not over working one upon another, until the acid Liquor hath become ſweet, *viz.* inſipid, robbing it thereby of its ſowrneſs; the like doth almoſt any Metal diſſolv'd in an *Aqua fortis*; which thence ſeparated by diſtillation or precipitation, becomes moſtwhat debilitated; ſo that it ſhall not be able to make another the like ſolution.

24. Hence we may throughly reſolve that ſeeming objection, which might ſtare us in the face, at the very firſt propoſal, of this Hypotheſis; *viz.* that ſeeing the Metalline body of Steel, or petrefied concretions of Coral, Pearl, and Crabs Eyes, being yet in the ſtomach, or on their paſſage through the ſecond digeſtion, along the inteſtines, do even there ſweeten the acid juyces of the body, whereas they themſelves (*viz.*) the acid juyces may be in more remote parts, and at a great diſtance; how

how comes it therefore that these remote corrosive pontick juyces, become dulcified at a distance?

25. Which we answer, first, by observing to you, that if you put the powders of Pearl, Coral, *&c.* into a glass, upon which pour distilled Vineager or the like, you may observe that though the powder lie in the bottom, and the Liquor only touch it superficially (and therefore according to the form of the Objection, should only alter and sweeten those very parts only which they touch) yet in a little time we see it sweetens the whole mass of Liquor, and that upon this reason, as I apprehend, *viz.* becaus the nature of water consisting in fluidity, is always in motion, so that in a little time all the parts of water, whirl and circle about so long, till they have all touch'd the powder, and all thence received a like dulcification; so in like manner the juyces of the body being liquid, do so circulate about by reason of their fluidity, that in a little time there be few parts of the body, through which the fluid juyces have not circulated, and so consequently meet with those bodies (if any such thing be inwardly taken, as may rob them of their sowrish sharpness) which being *extra lares*, prove hostile to the Nerves, Veins, Arteries, *&c.*

26. Another instance, let Silver be dissolv'd in *Aqua fortis*, there the corrosive *Menstruum* hath totally (though not radically) dissolv'd the body of the Metal, upon which it is also coagulated, although in a liquid form, if into this, somewhat diluted with water, you put plates of Copper, as Refiners sometimes do for the separating of Silver, you will find the Silver desert the *Aqua fortis*, precipitating upon the cuprous plates, and will thereby be totally separated from the *Menstruum*, and that

too,

too, notwithstanding the plates (as they always do) lie constantly in the bottom of the Vessel.

27. You will ask, how comes the upper part of the restagnant *Menstruum* (which hath an equal proportion of Silver in it, as well as the lower part thereof) to be acted upon by the plates at such a distance? to which as before I reply, That the liquid parts of the *Menstruum*, being in a constant motion of fluidity, and carrying the dissolved Metal in it, doth in a little time circulate all the parts of the Vessel, as far as the upper superficies thereof, one place constantly changing places with another, till they have at length all glided along the surface of the plates, which by a peculiar Metallick assimilation, put a stop to its current in the *Menstruum*, and hooks it to it self; which is one of the best and most thorough separations of Silver that is commonly known.

28. The like is done if Copper be dissolv'd in *Aqua fortis*, if plates of Iron be put therein, separating the Copper from the *Menstruum*, and that by the great affinity or likeness of texture of parts of those two Metals.

29. Thus in like manner, when any good preparation of Steel, of Pearl, of Coral, and Crabs Eyes are given, though they themselves pass actually no further than into the first and second digestion, and so proceed, yet being all the juyces and liquors of the body are in a constant fluid motion, and always circulating, therefore of course they must in time touch upon these forenamed fixed concretes, which if they touch they lose their pontick sharpness, by which they become hostile to nature, and have laid the foundation of many Diseases; which thus being dulcified, the juyces do *redire in gratiam*, and circulate as good companions as ever. 30. Stee

30. Steel, our now present subject, operates by separating this corrosive acidity, which had coagulated it self upon the bowels, *viz.* the Spleen, Liver, Matrix, *&c.* which spurious sowrness meeting with body to which it claims more affinity, then to the parts it had settled it self upon, joyns with it and becomes coagulated thereon; and so the bowels become set at liberty from their former obstructions, and the circulation of the blood and humours become hereby more florid, the exorbitant latex, which before was extravasated, runs in its own chanels again; and what was superfluous that would not *redire in sanguinem*, Nature finds some peculiar manner of exclusion or other, either of Stool, Urine, Sweat, or insensible Transpiration.

31. Thus the Dropsie and Scurvy, *Cachexia*, *Defectus Menstruorum, &c.* become Cured; besides which, we might name many more Diseases, which by a skilful managing and ordering of these Medicines, might by the blessing of God be Cured, as the Hypocondriack Melancholly, which chiefly proceeds from a coagulation of this *Tartarum resolutum*, this *Sal excrementitium*, we are now treating of, upon the Spleen, whereby its proper digestion, or peculiar function of seperation of some heterogenious parts from the blood is vitiated, which digestion of the Spleen so promoting the blood in its tincture, and height of spirituosity, wherewith the Spleen inriched with that plenty and complication of Arteries, seems to be destin'd to, being no doubt thereby replete with a noble ferment, which should exalt and spiritualize the blood, by a kind of Chymical separation, of some innate impurities, restagnant in the blood, until it come to partake of the exalting digestive ferment of that part; which to me seems to

be

be the very proximate ferment of the blood, before the converting thereof into those nimble spirituous parts, or animal spirits, which flote along the Brain, *cerebel*, *medulla spinalis*, and so in the cavities of the Nerves becomes *Liquor Spermaticus nervosum*, the agent of all operations, attributable to the *genus nervosum*.

32. I say this fermental digestion of the Spleen becomes obstructed and vitiated, by a coagulation of the foresaid spurious acidity, which consequently vitiating its next product, the nimble animal spirits, the very immediate corporeal Organ of the Soul which spirits, if I may so call them, are the immediate corporeal reflecting glass of the Soul, which it useth for the receiving and contemplating all visible objects; and being vitiated by such an obstructive coagulative Salt, in the Spleen, according to the strength and degree of the obstruent, is the blood perverted in its prolifick off-spring of animal spirits which become irregular and altogether erroneous thence making false representations of things to the Soul, whence strange fancyful apprehensions arise; which excrementitious Salt, radicated in the Spleen, hath commonly a *flatus* concomitant, which therefore is called *flatus hypochondraicus*.

33. Not but that this Disease may be inserted in the very semnials of the natural constitution, and (as also some others) become hereditary, in whom the *Ideæ dementes cuduntur in ipso viscere splenis vitiato* those madeling fancyful impressions, or erring apprehensions, being forg'd from the disturbed œconomy of the Spleen, vitiating those animal spirits which lodge in the Brain or *genus nervosum*, here these extravagant and erratick idea's, feign to themselves strange pains, in a moment make quick and spe-

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y transits, are always upon the wheel of uncertainties.

34. But now at length returning to view the Doctors qualities, methinks they begin to play least in ght, and probably may become *occult*; yea at ength be reckoned amongst *nouentia*.

35. He tells us what *Dioscordes* will have Iron to o, *viz.* to looſe the belly, eſpecially commending he flower or filings of Braſs to that purpoſe, this is ke the reſt, incongruous; for I believe neither *Dioordes*, nor himſelf, ever gave the flower or filing f Braſs, if they did, at leaſt never to have had round-work of obſerving a ſolutive property therefrom, for (if I miſtake not) ſhould the Doctor ive filings of Copper to any Patient of his, he ould find that by that time the filings had got into he ſtomach, and had become fret upon, by the acid erment thereof, it would preſently become deſpeately emetick, being by that time become as violent a omiter, as if ſo much *viride æris*, or common itriol had been taken.

36. Now Iron (ſaith he) being joyned with Viiol in this water, partakes of the nature of Braſs, nd is therefore the more purging and opening, from hich conjunction I think it is, that moſt of our itrioline Waters in *England* do looſen the belly; hich if it be true that Iron joyned with Vitriol in is water, partakes of the nature of Braſs, then uſt it of neceſſity, as I ſaid before, prove conantly emetick, which the Doctors long experience itneſſeth to the contrary; what difference of opeation would it have from ſo much *viride æris* or comon Vitriol, diſſolv'd in a large quantity of water? eing that both of them are made from the ody of Copper or Braſs, fretted by the acidity of

Vineger, or other acid alumenous liquor; so that the water wherein this nature of Brass is, becoming wrought upon by the acid ferment of the stomach, would certainly become as powerfully emetick, as the other, and then this Spring would lose its good report.

37. We have already sufficiently ravell'd into the nature of both Vitriol and Iron, throughly discovering their inconsistency in a Water-spring, which we are loth again to repeat; therefore what we have already said to that point being premiz'd, his *Thesis* of the reason of Purgation of these Vitrioline Waters, will naturally and of its own accord fall; in as much as any sort of Vitriol made out of Copper or Brass, is, as I said before, dangerously emetick, and not fit for an honest Physician to prescribe.

Sect. V.

1. ALlom is another principle, of which, according to *Gallen*, he reckons up three sorts, all of which are of gross parts, and very stiptick, abstersive, heating and something corrosive, *&c.* as say *Gallen*, *Oribasius*, *Aëtius*, *Serapio*, *Ferneſius*, *&c.*

2. Which of these sorts it is, that is the Ingredient of this Water, the Doctor had done well to have put the World out of doubt, for otherwise he leaves us in as great a Mist, nay greater than he found us; for the describing the virtues thereof, he seems to mean no other than that artificial factitious Allom used by Dyers, and Chyrurgeons, which as such is a Mineral compound Salt, which no doubt if the Water have any such Ingredient, must be a simple Mineral Salt, centred in the bowels of the Miner-

Stone

tone of Allom, without any superadditionary ad-
itaments of Urine, Salt of Kelp, &c.

3. Nitre, another Ingredient, is (he saith) of
vo sorts, natural and artificial; the natural ter-
s a reddish colour, as saith *Serapio*; *Gallen.* that
itre is also a white sort; so that unless *Serapio* or
allen tell us the kinds of Nitre, we shall have Dr.
ccount thereof from Dr. WITTIE; of which white
ort, he saith it is plain that this of ours is; I suppose he
eans the white natural sort, and yet goes on without
istinction, describing the virtues of the artificial
ort, saying it is wont to be mixed in Medicines, when
e would attenuate and deterge; it's added (he saith)
Cerats and Plaisters in Distempers of the Nerves.

4. By all which it should seem indeed by his di-
ourse, as if this artificial kind of Nitre used in
hops, were the Nitrous Ingredient of the Water;
nd then we should consult, where those *Salt-peter-*
angers are, those subterranean nimble sons of *Vul-*
an, who must furnish this Spring, with this artificial
rt of *Salt-peter*; and further query, whether
if the *Troglodites* knew the use of Sulphur and Dust
f Charcole) they might not (envying Mortals
is happiness) unfortunately (and to the great loss
f the Doctor) blow up this Spring?

5. Salt is the fifth and last Principle or Ingredient
f the *Spaw*; perhaps because it is so neer the Salt
Vater of the Sea; and indeed looking a little further,
find he saith he thinks it receives the Salt from the
ea, but how demonstrable I know not; for if any
uch Marine Salt was in this Spring, it would certainly
pon distillation or evaporation be left in the sedi-
ent, and then would as evidently be demonstrable
y the taste, as we see the Sulphur Well of *Knars-*
rough, having a body of Salt in it, upon evapora-

tion leaves it all behind in the bottom of the veſſel ſo here a little proportion of Sea Salt, would mak th ſediment ſufficiently brackiſh, and that diſtin guiſhable enough, if it were there.

5. But we find not the leaſt foot-ſtep of any ſuch S[illegible] left after the evaporation or diſtillation of th water, neither is any ſeparable by any known art o ſeparation of Mineral Salts; for after the ſedimen of the *Spaw* is further calcined by the force of fire and another ſeparation is made by ſolution, filtration and evaporation, yet is the ſeparated Salt ſo far re mov'd from any ſuch brackiſh taſte, as that it is quit of another perceptible taſte, ſo that the preſence o ſuch a Marine Salt is no otherwiſe than meerly ima ginary, and therefore to be taken up by præcariou Philoſophers.

7. Thus you ſee I have run through his five Prin ciples or Ingredients of the *Spaw*, found him trip ping at every turn, and very much inconſiſtent witl himſelf; for notwithſtanding the latitude of his aſſu med Principles, wherein he might have had ſcop enough to have ſported himſelf *inter thaumata Dei* amongſt the Wonders of God in the Mineral King dom, yet we find him ever and anon ſo, and ſo nar rowly pent up, as if he had not room to turn him ſo ſtreight lac'd is the *Ariſtoletick* and *Gallenical* Phi loſophy in the whole triplicity of Nature.

Pars Secunda.

SECT. I.

IT is now high time, after the unhinging of Dr. WITTIES Principles, to come to make a serious scrutiny into the real Principles of this *Spaw*; and though I have made Animadversions upon all his five Ingredients, shewing the inconsonancy and inconsistency of them, as he hath laid them down, yet without any intention or thought of denying them all, but to hold to those which we might find demonstrable by experiment.

2. For which intention, I went purposely to *Scarbrough*, and took along with me several Liquors and Spirits, by which, I thought, I might best essay the native Ingredients of the water; I took also along with me a solution of the five Ingredients, according to the Doctors supposition, each of them being in several glasses, *viz.* a solution of Nitre, Allom, Vitriol of Copper, Vitriol of Iron, and common salt, and desired him, for the evincing the truth of his Principles, that he would please to mix these in such a proportion, in a glass of fresh water, as might resemble the taste of the *Spaw* water, and would equally with it answer the same coagulations and solutions.

3. So when we came to the Well, I desired an essay might be made of the mixture of those five solutions in fresh water, to try if we could imitate the *Spaw* thereby; he told the company that I expected from those Minerals which had undergone the fire, to see the same as from those which had not passed the fire; answer'd, they were naked and bare solutions of

the Mineral Ingredients, made without any ſtreſs o fire, and therefore might well be taken to make expe riment withall; when he ſeemingly refus'd it, called for a porrenger of freſh water, and put ſom of each of theſe ſolutions in, taſting it after eac diſtinct Ingredient was put in.

4. The Vitriol of Iron made it taſte very like th ſweet *Spaw* at *Knarsbrough*; a little of the ſolutio of Nitre and Salt, did not much alter the taſte there of; to which a ſolution of Mineral Allom was ad ded, which did not yet bring it any thing near th taſte of that *Spaw*, comparing them both together nor did the addition of Vitriol mend the matter upon this mixture we poured the ſolution of Gauls which preſently, upon the account of the ſolution c Allom and Vitriol, became thick and muddy lik ink, and became clear from the ſame reaſon, wit the addition of ſome drops of the ſpirit of Vitriol not that the ſolution of Nitre or Salt, contribute any thing to this attrimentous curdling, nor yet wa alone from the ſolution of Vitriol, but alſo from th ſolution of Allom, which as to changing colours b the addition of Gauls or ſolution thereof, doth equal ly anſwer the ſolution of Vitriol.

5. But to come a little cloſer to the matter, I too a little *Spaw* water in one porrenger, and a littl ſolution of the Calx of Allom in another, upon bot of which I poured the ſolution of Gauls (made i fair water and filtred) and forthwith both waters *viz.* the *Spaw* water, and the water of Allom, be came coloured alike of a deep purple, and from thenc (having a little more of ſolution of Gauls added became blackiſh and opacous almoſt like Ink; b which I demonſtrated to the Doctor, what he woul not otherwiſe believe, had not his eyes convince

him

him; *viz.* that a purple colour, and from thence a dark opacity, like Ink, might be made from another liquor than Vitriol or Iron; to which he solely ascribes the changing of colours by a Gaul put thereinto, making that one of his demonstrations, why Iron is an Ingredient in the *Spaw*; which by an occuler testimony I convinced him, that the changing of colour by a Gaul was not any sufficient evidence, that Iron Vitriol must needs be an Ingredient thereof, because the bare solution of the Calx of Allom, having nothing of Iron or Vitriol in it, doth give exactly the same alteration of colour.

6. The strength of his Argument for Iron and Vitriol being plac'd in this, *viz.* that the sediment which falls to the bottom, upon the alteration with Gauls, which in his book, I take, saith he, to be the Iron Mineral with a little touch of the Vitriol; which certainly had been much more proper, if he had spoke of the Minera of Iron, and left out Vitriol, or of the Vitriol of Iron, and so discourse only of one, for that both should be there, we have in the first part denyed, and held inconsistent; nor is this variation of colour by Gauls a sufficient argument of the presence of the Minera of Iron (though I do not deny it to be an Ingredient) seeing a solution of the calcin'd stone of Allom will do the same.

7. But to proceed upon both these coloured Liquors, *viz.* of the *Spaw*, and of the solution of Allom by the solution of Gauls; I poured a little spirit of Vitriol, and presently by degrees, both of them became alike clear again; the spirit of Vitriol working upon, and dissolving all those scattered, loose confus'd atoms, which the Gaul shiver'd the waters into, till they had all become dissolv'd again in the body of water, and became as clear as at first.

8. From whence I inferr'd a further similitude of parts between the *Spaw* water, and the solution of Allom, being alike in their precipitation, and in their reduction, to clear Liquors again.

9. To these cleer solutions I poured some drops of *Oleum Tartari per deliquium*, which caused them both to become alike coloured, as deep almost as Ink; for this Oyl of *Tartar* precipitates what ever acid spirits, such as spirit of Vitriol, of Salt, *&c.* dissolve, and bring clear solutions into confus'd postures; by which it appears, that Mineral Bodies or Salts, may by the force of acid *Menstruums* be resolv'd into clear Liquors, which Bodies are not therefore converted into the nature of the *Menstruum*, and become the same with it, as Dr. *Wittie* would have Metals that are dissolv'd in *Aqua fortis* to be converted into the nature of the *Aqua fortis*, whereas lixivial Salts evince the contrary; for either a fixt or volatile Alkali, will presently precipitate, and make it fall to the bottom; whatever acid corrosive Liquors have dissolv'd, by which the Metal he thought lost, would once more become the object of his Opticks.

10. Then upon these Muddy Inky Liquors, I poured some more spirit of Vitriol, and clear'd them both again, upon which clear Liquors, I poured some volatile spirit of Harts-horn, which, as the Oyl of *Tartar*, made them both become confus'd and Inky.

11. By all which it appeared that the solution of calcin'd stone of Allom, admitted the same precipitations and resolutions with that of the *Spaw*, by acid Liquors and alkalizate Salts.

12. Then we poured forth these Liquors, and took fresh *Spaw* water, and fresh solution of Allom, upon both I poured some Oyl of *Tartar per deliqui-*

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um, which caused a whitish curdling separation much-what alike in both, which would again become clear by the addition of some drops of the spirit of Vitriol.

13. Now the Query is, how comes Oyl of *Tartar* or any lixivial Salt, or volatile spirit, to cause this separation of parts in all Mineral or Metalline solutions that are made by acid Menstruums? Whether they do it by coagulating themselves upon the bodies of Minerals and Metals, or by uniting with the Salts of the Menstruums, and so thrusting forth the other bodies of Minerals or Metals?

14. For the solving of which doubt, we must first know that there are three sorts of Salts or Spirits, out of which ordinarily Menstruums are made for the dissolving of most bodies commonly dissolvable; commonly dissolvable I said, because the Liquor Alcahest of *Paracelsus* and *Helmont*, that *primum ens salium*, their grand Solvent, doth, as *Helmont* saith, dissolve all sorts of concretes whatever into their primitive juyces. These Salts or Spirits out of which common Menstruums are made, are either acid, and those either naturally so, as the Essurine acidity which is to be found in Allom, and Vitriol Stones, also in the sowr juyces of Herbs and Fruits, amongst which that from Grains or Wines, is most eminent; or are so made from Mineral Salts by force of fire, as spirit of Vitriol, spirit of Nitre, Salt, *&c.*

15. Or secondly, from Alkalizate Salt, and those either fixed (as Salt of Tartar, Wormwood, Broom, or any other vegetable fixed Salt) or volatile, as spirit of Urine, Blood, Harts-horn, or the like volatile spirit from any vegetable, as Sage, Wormwood, and the like; the Alkalizate Salts are used to dissolve in water for the extraction of Brasil, Rubia, *&c.* and the volatile spirits mixed with a vi-

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nous spirit; helps to procure a stronger solution and tincture of Mirrh, Aloes and Saffron, than spirit of Wine alone would for the making *Elixir Proprietatis*.

16. Or lastly, Menstruums are made from vinous spirits, which is the frequent Menstruum for extracting the subtil sulphurious Medicinal parts of many vegetables, though I have seen and made a fourth sort of Salt in order to a Menstruum, which was an artificial one, made by the fire, which indeed is a kind of result from the three former Salts or Menstruums, and being dissolv'd in water or spirit of Wine, makes no ebullition, with either alkalizate solutions or acid spirits.

17. Now whatever it is that one of the two first dissolves, the other being added precipitates; if any solution or extraction be made with alkalizate Salts or volatile Spirits, upon the mixing a little acid spirits of Vitriol, Allom, Nitre, or the like, a precipitation is presently made of the dissolv'd body; as for instance, in the preparation of the Magistery of Chochineel or other vegetables, as the primary Ingredient for the confection of *Alkermes*; which is made by a decoction of the Berries in water, acuated with Oyl of Tartar; when by this means by itterated affusions of more of the same Menstruum all the tincture is got, upon which filtre pour the solution of crude Allom, which is alone as if so much spirit of Vitriol answerable was poured on, and what the lixivial Salts had dissolv'd the acid precipitates; which being washt both from the taste of Oyl of Tartar and Allom, is the Magistery of *Kermes*.

18. Where take notice that the ingenious *Zwolfe* saith, That in the preparation of this *Lacca Fl*

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rentina, as he calls it, he hath got almost double the quantity thereof in respect of the Berries he first took in hand; that which made up the bulk was an addition from the Menstruum and precipitating Salts.

19. So likewise in the solution of Minerals or Metals, as for instance in a filtred solution of Vitriol made in fair water, into which if Oyl of Tartar be dropped, there is presently, as I said before, a separation and precipitation of the Metalline parts of Copper or Iron, according as the Vitriol was made, and with the Colcotarine parts, there doth also fall some of the very salts both of the Menstruum, *viz.* acid salts (for whose sake it is the Metalline parts appear under a form of a Liquor) and also of the alkalizate salts, in as much as to make the Colcotar appear, single and solitary, there is need of a dulcification by warm water, which being filtred and evaporated, gives a sediment or neutral salt of the same nature with that which is left after the evaporation of the Liquor out of which the Metalline parts were separated, *viz.* a *Tartarum Vitriolatum.*

20. By which it is evident, that when a Mineral body is dissolv'd by an Effurine acid salt, acuating a quantity of water wherein the solution is made, fretting upon, and subtillizing all the otherwise grosser parts of a Mineral *in minima*, grinding them as I may say into the minutest particles, that then if some of the contrary sort of salt, *viz.* fixt or volatile alkalies be poured on, the salts immediately close with one another; but being of different textures of parts (and thence apt to make different sorts of Menstruums) and so of a contrary nature one to another, fret themselves into other shapes, in which

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fretting they cause an heat, and sensible or insensible ebullition, according to the intenseness or remisness of these hostile salts, in the Duel they thrust forth the already dissolved Mineral or Metalline body, which, loosening the salts that dissolv'd them, fall headlong to the bottom, whilst the salts have turn'd themselves into a *neutrum quid*, and part are fallen together with the precipitated body.

21. So that the salt of Tartar immediately reacheth the acid salts of the Menstruum that hath dissolv'd any Mineral body, and thereby precipitates and lets fall to the bottom the dissolv'd body, and part of it with some of the acid salts are carryed along with them, which appears because the water wherein the Mineral precipititate body is dulcified upon evaporation, gives, as I said before, the same things as is made from the combining of the two salts in the superstagnant water, *viz.* a *Tartarum Vitriolatum.*

22. Hence it is that Oyl of Tartar being dropt into the *Spaw* water makes a whitish coagulum or separation, because of the solution of the Minera of Iron, which is dissolv'd in the Essurine acidity, either as it passeth through Allom stones or other proper matrixes in the bowels of the Earth, wherever its found, as to its simple primitive elemental acidity, it's all one, and therefore by some called the *primum ens* of all natural Minerals, solutions, *Spaw* waters and salts.

23. For this Mineral acidity is the very solvent in the water, which pervading a Minera of Iron, makes a slight solution of it, and being equally contempered together, makes up the body of the *Spaw*, upon which if spirit of Vitriol or any other acid Liquor be poured, it makes no alteration in the water, because of similarineſs of parts between the

the acid ſpirit of Vitriol, and the acid ſolvent in the water, no more than fair water mixed with fair water, or ſpirit of wine mixed with ſpirit of wine; but fixt and volatile alkalies, being of a contrary temper, precipitate whatever Mineral ſolutions the other hath made; for an ingenious Friend of mine took a good quantity of the *Spaw* water, upon which he poured ſome lixivium of Tartar; which cauſed a great curdling ſeparation of a white matter; by ſtanding a while, a white ſediment fell to the bottom, which when the water was poured off, and the reſt dryed to a powder, became a white and almoſt inſipid calx; by which it was evident that both the ſalts, *viz.* the acid ſalt of the *Spaw*, and the lixivial ſalt became diſſolv'd together in the reſtagnant water, and only let the aluminous calx, which the acidity of the water had before diſſolv'd into it ſelf, fall to the bottom, and that without the leaſt perception either of Vitriol Iron or any other Ingredient.

SECT. 2.

THus far I aſſented to Dr. WITTIE, *viz.* that an alluminous ſalt, from a Mineral acidity had diſſolved a ſlight touch of the Minera of ron, and both diſſolv'd in the current ſpring of wa-er makes up the *Spaw*; I asked him how he would emonſtrate his other three Principles? and firſt as › Vitriol, he ſaid, that in the carriage of the water om the ſpring to remote places, there was found › be a loſs of ſpirits, which he called Vitrioline pirits; firſt, that theſe were Vitrioline ſpirits, and at they were loſt, remained to be proved; that ere was an alteration in the water by carrying to iſtant places I granted, but that I told him I apprehended

hended was from a quassation of parts, which in wooden vessels might easily admit of an incipient putrefaction, whence might really proceed an inversion of parts, which would beget a great alteration in the texture of the water; not to say what alteration may be made from oken vessels, which by precipitation may make a great alteration.

2. But an ingenious person being by, asked the Doctor, whether suppose the water was sealed up in a glass bottle hermetically, and so carryed to a remote place, whether it would be altered by carriage or no? he answered, he thought it would; if so, then it was not from any volatility of parts, because the glass was supposed sealed up, therefore the alteration of the water, was not from the loss of any volatile spirits, and consequently not from the loss of the Vitrioline. But the foresaid ingenious person, put some of the *Spaw* water into a glass bottle, and stopt it up from the air; into an other glass bottle he also put of the same water, but let it stand open; the first he observ'd that though it was kept until the water suffered a little putrefaction, did yet give a tincture to Gauls, he tryed another bottle after the very same manner, which yet did not give the tincture as the other did, but the bottle that stood open to the air within two or three days lost its tincturing property. so that though we should grant there are volatile part which take wing in the air, yet are they not Vitriol because though kept in closely stopt vessels, yet in time they lose themselves, which if a body of Vitriol was there, would be permanent; it is therefore an *apporrhea mineralis*, whether Vitrioline or Alluminous.

3. But being he mentions this loss of Vitriolin spirits, which by agitation of the water (in carryin

it at distance) evaporates, I wonder seeing those are so considerable according to his own supposal, making the water act more lively; why, I say, in his experimenting the water he did not set upon the distilling of it, and saving, by accurately closed joints, those Vitrioline spirits, that he might have tasted them, or by other means have brought them upon the test and examined their nature; but he very civilly, because they are volatile, lets them go.

4. If you view the Doctors tools, by which he undertakes to hew out the rudiments of this *Spaw*, they are indeed very rude, and of a low rank, *viz.* a skellet, a culinary fire, but not a word of a glass still, which an ingenious Artist supposing volatile spirits, would rather have chosen for the satisfaction of himself and the World, he tells us almost a wonder, *viz.* that when the water was almost evaporated and spent, it riseth up in billows making a bubling noise, like the boiling of Allom in the Mines at *Whitby*, which he might see very frequently in the evaporations of most Mineral, Metalline, nay Vegetable solutions, but that it may be it is the first he hath seen, and therefore excusable.

5. I arguing with him against Vitriol, as being inconsistent with that of Iron in the *Spaw*, told him that I apprehended, that if there were any common Vitriol in it, would be emetick or vomitive; that it had no such operation, constant experience convinc'd, as also an example he produc'd of a man that every morning drank Eighteen Quarts, for two weeks together without any vomiting at all.

6. But the reason he blusht not to urge, why, though Vitriol be in the water, yet it should not vomit, you will wonder at, it is this, *viz.* we frequently give in our Cordials, saith he, spirit of Vitriol

Vitriol as also to quench thirst, but doth not at all make the Patient vomit, saith the Doctor.

7. As if, according to his account, the spirits of Vitriol were nothing else but Vitriol it self, and then indeed it would hold good what he saith, that when the Vitrioline spirits were gone, the Vitriol it self would also take wing; to which we return'd, that the spirits were but one part or element of Vitriol, and the *caput mortum* or Colcotar another, and that the chief vomitive property, lay not singly and distinctly in either of these; for if the Colcotar should cause vomit, yet it is because there remains still some salts or spirits unseparated, which when throughly dulcified, hath nothing near, if at all, that emetick property it had when the salts were joyned to it.

8. Copper amongst all the Metals, if resolv'd into a *Viridaeris* or Vitriol by any acid salt is the most, if not the only emetick Metal (excepting Mercury, which although *mater metallorum*, yet is reckoned one of the seven, which by *Aqua fortis* or Oyl of Vitriol, is brought in to precipitate or turbith Mineral, either of which is desperately emetick) I say Copper or the Minera of Copper being resolv'd by an acidity becomes emetick, these salts being separated either by distillation, or otherwise by a Menstruum, the Metal or Minera becomes what it was again.

9. Now the Query is, whence the vomitive quality of this cuprous solution should proceed? It is not surely singly from the Sulphur of that Metal, because it being separated from that Metal by the Liquor Alkahest, becomes, as *Helmont* saith, a sweet, fixt anodynous Sulphur, and therefore quite contrary to an emetick property; nor is it alone from the

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Mercurial part, becauſe then the ſame would be had from *Saturn*, *Jupiter*, *Luna*, &c. inaſmuch as they have as great a proportion, if not a greater of *Mercury*, than *Venus*. Now the *Saccharum Saturni*, nor the *Sal Jovis*, as far as I underſtand, hath any thing near ſuch, if at all, Emetick qualities; and as for the *Sal Lunæ*, or Salt of Silver, that is chiefly purgative, witneſs the *Pillulæ Lunares*.

10. It is therefore from the Salts preying both upon the mercurial and ſulphureous parts jointly conſidered, which together make up ſo hoſtile a texture of parts, as that they become wholly inimical to nature, becoming totally refractary to the acid ferment of the ſtomach, which not admitting ſo tyrannical an Enemy, gathers all its Forces together, rallies them, and oppoſeth with all its might this grand Antagoniſt.

11. But reduce again this Vitriol into its primitive Elements, *viz. Sal acidum, & terra Mineralis ſive Colcotar veneris*; or reduce *viride eris* into the acid Salt, and cuprous body, and none of theſe ſingly and alone ſhall be Emetick; for the Spirit of Vinegar, nor ſoure Juyce of Grapes, nor the Spirit of Verdigreeſe, is at all vomitive; nor yet is the Salt of Vitriol of *Venus*, if totally by an artificial *Menſtruum* it be ſeparated, Emetick; nor is the Spirit of the ſame Vitriol at all vomitive. So that it's very clear, that the hoſtile property of vomiting, is jointly from the commixtion of the *Menſtruum*, that diſſolves either the Minera of Copper, whence the *Vitriolum cupri*; or of that acidity that coagulates upon the very body of Copper, for making of it *viride eris*.

SECT. 3.

1. I Queried with the Doctor how he came to understand that Nitre was an Ingredient, and that the chief in the *Spaw* water, being as he writes the most predominant; his arguments for it were twofold, the first argument he urged was this, which as he thought was grounded upon experiment: Take, saith he, the *Spaw* water, into which put some Gauls, which strikes a colour, then after it hath stood awhile, give the vessel a shake, and somewhat like a blackish sediment will fall to the bottom, then pour off the clear water, and set it upon the fire, and in a little time there will be a separation of a whitish curdling matter; take it off the fire, and let it stand to cool, and there will be found another whiter precipitation than before, and pour off the clear water again, and this precipitate, saith he, tasts somewhat like to Nitre; the clear remaining water being boyled up to a dryness give the rest of the Minerals.

2. To which I replyed, that after the first precipitation was made, by the addition of Gauls, the the clearly decanted water receiving an alteration from the fire, begun to make a spontaneous separation of part of the contents thereof, which I had no other cause, from any argument of his, to look upon otherwise than of the very same nature with the sediment which remained after the boyling up the rest of the water, as to the taste of it, which he thought was somewhat Nitrous, I suppose might be spoke in favour of what he would willingly it should have tasted.

3. Many solutions may upon the fire give a separation of parts, which are yet but of the same nature

nature, with those left after the evaporation or distillation of the Liquor, so that this whitish separation severs no distinct Ingredient from the *Spaw* water, neither doth it evince any truth in favour of the multiplicity of principles in that water.

4. His other argument, which indeed is the chief he insists upon, is twofold, *viz.* first from the Nitre, which is frequently found upon the Cliff, at the bottom whereof the Springs break out, this he thinks must needs (because so near the Well) contribute its assistance to the water, and that which confirms him in his judgement, as he imagines, is that when the Rain comes it washed off this Nitre, and after that more sweats thorough the earth, as he supposeth, and fills the vacancy of the former.

5. To which we answer, that it is true there is Nitre found along the Cliff near the Well, but that this Nitre should contribute any influence to the water, I deny; by shewing, first, that that Nitre is ingendred chiefly from the air, and next to that, that it is only superficially to be found.

6. First, that it is chiefly begotten from the air, is apparent because it is to be found very plentifully on old Walls, either Brick or Free stone, upon the Lime in the seams of the Walls, especially where the Rain comes not, but the air hath free access, for otherwise the Rain washeth it off when it comes; this is called *Nitrum murarium* or *Nitrum aereum*, being a volatile aereal Salt coagulated upon Lime, Allom, Stone, or the Mineral Earth of Allom.

7. To the coagulation of which Salt, is required a competent body or subject, which may answer the indication of a *Magnet*, upon which these Nitrous Articles, floting in the air, settle themselves; of which sort are the forenamed bodies, *viz.* Lime,

Allom, Stone, Mineral Earth of the same, as also any fixed salt, penetrating the body of an earthen Pot, as likewise an Effurine Colcotar, made barren of its imbred spirits by force of fire, all which centre upon themselves, the volatile Nitrous Atoms dispersed in the air.

8. So that this Nitre lyeth not in veins of the earth as a Mineral salt, as Dr. *Wittie* supposeth, but is meerly superficial, and therefore washed away by every dash of Rain; for if a solution were made of the same Mineral earth where this is found, it is very probable we should upon examination find nothing of Nitre in it.

9. The other part of his argument, which he thinks is *instar omnium*, to confirm his opinion of Nitre the chief Ingredient, is this experiment, *viz.* that upon the exposing of the Minerals (as he calls the sediment left after evaporation of the water) some while in a moist and cold air, that there have been found *stiries* or little Icikles among them, which is the form of Nitre; as to the veracity of the experiment we are not incredulous, but that this should evince the preexistence of Nitre in that sediment, is the thing we contend and very much question.

10. For we say that the alluminous body left behind, after evaporation of the water, is of the same nature with the Mineral earth or stone of Allom found upon the Cliff, and so the one as well as the other becomes equally magnetical, and attract or centre upon themselves the floting Nitrous particles dispersed abroad in the air; so that it is not the moist air that extraverts any preexistent nitrous parts from the body of the minerals; but the vollatile nitrous salt fluctuating in the air, settles it self upon proper magnetical bodies, among which, the sedi-

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ment of the *Spaw* water (being chiefly an Alluminous Salt) is moſt peculiar.

SECT. 4.

1. BUt that we may the better illuſtrate the truth of what we aſſert, *viz.* That an acid alumenith mineral Salt, preying upon, and diſſolving a ſlight touch of the Minera of Iron, gives eſſence to this *Spaw*, conſider this following Experiment. Take a duskiſh yellow Earth, which lyeth much in veins, as alſo interſperſedly here and there upon the Cliff near the Well, which is diſcernable enough in taſte, being ſweet and ſtiptick, like Vitriol, or Allom, or both.

2. This I diſſolv'd in ſimple diſtill'd Water, and filtred, with which mixing a little powder of Gauls, gave an alteration of colour towards a purple, though not ſpeedily, which with Spirit of Vitriol became clear again, after the manner of the *Spaw* water.

3. The ſame clear Solution of this Minera found upon the Bank under which the *Spaw* runs, being mixed with Oyl of Tartar, gives a white *Coagulum* of milky ſeparation, like the water of the *Spaw* it ſelf, or the ſolution of Allom; which, with addition of Spirit of Vitriol, or *aqua fortis*, becomes clear, and with Oyl of Tartar becomes white, which may be again reſtored to its priſtine Clarity, by adding Spirit of Vitriol, or *aqua fortis*, &c.

4. The ſame Solution having ſome drops of Spirit of Harts-horn mixed therewith, gives a white ſeparation, and with Spirit of Salt becomes clear again, anſwerable in every particular to the *Spaw* water it ſelf.

5. Some of this clear Solution I diſtill'd in a Glaſs retort, until what remained was a bright ſtyriate flo-

ſcule, increaſing the fire ſomewhat more, it came to be a dry white Salt, of a ſtiptick allumenous taſte.

6. The water which was diſtill'd off from this Salt, being ſaved in a glaſs Receiver, whoſe joints was cloſe ſtopped, would not give any alteration of colour, either with ſolution of Gauls, or with lixivium of Tartar; which argued that no heterogeneous volatile parts of the ſame nature with the Salts, came over the helm.

7. All which put together, evince no leſs than a parity or likeneſs of Principles between that Mineral earth, and the *Spaw* water; for from a parity of Principles in an homogeneal proceſs, reſults a likeneſs of products, ſo that the *Spaw* is nothing elſe but this Eſſurine acid Salt in its Mineral earth *(in toro ſuo Metallico)* being an allumeniſh terreſtrial Globe, diſſolv'd in the current Spring of water.

8. For the ſpecifical difference of all Mineral Salts, depend upon theſe three, *viz.* a Sulphurious, acid, eſſurine ſpirit; water, and a Mineral Glebe; from the various ſolutions and mixtures of which, ariſe the variety of Mineral Salts, in the bowels of the earth.

9. Water impregnate with this acid ſulphurious ſpirit, diffus'd thorough the occult Meanders of the terraqueous Globe, according to the nature of the Mineral Glebe it meets withal, it becomes coagulated into ſuch and ſuch a ſalt; for if this acidulated water, find a ſalſuginous Glebe, it becomes coagulated, according to the property of that Glebe, together with its connate ſalt in a *ſal marine*, which with greater daſhes of water paſſing thorough the ſubterraneal channels, becomes diſſolv'd and carryed into the Ocean, thence the ſaltneſs of the Sea, which hath its Minera from foſſile ſalt, from which alſo

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ſome Springs are ſatturate, as the Sulphur Well at *Knarſbrough*, *&c.*

10. If the ſulphurious acidulate water meet with Nitrous Veins, it coagulates into Nitre, which being by other current ſtreams of water diſſolv'd, very probably become the original of intenſely cold ſprings, *viz.* ſuch as *Magnus* Well, *Cockroft* Well, *&c.* which though to touch extremely cold, yet by an intrinſick ſulphurious warming property, doth ſo notably open the pores of ſuch as are bathed therein, as that it reſolves the congealed blood and latex, ſettled about the joints and outward parts of the body, thence becoming the cauſe of Pains, Aches, Stiffneſs, Numbneſs and Lameneſs of the joints, which by the penetrating opening virtue of thoſe Nitrous ſprings are reſolv'd, and thence a redintegration of the glyſſent ferments of the blood and humours, which give warmth and motion to all the parts again.

11. If the aforeſaid eſſurine water find a Mineral Iron bed, it becomes determin'd thereby, either into a Vitriol, or becomes the original of moſt acid *Spaws*, called *Fontes aciduli*, ſharp ſprings, ſuch as *Tunbridge*, *Epſom*, *Knarſbrough*, *&c.* amongſt which this of *Scarbrough* is not the leaſt.

12. The ſweet *Spaw* of *Knarſbrough*, is but languid of Mineral principles, having but a very ſlight touch of the Minera of Iron, and hath the eſſurine acidity but in a very remiſs degree, thence it is that great quantities muſt be gulped down, before any ſenſible operation by purgation.

13. As the Minera of Iron terminates the ſulphurious acidity into vitrioline ſharp ſprings, ſo in like manner the Minera or *primum ens* of Copper, coagulates this eſſurine ſalt into a cuprous Vitriol, and that either foſſile to be digged out of Mines, or is

further dissolv'd in a water spring, which by exhaling the moisture by the Sun, or by boyling it up over a fire, it shoots into Vitriol. Or lastly, this acidity is coagulated in Mineral cuprous stones, which being expos'd to the air, become resolv'd by the falling of Rain water thereon, which after filtration and boyling up, shoot in great troughs into common Vitriol.

14. But if this essurine sulphurious water find an allumenish Glebe or Rock, it becomes thereby coagulated into natural Allom, receiving a specifical difference, from that particular Mineral Glebe, whereby it becomes different from the other coagulations of the same Mineral acidity, which by further dissolution in the current of a water spring, give being to this of *Scarbrough*, and other the like *Spaws*.

SECT. 5.

1. NOw whence the great variety of Mineral glebes should proceed, is a Philosophical query, worthy our most choice consideration; especially seeing that from the multiplicity hereof, the sulphurious acid spirit, becomes determined to this or that particular specifical salt of *sal marine*, Nitre, Vitriol and Allom.

2. For in these the Metals are *in solutis principiis*, in their primitive juyces; their Mercuries, though volatile, crude, and undigested, yet are spermatical and as such are the radical moisture of Metals, not to say the Mercury of Philosophers, these are apt to be coagulated and maturated into Metals, by the embryonate Sulphurs, which lurk *in intimis Thalamis glebarum metallicarum*, which according to the purity

purity or impurity of the terreſtrial Matrix, and degrees of the graduation of the Sulphurs, are determined and ſpecificated in imperfect and perfect Metals to the completing the ſeptenary of the Metallick order, beſides their middle Minerals, which are in the Road to Metalization.

3. That all Metals and Minerals have their innate ſeeds, ſhut up in themſelves, we ſhall not need to ſpend time to confirm, *in auro ſemina ſunt auri quamvis abſtruſa recedunt longius*; ſeeing that their ſpernatick principles, become prolifick *ſuo more*; whoſe ſeed operating in a volatile crude Mercury, and an embrionate Sulphur, become deducible after the manner of a natural geneſis unto their ſtate of maturation, accord to the proceſs of their concretes in the Vegetable kingdom.

4. We may therefore conſider, that as God, the original Founder of all beings, hath implanted in the ſuperficies of the earth, that great variety of vegetable ſeeds, whence the diverſity of Plants, not only ſprung up at firſt, but by their ſeminal beginings, or ſomewhat analogous thereto, have continued to propagate themſelves in their ſpecies.

5. Every Vegetable at its proper ſeaſon by the instigation of the heavenly influences, having its ſemials ſet at work, in which it hath its own ſpecifick faber, or (if I may ſo call it) Archeus, which by its innate plaſtick power, begins to hew forth it ſelf a body, out of the elementary principle of water, shaping it ſelf in ſtalk, branches, leaves, flowers, ſeeds and fruits, according to the platform laid in the ſeminal beginings thereof, every Plant in its kind, to the great and wonderful variety, which we ſee upon the face of the earth, ſo that *preſentem refert, quælibet herba Deum.*

6. So

6. So in like manner the invisible Divine Power, hath according to his own *beneplacit*, dispersed variety of Mineral and Metaline seeds in hidden places of the opake body of the earth, whence indeed the great and manifold difference of Mineral Glebes or Earths, which Mineral seeds, as well as all others, whether vegetable or animal, are indemonstrable *à priori*, taking at first their immediate beginings from the very bosom of the Eternal Being.

7. And therefore only demonstrable to us *à posteriori*, *viz.* to our common sense, by appearing in a visible garb upon the Stage of the World. Now these dispersed Mineral Seminaries, wherewith several parcels of earth become impregnate, being set at work by the primitive *fiat*, which is the same to this day as ever, in their begining to shape bodies for their ideal essences to become manifest in, form to themselves a Mercurial volatile juyce, and an embrionate Sulphur, as the *materia proxima & prima* to Metalization.

8. With these two proximate principles, the Mineral Archeal faber operates, ripens the elemental crudities, and in a linear process puts on a tincture and weight, and at length terminates in the coagulation of a perfect Metal, specificated according to the form of the innate seed; for the ripening coagulating fire of the embrionate Sulphur, is as the *Sol terræ (id quod est inferius, est sicut quod est superius)* which kills the *Python*, *viz.* exiccates and maturates the radical Mercurial moisture, and terminates it in a Metalick species: But I digress, this being more fit for a Philosophick discourse upon another subject.

9. We say therefore that these Mineral Glebes have for the moſtpart a Mercury and a Sulphur *i*

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solutis principiis, and both dissolvable in an essurine salt for salts are the keys that unlock the Mineral Kingdom.

These are those Menstrual Salts which teach Minerals and Metals how to dissolve in water, by breaking them *in minima*, and thereby how to communicate their medicinal virtues for the health of mans body.

10. Here the Chymistry of nature is most admirable, which by its own peculiar Menstruums extracts the essential innate virtues of Mineral Glebes, and that by an intrinsick invisible fire in the digesting vessels of the earth, yea and by the help of Art, supplying the difficulties of Nature, by frequent solutions and coagulations, may yet further graduate these mineral virtues into more noble Arcana's, whose essential tinctures may the better penetrate the vital ferments of the Microcosm.

11. But how this Sulphurious essurine Salt, becomes determined and specificated, according to the difference of the Mineral Glebes it meets with, into this or that fossile Salt or Mineral mixture, may perhaps not unaptly be represented, by this following instance; as suppose several colours and salts placed at a distance, one from another upon a large Marble, and common simple water is convey'd to each of these, this water though the same to all, yet as it comes to every of them, it becomes differently tincted and tasted, according to the colour and taste of those parcels it meets with.

12. So this essurine Sulphurous Spirit, meeting with variety of Mineral Earths, though the same in it self to every one, yet becomes altered and tinctured according to the different property of the Mineral Earth, and that according to the degree of Sulphur, maturating the crude Mercurial juyce.

Now to confirm this our Thesis, we must assume these

these two considerations, first, that all the various specificated Mineral Salts, as Allom, Vitriol, Nitre, *&c.* have *aliquid commune*, something in common amongst themselves; and secondly, that thereby all these Salts become transmutable one into another.

13. For the first, that they have something in common among themselves, besides confirmation by our previous discourse, is yet further demonstrable by matter of fact upon our second consideration, *viz.* the transmutability of one salt into another, by the Chymical Art we can out of *sal marine* or the spirit thereof make a Vitriol of Iron or Copper, and by dissolving Quicksilver in Oyl of Vitriol, according to what is done in making turbith Mineral; as suppose four Ounces of Oyl of Vitriol to one of Mercury, after the phlegm is evaporated and distilled, that there remains a white precipitate, which edulcorated by washing gives a Citrine powder, and being revived (as by distilling it from pot-ashes it may) gives the same weight of current Quicksilver as it was at first: This water which is impregnate with the Vitrioline Salts, by being boyled up gives a true Allom; here Vitriol salts are transmuted into an allumenish salt, and that without the addition of any thing but Quicksilver, which is again totally separable, and yet salts by the very odour of the Mercury is turn'd into an Allom.

14. And not only Oyl of Vitriol with Mercury, but also Oyl of Vitriol with common *sal marine* gives Alumen; for if you put Oyl of Vitriol, as we sometimes have done upon common salt, and distil it in a glass body or retort, with a gentle heat, you will find a very volatile spirit of salt will come over the helm, which will fume exceedingly, the *caput mort'*, or remaining salt being dissolved, gives a salt exactly resembling Allom. 15. Also

15. Also Allom in its Minera exposed to the air, is as a Magnet to Nitre, attracting and centring it upon it self, and common salt is in the body of Nitre. Thus you see a relation or circulation of salts one into another; and all this, because they have in their Centre that one common Essurine spirit of salt, which according to various alterations in Mineral beds admits of different coagulations.

16. In short, by way of recapitulation, it is thus, the Essurine acid salt, having in its solution got a slight touch of a Vein or Minera of Iron, and passing through a Rocky Mineral Glebe of Allom (of which along the shore of *Scarbrough* and *Whitby* is found great plenty) becomes more specificated in an allumenous than any other salt, with which the water of the Quick-spring (which breaks forth at the foot of the Rock) is impregnate, which makes that Fountain, *viz.* the *Spaw*, we discourse of.

SECT 7.

1. HAving thus run through the essential principles of this spring, which make up this body of Mineral water, which is so frequently (and that for the most part, not without the expected success) drunk for the health of mens bodies, I think it not impertinent to speak somewhat of its virtues, and that the rather because Dr. *Wittie* gave forth, as I was inform'd, that I endevoured to defame the *Spaw*, in that I held it to be an allumenous Spring.

2. Let him therefore and the World know, that in the Essurine salt of Allom, as noble medicinal virtues are to be found, as in any other Mineral specificated salt whatever, for this salt in its *primum*

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ens is volatile, and therefore exquisitly penetrative; forcing its passage, thorough the otherwise obstructed Meanders of the bowels, notably opening the obstructions of the parts, and thereby restoring the blood, and other peculiar spirituous juyces of the *genus nervosum*, to their primitive fermental vigor.

3. For the better understanding of which, we are to consider, first, the natural fermental digestions of the body; next to that the depravations thereof, by excrementitious parts; and thirdly the Diseases thence depending; and lastly, the restoration of these digestions, by removing the interrupting obstacles and redintegration of the blood and humours.

4. First by the digestive ferments of the body; I mean such alterative juyces as are *ab origine* implanted in such various principal parts, as are adapted for the transmuting of the nutritive juyce of all aliment, from one consistence, colour, and taste, into another, untill it hath run the whole circuit of alterations, giving a proportionable nourishment to every part, for growth of children in the way to maturity, and for the supplying the deficiences contracted, by constant transpiration in adult persons.

5. These ferments are (as the ingenious *Helmont* saith) *transmutationum parentes & à priori indemonstrabiles*, the authors of all transmutations, and cannot be demonstrated by any thing before them, because they are primitively inserted *ab ortu*, and so become radical principles.

6. That of the stomach is certainly such a one as is scarsely to be parallel'd *in rerum natura*, excepting the prodigious effects *Helmont* tells us of the grand Liquor Alkahest, which makes every concrete *fatiscere in suam primam materiam*, resolving them into their primitive juyces. This acid ferment of the

ne ſtomach is ſo powerful, as no other extraneous cidity in the World, can (if in its native vigor) eſolve the hardeſt of aliments into a milky juyce, nd tranſmute ſeveral ſorts of food, as Beef, Mut-on, Veal, *&c.* taken at the ſame time into one milar *cremor*, which no other acidity (we yet now of) can do, though aſſiſted by as equal a dige-ive heat, as we can imagine to be in the ſtomach the parts adjacent.

7. I ſhall not enter upon a large diſcourſe of the erments, being notably and fully diſcuſs'd, both by e noble *Helmont*, and the ingenious Dr. *Willis*; ſhall only aſſume ſo much of that Doctrine as to uſtrate what I intend, *viz.* that theſe vital ferments eing ſtrong and vigorous make ſuch alterations, parations, depurations, exaltations and aſſimila-ons of the nutritive juyce, as are convenient for alth and the common functions of life.

8. But if they become alienated and depraved, by crementitious parts, accumulated through the in-mities of living, as by exceſs of meats or drinks, hich burden by out-proportioning the digeſtions, alſo by food which agrees not with the ferment of e ſtomach, as alſo by unſeaſonable exerciſes, and paſſions of the mind; all which together with e inclemency of the air, *&c.* have ſuch an influ-ce upon this and other parts of the body, as that perverting the ferment, or precipitating the fer-ented maſs, doth ſo alter the function thereof, as at thereby no ſmall foundation is laid for the mul-licity of Diſeaſes, both acute and chronical; but pecially chronical, whoſe deep roots are moſt at inſerted in the ſeminals of the depraved ferment the ſtomach.

9. The Diſeaſes thence proceeding, are generally the

the Scurvy, Dropsie, Asthma, Vertigo, Nauseatings, Vomitings, Diarchea's, and sometimes Dysenteries, *&c.* all which, though when in their full state of symptomes and products, indicate a vitiating of other ferments of the body, and appear in other parts, yet have their beginings from the perversions of the stomachical ferment.

10. For no sooner is the ferment of the stomach vitiated, by the foresaid or any other occasional cause, but the nutritive juyce receives such different alterations (according to the degree of the error of the ferment) from what it should be, as that either the crudeness or over acidness of the chile whilst yet in the stomach, lays the begining of the seminaries of the foresaid Diseases, which being transmitted thus raw, or too pontick into the other digestions, draw them likewise into consent, and so vitiate one digestion after another, until the Diseases appear in their full dimension and latitude of symptomes.

11. Now if the ferments become debilitated by the accumulation of excremental impurities, which in persons of weak constitutions in tract of time, more easily happen, than the alimental juyce proves not well dissolved and digested, which passing the first digestion thus crude, either before its transit through the *pilorus*, causeth a *flatus*, then a Nauseating Vomiting or Pain of the Stomach, a Vertigo, or lays the foundation of a Feaver, either continual or intermitting; if it pass the *pilorus*, it vitiates the second digestion in the intestines, and thence Worms, Jaundice, Obstructions of the Misentery, *&c.*

12. If this vitiated juyce pass thus uncorrected from the thoræical vessels, into the *vena cava*, and so into the heart, which I suppose to be the third digestion, taking the second and third of *Helmont's*

digestions

digestions to be but one, which is done in the intestines and lacteal vessels: The third, to begin with sanguification, *viz.* when the chyle hath passed the second digestion in the intestines, and there receives a further depuration and separation into a more refined milky juyce, whose receptacle are the *glandules* of the Mesentery, and the *Lumbares* is further carryed by the thoracical vessels into the jugular veins, and there meeting with the blood, is dasht with a rubicund colour, and carryed into the ventricles of the heart, and there undergoes the third ferment, where it is elaborated into vital blood. I say if the foresaid vitiated juyce, come thus raw into this third digestion it terminates in Fevers both continual and intermittent.

13. For the (otherwise) nutritive juyce, coming so indigested to the vital ferment of the heart, which is not able to master it, or make any good arterial blood, subverts the vital digestion thereof, rouseth up a spurious febrile fermentation, and intestine commotion of the blood; hence the burning heat in Fevers, and coming from an impure digestion in the stomach, whose footsteps it yet retains, thence the great thirst, and from the same, yet further vitiating the other digestions of the *genus nervosum* (which is the Minera of animal Spirits) proceeds Frenzies, Deliriums, *&c.* and therefore according to the degrees of this vitiated juyce, and consequently of the intense or remiss disturbance of this vital ferment it causeth the paroxysmes of intermiting Fevers, to come sooner and later, thence the variety of Quotidian, Tertian, double Tertian, Quartan Agues, *&c.*

14. If this depraved juyce arrive at the *succus nervosus*, *ubi spiritus animales cudumtur*, which I

take to be the fourth digeſtion, or depuration of nutritive juyce, in its road to abſolving the function of ſenſe and motion; thence a perturbation of thoſe animal Spirits, an inverſion of their natural *craſis*, whence Lethargies, Epilepſies, Apoplexies, Convulſions, Spaſms, *&c.* all which depend upon the depravation of the ſpermatick juyce of the *genus nervoſum*.

15. But if it reach to, or be depraved, by the fifth or laſt digeſtion, *viz.* the aſſimilative ferment of the ſolid parts of the body: thence Abſceſſus, Apoſthumations, Fiſtula's, Ulcers, Tumors, Prurigoes, *&c.* all which depend upon the vitiating of the ultimate digeſtion in the habit of the body.

16. I look upon the alimental juyce in its way to nutrition, to undergoe many alterations from ſpecifical ferments, placed in different parts of the body; to ſuffer many ſeparations, and to paſs through many Colanders or Streiners, where it is percolated and depurated, each ferment after other (while a ſymmetrie in the œconomy of parts) inricheth it with new and more balſamick tinctures, enlivens it with more elaborate ſpirituous particles, adapted for the clarity of ſenſual functions, as a more depurate diaphanous vehicle for the ſoul to act in.

17. I ſay theſe Spirits (which are almoſt the ultimate reſult of all the digeſtions) have their conſtitution and daily ſupply, from the ſucculent parts of the aliment, which paſſeth various fermentations, and are at laſt fabricated out of the pureſt parts thereof; according therefore as the vigour of theſe ferments are, and the depurations of the nutritive juyce more or leſs: ſo are theſe Spirits in their Craſis more pure and ſerene, or dull and opake, whence the ſoul which ſees and acts by theſe organical Spirits, either becomes lightſome and cheerful in the outward fancy

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and portals of the external senses; thence the sanguine and colerick complexion. Or becomes dark, dull, and heavy, and as it were incarcerated in the dungeons of the senses and sensual fancy, the cloudiness of those Spirits darkens the soul, and makes up the melancholy complexion, which with a little variation makes the phlegmatick.

18. I look upon the Spleen and the ferment thereof, to contribute very much to the Crasis of these Spirits; for if the ferment thereof be deprav'd, so as a due separation of the blood is not made (which yet ought to be) and that which should be separated is yet retained: thence obstructions in the very parenchym of that bowel, a darkning and cloudiness of the Spirits, a melancholy vaporous steam soyls the channels of the animal Spirits, and obscures the function of those nimble agents, inverts their order, breaks their ranks, and brings a sad catastrophe upon the animal powers.

19. The soul while in the body hath these airy Spirits for its Vehicle, having thereby an influence upon all and every part, is not determined to any particular place, neither in the *glandula pinealis* of the brain according to *Des Cartes*, nor yet in the membranous tunicles of the stomach, according to *Helmont*; though I do not deny but in the one it may have its peculiar residing place for the regulating the culinary digestions, and in the other its turret to take in the sensible impressions from outward objects, to look about it through the casements of the senses, yet is essentially in every part: and where ever it finds any hostile enemy, which impugneth the texture of those Spirits, there the sensitive soul (by which I mean the vital and animal Spirits, which yet are but one; and that the Vehicle of the immortal

Soul) acts *ad nutum*, rallies up all its forces, incounters the Disease, and at length, *si vires ferent*, plucks out the morbid thorn, and all is well again.

20. So that all the digestions and ferments, the separations and depurations thereunto belonging, are but to prepare and so elaborate the nutritive juyce, as thence a continual supply may come in for the preservation of these animal Spirits, the Vehicle of the soul; whose different Crases make different complexions; and whose different alterations, by various depravations of intermediate ferments, cause no small offspring of Diseases.

21. Now as the crudity of the alimental juyce, first made so, for want of a due fermentation in the stomach, and passing on uncorrected from one digestion to another, lays the foundation (as I said) of several Diseases: so in like manner the over acidness or spurious ponticity of the stomachical ferment (which is also a depravation of the ferment thereof) gives begining to several other Diseases.

22. For though the genuine ferment of the stomach, be specifically acid; and as such, doth so temper, dissolve and equally mix the meat and drink we take, as to bring it to a chyliferous cremor, and that as a necessary preparation to the succeeding digestions: yet if it become too exorbitant, even while in the stomach working up to the upper mouth thereof, causeth Cardialgia's, Heart-burnings, and sowr belchings. That a spurious acidity is the cause thereof, appears by their Cure, which is done by such things as have power to correct, by diluting and sweetning such superfluous acidities, *viz.* by any fixed salt of Vegetables, or any concretes which contein a fixt Alkali in them, as Crabs Eyes, Corals, Pearl, *&c.*

23. This spurious acidity transmitted into other digestions

digestions, cause other Diseases, *extra suos lares*, saith *Helmont*, *in alienam messem transmissa, evadit hostile venis & arteris, &c.* for if it be sent into the second digestion, it causeth sometimes the Colick, Gripings, Iliack Passion, with Spasms, and Convulsive motions of the Guts: and sometimes from an acid *flatus* or sowrish *gas*, fretting upon the spermatick parts of the intestines, causeth Gripings, Disenteries, which grating upon the tender tunicles thereof, liquates the blood from them, and the adjacent parts; at every tormenting liquation puts Nature upon the rack, makes the tender parts confess their weakness to so powerful a fretting agent.

24. Where by the way take notice, that in a complete digestion of the stomach, where there is no more than a proportionable acidity, the cremor comes somewhat acidulate to the second digestion, which by the ferment of those parts, is transmuted into another taste, *viz.* as *Helmont* saith, it becomes of a saline taste, I say though it come somewhat acidulate, yet is conquerable by the ferment of the next digestion, so that unless the acidity be beyond the natural proportion, it causeth no alteration as to the foresaid Diseases.

25. If this exorbitant acidity be carryed to the third digestion in the heart, it becomes hostile to the arteries, subverts the Crasis of the blood, by altering the sweet balsamick soft natural temper thereof, impressing an austere sowre property: sometimes causeth Fevers, but most what lays the foundation of a depraved scorbutick ferment, by perverting the sweet temperature of the blood, inclining it to a sowr saltishness, which precipitating the balsamick parts, and giving fluidity to the saltish and sulphureous parts of the blood, in the same sowrish

property, hinders the natural fermentation of the blood, and in lieu thereof begets this scorbutick ferment.

26. This pervertion of the genuine ferment of the blood, proves a remora to its circulation, making it at sometimes to restagnate, in some of the arterial or venal chanels in some parts of the body: where coagulating, causeth Tumours, Imposthumations, inward Ulcers, Pains, becomes a thorn in those parts, which pricketh (if I may so say) the Archeus, incenseth the Spirits, inflames the parts, brings on a Fever, which, if mortal, hurries all out of doors.

27. The scorbutick ferment prevailing, by degrees spreads it self, by vitiating one digestion after another, until it appear clad in all its colours, branched forth in all its symptomes and products, which are various, sometimes in one dress, sometimes in another, *viz.* in erratick Pains, Dulness and Heaviness of Spirits, Tumors, Ulcers of many sorts, Spots, Looseness of the Teeth, Soreness of the Gooms, Foulness of the skin by Botches, Roughness and other impurities of the outward parts.

For the blood is so corrupted by the vitiating ferment of the Scurvy, as that it constantly breaths forth, staining Apporrhea's or impure steams, which making their egress through the pores of the skin, are, by obstructions they find there, coagulated upon the outward parts, and so make Spots, Botches, Foulness, Roughness (as if nettled) and other impurities of the skin.

I cannot otherwise, at least not better, compare the skin of mans body, in these and such like foul Diseases, than to a transparent glass; which if the steams, rising from a spurious fermentation of the blood

blood and humours, become too groſs to be pervious to the pores thereof, then they condenſe along the ſides, begeting Spots, Stains, foul Damps, *&c.* analogical to the dampy miſts of the Scurvy, which if it were poſſible to cover the body over with tranſparent, white glaſs, we might eaſily diſcover the impure miſts and dark ſteams, ariſing from the baſtardly fermentation of the blood, in Scurvies, venereal Diſeaſes, malignant Fevers, Plague, *&c.* which if the interception of the circulation of the air (that neceſſary bellows of Life) would not prevent the ſucceſsfulneſs of the experiment of glaſs-Receivers, we might diſcern very ſtrange and unthought-of Apporrhea's, cloudy miſts, impure ſteams, circulate within the atmoſphere of the aforeſaid diſeaſed bodies, perhaps not much unlike thoſe foggy miſts, cloudy vapours, and tempeſtuous confuſions, which frequently happen within the Orb of the Earths atmoſphere, which gives that frequent change of weather in the Macrocoſm, as theſe cauſe alterations in the Microcoſm.

Theſe vaporous ſteams ariſing from the blood of perſons infected with the foreſaid Diſeaſes, are not ſimple diſtillations, or meer evaporations of the blood; for then neither our glaſs-Receivers, or our skins would condenſe or percolate any other than fair ſimple water, which would cauſe neither Spots nor Stains: but the ſteams of ſpurious fermenting blood is quite otherwiſe; for here nature endevours an analyſis of the morbid matter, in the reſolution whereof, it carrys of *vapore tenus*, the very ſeminal Miaſmes, equivolent (according to their proportion) to the relicts thereof, ſtrugling in the chanels of the blood; for we ſee in all fermentations a ſeparation of ſome *terrene faces* to the ſides of the

veſſels, alſo of an incoercible *flatus*, which carries along with it ſome ſlight touches of the radical principles in the fermenting Liquor.

Whence firſt we ſee the reaſon of the infectiouſneſs of the foretaid Diſeaſes; for in ſuch ſpurious fermentations nature attempts a reſolution and ſeparation of the peccant matter, which takes wing by thoſe impure vaporous ſteams; in its road it leaves its character of Spots, Stains, Blotches, Buboes, Ulcers, *&c.* in the outward parts of the skin, and ſo goes on to the utmoſt extent of the activity of its own Orb, which if (as I ſaid) could be retained by glaſs-Receivers, we ſhould not only ſee the extent of its Orb, but alſo view the corrupting ſoiling Apporrhea's, which iſſue from ſuch infected bodies; now what bodies come within the orb of their activity, if duly fitted for the reception of thoſe Miaſmes, they become tainted with effluvia's thereof, which retain the platform of the very ſeminal principles of the Diſeaſe in the body, or at leaſt carry along with them ſomewhat analogical to thoſe very Diſeaſes they ſpring from, even ſo much as to be ſufficient to propagate the like Diſeaſe in the next infected body, as we ſee moſt frequently in malignant Fevers; eſpecially the Plague.

Whence alſo we ſee the reaſon why ſome precious ſtones, worn in Rings or otherwiſe, *per modum appenſorum*, will ſuffer a loſs in their oriental ſplendor and brightneſs, when near ſuch bodies as have theſe ſoyling ſteams ariſe from their fermental impurities, *viz.* in ſuch bodies as have the Small Pox, malignant Fevers, Plague, yea ſometimes in ſuch as have the *French* Diſeaſe and Scurvy, in an high degree, whence the Saphir or the Hyacinth, being ſo held to a pained Member in ſuſpicion of the Plague,

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as that it reflects the light upon the affected part, doth so collect and concentre those malignant steams which arise from the infected blood, as that in a very small time (if the party be really infected) it makes the part grow wan and black, and becomes the infallible indication of the Plague, by which afterward, as *Helmont* saith, the virulency as through a tube or chimney is driven forth; that a piece of red Coral should grow pale upon the touching of an hysterical (or I rather think menstrual) woman is from the same cause; for upon the regurgitation of the menstrues there happens an extrordinary defedation of the blood, which by a kind of virulent fermentation, sets the blood into a venemous steaming; which oftentimes is so powerful, as it not only soils the external parts, but also passeth forth, and meeting with any trannsparent or reflecting glass, or Gem stains them, which is not so much from the breath of a menstruous woman, as from other steams which pass through the pores of the body round, but especially at the portals of the eyes.

In like manner appears the reason of the *Evestrum vitæ, bene vel malè affectæ*; for amongst precious stones, some are diaphanous, others opake, as Coral, Cornelian, Turcois, Jaspis, *&c.* but in pellucids, as *Helmont* saith, that *Evestrum vitæ* reverberates it self; for as he saith, *gaudet vita speculo lucido reflecti*, and therefore he looks upon Gems as opake well polished glasses.

And seeing as he further saith, that something doth constantly and necessarily breath through the pores of our bodies, which participates with life it self, and acts within the sphere of its orb; and this in the most sound bodies, which if it find a polite body, reflects it self therein in the manner of a glass;

glaſs; and hence it is that many periapta become effectual, by being ſuch polite bodies, wherein the *eveſtrum vitæ* reflects it ſelf *in modum ſpeculi*; and from this very root ariſeth moſt of the *arcana ſympathetica*; yea and from this original by figmental additions came the *Ganiahen* and *ſalis manica* of the *Arabians*, from whom *Paracelſus* was taught that ſort of Magical Doctrine, *viz.* his *Archidoxis Magica, &c.*

28. This *Dyſeraſia ſanguinis* is not only compatible to the Scurvy, but alſo to other chronick Diſeaſes, as the Quartan Ague and the Dropſie, in both which, the peculiar natural ferment of the blood is much vitiated; in the firſt of which, the blood loſing its native balſamick ſweetneſs, becomes acid and pontick, even in an high meaſure; thence the great difficulty of its redintegration to its former eucraſia: in the latter, the blood becomes too much diluted, drowning its rubicund balſamick tincture, in a watery deluge, having the latex regurgitated in too great a proportion into the veſſels of the blood or other receptacles, from an obſtruction in the veins, which ſhould (if well diſpoſed) ſeparate from the blood an urinous latex, and by other more abbreviate paſſages betwixt the ſtomach and it, a great deal of the potulent parts taken in: but being obſtructed makes both regurgitate, the one into the veſſels of the blood, thereby vitiating its ferment by too great a dilution, which in the habit of the body cauſeth an Anaſarcoſis, and the other in the cavities of the *abdomen*, between the *omentum* and *peritoneum* ſwelling the belly cauſeth the Hydrops, which with a *flatus* extending the membranous parts, begets a Tympany.

* 29. But if this ſpurious acidity reach the fourth digeſtion,

digeſtion, where the animal ſpirits are fabricated, and there afflict the *genus nervoſum*, it cauſeth, by vitiating the ferment, ſcorbutick Palſies, Apoplexies, Spaſms, Convulſions, and Cephalalgia's, which prove inveterate, and ſometimes Epilepſies; yet commonly this hoſtile acidity as ſolitary is not ſufficient to beget theſe ſcorbutick Apoplexies, Palſies and Epilepſies: but alſo hath *quid cadaveroſum ſpirituale*, and therefore *viroſum*; ſome ſpirituous putrid and therefore poyſonous matter to accompany it. By which I mean ſuch a portion of the nutritious juyce as not having received due fermentations in the ſeveral digeſtions, but become more and more vitiated and putrid, and being circulated from one digeſtion to another, grows more putrid and penetrative, and in continuance of time becomes ſo ſpirituous, as to be able to inſinuate into the more retired receſſes of the vital principles; for being by theſe rotations volatiz'd, hath more eaſie ingreſs into the inward retirements of the vital and animal functions: ſo that it becomes gradually exalted to a kind of virulency, which joyning iſſue with this tranſmitted ſpurious acidity, *inſidiantur vitæ*, ſits upon the skirts of life, betrays it into the hands of theſe truculent Diſeaſes. Hence it is that the Palſie or Apoplexie prove ſuddainly mortal, if not at the firſt, yet commonly at the ſecond or third paroxyſm, and from the ſame baſis ariſeth the cauſes of other kinds of ſuddain deaths; for when this depraved, circulated matter, hath reached ſo far, and be wheeled ſo often, as to acquire a virulency or cadaverouſneſs, it then takes an occaſion by the next exorbitancy of the digeſtions, joyns hands with it, and conſpires the extinction of the vital flame.

30. This fourth digeſtion, as I conceive, begins in

in the arteries and is complete in the nerves; for when the alimentary juyce, being dasht with blood in the *vena cava*, receives a vital ferment in the heart, and becomes elaborate in the tunicles thereof, into a rubicund balsamick liquor, which by the perspiration of the lungs, in the bloods passage thorough the *vena arteriosa*, and *arteria venosa*, receives a volatizing ferment from the air, conducing much to its circulation, is thence by the systole of the left ventricle carryed into the *aorta* and other arteries: where the blood begins to be further elaborated for the producing of spirits, which may be subservient for the animal functions of sense and motion; where from the continual elixation of the blood in these vessels, it begins to sublime, or distil into more pure refined spirits, which pass directly into their proper Receivers or Conduits, the Nerves, to complete their digestion and absolve their function of sense and motion, for as much as every Arterie hath a vein and a nerve annexed to it, the one to carry away these volatile spirits, the other to bring back the blood, after it hath been exhausted of these spirits, and spent its other balsamick parts, in nutrition in the habit of the body, to recive a fresh impregnation, by the vital ferment in the heart again, in its return out of the solid parts, by capillary veins into larger vessels, untill it come to the *vena cava*, it meets with fresh nutritive juyce, coming from the jugular and thoracical vessels which thence pass along together into the heart to become freshly repleniſht with the vital balsam.

31. So that these animal spirits are made in every part of the body, while the arterial blood is fraught with a vital ferment, out of which the Archeus by a further volatization hews forth these spirits: here the

he hermetical adage is most true, *id quod inferius, st sicut id quod superius, & vice versâ:* for the vi- al agents, if not interrupted, are alwaies and in very part at work, *nunquam feriatur natura*; there- ore sensation and motion are alwaies and in every part, except some interrupting cause break the links of this noble chain.

32. Now any disturbance in this digestion, such s by a conflux of the foresaid spurious hostile aci- lity, cadaverous virulency, *&c.* may confound and o blunder the texture of these spirits, as thence all he various exorbitances and different anomalous pro- lucts, with all the heteroclite symptomes of the *ge- us nervosum* are reducible, which I shall not now ake the time further to illustrate. But pass on;

33. This exotick acidity coagulating the blood in the Matrix in women, is the author of most of their ute- ine infirmities; for in women who are not with child r give not suck, if all be well with them, the blood ttempts to make a lunar evacuation, which it doth y separating a portion thereof at the critical season, nto the vessels of the Womb, which according to he intent of nature, is for the nourishing of the *Fœtus* after conception, being a precursory provision or that end: if no conception be, as in Maids, Widows, *&c.* then nature endevevours to separate, nd carry away that superfluous blood by vessels fit- ed for that purpose, where it receives a fetid men- trual virulent ferment, which gives the uncleaness not to say more) to that evacuation.

34. Now when the superfluous blood, is proscri- ed into the remote vessels ready to be expel'd, is here robb'd of the vital balsam, its *Crasis* perverted, nd becomes infected with an acid virulent alumenish incture, *Nam linteum menstruo inctum, ut* Helmon-

tius

tius *loquitur, si demergatur in aquam bullientem, maculam contrahit inposterum indelibilem, quæ tertiâ saltem elotione, excidit è linteo foraminato, non secus ac si spiritu sulphuris acido aut tinctura aluminosa corrosum foret*; which depraved virulent acidity is not transmitted from other digestions, but is innate and connatural to the place, like the stercorary ferment to the *cæcum* and *rectum* of the Guts.

35. If this virulent acrimony, with which the separated menstrual blood is vitiated, becomes by a retrograde motion revulsed into the veins or arteries where the vivid balsamick blood circulates, which is done sometimes by unseasonable cold contracted at the crisis of evacuation, or by too much blood spent in venesection, or by symptomatical enragements of that furibund animal the Matrix, or by what other cause soever, is I say the effectful cause of direful Diseases, proper to that soft sex, *viz.* Syncop's, Palpitations, Convulsions, and horrible strangulations.

36. For this exotick revuls'd virulency assaulting the blood and vital spirits therein, begins to ferment strongly, smites the heart, or at least those balsamick spirits which received vitality from the heart; thence immediately Swoonings, whereby for a time happens a suspention of the vital offices, the pulse ceaseth or is weak, the spirits flag, the circulation of the blood is torpid, and all the vital powers shaken: sometimes it strikes the heart with a palpitation or trembling, *viz.* the vital spirits stand amazed, as if smitten with a thunder-clap from the uterine toxicum; also it afflicts with Convulsions, making the animal spirits run counter, whirling them in oblique gyres to the contortion of the musculous parts.

37. And further by an influential manner, it causeth

seth terrible strangulations, by suddainly stopping the pores of the Lungs; and that too, though the Lungs be never so sound (whence all suspicion of any corrupt matter being there to cause the obstructions, is taken away) as also the same is evident in that, after the cessation of the strangulating paroxysm, many times no invisible evacuation follows: and this it doth I say by contracting the pores of the Lungs, whereby all respiration is intercepted, and consequently no pulse, nor circulation of blood during that time; sometimes this acrimonious virulency hath access to the hypochonders, and there (especially when it is acuated and grows more virulent by circulation) it causeth Frenzies and Madness, which sort Mania's prove difficult to cure, because they are not generally right understood, what is the true effective or efficient cause.

38. Thus in short, of the cause of these terrifying Diseases of the female sex. Now there are other more common (but less if at all virulent) Diseases, which happen frequently to women from the redundancy of blood, which not having been brought so far as to be proscribed into the vessels where usually it receives the foresaid menstrual virulency, but is, because superfluous, ready to be transported into the common *Ploaca*; yet by obstructions in the Matrix is sent back into the mass of blood, where it stuffs the vessels, estagnates in some parts, causeth swellings, and coming too plentifully to the Heart, so as not being sufficiently volatiz'd by the respiration of air, stuffs the Lungs, causing; short-windedness, heaviness of spirits, which in young women causeth the Greensickness; in others indigestion of stomach, Pains, Gripings, Head-aches and other various symptomes: All which are curable by removing the foresaid cause

of

of obstructions; by aperient Medicines together with the breathing of a vein, which in these Diseases of an inferior order, from the bare obstructions and recursions of blood, as blood, is not impertinent but of use, which in the other case of the revulsion of the virulent menstrual ferment into the blood is dangerous; but especially at that time when the critical evacuation happens; for then it becomes one of the chief causes of the retrogradation thereof into the blood, and of all the symptomes issuing thereupon.

39. Lastly if an exotick acidity be transmitted from the other previous digestions into the fifth or last, or become actually ingendred and fostered therein, then it becomes the cause of many Diseases found in those parts, for in the ultimate digestion all assimilation of the nutritive juyce is made, so that every part according to the innate ferment thereof turns the one similar aliment into its own likeness; whence then utrition of all though different parts from one and the same nourishment.

40. But if this ferment of any part become alienated from an inbred or transmitted acidity or sowrish saltness, it forthwith depraves the nourishment thereof, and causeth Aposthumations, Fistula's, Ulcers, Tumors, the Evil, Tetters, Inflammations, &c. and sometimes rouseth up the paroxysms of the Gout, or Sciatica; for we see that in Fistula's, Ulcers, or any other running Sores, if the Patient prove exorbitant in his Diet, either in eating saltish meats, or drinking too much strong drink, or to petulant in venereal exercises, is easily discernable by the flux of the wound, which argues that the almentary juyce made from the food taken in, retains some footstepsof its primitive nature, which it carries through

all

all the digestions, and therewith vitiates the very last; and according to the degree of the depravation of the ferment, and rawness of the nutritive juyce, the different sorts of Ulcers, *&c.* proceed.

41 That the paroxysm of the Gout may be roused up from the exorbitancy of a spurious acid ferment in the ultimate digestion, is not uneasie to apprehend, if we consider how some sorts of *French* Wines, Goose, salt Meats, *&c.* easily excite a fit of the Gout, to those who are inclinable thereto, which they do either by retaining a specifical ferment, through all the digestions untill they come to the *synovia* of the Joynts, and there display their hostileness to the parts by proritating the Gout; or rather they vitiate the alimentary Juyce, provoke a spurious ferment in the Stomack, incense the Archeus, at whose beck all the digestions and ferments are subservient; who presently impresseth a fermental acidity upon tender *synovia* of the joynts, thence the Gout, and all its attendants begin to keep court.

42. Now the Gout is a seminal or Ideal Disease inserted into the very initials of life, and therefore hereditary, which can lie long rooted in the very vital principles, ere it make it's first assault, and between one fit and another, is as really present in its morbid character, as when cloathed with all its symptomes, only wants an acid ferment and a beck of the Archeus, to transmit it into the proper Matrix, which it no sooner hath, but is *podagra omnibus numeris absoluta*, a complete Gout.

43. But an objection meets me, which is this, *viz.* That seeing this spurious acidity in the alimentary juyce, as it passeth along from one digestion to another, becomes the material cause of so many Diseases, how comes it, that the Diseases it causeth are not ter-

minated in the first, second, or third digestion: seeing that in those places by its action on the ferments, and their reaction upon it, oftentimes it loseth its acrimony, and assumes some other property, which it carries into the subsequent digestions: and consequently if it be carryed into the last digestion to make Diseases there, it must first in its passage through the primary digestions, cause Diseases belonging to those parts, whereas experience evinceth the contrary?

44. To which I return, first by saying That all acidities, in subsequent digestions of the chyliferous juyce, are not always transmitted from that spurious one of the stomach: but sometimes are new products hatcht in the very latter digestions, by the occasional and spontaneal depravations of their ferments; and therefore must only cause Diseases where they are found. Next, That these transmitted acidities are sometimes in other digestions transmuted into other properties, no less hurtful than before, as for instance, may be turn'd in the third digestion in the blood to a spurious saltishness or stypticknes, *&c.* as prejudicial to the balsam of the blood as the other would have been.

45. And lastly, I answer by saying, That spurious acidities may be transferr'd at distances, *ad nutum Archei*, at the beck of the Archeus, which is the overseer of all the Engine-works of the digestions; as for instance, In those erratick pains of the Gout, how suddainly will the Archeus (in whose *aura vitalis* the morbid character of that Disease, is intimately impresst) transmit an acid ferment from one part to another, from the left foot to the right shoulder or arm, in a small moment of time: yea from one foot to the contrary knee, and to the contrary foot in a little time: all which is done by an Archeal

Archeal transmission of an acrimonious ferment, skipping by an influential manner the intermediate parts, and hitting upon this or the others Juncture, sets the humours of those parts a working, which fretting the tender membranes and *periostium*, like a Mole sometimes works under-ground, and otherwhiles throws up its little hills, *viz.* Tumors, Tophous knots and coagulations.

SECT. 8.

1. NOw some may say, What's all this to the virtue of the *Spaw* water? The answering to which *quære*, will give me liberty to prosecute what I aim at, *viz.* The restoration of the digestions, and redintegration of the blood and humours, by removing the interrupting obstacles, and how far the virtue of the *Spaw* may reach in the cure of the foresaid Diseases. For having in the former *Section* given a short account of the essences, and original causes of many if not most Diseases, what they are, and whence they proceed; how they arise from a vitiating of the several ferments, either causing a rawness or over-acidness, or other hostile properties in the nutritive juyce, having distinguisht them into the several classes of the digestions,

2. I shall therefore now signifie what Diseases this *Spaw* is proper for what not, *Helmont* tells us, *Potæ Spadanæ non multùm conferunt in epidemicis, endemicis, & astralibus morbis, ut sunt pestis, pleuritis, prunella, &c. nec quibus venenum subest vel assumptum vel intus genitum vel contagio participatum, ut neque in morbis tinctura, quales sunt lepra, lues Veneris, Morphea, Cancer, Epilepsia, &c. viz.* that the *Spaw* water avails nothing in pestilential Diseases, Plurisies, Prunella's,

nella's, Poysons taken in or inbred, neither in the Leprosie, *French* Disease, Morphew, Cancer, Falling Sickness, nor in the Apoplexie, Palsie, or Asthma.

3. And though in womens Diseases upon occasion of obstructions of the Menstrual evacuations, there may happen Epileptick, Paralytick, Apoplectick, and Asthmatick affections, which by frequent drinking of the *Spaw*, the obstructions being thereby remov'd, the foresaid dreadful Diseases may cease; yet doth it not thence follow that they as such Diseases considered, as from their own natural causes, or as they are found in the male Sex, are therefore curable by drinking the *Spaw* water: so that, great distinction must be made between those Diseases flowing from their natural seminaries in the body, and those which proceed from the regimen of the Matrix, which *Protens* like, puts on the same vizard of such Diseases, as if sprung from their proper inbred causes in the male kind.

4. So that to the curing of the Epilepsie, Apoplexie, Palsie and Asthma, the solitary drinking of the *Spaw* (though accompanyed with all the rules imaginable) is not sufficient, unless assisted by the efficacy of some noble specificks, which yet without the *Spaws* might do their work, though it's not amiss to absterse the *sordes* of the primary culinary digestion by the *Spaw*, which may thereby somewhat contribute to the energy of specificks, whose work is to dint and mortifie that malignant blass, which arising from the virulent circulated recrement, suddainly surprizeth, stupifieth, and taketh the animal spirits.

5. For in the Epilepsie, the circulated cadaverous excrement, coming to its maturity brings on a fit

of

of that Diſeaſe, by impugning the *aura vitalis* of the Archeus. From the antipathetical concourſe of which two, ariſeth a ſecret incoercible *flatus*, which being pent up by obſtructions in the ultimate digeſtion, ſmites (*quaſi ictu oculi*) the animal ſpirits, which ceaſing to act, the body falls down; or if they act, it's after a retrograde and irregular manner, cauſing Convulſions, and Diſtortions, of the muſculous parts; but the *flatus* being after a while diſperſt, the ſpirits return to their former offices. Which happens otherwiſe in apoplectick and paralytick Diſeaſes; for though there be the ſame concurring cauſes, to theſe as to that of the Epilepſie and a *flatus*, which at the ſecond or third fit proves mortal, by ſecretly ſtifling the ſpirits; yet the *flatus* inclines to one ſide of the body, ſtriking in with the *peroledi* (if I may ſo call them) or influential chanels of the Microcoſm, ſettles the anodynous, cadaverous rerement in the organs of Senſe and Motion: and here lodgeth along time, to the great diſinablement of the animal ſpirits; hence the tedioufneſs ſometimes of apoplectick and paralytick paroxyſms.

6. The incoercible *flatus* which accompanies theſe Diſeaſes, is no better demonſtrable, than by putting one ounce of *ſal-armoniack* into four ounces of *Aqua-fortis*, ſtop the glaſs up cloſe, and in half an hour or leſs you will be convinced of the power of an incoercible glaſs; for you will ſee the glaſs, and that with a great noiſe, broken into many ſhivers: which happens from the antipathy of thoſe two, working one upon the other, exciting thereby a ſtrong *flatus*, which being pent up by the ſealing or ſtopping of the glaſs, forceth its paſſage by breaking the glaſs, though never ſo ſtrong.

7. So in the body of man, the incoercible *flatus*

arising from the mutual contact of the circulated cadaverous recrement, and the *aura vitalis*; though it splits not the body; yet it either quite extinguisheth the vital taper, or at least flattens and disinableth the animal spirits.

8. Now the remedy must either be equivalent to the cause or it effects nothing. But the *Spaw* water comes short, and reacheth not to those inward recesses where the animal spirits lie on their death-bed, and therefore can administer no help; especially if the Disease be graduated to the maturity of one or two paroxysms. For though by absterging the primary digestions, it may help to prevent the plenteous ingendring of the excrements in the after-digestions; and so consequently if timely taken might prevent the occasional cause thereof: yet if the Disease have once become raised from its seminaries to a full stature; then nothing but specificks will doe: such I mean as hath power not only of correcting and preventing the enormous *flatus*, but also of absterging the subtle cadaverous *sordes*, reposed in the inward chanels of the animal spirits, by inclining them to a transpiration: sweetning also the concomitant spurious acidities, which is particularly done by some noble vitriolin Arcana's: The *Elixir Proprietatis*, and volatile tincture of Coral of *Paracelsus* and *Helmont*, *per spiritum sanguinis*, *per lac per larum & per appensa*, *&c.*

9. The same circulated cadaverous recrement sometimes settles upon the spongy *parenchyme* of the Lungs, at which *horret Archeus*, *& flatum suffocativum extimulat*; which suddainly obstructs the porosities thereof, and causeth an Asthma: which often intercepting the air, hinders the ventilation of the vital fire in the Heart; if prevalent, suddainly puts out lifes taper.

10. T

10. This is not curable by the *Spaw*, being too languid in its virtue to reach the Lungs; especially when it is come on to the ripeness of an Asthma: is curable by the former specificks, and that because an Asthma, Epilepsie, Apoplexie and Palsie, are identical in their material and efficient causes, *viz.* The same circulated, anodynous, cadaverous recrement, settling in different places cause the foresaid Diseases; in the brain, the Epilepsie; in the membranous and nervous parts, the Apoplexie and Palsie. If it only vitiate the organs of motion *salvo sensu*, then it's the Palsie; but if both motion and sense be deprav'd, and that with a vibration upon one side, or through the whole body, then it is surely an Apoplexie.

11. But if by a transmigration of this peccant matter, it become coagulated in the Lungs, then an Asthma; of which as also of the other syncritical Diseases, I may say as formerly hath been of the Quartain, That they are *ludibria Medicorum*, and therefore to be found only in the Catalogue of Incurables. And what's the matter? Nothing but we want well prepared Medicines; which either our idleness, or our ignorance, or both, will not suffer us to attain to.

12. These Diseases being congenial in their causes, are the same in their Cures; therefore none of them curable by the solitary assistance of the *Spaws*: but by the power of absterstive and restorative Arcana's, such as the aforesaid remedies and the like.

13. It is true Dr. *Wittie* brings in two instances of the virtue of the water in the Palsie: but if you observe, The Disease in both Patients was at the declining hand; and probably nature by degrees might have wrought it forth, without the help of the waters. It's very probable the change of air, and the

exercise of the body by riding, might contribute as much to the Patients assistance as the water. Besides it may be, The paroxysm of this Disease might be hastened by the exorbitancy of the stomach and foulness thereof, which being rectified by the abstersive property of the *Spaw*, might be alleviated thereby.

14. He gives one, and but one instance of help in the Epilepsie by the water. He tells us of an excellent success he had seen in that one that was Epileptick: but how or after what manner it appeared we must not know; though he doth indeed ingenuously confess, if the Diseases of the Palsie, Epilepsie, Vertigo, be idiopathick, be radically in the head; or otherwise though the malady arise from sympathy, if it be in the begining of the paroxysm; or in its state, the morbid humour being fixed, in such cases he acknowledgeth the improperness of the water.

15. Where by the way take notice, that those three Diseases have not always the head for their principal seat; for though in the Epilepsie and Vertigo, in the one there be a vellication of the membranous and perhaps nervous parts of the brain: and in the other a consternation of the animal spirits, lodg'd there; and that either by a deuteropathy, being disturb'd from other parts, or by an idiopathy in the very membranous and nervous parts themselves: yet notwithstanding the Palsie hath not its original seat in the head, but in the *genus nervosum*, and the inhabitants thereof, *viz.* the animal spirits; and therefore may be, and is in other parts of the body, *salvo capitis regimine*. For it is the catastrophe of these spirits, that gives being to the paroxysm of these Diseases, *viz.* of the Epilepsie and Palsie, *&c.* and when ever they are found smitten with a *flatus* arising from the antipathy of the putredinous, cada-

verous

verous recrement, and the *aura vitalis*, there to be sure is the Disease, in what part soever of the body it is found.

To confirm which, *viz.* that the head is not the chief seat of the Palsie, I shall bring in a considerable instance of a paralytick Patient, to whom I had the hap to be called, after seven or eight other Physicians and pretenders to Physick had been consulted, he lives in *Fernedale* belonging to the Duke of *Buckingham*. This Patient had lingred most part of two years under his Distemper; the occasional cause whereof was, as far as I could learn, either from the damp of the earth, being imployed to over-see, and sometimes did work in an *Hough* (as the Country-People call it) of *Blacomoore*, for some suppos'd Mine of *Pluto*, some treasure deeply lodg'd in the earth, but found none; or else by going into the water in the Summer time to Fish, either of which might occasionally give being to his Disease. He was gradually taken of all his joynts; and sometimes had neither sense nor motion in most parts of his body; but most frequently, if not altogether, had little or no sense, especially from the lower parts of his body downward: insomuch, as if any weight lay heavy on those parts, or any great heat from the fire scorched them, he was not sensible, nor at all complain'd. He could mostwhat move all his joynts as he sate or laid, and that pretty nimbly; but when he came to stand, his knees shaked under him, his legs bended, and he glad to be held up from falling in ones arms. His hands and arms he could move very well, but when he came to take up any meat to put in his mouth, he always either left it or let it fall; so was helped by another, both for his meat and drink taking. Yet all this while *salvo regimine capitis*, had all his senses in his

his head; for saving a glimmering of his eyes whereby he could not read distinctly, which might very probably be from the weakness of the optick nerves, together with some alteration of the texture of the vitreous and cristaline humors thereof: I say excepting this weakness in his eyes, he had his memory as perfect as ever, could cast Account as well as before; had his hearing, taste, and smelling in good order; could eat his meat pretty well, without the least trembling or shaking of his head.

The Physicians he had consulted, had ordered him Vomits and Purges in great plenty, Unguents not a few, and Baths too many; for he was alway the worse after them. They so much enfeebled him, as that he lost the use of his limbs for a time after; and almost weakened him to death.

The Medicines I ordered him were chiefly volatile Spirits, *viz. Spiritus Salis Armoniaci* to smell at, and *Spiritus Sanguinis* to take inwardly, together with a Plaister of Mustard Seed and Vinegar, anointed over with the Balsam of Antimony, Amber, Turpentine, *&c.* applyed to the shaved crown of his head.

The volatile Spirits had a very remarkable operation, for so often as he held the bottle to his nostrils (which he would do a long time together, having an eager desire of receiving benefit by what was ordered him) he could after a while feel it run sensibly down the *vertebræ* of his back, disperse it self into his loyns, and upon those parts to bring a fine gentle warmth, which before usually were very cold, and then run down to his very feet, also to run along his arms to his very fingers ends, with a dindling and pricking as it run along; but he had not this sense of this operation of the volatile Spirits (he smelt to)

at

at the first, till he had several times taken inwardly the *Spiritus Sanguinis*, which usually brought him into a moist sweat, thereby opening obstructions of the *genus nervosum*; after the use of these, for awhile, he found a stiffness in the sinewy parts of his joynts; then began the shaking and trembling of his joynts (upon endevouring to stand, or to go a little which before frequently troubled him) to go away, and that stiffness brought strength from the sinews into the musculous parts; so that he could after the use of these awhile, go a little alone upon the house-floor, and begun to get the sense and use of his hands, so that he can now, not only serve himself, but cut his own meat which he never could do before, since the Distemper seiz'd upon him, also can put on his own cloaths.

From all which duely weighed, results these following considerations. First, hence appears the reason why Patients do not usually reap that expected benefit from volatile Spirits, in these and such like Diseases; for these Spirits, whether inwardly or outwardly administred, or both, are neither palatable, nor pleasant to the smell; but being nimble and quick, do *ferire nares*, after a smart manner, which many people (too much indulging their sense and palat) will not have the patience to undergoe, but boggle and fly back at the first onset of such penetrative Medicines, and consequently deny themselves the expected efficacy thereof.

Secondly. That sense and motion are the products of life, and not the life it self; for this Patient sometimes lay void of any visible sense or motion: and that once or twice after he came out of his Baths, and yet life was present; so that all vital functions, whether fermentations, heat, motion, sense, &c. perfor-

performed by organical parts, are but the sequels and posterior products of the *anima sensitiva*.

Thirdly. That sense and motion are different modifications of the animal Spirits in the *genus nervosum*, and membranous parts of the body. For it is not enough that nervous vessels be replete with so many of the animal Spirits, as to give motion to the muscles, and those to the joynts; I say to have such store of these Spirits in those vessels, as to cause motion, is not enough also to cause sense, unless these Spirits retain their natural sting and acuteness, by which they communicate that we call sense, to all the membranous parts of the body, as happened to this Patient, and so *vice versâ*.

The Spirits may be acute enough, and give their vibration to all the membranous parts, so as to cause sense; and yet the motion of those Spirits, may be so intercepted and dull'd, in the nervous vessels of some parts of the body, as to cause a defect of motiou in the same parts, which happens in the generality of paralytick and apoplectick persons; only with this difference, that the *virus cadaverosum, viz.* the putredinous, anodynous, circulated recrement, which is with the explosive incoercible *flatus* thence arising, the efficient cause of all the Diseases of the *genus nervosum*, whether Palsies, Apoplexies, Epilepsies, Convulsions, *&c.* The foresaid anodynous recrement, is I say more or less according to whose graduated accumulation, the Disease becomes more or less mortal. For if this recrement be ultimately carryed and settled in the membranous parts of the body; then becomes the sense deprav'd as happened in this Patient: but if it seize upon the animal Spirits in their current glidings along their own vessels, it becomes their remora, mortifies them in some parts,

thence

thence comes the depravation of motion and all ſymptomes, accompanying the common ſort of Palſies, Apoplexies, *&c.*

Fourthly. Hence it alſo appears that the volatile Spirits in the blood, are of the ſame family with thoſe of the *genus nervoſum*, and membranous parts; only in their own veſſels they reeeive a more natural determination to their proper functions of ſenſe and motion. For unleſs the blood give being to the animal Spirits, they are not: and unleſs they were akin to thoſe ſaline Spirits in the blood, the Patient could not upon the uſe thereof, I mean of the volatile Spirits of blood, have perceived his joynts to have become more ſtiff and ſtrong than before.

Fifthly. That there is a concatenation of the veſſels of the *genus nervoſum*, and anaſtomoſis of one into another, through the texture of the whole body, was apparent; in that the Patient felt ſenſibly, the volatile Spirits which he ſtrongly ſmelt at, to paſs through the proceſſes of the *medulla ſpinalis* down the *vertebræ* into his loyns, and ſo down to his feet, alſo along his arms to his hands, and to his very fingers ends. Whence alſo it is more than probable, that the ſpringy motion of the animal Spirits, in the nervous kind, have their original in the brain; for as the heart is the ſpring of all the Arteries, the liver of all the Veins: ſo likewiſe the brain of all the Nerves. Which yet doth not infringe our doctrine of the generation of the animal Spirits from the ſpirits of the blood; being the pure defecate eſſential parts thereof, ingendred from all parts of the Arterial blood, becomes exquiſitely elaborated in their own veſſels: and at length receive a determination of motion in the brain.

Sixthly. That the head is not the chief ſeat of the Palſie,

Palsie, was evident in this Patient; for all the senses of his head were untouch'd, save a weakness as I said of his eyes: so that the animal Spirits in what part soever of the body, are the subject matter upon which the cadaverous recrement seizing, gives being to the Diseases of the *genus nervosum*. And that without respect to the head, unless the same efficient cause be there; and then indeed it gives original to the Epilepsie, Catalepsie, Convulsions, *&c.* of that part. More observations I could make, but am not willing to prosecute them to the full at this time, till I am more confirmed by some collateral experiments.

16. The Doctor gives us two instances of the Cure of the Asthma by the Water, *viz.* of an Alderman of *Hull*, and of a Gentlewoman. As to the first we answer, that it is very (if not more than) probable, That the Asthma, wherewith the Alderman laboured was from a deuteropathy, from a stuffing of the stomach, which might compress and streighten the Diaphragm, as also from some trivial obstructions in the lungs, which together might very well produce a spurious Asthma or Shortness of Breath; than which in ordinary foulness and oppressions of uhe stomach, nothing is more frequent: and upon that account might eatily enough be cured by the Water, which doth notably cleanse the *sordes* of the stomach, *&c.* But that this was a real Asthma, I fear the Doctor mistakes in his diagnosticks.

17. And as for the other Cure of the Gentlewoman, I cannot otherwise apprehend from his enumeration of concomitant circumstances, but that it was from an uterine cause, *Asthma ex regimine matricis influentiali prognatum*: and so was not primarily in the Lungs, but only secondary and symptomatical

:omatical, depending upon the depraved œconomy of the Womb; and that from inordinate obſtructions therein, which was caus'd, as I ſuppoſe, from :old taken at an unſeaſonable time, when Nature was ibout its critical evacuation. Now the *Spaws*, by reaſon of the aperient Mineral Salt therein contained, was very proper for opening thoſe obſtructions, ſending away what ought to be by thoſe inferior chanels; and ſo conſequently the cauſe being removed, the ſymptomatical Aſthma might by degrees ceaſe: in which judgment I am further confirm'd, in that he ſaith that not long after ſhe had a Child.

18. As for Rheumes or Catarrhs, He mentions one that received benefit thereby, which Diſeaſe according to the *Galeniſts*, as I apprehend, proceeds from vapours, aſcending from the ſtomach, which being condenſed by the coldneſs of the brain, and obſtructions in the head, diſtill *per foramen palati*, thorough the ſmall chanel of the palate, or by the noſthrils, which falling upon the Lungs brings a Cough, and ſometimes a Conſumption, and deſcending in other chanels, cauſe other Diſeaſes; all which may indeed be reckoned *inter deliramenta Catarrhi.*

19. The eſſentials of which Diſeaſe we deny, *viz.* any vapours to ariſe from the digeſtion of the meat in the ſtomach, after ſuch a manner as *vapore tenus* to reach the head. Which ſuppoſe we ſhould grant, let us ſee what abſurdities would follow; firſt, no ſooner would the meat and drink be taken into the ſtomach, but the heat and moiſture therein would forthwith ſend up vapors, and we ſhould thereupon be conſtantly troubled with Catarrhs.

Alſo the moſt ſound ſtrong ſtomachs whoſe heat was lively, would certainly always breed Catarrhs, becauſe of ſending up moſt powerfull vapours, from the

the liquid parts of food; also in cold Winters, from the forcible injury of the cold air, working upon the brain, and causing a cold Distemper there, we should never be kept free from a Catarrh; not to say what constant droppings there would be at the pipe of the Alembick, the Nose, enough to fill a Receiver in a little time; and to make every one go with one, hung at his Nose.

20. Also it would follow that all defluxions of Rheumes should have but one taste, and that insipid too; because if the vapours, suppose in a pot, arise from never so many sorts of meats, where there is a competent moisture: yet that which is sav'd by condensing, will have but one taste, *viz.* an elemental simple water; whence therefore according to their own doctrine, should the variety of consistence, and tasts proceed; that one should be salt, another sharp and fretting; one thin, and another more thick? So that difficulties and absurdities on all hands, sit upon the skirts of this doctrin of a Catarrh.

21. To be positive, We say the stomach no sooner receives food into it, but it closeth the upper mouth, and the membranous œsophagus claps close together; which also happens at every bit that is swallowed down, so that no vapours can pass it; and though vapours should arise (which no doubt in small quantities they do) from the lower concave of the stomach, where the food lyes, to the upper part thereof; yet they are carryed up with so easie a digestive heat, as that they circulate and fall back upon the digestive mass again, like a globe of glass half filled, whose neck is close sealed up, and set in an easie heat of digestion, the steams which arise, circulate back again upon the matter, without any pressing thorough the neck of the glass, or any danger of breaking the glass.

22. It

22. It is true that from the incongruity of the food in the ſtomack, and from the reluctancy thereof, and the indigeſtion thence following, a *flatus*, *ſpiritus ſylveſtris*, or incoercible gas may ariſe, which not ſuddenly finding vent, by the opening of the upper mouth of the ſtomack, ſtretcheth the membranous parts thereof, makes one ſick and faint; but at length getting paſſage by the upper Portall, flaps open the Oeſophagus, whisks forth with a ſudden noiſe of a ructure or belch. This *flatus*, or wind, carries with it the odour or taſte of that part of the food which is moſt difficultly digeſted; and this is all the vapour which is carried up: which yet is not a vapour, but an incoercible wind, never condenſable (as all vapours are) into water.

23. But it may be objected, That if no ſteams or vapours, are carried up from the ſtomack to the brain, as is uſually and vulgarly ſuppoſed, how comes it to paſs, that after meat, we commonly find our ſelves dull and indiſpoſed, and, as it were, heavy to ſleep many times, Is it not from the vapours which aſcend into the head, and incline to heavineſs?

I Anſwer no. But we are then inclinable to an heavineſs and ſleepyneſs, from the ſame cauſe we are inclinable to the ſame at any time; ſleep follows waking, as night the day; heavineſs and dulneſs are as precurſory to ſleep, as the evening to the night; waking is a vigilancy and action of the ſpirits, each ſtanding centinel in the Portalls of the ſenſes; ſleep is a quieſcence of the ſpirits from their action; the animal Spirits are after a time of working wearied, and willingly give themſelves up to a laſſation, for a further recruit: ſo that there is no need of vapours to riſe into the head to cauſe ſleep. For though a man faſt 24 hours, or longer, and conſequently hath ſmall

matter left on his ſtomack to cauſe vapours; yet is he nevertheleſs inclinable to ſleep: and many can ſleep as ſoundly upon an empty, as a foul ſtomack. Employment either in mind or body, keeps the Spirits in action, and awake; once give way by Idleneſs, or ſolitary ſitting after meat, or at other times, and a dulneſs begins, which is the Harbinger of ſleep, and the Spirits fair and eaſily fall to reſt.

24. Another Objection offers it ſelf, How comes it, That when we drink plentifully of ſtrong Drink, we become ſtupid and inebriate therewith, Is it not from the vapours of the ſtrong Drink, aſcending into the head, that makes a man drunk?

The Anſwer is no. For ſtrong Drink is no ſooner taken (if in an exceſſive quantity) but the ſubtle inebriating Sulphur thereof begins to act upon the Spirits, whether animal or vital, communicable with the brain, by the nerves of the ſixth conjugation, and every where at work in all parts of the body; ſo that there is neither need of aſcending nor deſcending, the Spirits which are overcome by the *toxicum* of ſtrong Drink, are every where preſent, and as eaſily oppreſs'd in the ſtomack by the inebriating Sulphur of vinous Spirits, as in any place.

25. But before I go from the figment of a Catarrh, I ſhall give you ſome account how I apprehend that defluxion of Rheume to happen, which I have denied to proceed from vapours aſcending from the ſtomack. It is therefore a ſpurious depravation of the *Latex* which runs along with the blood, and is every where while in the channels of the veins and arteries, one with it under a ruby colour; but upon any injury inflicted upon any part, is almoſt at hand, at the beck of the Archeus, ready to be ſeparated from its boon companion the blood: and to aſſiſt towards

waſhing

washing of that stain impress'd upon the weakned part.

26. So that if any injury of Cold become as a Thorn, to prick or offend any part (which is the same as is meant by taking of Cold) presently the *latex* (which upon all such occasions is ready at hand) is commanded away, to bring what speedy help may be to the injured part; but not being able to perform that work, by reason of the prevalency of the thorny impression (if I may so call it) becomes rather tainted thereby, receiving an exotick ferment from the injured part; becomes thereby the Patron of all those exorbitant defluxions, which are accompanied with pains, inflammations, or the like. This falling upon the *Larynx* already alienated from an injury of Cold, is sometimes turned into a copious mucous matter, frequently expell'd by a Coughing.

27. But if the *Larynx* happen to be debilitated through a continual defluxion thereof, then it falls upon the Lungs, where it perverts the alimentary juyce of that part, turns it into a putrelaginous corrupt matter; which as worm'd up by the force of a Cough, still increaseth as fast; so as at length fretting upon the spungy substance of the Lungs, wears them away: hence Ulcers of the Lungs, *Tabes* or Consumption.

28. If the *Ossa Ithmoeida* in the Nostrils, be the parts affected from an injury of the cold Air, or smoke of Coals, or other bad offensive fumes; thence a *Coryza, viz.* a Disease we should all be troubled with, in case that vapours actually ascended from the stomack to the head. If the eyes be the parts offended, thence an *Ophthalmia, viz.* a defluxion of Rheums, with an accompanied inflammation. If the teeth, or nervous parts therein be offended, and that from the injury of

the Air reaching thither through the hollowneſs thereof, thence an *Odontalgia*, *viz.* Tooth-ach, with a defluxion of Rheum, or portion of *Latex* ſhowring down that way.

29. Beſides the exotick quality the *Latex* gets from injured parts, to which it is carried by the next adjacent *glandules*, to waſh away the things offending, or the impreſſion it hath left behind; as if a Mote injure the Eye, a great quantity of *Latex* will preſently flow to it, to waſh it out; and that too from the ſoundeſt of bodies. The like happens, if any volatile acrimonious Spirits, as of vinous, Sal armoniack or Harts-horn, ſmite the Noſtrils, preſently an inſipid *Latex* runs to the affected part, and makes the Noſe run. The like alſo, if any unwonted taſte offend the Palate, what a ſpitting doth it cauſe, which is nothing but an inſipid *Latex*, which haſts away to waſh off the impreſſion the offenſive thing hath left. ſo a thorn pricking any fleſhy part, preſently the adjacent *Latex* is ſent away, which endeavouring to waſh off the impreſſion the Thorn hath left, but cannot, thence upon a further conflux of more *Latex*, comes a tumour, and a pulſe, a pain and inflammation, *&c.* which being vitiated by the perverted ferment of the part, turns ſometimes to an Ulcer.

30. I ſay, beſides the hurtful quality the *Latex* gets from the injured parts, it alſo ſometimes becomes depraved, and badly qualified, from ſome inbred cauſe, even in the very veſſels of the blood, or in the lympheducts, often tinctured with an hoſtile, ſharp, pontick, ſaltiſh acrimony; which upon that very account is often proſcribed from the œconomy of life, into ſome external parts, *quibus pœnas luit*, whom it puniſheth with its own crime, tainting them with that they knew not before. If this by the motion of na-

tur-

ture be thrown upon any part, it actually weakens it, by impressing its own character thereon; *Hinc tincturæ ac impressiones venenosæ in vitam durabiles*: if it be thrown upon the Lungs, it certainly causeth a *phthisis*, *Tabes*; or Consumption, wears away the life insensibly.

31. If upon the *menninges* of the brain; hence inveterate and most obstinate head-aches, not bending unless to the best of Arcana's: If upon the Eyes, it causeth Opthalmia's of most difficult cure: If upon the Gums, it ulcerates them, loosening the Teeth, together with intolerable pains: If upon the Palate, it ulcerates and mortifies them; and in the French Disease, it is that spurious *Latex*, which retains the venomous properties, for wherever it settles it ulcerates, when tainted with the venom of that Disease. It is also the author of Scorbutick, and other cacœthical Ulcers.

32. The waters of the *Spaw* may, I confess, at the long run, and with continual use for a competent time, help to dint the acrimony of this spurious *Latex* if it be not too much graduated, nor hath not too immoderately weakned the parts; for then nothing short of noble Chymical Arcana's, that are enriched with a penetrative and restorative Balsom will effect the cure: such as are the Spirit of Salt of Tartar, the prepared Sulphur of Vitriol, the *tinctura lilii*, &c.

33. Now as the forenamed Diseases are not curable by the *Spaw*; so neither are Fevers, especially continued; for a Fever is a spurious fermentation of the blood, from a depravation of the Elementary juyce, coming too crudely into the third digestion, where it should be elaborated into vital blood; but by reason of its rawness, or other alienated properties, it perverts the natural ferment of the heart, cau-

seth a preternatural working and boyling in the blood, by reason of plenty of Heterogeneities that are heapt up with the nutritive juyce.

34. Now whatever hinders the natural fermentation of the blood from purifying it self by separation of Heterogeneities, that, I say, rather aggravates, than abates a Fever; but such is the coldness of the water, (Cold being the great enemy to the ferments of the digestions) that it rather abates, and takes off from the vital fermentation, than otherwise; and so consequently suffers the blood to be stuff'd with a greater plenitude of indigested Crudities, thereby aggravating the febrile fermentation, and increasing all the Symptoms thereunto belonging.

35. And as cold water increaseth a Fever, so also all cold or cool things do more harm than good; yea, even the cooling Julips prescribed by the *Galenists*, yield very small help, if they do not actually prejudice Nature, in the purifying work of fermentations: so that whatever is administred in Fevers, if it have not respect either to abstersion of the *fordes*, in the first, second, or third digestion; or to promote the natural fermentation of the blood, where Heterogeneities are present, and so move *ad diaphoresin*; or to stay the overmuch fermenting, when it is spontaneous: Or lastly, to fortifie the digestions and vital spirits, against the assaults of the Disease. If it have no respect to one of these three, it is, I say, altogether impertinent and frivolous.

36. But neither cooling Julips, as I said before, nor the Shop Cordials, compounded most what of Syrups, Confections, Strong-waters, and the like, all which are cumbred with store of Sugar, that clog and oppress the stomack; which thereupon can receive little benefit from the vertue of the Ingredients, and so

ſo becomes tantaliz'd by the farraginous mixtures of Concretes, which taken ſimply, might help Nature more effectually, and be leſs burdenſom to the digeſtions; I ſay, neither do theſe ſtuffing Cordials contribute any help to the forenamed intentions. For what is truly Cordial, muſt have a power to allay Wind; and if I affirm, That nothing is effectually Cordial, but ſuch as doth *compeſcere flatum*, oppoſe, or take away Wind, I think I ſhall be able to make it good: and that thus.

37. By Wind, I mean ſuch a wild incoercible Spirit or Gas (whatever we may call it) which ariſeth from a reluctancy of the nutritive juyce, or reliques, or recrement thereof, to the ferment of the ſtomack, or other parts; which the ferments not being able to maſter, either through their own debilitude, or through ſome ſtubborn untameable parts of the alimentary juyce, or recrement thereof, begets this wild uncoagulable Spirit we call Wind; which being pent up, not finding vent, ſtretcheth the tunicles of the ſtomack, or membranes of other parts in other digeſtions, regurgitates upon the *anaſtomaſis* of ſome veſſels into the ſtomack, and upon others adjacent, which contain blood and vital Spirits, whom it almoſt ſtifles, put Nature thereby upon the Tenter-hooks: Hence pains, yea, all ſorts of faintneſs and ſickneſs.

38. Now whatever takes away this cauſe, the effect, or *flatus* failing, is truly Cordial; but all other contriv'd Cordials, which reach not this root of Wind, are in vain. It is not enough to make one rift or belch, though that many times gives much eaſe; but to ſtrengthen the digeſtions, and to abſterſe the occaſional cauſe, thereby preventing a ſpurious fermentation, whoſe product is a *flatus*. This, I ſay, is properly to allay Wind, and to become truly Cordial.

39. If we examine the *Galenical* Shop-Cordials, and their other Confectionary Medicaments, we ſhall find the main pillar of them all to be Sugar, witneſs their Electuaries, Looch's, Conſerves, Syrups, Confections, Cordial waters, *&c.* by which the Concretes are ſo clogg'd, as ſcarce one ray of a ſpecifick can eſcape the clouds to illuminate the Archeus, when they paſs the ſtomack into other digeſtions; and through the prevalency of the Diſeaſe, wanting a volatizing ferment, a great part of the Cordials, *viz.* the Sugar-part, turns into a *caput mortis:* which rather increaſeth a feveriſh fermentation, than otherwiſe. Thus the very Cordials of the *Galeniſts* in the concluſion, prove burdenſom to Nature.

40. And as cooling Julips, nor Shop-Cordials: ſo neither Phlebotomy, after that frequent manner it is uſed, availeth any thing as to the three aforeſaid indications; not as to the firſt, *viz.* abſterſion of *ſordes*; for in opening of a vein, both good and bad go together. If indeed the worſt parts of the blood could be ſingled out from the reſt, then letting of blood would prove a ſingular remedy; but the beſt way, the moſt balſamick parts of the blood, are carried forth with other parts thereof: inaſmuch as the very next blood to the Orifice, is firſt carried forth, which perhaps is the moſt free from the morbid impreſſion.

41. Nor ſecondly, doth it promote the natural fermentation of the blood, eſpecially where the Diſeaſe hath, through continuance of time, weakned the digeſtions, impoveriſhed the blood of Spirits by a ſolution of its compage, exhauſted the volatile balſamick parts thereof; for in ſuch caſes, the maſs of blood is ſo degenerated from its former *eucraſia*, as that an infuſion of well-ſpirited balſamick blood, according to late Experiments, would rationally be more

more pertinent, than the taking away part of that, wherein that ſpark of life yet remaining is lodg'd; for in the blood is the life, and the powers and ſtrength of life; how much of the blood is taken away, eſpecially by reiterate bloodings (as the cuſtom of ſome; not to excuſe the Doctor) ſo much is Nature actually debilitated, the digeſtions perverted, and the fermentation of the blood ſpoyled, at leaſt ſo weakned, as to repair the loſs of the volatile balſamick ſpirits requires a long time. And as the blood hath a fermentation whereby it endeavours the ſeparation of congeſted Heterogeneities, whoſe preſence cauſe ſome ſort of Fevers, to which the uſe of Diaphoreticks are very proper; ſo alſo the fermentation thereof may ſometimes be ſpontaneouſly ſpurious, ſet at work by attempting a new *craſis*, *viz.* intentionally to refine, and make it ſelf a more depurate and defecate liquor, which in Children being ſet a working, occaſionally from the inherent *recrementa uteri*, cauſeth the Small Pox, Meaſles, *&c.* and being once ſet a work, doth ſometimes over-ferment, thereby ſpending the volatile ſaline parts of the blood, and gives the Sulphur thereof an *empyrheuma*, ſeparating the eſſential principles of the blood, ſubverting the *craſis* thereof, extinguiſheth the vital flame; which overfermenting of the blood, not only happens to Children, but alſo to more grown perſons, which requires ſome peculiar remedies, leaſurely to put a ſtop thereto; and that either by Phlebotomy, which may anſwer the drawing forth of Wines out of the veſſels, when they ferment too ſtrongly: or by ſome proper Emetick, for ſuch fermentations are rarely perform'd without ſome relation to the *ſordes* of the ſtomack; which anſwers the taking away of the Tartar from the ſides of the Wine-veſſels, from whoſe too great plenty, ſometimes happens

happens the overworking of Wines: Or lastly, by some noble *Arcanum*, whether specifick or catholick, which doth readily purifie the blood, rejecting the feculencies: for the blood may long ferment, and yet through an innate weakness, still retain the first feculencies: and unless helped by some *Arcanum*, would keep on fermenting, even unto the ruine of the balsamick principles thereof. These refining *Arcana's*, or purifying Medicines, answer that which some ingenuous Wine-Coopers perform, by putting some peculiar thing into the Wines, which will leasurely put a stop to the overworking of the Wines; but the skill of such persons is shewed herein, that what they put into the Wines, doth so specifically (if I may call it) stay the overworking of the Wines, as that no prejudice succeeds upon the radical principles thereof, so as they are not liable thereby to decay or degenerate: so likewise by the skill of the Physitian, such noble *Arcana's*, whether Specificks, or such as are more universal in their depurating operation, are to be administred, as may not only leasurely put a stop to the overfermenting of the blood, but restore it to its equal temperature, and proportional poysure of principles, thereby renewing its *eucrasia*, and fortifying the balsam of life; But frequent Phlebotomizing, doth rob the blood of a great share of those remaining volatile balsamick Spirits, and therefore not proper for the restoration of its *eucrasia*.

42. Hence those that recover under their hands, do it with much lingering and tediousness, because of the great enfeebling of their Spirits by loss of blood, the very Weapon in the hand of Nature to manage its encounters with Diseases; which is strangely snatched out of its hands, by many of its pretended Friends,

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the Physitians; who, without pity, see her bleeding upon the spot, and cry out yet with flinty hearts, Blood, blood, yet more blood: Nay, after a ternary of bleedings, and as often vomitings and purgings, in an obstinate Fever, which would neither bend to this severe method, nor the life make its *exit* thereby. One able Physitian being asked, What he would now do after all this? To which he ingenuously answered, That unless he run the same round again, he was at a stand, what to do further. The Querying person returned, That he did believe, if he run but the same round over again, from the beginning to the end, the Patient would by that time be perfectly cured of all Diseases.

43. I grant, That the single breathing of a vein, or artery, or a moderate Phlebotomy, may, and doth sometimes help in a Fever, where nothing of Malignity is suspected; and that chiefly upon the account of the ventilation of the blood, by which I mean a setting at liberty that incoercible *flatus*, which is the product of the febrile fermentation in the vessels of the blood; for this uncoagulable Spirit, or wild Gas, which alwayes results, and is the sequel of a spurious fermentation, if it be not dinted, or let forth, either by breathing a vein, or by Diaphoreticks (which opening the pores, let it go at so many minute portals) then it runs too and again in the vessels of the blood, and causeth erratick pains, restlessness, and unquietness of Spirits.

44. Therefore we find upon the ventilation of the blood, by a moderate Phlebotomy, that pains are abated, whether pluretick, or others; which the *Galenists* observing, take encouragement of arguing *a minori ad majorem, viz.* That if a little blood taking away, give some ease of pains, then surely the taking away

away of a great deal, must give more ease; and so, if they would yet hold on their argument, the taking away of all the blood, will give perfect ease, not only from pains, but from all diseases. Would they go no further than to argumentation, the Patient might very well bear with them; but they come to put this into action; they bleed once, its very well, I wish they would second it with a Specifick; they stay not here, but go to it a second and a third time, to the great loss of Spirits, and enfeebling of the Patient; and oftentimes the disease as much, if not more to cure than ever, and the Patient left less capable of it.

45. I confess I never order Phlebotomy oftner than once in a Fever; and that too, with reluctancy, bemoaning my self, That I have not yet attained to a Medicine, that will answer all Indications thereof; for it is only our poverty of noble *Arcana's*, which makes us stoop to so low and trite a method: and yet I may be bold to affirm, That I have been instrumental to cure Fevers of that nature, where the *Galenists* suppose most necessity of Blood-letting, even Pluriſies, by Specificks, without Phlebotomy. Nay, further, I have been with some Patients, who in Pluresies have undergone a Galenical method of twice blooding, *&c.* (ready for the third time) and the Fever yet as high as at first; whom, after all this, I have, by the blessing of God, cured with a diaphoretick Specifick, once or twice repeated: and sometimes one single Dose thereof, hath so abated the pains, and allayed the feverishness, as that very little more hath been requisite to the cure, *Demptâ spinâ pleuræ infixâ per diaphoreticum cessat ipsa pleureſis.*

46. As for the third and last Indication, *viz.* the fortification of the digestions and vital Spirits, Phlebotomy

botomy doth diametrically oppose; and that because it robs the blood of part of its treasure, surreptitiously stealing away its balsam; and therefore as I said actually debilitates the vital Spirits, making them loure their Topsails upon a fresh incounter of the Disease: so that though seemingly the Disease may not assault so strongly as before, it is not altogether through the abating the former force of the Disease, as it is from the weakening of the vital powers, who are not able to make as forcible an attempt, to expel the malady as before; and therfore flags before its enemy.

47. As in acute so in Chronical Diseases, the frequent use of Plebotomy is not commendable nor proper; and that because in long Diseases the digestions being deprav'd, the blood (whose *eucrasia* depends upon the vigor thereof) becomes degenerated from its sweet balsamick rubie essence, into an austere, sharp, pontick or saltish liquor: which growing old for want of due fermentation and circulation, restagnates in the vessels, makes hetrogeneous coagulations, whence Pains, Tumors, Ulcers inward and outward, the common product of Chronical Diseases.

48. So that what remains to be done in these chronick Diseases, is rather to super-induce a new reviving ferment into these old decayed wines, the blood, that thereby new volatile Spirits might be ingendred, and the sweet balsamick essence be restored; then yet further to weaken by Phlebotomy the sinking vital Spirits: which if they could speak, it would be *Vox querebunda, manibus quorundum Medicorum tyrannicis gemens, Hinc lachrymæ, viz.* Faint cold sweats; into which agony poor languishing Nature is often thrown, having both its strength, first weakned by the continuance and prevalency of powerful Diseases, and at last by the hand of its Physician

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(who ſhould if rightly ſo, be its helper) to have its little ſtock of vital balſamick Spirits, waſted by a palpable weakner, Phlebotomy.

49. Amongſt the moſt obvious ſymptomes, and to the Patient moſt urging, is that of thirſt; which becauſe it is not natural, the more they drink the more they would. This according to the *Galeniſts*, proceeds from an hot and dry Diſtemper of the ſtomach; to anſwer which indication, they moſt frequently order cool and moiſt things: which if the cauſe of thirſt were as they ſuppoſe, they would have a moſt facile ready way of Cure, in caſe that were true, *Contraria ſuis contrariis curantur*; *viz.* That every diſtemperature were curable by its contrary; for then ſuppoſing ſuch and ſuch degree of heat and dryneſs of ſtomach in a Fever, it is but applying the ſame anſwerable degree of cooling and moiſtning liquors; and the Cure would forthwith be effected. If ſo; Why are not the thirſt in Fevers preſently quenched? That after great draughts of cooling Julips, and the like are drunke down, they yet cry out Drie, Drie, as thirſty after a while as ever.

50. What? Can the elementary properties of cold and moiſt, ſo much conſpire the Patients prejudice, as to forget their own natures of cooling and moiſtning? Surely theſe qualities (if they may be ſo call'd) of heat and cold, of dryneſs and moiſture, muſt act one upon another upon the very contact; and no ſooner can heat be encountred with cold, but the heat muſt be abated; and if the degree of cold be proportionable, muſt become quite extinct: ſo neither can drineſs meet with moiſture in the like degree but the drineſs will ceaſe.

51. So that indeed a Feveriſh thirſt hath not theſe elementary qualities for its efficient, and ſo is not

curable

curable by the contrary qualities; but hath a more abſtruſe cauſe, and that is from a depravation of the ferment of the ſtomack, which not being able to digeſt after the wonted manner, what is upon the ſtomach, turns it into recrement; which by the heat of the part (having loſt its curb the ferment) is burnt into a kind of *Alkali* or friable maſs, which being faſt impacted in the tunicles of the ſtomach, becomes the efficient cauſe of a *febrile* thirſt.

52. Theſe burnt Alkalizate *ſordes*, parch the very membranous parts of the ſtomach, œſophagus and tongue (which membrane, is but as one continued web overſpreading all thoſe parts) thence the intollerable thirſt, foulneſs, roughneſs, and parchedneſs of the tongue, which by abſtinence from drink (as is the fooliſh cuſtome of ſome Phyſicians, who underſtand not the Diſeaſe, too ſtrictly prohibit) the Fever becomes the more increaſed, the thirſt the ſtronger, and all the ſymptomes more exaſperated. For there muſt be ſome liquid thing of neceſſity to dilute and ſoften theſe burnt *ſordes*, though it do not ſatisfie and quench the thirſt, or elſe all things go the worſe; but if the skill of the Phyſician be ſuch, as to mingle with theſe diluting potable liquids; ſomething to abſterſe theſe *ſordes*, and to ſatiate theſe Alkalizate recrements, then he effects ſomething as to the real quenching of thirſt, which otherwiſe proves obſtinate and rebellious to all ſimple liquids.

53. For if all ſimple water, or fermentally married to a vegetable juyce, *viz.* Beer, Ale, or Wine, be thrown into the ſtomach, upon theſe friable *ſordes*, they do but (and that ſcarcely) for a moment quench the thirſt, but by the untameable heat of the ſtomach; are caſt into vapours, and by ſweat

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or insensibly, are driven through the pores of the body: and in the conclusion encrease the heat, cause cold sweats, faintness, debilitudes and wasting lassitudes, after the manner of water poured on an hot stone, is presently dispersed *vapore tenui*; or as Spirit of Wine poured upon an *Alkali* of Tartar, causeth a great heat, more than was before.

54. But if these *adust sordes* be absters'd, by the well prepared Salt of Vitriol, or other proper emeticks; or some proper solutive, that may cleanse downward the recrement of the primary digestions, and be seconded with Spirit of Salt, Sulphur or Vitriol, acuating the Patients common drink, together with the use of some anodynous Diaphoreticks, not only the thirst will be abated and quenched, but the Feverish fermentation, and consequently the Fever it self. I have often wondred the *Galenists* should not more seriously take into consideration the efficacy of Diaphoreticks, or sweating Medicines, in Fevers; in as much as in the whole round of their Practice, they find not a more effectual means to quench thirst, and to abate a Fever, than by *Sudorificks*, which is most obvious both to them and to ordinary People, and yet there is nothing they less frequent. If it were no more than observing the operation of a Dose of *Laudanum*, methinks it might convince them of the excellency of Diaphoreticks, and put them upon ingenuous enquiries, how they might promote, and improve that stock of Diaphoreticks, they have in the Shops; might I say put them upon enquiring, how a few grains of *Laudanum* should so quiet the Spirits for a time, quench thirst, and allay pains, and all this as a Diaphoretick; which surely if the narcotick Sulphur was castigated, and the power of the volatile Diaphoretick Salt thereof exalted,

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would prove a much more effectual Diaphoretick, than any *Laudanum* in the Shops.

55. As for *Antimonium Diaphoreticum*; because it is Chymical they are afraid of it; and if they order any, it is in so inconsiderable a quantity, as the effect cannot answer the Patients expectation. They will prescribe 3 grains, it may be 4, 5, 6, or 7 grains, and a great Dose too; and this forsooth must be clogg'd with some other farraginous mixture; which together makes such a confus'd jumble upon the stomach, that the *Archeus* or vital regent, knows not what to make of it; for by their mixtures they miss the mark of Specificks, and thereby of the best Diaphoreticks: In effect, do nothing sincerely, *viz.* without mixtures in the whole course of their Practice. They will wonder perhaps if I tell them that of this *Antimonium Diaphoretick*, which they scruple to give 6, 7 or 8 grains; I can and do with good success, give from one scruple to an whole dragm, which is 60 grains, and that without scruple or danger, but with great satisfaction to the Patient. *Bezoardicum Minerale*, another as dangerous *anti-febrile* Diaphoretick (as they account it) is the former, of which, they scarce dare give above 3, 4 or 5 grains; of which, I with the like success as the former, give from half a scruple to 24 grains. Indeed they are both of my own Preparation, and therefore dare more confide in them.

56. Now the conclusion of all this is, That Diaphoreticks whether Vegetable or Mineral, after previous absterſion of the primary digestions, are the only quenchers of thirst, abaters of pains, allayers of Feverish fermentations, composers of the Spirits; and in fine, the chief Curers of Fevers: and therefore whether duely to be considered, let

the World judge, seeing it conserves thousands of Lives. Thus far as to particular Diaphoreticks. Besides which, *Helmont* speaks of an universal Diaphoretick or *Panacea*, by the name of *Mercurius Precipitatus Diaphoreticus*, which is a fixation of Precipitate, by the cohobating the *Elementum ignis*, extracted out of the Vitriol of *Venus*, at last being strongly fired, becomes fixt, and is edulcorated by repeated distillations of rectified Spirit of Wine, from it to ten times, and then becomes sweet; and is also called *Aurum horizontale*, of which he saith, *Omnem sanat febrem unicâ potione: Hecticam intra Lunæ decursum; oretenus enim sumptus, curat carcinoma, lupum & quodlibet est hominum cacoethes, ulcus sive externum, sive internum, itemque hydropem, Asthma, & Morbum quemcumque Chronicum; complet solus desideria medentum tam in Physicis quàm Chirurgicis defectibus*; by all which it may certainly be concluded to be a *Panacea*, in as much as (according to what he affirms) it cures all acute and Chronick Diseases. *Sed nobis non licet esse tam disertos.*

57. I do not here pretend to it, but doubt not o the veracity of that noble Philosopher, who wrough Thirty Years in the search of Natures choicest Secrets, whose Master-piece was the Liquor *Alkahest*, *Precipitatus Diaphoreticus*, *Arcanum Coral linum*, *Tinctura lilii*, *Sulphur Vitrioli*, *Metallu masculus*, *Elementum*, *Lac perlarum*, the Spirit c Salt of Tartar, *Elixir Proprietatis*, *&c.* all whic conspire the restitution of the integrity of health though disturbed from what occasional cause soeve For the Life, or *Spiritus impetum faciens*, is but on receives the influences of Diseases into it self; whic according to the variety of occasional causes becom differently affected and disturbed: whence the mu

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tiplicity of Diſeaſes; which by an highly graduated Medicine reaching the very radical principles of this *Archeus*, or regent Spirit of Life, corrects the enormities and irregularities thereof; and by abſterſing the offending occaſional cauſes, reſtores it to its *priſtine* integrity; *Vita & vis ejus eſt unica & integra, niſi à cauſſis alienis degeneretur, tum tanquam ſerpens ſævit in ſeipſum, & Morborum evadit Matrona; quâ reſtitutâ eadem ut antea, eſt vitæ integritas.* What noble effects, theſe generous and univerſal remedies may have upon the vital *Archeus*, in order to its reſtitution from the burden of Maladies, may not uneaſily be apprehended, by thoſe who do but ſee the efficacy of their ſubſtitutes, whether in Chronic al or acute Diſeaſes.

SECT. 9.

1. THus having run through the Diſeaſes, or at leaſt moſt of them, to the Cure of which the *Spaw* contributes little help; Now come we to thoſe Diſeaſes where the efficacy of the *Spaw* is moſt diſcernable, *viz.* the Scurvy, Dropſie, Stone or Strangury, Jaundiſe, Hypocondriack Melancholy, *Cachexia's*, and Womens Diſeaſes proceeding from the obſtructions of the *Menſes:* all which (ſaving that of the Stone and Womens Diſeaſes) as they have their firſt Springs from the irregularity of the ferment of the Stomach, Spleen, and ſome next ſucceeding digeſtions; ſo they are thereby more capable of receiving the virtue of the *Spaw*, which chiefly operates upon the ſtomach, abſterſing the *ſordes* thereof, whence it becomes very proper, againſt frequent and immoderate Vomitings, Heartburnings, from an over-acidity, grating upon the

upper mouth thereof, Pains of the Stomach from the like cauſe ; *&c.*

2. Firſt as to the Scurvy, which Diſeaſe at its full ſtate, though it ultimately vitiate the whole habit of the body and brings on a *Cachexia* ; yet the firſt ſeminaries thereof are found in the Stomach, where the nutritive juyce, being not well concocted by the ferment thereof (for no ſolitary heat, but a ferment, is the agent of concoction) the firſt ſtone is there laid towards the building of the Scurvy : this firſt alienation of the alimentary juyce, being not corrected nor amended in the ſubſequent digeſtions, comes crudely into the third, into the maſs of blood, ready to receive the vital ferment in the heart, which finding many untameable hetrogeneities cannot *ſub jugum trahere*, bring it into conformity ; whence the *craſis* of the blood becomes perverted from its ſweet balſamick eſſence, into a ſouriſh, ſaltiſh, and (at the height of the Diſeaſe) vapid liquor.

3. Now the eſſurine alumeniſh ſalt of this Spring, doth notably abſterſe the feculencies of the ſtomach, and thereby ſtrengthens the ferment thereof ; which to Perſons who have not or (if they have) but in a remiſs degree, the Water may be of uſe to prevent the Diſeaſe ; and to thoſe who have it in an intenſe degree, it will abate the firſt ſpring or feeding cauſe thereof ; and by the penetrating Mineral Salt in the Water, may inſinuate the *limen* of the third digeſtion ; where (eſpecially if helped by the addition of ſome reſtorative balſamick Medicines) it may in continuance of time, overcome that *Dyſcraſie* of the blood, by removing that which is ſuperfluous, may repleniſh the blood with its wonted vital ferment, and by dinting the ſpurious ſaltneſs thereof, may reſtore it to its primitive ſweet balſamick nature.

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4. The *Spaw* Water, together with the change of air is pertinent to the aforesaid purpose; especially, as I said, if seconded by other penetrating Medicines, which hath a power to dint the scorbutick ferment. Of which sort are the tincture of Antimony, the right prepared Spirit of Salt, the Volatile Salt of Harts-horn, the Spirit of Salt of Tartar, the Volatile Spirit of Scurvy-grass, *Ens Veneris*; all which as a balsamick condiment, season the nutritive juyce, separate exotick heterogeneities therefrom, by their proper emunctories, sweetens the blood by renewing its former volatile balsamick Spirits, and restores it to its *pristine Eucrasia:* which done, the scorbutick products, whether Pains, Tumors, Ulcers, sore and swelling of the Gooms, looseness of Teeth and the like, ceaseth; and the Scurvy is Cured.

5. Secondly, The Dropsie may be helped by the *Spaw*; which to affirm, though at the first sight it may seem unreasonable and contradictory, because n this Disease the blood is already too much diluted with a wateriſhness: yet if we consider the efficient cause, which is chiefly an obstruction of the Reins, the strangeness will be taken away; for although there be a real vitiating of the ferment of he stomach, and an *adust Alkalizate sordes* impacted in the tunicles thereof, whence a Feverishness nd a pressing thirst constantly attends Dropsical Persons, which Fever is not primary but symptomatial.

6. I say though the ground-work of this, as of ost Diseases, be in the stomach; yet is the main use an obstruction of the Reins, which being the rincipal emunctory of the potable parts of the nuitive juyce, whether being separable from the

mass of blood, by the emulgent veins, or by any other nearer passage to the Reins, if through the congestion of some *mucous* recrement, the small vessels are obstructed (as usually in this case happens) then is the superfluous liquid *latex* (ready for separation) regurgitated, either back into the mass of blood; and thence into the habit of the body, whence that *species* of the Dropsie, called *Anasarcasis*, which by the *Anastomasis* of the vessels, sometimes lets a part thereof fall into the legs, swelling them, especially towards night; and at other times swallows them up again into the former vessels, and the legs become unswell'd again.

7. Or else the liquid potables, coming by a shorter cut to the Reins by reason of their obstructions, flows back and is heaped up between the *Omentum* and *Peritoneum*; which stretching the membranes thereof, bears up strongly against the *Diaphragme*, thereby contracting the cavity of the Lungs, makes the Patient short-winded as commonly they are.

8. This congested potable *latex*, accompanyed with a *flatus*, gives being to a Tympany; and hath no urinous Salt in it, as that had which was about separating from the blood, and by the obstruction of the Veins flowed back again into the mass: and therefore those who are tapp'd for the Dropsie, let forth an almost insipid liquor; so that water which passeth from those who drinke plentifully of the *Spaw*, has no urinous Salt, and so neither tincture no sapour.

9. Now the *Spaw* water doth notably cleanse th stomach, first by loosning and dissolving the clos sitting *sordes*; and that through the dissolving pow er of the alumenish Mineral Salt, which graduall attenuates and thins the *viscous* recrements of th

stomach

ſtomach, after which ſolution of the otherwiſe fixt feculencies of the ſtomach, the plentiful gulping of the water, doth eaſily waſh it away by ſtool; beſides which, a great quantity of the water acuated with its Mineral Eſſurine Salt, paſſeth the ſhort way to the Reins, I mean by thoſe chanels, that great drinkers of Wine, and Strong Drink, have to convey away, ſuddainly, the potulent parts (of what they take in) to the Reins; whereby the penetrative power of the Eſſurine Salt, which as a Solvent in the water, diſſolves the coagulated matter, opens the obſtructions, and makes free paſſage both for it ſelf, and for the *exit* of the reſtagnating *latex*, which before floted in the *Abdomen* and ſwell'd the belly.

10. That obſtruction of the Reins is the chief, if not the eſſential cauſe, of the ſuper-abundant floting of the potable parts in the *Abdomen*, is manifeſt; becauſe all Dropſical Perſons piſs very little, and that often with difficulty: ſo that the moſt part of that which ſhould paſs forth by urine, through obſtructions regurgitates back upon the bowels, or elſe fills the bloody veſſels with a dilating overplus *latex*; whereas if the paſſages were open, and the current kept clear, all the ſuperfluous watry parts, would be dreined away by their natural and proper chanels, and ſo all would be well.

11. The *Spaw* therefore hath its efficacy in Cure of the Dropſie two ways, *viz.* by abſterſing the *ſordes* of the digeſtions, and by being a Diuretick; not to ſay that in ſome obſtinate Dropſies, there may be an extravaſated blood about the Reins, which may ſo irritate the innate Spirit of thoſe parts, as to make a ſpontaneous occluſion of the veſſels, and reſiſt all Medicines, except the nobleſt of Chymical *Arcana's*.

 12. Thoſe

12. Those Medicines which chiefly relate to the Cure of the Dropsie are, as I said, such as are absterſive, and diuretick, together with such as have a restorative astringency, communicable to the debilitated membranous parts; of which sort are the lixivial Salts of Vegetables, whether of Broom, Juniper, the Vine, Wormwood, or the like (among which there is small difference) wherewith the ordinary drink of the Patient is to be acuated: also the *Cinnabar* of Antimony often resublim'd, the Spirit of Salt of Tartar; the *saccharum Martis* or Sugar of Steel; *Bezoardicum Minerale*, which is *Riverius* his Diaphoretick out of the Butter of Antimony; the *Pilulæ lunares*; of which last, I must confess, I never found any considerable success, and for the sake of the corroding *Aqua fortis* or nitrous Spirits, shall for the future rather advise against, than otherwise; also the magistery of Wine, which is the fixt Salt of Tartar so prepared, as to dissolve in the most rectified *alcool* Spirit of Wine; which being often purified by reduction, is a noble Diuretick, essential Salt of Tartar; also the *Precipitatus Diaphoreticus*, and *Precipiolum Paracelsi*; the sappy liquor of the Birch, *&c.*

For most of which Medicines, if you consult the dispensatory, you will be mistaken; they are not attained to by idleness, and meer speculation, but by boldly handling the coals, and putting our fingers into fire.

13. The next Disease is the Stone and Strangury; upon which the *Spaw* hath the more efficacy, because a great part of the water glides through the Reins and Bladder, the places where Gravel and the Stone have their nativity; so that first by the absterſive virtue of the Essurine Salt in the water, it hinders the encrease

encreaſe or growth of the bulk of the Stone, by carrying away the recremental *ſordes* of thoſe parts, alſo by often drinking and that too great quantities of the water, it keeps the current open, dilates the paſſages, and takes the opportunity of ſlipping a Stone now and then, with a ſtream of water, through the *ſphincter* of the Bladder.

14. But as to a reſolution of the Stone, into a liquid juyce, by a retrograde *Analyſis*, is not feaſable either by this or any other Spring; but only (at leaſt chiefly competible to the Alkaheſtical Preparation of the *Ludus Paracelſi, calculoſorum Solamen magnum*; of which, is the *Alkaheſt* diſtilled from the *Ludus*, by which the *Ludus* is reduc'd into a Salt, diſſolvable in the Air into a Liquor; this digeſted in a ſealed glaſs, until the Salt ſwim upon the top of the attracted moiſture, in the form of a greeniſh Oyl or *Axungia*, of which Fourteen Grains ſometimes repeated reſolves the compage of the Stone, of what magnitude ſoever; and upon the ſolution, is alſo expelled; and thereby the Stone perfectly Cured, according to the proceſs of *Paracelſus* and *Helmont*, who both (as they ſay) had it: by which, as *Helmont* reports, not only the Stone was reduced into a liquid form, and driven forth; but alſo the *inclinatio petrifica* was taken away. I have by a ſuccedaneal Preparation, ſo opened the body of the *Ludus*, as that it would yield a deep ſaturate green tincture to Spirit of Salt, as alſo to another liquor of Salt I have by me; but what that will effect, as to the Stone, I have not yet tryed. The well prepared Spirit of Salt, *Helmont* highly commends for the Strangury, and the *Tinctura Aroph Paracelſi.*

15. The Jaundiſe if not too deeply graduated into

into that called the Black, is also curable by the *Spaw*; and that because this Disease proceeds from an error of Crudities in the second digestion, transmitted into the fifth or habit of the body; where that which should of due have been separated by the right fermentation in the second digestion, was carryed into the last digestion, and there discoloured the blood in the ultimate *fibres*, through the whole habit of the body: Now the *Spaw*, as I said, helps to separate, that which of due ought to be separated; by opening the obstructions of the second digestion, and so may prevent the feeding of the Disease, from its own original source, and by the help of specifick may thoroughly be Cured; of which sort, are *Ens Veneris*, Spirit of Urine, *Alkalies*, *mille pedes aliæque insectæ, quæ abstergunt secundam digestionem.*

16. Now come we to Hypocondriack Melancholy, A Disease when deeply seated, puzzles the *Spaws*, and the best method of usual Medicines. The place of its nativity is probably the Spleen, whose ferment if vigorous, is not only to make a separation of some impurities of the blood, not separable by any other part: but also as a specifical ferment, to add some new and noble qualities to the blood, making it more pure and spiritous by separating the feculencies thereof, promoting the clarity of the *Regimen* of the animal Spirits, that Looking-glass of the Soul, which if pure and polite, gives pleasure and solace to the Soul in the Body, causing generous reflections, and shaping perspicacious Idea's, helping acuteness of fancy, solidity of judgement, and tenaciousness of memory.

17. Whereas if the fermental elaboration of the blood in the Spleen be deficient; and thereby the

sordes

fordes become unseparated: thence a steam ariseth which soyls the vessels and muds the animal Spirits, darkens the imaginative part, and with a melancholy vapour clouds the fancy, Hence all the irregularities and disturbed fancies of Hypochondriack Melancholy:

18. The Spleen and the regiment thereof, is *Vulcan*'s Shop, where the materials lie for forging of all Idea's; if the materials be good and artificially handled, a sound structure of fancy may well be raised: but if a wrong cast happen, either through the indisposition of the materials, I mean the blood, or through the error of the work-man, I mean the ferment, the structure will prove accordingly, *viz.* the fancy will be inverted, and the Idea's thereof become prepostrous.

19. Now the meat and drink we commonly take, together with the exorbitancies thereof, have no small influence upon the Spleen, and its œconomy, and consequently upon the animal Spirits and the Soul,

——*Corpus onustum*
Hesternis vitiis, animum quoque prægravat unâ
Atque affigit humo Divinæ particulam auræ.

For if a good orderly Diet be observed, of wholesome food, with much temperance and moderation, Chronical Diseases cannot have power to exercise that tyranny they usually do, nor can the irregularities of the digestions prove so irreducible, as they do by excess of living; in as much as all the digestions take their nutritive juyce in order one from another, so as if the first prove a glutton overcharging its ferment, the rest share with the excess, and communicate

communicate it one to another, till it hath gone the round, and in the concluſion reach thoſe Spirits, whoſe fine texture makes them nearer the Soul, by which it alſo becomes affected.

20. The *Spaw* hath power to help the carrying of the dreggy parts, left after the digeſtion of the ſtomach is over; and thereby helps the refining of the veſſels, ſo as the nutritive juyce, may not come replete with crudities to the other ſubſequent digeſtions, and ſo ſubducts from the Diſeaſe by hindring the affluent cauſe: for ſo far as the virtue of the Eſſurine Salt in the water can reach, eſpecially in the common paſſages towards the bladder, it doth pretty well cleanſe and therefore proves effectual in thoſe Diſeaſes, native to thoſe parts; but doth ſcarce throughly penetrate thoſe more abſtruſe receſſes, where the main concerns of animal Spirits and the forging of Idea's are tranſacted. This is left for the other more penetrating Medicines to perform, which perhaps one with the other, may the better complete the Cure.

21. The Medicaments of uſe in this caſe, are ſuch as are abſterſive, of a penetrating nature, oppoſe a *flatus* by allaying the ſpurious fermentation, and can dulcifie the blood and humours, by all which compoſing the Spirits and ſettling every thing in order; of which ſort are a *Tartarum vitriolatum*, not ſuch a one as is vulgarly made in the Shops, with Oyl of Vitriol: but with the Eſſurine Salt of Vitriol, that hath not undergone any force of fire, readily diſſolvable in any *Vehicle*, which the other will not. The Eſſential Salt of Tartar, the *Sal Chalybis*, the Spirit of Salt of Tartar, the *Spiritus Veneris*, Coral and Crabs-Eyes; and probably above all the *Aurum Horizontale*, or fixt *Mercury*, which being a *Panacea* anſwers all Indications. 22. Now

22. Now come we to discourse of Womens Diseases, and of the virtue of the *Spaw* in the Cure thereof; whose Diseases proceed chiefly from obstructions in the Matrix, whereby the redundant blood flows back, or from a debilitude of the Womb, whereby the blood becomes d:eyn'd away in too great quantities; whence *Lypothymia's*, Faintings and Swoonings, *&c.*

23. As to the obstructions of the superfluous blood, which should be carryed away by the vessels of the Matrix, in form of the *Menses*: We must know therefore, that the *Menstrua* are a certain portion or efflorescence of the blood, granted by God in nature for proper ends, *viz.* both for yielding matter and corporeal bulk to the *fœtus* or *embryo* in the Womb; as also for nourishment of the same, until it come to the birth, It is I say a certain portion of the blood remaining after a full refection of the body, ingendred within a Lunar Moneth, and sequestred from the rest of the mass to the foresaid end; this matter destined to the generation and nutrition of the *fœtus*, long foreseen of Nature (which never acts in vain *quoad intentionem*) in the female, is the main drift and aim of the *Menstrues*.

24. The manner of their generation is thus, *viz.* The blood in the intermitting time, encreaseth in its bulk in the Veins and Arteries, so that one part thereof being supposed to supply the deficiency of what is daily spent by transpiration, the superfluous part increaseth the mass of blood, and at length stretcheth the containing vessels with its plenty, whence a *turgescence* and *plethory* of the vessels.

25. Then Nature (not unmindful of its office) endeavours at the next critical Lunar season, to employ a little the *turgid* vessels, by certain passages and

Anasto-

Anaſtomoſes from the veſſels they run in before, into the *ſecundines* or chanels of the Matrix. This *niſus* or endevour is done two wayes, *viz.* both by an apertion of the *Anaſtomoſis* from ſome veſſels into others, as alſo by an innate contraction of the *fibres* of the ſanguinary veſſels, by which they endevour to free themſelves (*annuente naturâ*) from the oppreſſing *Plethora*; for there is a certain contraction or compreſſion, proper to the Veins and Arteries, by which the circulation of the blood and nutrition of the ſolid parts ſucceeds the better: ſo that thoſe veſſels have a kind of connate *Syſtole*, by which they compreſs themſelves, and after their wonted manner, become free from the ſtifling plenty of blood.

26. That there is a *Turgeſcence* of the veſſels about the time deſign'd by Nature, for the critical evacuation, is manifeſt in Virgins, Widows, *&c.* to whom ſuch a compreſſion of the veins, and ſuch an apertion of the *Anaſtomoſes* of the veſſels are at the critical menſtrual ſeaſon denyed; *oculare præbent teſtimonium defectuum naturalium; ſignaque in fronte gerunt aliquid amplius in venis ac arteriis adeſſe*; Whence ſometimes *Puſtules* in the Face, Redneſs of Eyes, with a ſwelling of the circumjacent veins; whence alſo Tumors in ſeveral parts of the body, Pain in the head and other parts; and many other Diſeaſes, which owe their original to no other than this eſſential cauſe.

27. All which indicate a *Plethory* or *Turgeſcence* through overmuch plenty of blood, whence the maſs of blood through a diſtention of the membranes of the veſſels, doth as it were reſtagnate therein; eſpecially in the *Bronchy's* of the Lungs where the blood ſetting (as the vulgar word is) and the motion of the *Diaphragme* being unproportionabl

nable towards its agile transmission into other parts, and that by reason of the Laxation and flagging of the membranes thereof, over-charged with too great afflux of blood; Whence an Indisposition, Dulness, and Sluggishness of the body, Shortness of Breath, an oppression of the *Præcordia* or upper mouth of the stomach, *&c*, And in a further degree of this restagnation or setting of the blood, proceeds sometimes *Syncopes*, Palpitations and Suffocations; yea at length Death it self. And all this from a bare solitary restagnation of the blood in the vessels, through a retention of that which should naturally be separated at its due critical season.

28. Now further if the blood upon these retentions, restagnate about the mouths of the vessels of the Matrix; especially if tainted with any virulency, from the reflux of some corrupt Menstrual blood, whose current hath been stopped by cold passion, or the like, at the very time of Critical evacuation: thence the *Archeal Regimen* of the Matrix, that *Animal furibundum*, becomes rouz'd up, which acts at a distance, *viz.* in other remote parts of the body, by that manner of operation which *Helmont* calls a *Blast alterativum*, which I cannot nearer compare to any other than to the *spiritus sylvestris*, or *flatus incoercibilis* mentioned before, yet is not formally the same,

29. It is an influential manner of acting, which I judge to be *Identical*, with that whereby the Soul acts upon the Body by passion, darting a Raye here or there, upon this part or the other, *ad lubitum*; for this influential *Blast* (or what other name we may give it, so it comprehend the nature of the thing) it exerciseth its tyranny on remote parts, *viz.* the Hypochonders, Stomach, Lungs, Brain, *&c.*

&c. as by violent forcible motions; and tenſions of the Hypochonders (enough to require the ſtrength of two or three men ſometimes to keep down) and by cauſing the blood to reſtagnate in the Lungs and Heart; whence a ceſſation of the Pulſe, and circulation of the blood, alſo an inſtantaneous Aſthma, together with a ceſpitation of the animal Spirits, accompanyed ſometimes with a *contorſion* of ſome *muſculous* parts; whence Convulſions and the like: in the concluſion it puts a ſtop to all the digeſtions and functions of the body, ſave its own and that irregular.

30. Theſe *Hyſterical* paroxyſms are often occaſionally brought on by paſſions in thoſe women inclinable thereto; which like as a Feveriſh *Delirium*, imitates the *narcotick* Sulphur of *Opium*, or rather as the animal Spirits, are identically wrought upon by a Fever, as by a large Doſe of *Opium*, both working the ſame effect, perverting the imaginative faculty, cauſing wandring irregular Phantaſms, and ſudden irrational Idea's, with prepoſterous glances, the operation of the one ſcarce diſtinguiſhable from the other: So in like manner the uterine *Archeus* or *Spiritus impetum faciens*, connatural to that part, is equally irritated and provoked by a paſſion of the mind, as by a virulency from regurgitated fœtid Menſtrual blood, recurring upon the innocent maſs thereof, in thoſe I mean inclinable to theſe *Hyſterical* Fits.

31. This uterine *Faber* takes a like occaſion from both to become furious, and to act by its alterative *Blaſs* upon other diſtant parts; and that *à vi regiminis* as the noble *Helmont* calls it, whereby it equally, from the one cauſe as from the other, ſtretcheth the Hypochonders, by a furious incoercible *flatus*; which

which if it ſhould proceed from a windineſs of the Matrix, according to the vulgar *Galenical* notion, the part had need to be charged with wind, like a gun, yea and ramm'd too (which how they will be able to make forth I know not) and after every diſcharging, the wind or air muſt be forcibly attracted by the mouth or poſteriors to make a freſh charge for a new fit; which forcible attraction hath never yet (that I ever heard of) been obſerved; only if the Patient get a riſt, the incoercible *flatus* gets vent, and ſhe is better until the next arbitrary *Blaſs* or *flatus* ſtretch the parts again.

32. This flatulent *Blaſs* of the uterine *Archeus*, is far more prevalent than the Elaſtick power of the air; for, if the trite notion were true, That the Fits of the Mother were from a bare windineſs of the Womb, which rowls up the *Abdomen* to the Hypochonders, puffs and ſwells up the parts; then muſt the Womb be ſuppoſed as a Pneumatick Engine, out of which the air being exhauſted (how or by what means I know not) the air of the convex part muſt of neceſſity have a ſtrong preſſure or Elaſtick force to return into the concave thereof, to ſupply the forced vacancy: ſo that the preſſure would not be ſo much from the Womb as towards it, unleſs at the time of the ſuction of the air. Which ſuppoſe we grant, yet would the external preſſure of the air be as ſtrong to return into its vacant and deſerted cavity, and thereby force the membranous parts of the Matrix to give way, flag and falk before it, till it came to an equal poyſe again; and ſo no forcible wind would thence preſs the adjacent parts to any ſuch injury, as ordinarily the uterine *flatus* doth.

33. So that, let them contrive all the ways imaginable, how to ſolv all the urgent *Phœnomena's* of

this *Hypotheſis*, grounded upon a ſolitary *flatus*; which according to the ordinary acceptation, is only a *latio* or *motus aeris*, and we ſhall find a flaw in them; for as ſuch, though forced with Engines in the body (which we know not how they can prove) yet cannot perform, neither with that clerity nor force, what the otherwiſe violent operative *Blaſs* of the Matrix can ſuddainly diſplay, even *ictu oculi*. For as a blaſt or malignant influence in the chanels or *peroledi* of the air, doth ſuddainly ſmite and wither branches of Trees, or other Fruits of the earth, or Faces of People, where they hit; ſo *(quanquam haud paſſibus æquis)* where this malevolent influential *Blaſs* or incoercible *flatus* of the Womb hits, thoſe parts are afflicted with the raging force thereof. But to return.

34. Now as obſtructions and regurgitations of the Menſtruals and paſſions of the mind, are the *Procatartick* or occaſional cauſes of *Hyſterical* Fits, and concomitant ſymptomes thereof: ſo, as I ſaid, are debilitudes of the *Placenta*, and laxation of the veſſels thereof, the cauſe of great evacuations, which ſometimes happen to the great impoveriſhment of the blood and ſpirits, and much enfeebling of the Patient, and the cauſe of *Syncope's*, *Lypopſychia's*, Faintneſs, Swoonings, *&c.* and that meerly by the loſs of blood and ſpirits.

35. The Cure of theſe uterine Diſeaſes is next to be conſidered, where if the Diſeaſes be from obſtructions making the blood flow back into the maſs thereof, before a menſtrual defedation of the ſame, in ſuch the *Spaw*, if in any Diſeaſes, is effectual; and that becauſe the Eſſurine Salt thereof, is very prevalent in opening of obſtructions, waſheth away the *ſordes* which uſually cling to the oſculations of the

the vessels of the Womb; and absterseth notably every tartareous recrement fastened to the sides of the said vessels: in as much as there is a *Sal quoddam minerale excrementitium*, or *tartarum resolutum*, of which whether the Womb, Liver, Spleen, Reins, *Pancreas*, *Mesentery* or Stomach be the *minera* thereof, it causeth, as *Helmont* saith, great trouble to the Patient (*insignes parere laborantibus molestias*) which will not obey the mandates of common solutives.

36. In order to which, if *Sal Martis*, *viz.* the Sugar of Steel, or the *Crocus Martis*, or Powder of Steel it self, be given after a due manner; as soon as they come into the stomach, the Salt of Steel being in a *Vehicle*, whether water or wine, the *Crocus* therein contained precipitates, unto which the foresaid spurious excrementitious Salt hasts, becomes coagulated thereon, and carryed away by seidge: whence the blackness of excrements in those who take chalibeate Medicines. The same also happens if either the *Crocus* of Steel, and powder of Steel be inwardly taken; and in some cases very proper and effectual.

37. Now because in the *Spaw* water there is no *Crocus Martis*, no body of Iron at all, but only a sleight touch of the *minera* thereof, I should advise, for helping the waters to work this effect, to dissolve therein at sometimes half a scruple or more of rightly prepared Sugar of Steel, which no doubt would make the water more effectual, for precipitating and carrying away this foresaid *Tartarum lutum*, which otherwise often pertinaciously adheres to the vessels, and proves rebellious to ordinary solutives or purging Medicines; to which purpose some vitrioline waters, especially where a larger portion of the body of Iron is dissolved, is of more

efficacy in this case than, this: which as I said before may easily be helped, by an artificial addition. For commonly in the most obdurate obstructions and Diseases thence depending, this *Sal excrementitium* clings closely to the oculations of the vessels, and is the cause why the Green-Sickness in some young women is so difficult to Cure. Which sometimes bends not to the single help of this or other *Spaws*, where little or no body of a Mineral is found: nor to a *Galenical* method of Blooding, Purging, *&c.* but only or chiefly to chalibeate Medicines, and some resolving penetrating Diaphoreticks.

38. In the defects of Critical evacuations in young women, the obstructions may be so great, as to cause an uterine Asthma, Suffocation, Epilepsie, Palsie, *&c.* Which obstructions being removed by the *Spaws* and chalibeate Medicines, those Diseases because uterine, and depending thereon, are forthwith Cured; to which the change of Air doth not a little contribute, by adding a volatizing ferment to the blood, whereby it becomes more capable of being absolv'd from the tartareous recrement, to circulate the more freely in the vessels.

39. As the *Spaw* water and chalibeate Medicines have an aperient virtue of resolving the tartareous obstruent: so also they strengthen and constringe the fibrous *Systole* of the Membranous parts, helping them to do their work which before they flagged under; hence they are proper for *Diarrhea's*, *Dysenteria's*, *Lienteria's*, *Cœliaca's*, *&c.* All which proceeding from a coagulation of the foresaid tartareous recrement upon the *fibres* of the Membranous parts, which makes them forget their function: weakens and loosens the *fibres*, whereby they can not retain what they should, but carries all off with a pr

a prepoſterous *Diaſtole*. The *Fibres* of the uterine Membranes are often very well conſtring'd by the *Spaws*, as I ſaid, and chalibeate Medicines, and reduc'd from being too great prodigals, that before ſpent their own, and a great part of the ſtock of the body.

40. But if the uterine Diſeaſe riſe a note higher, by being graduated from a virulency in the blood; ſo as thence to cauſe *Hyſterical* Fits, *Syncope's*, *Lypopſychia's*, *&c.* Then will Medicines of an higher rank be requiſite, for the *Spaws* and Chalibeats will not reach them: To which purpoſe I have ſeen *Elixir Proprietatis* well Prepared, after a previous proper purgation, operate notably in allaying theſe uterine furies, mitigating the acrimonious virulency of the blood, and thereby compoſing the otherwiſe *furibund Archeal Faber* of the Womb.

41. *Helmont* in theſe caſes commends the volatile tincture of Coral, and the *Arcanum ignis ſive dulcedo Sulphuris è Vitriolo Veneris*, which *Ignis Veneris* doth allay the ragings of that furious *animal* by the anodyne Sulphur thereof; alſo his *Electrum Minerale*, which is a bright reſplendent Mineral *Marcaſite* of Gold; alſo *Aſafœtida* and *Caſtor* and the Oyl of Amber. *Paracelſus* highly extolls the fume of Horſe-warts, taken *ex infundibulo per inferiora*; ſometims a draught of cold Spring-water; the ſmoak of burnt Feathers; alſo *Amulet*, as *Aſafœtida* hung about the neck: which two laſt ſave one, with the like of that tribe, do only palliate the Diſeaſe.

42. A good *Deoppilative* Medicine together with a proper Diaphoretick and ſutable *Anodynes* are moſt requiſite in theſe Diſeaſes; ſuch I mean as may anſwer the indications thereof, both by aperient, Diaphoretick, and *Nepenthine* Remedies.

A short Description of Malton Spaw.

1. THE like Ingredients of the *Scarborough Spaw*, hath also the *Spaw* at *Malton*, and consequently according to all probability the same operation; as to the parity of Mineral Ingredients, will appear, if you put either the powder or solution of Gauls thereto, it presently gives an opacity, first purple, then black; after the manner as the same doth to the *Scarborough* water, or to a solution of Allom stone, into which if Spirit or Oyl of Vitriol be dropt, that water of the *Malton Spaw* as well as the rest will become clear again: If Oyl of Tartar be dropt into the same cleared water, it becomes troubled again, *&c.*

2. If Oyl of Tartar be dropt into some fresh water of the *Malton Spaw*, it makes a white *Coagulum* or milky separation, dispersed through the whole; if Oyl of Vitriol be dropt into that milk water, it clears it after a little ebullition from the two contrary Salts. The same *Spaw* with the addition of the volatile spirit of Harts-horn, *&c.* makes a white separation, and with Oyl of Vitriol becomes clear.

3. This water I have distilled in a glass-Retort, with a gentle fire; and after the simple elementary water was come off, there remained a pale-coloured Sediment, much the same with that which remains after the distillation of the *Scarborough Spaw*, *viz.* an Essurine alumenish Salt, which passing thorough or by some Mineral Bed of Iron, licks upon it, carries some small touches thereof; and also passing by some Stones in its current, raiseth some small portion thereof, which being wrought off by the Essurine

Salt,

Salt, it hides it with it ſelf in the pores of the water; which is that as remains after the Salt is waſht from this Sediment, either ſimply or after calcination, which hath no taſte, nor (after the ſeparation of the Salt) is diſſolvable.

4. To enumerate the virtues thereof, were but to repeat what I have ſaid already concerning the *Scarborough Spaw*; and therefore ſhall wave it, and wiſh a ſtronger Spring, with a better current, were endevoured thereabout, for the good of that part of the Country; in reſpect it hath but a faint Spring, and would eaſily be dreyned if many ſhould drink thereat. This water is as deeply ſaturate with Mineral Principles, and as throughly impregnate with Eſſurine Alumeniſh Salt, as the other of *Scarborough*, only by reaſon of the reſtagnation of the water about the mouth of the Spring, is ſomewhat more ſluggiſh, and unapt to give its virtue: All which may be mended to the great improvement thereof, if a new Spring were found out.

The Sweet Spaw *at* Knarsborough.

1. I Shall not ſpeak much of this water, becauſe the ingenuous Dr. *French* hath writ thereof at large; only ſhall in ſhort ſay, That this water hath but a ſmall portion of an Eſſurine Acidity, which hath a little preyed upon the *Minera* of Iron, got a ſleight touch therefrom, and therein is as a Vitriol of the *Minera* of Iron.

2. For if Gauls be put therein, it turns purple, and in the concluſion Inky, upon which if Oyl of Vitriol be dropt, it becomes clear again; and by Oyl of Tartar muddied, and cleared again with Oyl of Vitriol, *Aqua fortis*, *&c.* But if you pour Oyl of Tartar on ſome of the freſh water, it gives a white milky ſeparation; which with Oyl of Vitriol becomes, after ebullition, clear again; upon which if Oyl of Tartar, Spirit of Harts-horn, or any volatile Saline Spirit be again poured, it cauſeth the ſame white *Coagulum*, reducible to a clarity by freſh addition of the foreſaid Oyl of Vitriol, *Aqua fortis*, or the like.

* 3. All which demonſtrate, That Vitrioline Solutions may undergo the ſame alterations, by the effuſions of various Liquors, as Alumeniſh Solutions will do, * and that in effect, as I at large ſhewed in the former Diſcourſe, are but the ſame Mineral Eſſurine Salt, under various diſguiſes from Mineral Beds, where they become ſpecificated into this or the other Salt, from the touching upon various Mineral Glebes.

4. So that in effect, all Mineral Springs, whether vitrioline or aluminous, are the ſame; only ſome waters are more ſtrongly ſaturated with Mineral Salts than others: in order to which, we find

that

iat the *Scarborough* and *Malton* water are better
'aught, and more richly laden with its Minerals
ıan this of *Knarsborough*, which is a more poor lean
'ater, thin of Minerals, and therefore greater
uantities muſt be drunke.

5. I confeſs I like the Air of that place much
etter, being upon an high heathy Common, than
hat of *Scarborough*, eſpecially for weak and tender
odies; and in the Cure of Chronical Diſeaſes, the
hoiceneſs of the Air is of no ſmall value, nay indeed
ftentimes *inſtar omnium*, above all the reſt. For the
hange of the Air, and the aptneſs and goodneſs
hereof, doth often volatize the ſluggiſh ferment of
he blood, which in long continued Chronical Di-
eaſes, as the Scurvy, Dropſie, Aſthma, Conſump-
ion, *Cachexia's*, *&c.* is become flat, feculent and
eſtagnant in the veſſels, through the depravation
f the ferment thereof; which cauſeth the lamp of
ife, only to glow in the coal, or *Caput mort* of
he blood: whence they commonly, who are affli-
ted with thoſes Diſeaſes, go heavily and ſadly.

6. Whereas when the ferment of the blood be-
omes reſtored (to which change of Air doth not a
ittle contribute) that it ſeparates the feculencies,
volatizeth the maſs, and gives wings to that which
ſhould tranſpire, then the blood begins to circulate
freely, the Diſeaſes become Cured, and the lamp of
Life burns with a bright flame. I ſay, the change of
Air helping to volatize the blood, renders it more ca-
pable of receiving ſome aſſiſtance by other Remedies,
whether the *Spaw* water or other Specificks.

7. That this *Spaw* is Vitrioline, and that only, is
demonſtrable by matter of fact, *viz.* Take a Dram
of Vitriol of Iron, otherwiſe called Salt of Steel,
which diſſolve in a pint of Spring water; of which

two

two or three spoonfuls mixed with a glass of fresh Spring water, gives the exact taste of that *Spaw*.

8. I should advise the Drinkers of that *Spaw*, in order to make the waters more effectual in less quantities, to take Salt of Steel dissolv'd therein frequently; which I am confident, would add abundantly to its virtue, and make it more readily answer their expectations. For thereby, first, they need not drink such large quantities, which often overchargeth the digestions, stretcheth the Hypochonders, and burdens nature, to the prejudice of the expected future good; whereas a lesser quantity acuated, with an artificial Vitriol or Salt of Steel, will make its way the more readily, open obstructions more powerfully, constringe the loose flagging membranous parts more easily, and answer all indications more generally.

9. Besides all which, the *Crocus* of the Steel in that Vitriol, when taken into the Stomach *&c.* would precipitate; upon which the excrementitious Salt or Tartarous recrement, the great obstructer in many Diseases, would be coagulated, and by the peristaltick motion of the Intestines would be carryed off by siedge, giving blackness to the excrements, thereby sweetning the blood and humours.

10. And therefore it is that those Mineral Springs, which are the most impregnate with a natural Vitriol of Iron, are not only reputed but found to be the most successful in Cures, witness the two *German Spaws*, *Pawhont* and *Sauvenir*, or *Savern*, in which, though Dr. *Heeres* saith, That by distillation he found Rubrick, *Oker* and a little Vitriol, I mean in the *Pawhont*; yet if we shall credit *Helmont* he speaks thus, *Distillari aliquando seriò, Savenirium & Pawhonteum; & sanè non tantum Mineralium catalogum, imò nil quicquam in iis offendi, prater aquam Fontanam*

am & Vitriolum ferri, ab aliis ante me ſcriptoribus lectum. Now whether of theſe two is to be credi- ? I rather think that *Hen. ab Heers* might be mi- ken, calling that *Oker*, which is nothing but a ſe- nent of the Mineral Earth of Iron, diſſolved by Eſſurine acidity, which we ſee is ſeparable from triol it ſelf, by a bare ſolution thereof in Spring common water, in the form of a yellow powder, ich he might eaſily miſtake for *Oker*. As for Ru- ick I ſuppoſe it is nothing elſe but *Mater ferri*, the dy of Iron in the Vitriol; and ſo it will neceſſari- follow that what *Helmont* ſaith, as to matter of t, is moſt true, *viz.* That he found by diſtillation thoſe waters, nothing ſave clear water and a Vi- ol of Iron.

11. By the *Medium* of which Vitriol of Iron oſe Springs effected their Cures: Of which alſo is at *Knarsborough*, if aſſiſted by the help of an tificial Vitriol or Salt of Steel, would prove *ſuc- daneous*; though I confeſs if it were ſaturate with e natural Vitriol, it would operate the better. Which, whether natural or artificial, if the water be y thing conſiderably impregnate therewith, it th its work in leſs quantities; the great bulk hereof, uſually taken to make it work, ſtretcheth o much the *Fibers* of the Membranous parts, ba- les their *Syſtole* or contractive motion; whence not eing ſtrengthened afterwards by ſome aſtringents, ey flag, and the Patients ſometimes, after they have ft drinking the waters, fall into Dropſies, Defluxi- ns of Rheumes, *Cachexia's*, and the like.

12. All which might eaſily be prevented by ta- ing the Vitriol of Iron or Salt of Steel, in a pro- ortionable quantity diſſolv'd in the water; for this ſtringeth and keepeth up the right tone of the Mem- branous

branous parts, orderly regulating the *Syſtole* and *Diaſtole* thereof; which very thing would be of no ſmall uſe to many Patients.

13. I ſhould adviſe before the drinking of the water, a Doſe or two of the well prepared Salt of Vitriol, eſpecially to ſuch whoſe ſtomachs are furr'd with a tartarous recrement, and *viſcous* Sediment, faſt impacted in the tunicles thereof, which the ſolitary waters might ſlip over again and again, without any remove, and conſequently without any conſiderable effect; but being once looſened by the ſtrength of an Emetick, might be carryed off the ſtomach, partly upwards and the reſt downwards, waſhed away by the force of the water.

14. The time of drinking the largeſt Doſe of the waters, acuated with the Salt of Steel, is the Mornings, walking as the uſual courſe is, and no more all the day, except two glaſſes in the Afternoon about four of the Clock; and that but to ſome bodies neither, *viz.* to ſuch as by experiment find it go well with them: exerciſing themſelves by Walking, Riding, Reading, Bowling, or any other innocent divertiſement; keeping an ordinary Diet of a few diſhes, and thoſe of wholeſom meat and well cook'd, without too much variety of ſauces, which confounds the ſtomach; not to glut or overcharge the ſtomach, but to keep an hanke over it.

15. The water thus drunke, together with the addition of ſome ſingular Specificks, well ordered, according as the nature of the Diſeaſe requires, will probably, *conſideratis conſiderandis*, perform very conſiderable Cures, to the comfort of the Patient and credit of the Phyſician; who as ſuch, is a Miniſter or helper of Nature. As to the particularity of the Diſeaſes themſelves, this

Spaw

Spaw and other additional helps may be effectual
n, I shall refer to what I have already spoke in the
ormer discourse of *Scarborough Spaw*.

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The

The Sulphur Well at Knarsborough.

1. THat this water hath a ſtrong body of *Sal Marine* in it, needs no further evincement than its eminent ſaltiſh taſte, and the copiouſneſs of a black ſalt left behind after the diſtillation, or evaporation of the water; which by ſolution, filtration and evaporation becomes a clean white *Sal Marine*, no way diſtinguiſhable from the Trencher-ſalt we uſe; that it hath alſo a Sulphureous *fœtidneſs*, is apparent enough, both by the ſmell, and by the ſtrong rifts or belches upon the ſtomach, ſomewhat like to *fœtid* rotten Eggs.

2. As I was trying an Experiment to another purpoſe, I found ſomewhat unexpectedly, which did abundantly ſatisfie me, as to the cauſe and reaſon of this Spring; and it was thus, I took three Ounces of thrice calcin'd Bay Salt, diſſolv'd it in about a pint of Well water, which upon the Solution gave a very *fœtid* odour, moſt exactly reſembling this Sulphur Well. It was very black in reſpect of the terreſtreity of the Salt that gave that blackneſs to the otherwiſe clear water; this I filtred forthwith into a clear liquor, that retain'd the perfect ſmell and taſte of the Sulphur water.

3. Whence I concluded, firſt, That the *Sal Marine* is not a ſimple Salt, but a Mineral Concrete, having an embryonate Sulphur cloſe lockt up in its concretion or compage of its body, whereby the *Primum Ens Salium* becomes ſhut up in it, as well as in other Mineral Salts; and therefore cannot be made to appear, unleſs that which hinders be taken away, that is, unleſs the Hydropick moiſture wherewith it abounds be exhauſted by flagration or decrepitation;

and

d the terreſtrious feculency, or (as I would rather ll it) the embryonated *fœtid* Sulphur be removed, hich is done by a further, or reiterate calcination fuſion by the fire, whereby its Mineral compage unloos'd, and ſo comes nearer its *Primum Ens*, than hen it's clothed with Mineral Veſtments.

4. For all Mineral Salts, whether Nitre, Allom, itriol, or *Sal Marine*, are but the ſeveral ſpecifi- ted concretions of that *Primum Ens Salium*, the other of them, as alſo of other Mineral productis: So that the *Primum Ens* runs through, and is in l thoſe Salts, only receives a particular determina- on into this or the other Salt, according to the pre- ominations of the properties of the nature and diſpo- tion of the place, at time of concretion; inſo- uch as that by the addition of a Sulphur, every here (though differently) wrapt up in the boſome f Nature, this *Primum Ens* becomes coagulated and etermined into a different Salt, or other concrete bo- y (which yet to a common and unexperienced eye, ight eaſily paſs for a ſimple and uncompounded alt) the reſolution of which requires no leſs than a kilful Artiſt.

5. Secondly, I hence alſo conclude, What may e the conſtitutive principles of Sulphureous Springs; nd that is a *Sal Marine*, ſo digeſted in the bowels f the Earth, as that its Mineral embryonated Sul- hur becomes unlooſed: which together diſſolving in he vein of a Spring, paſſing through the various Meanders or Streiners of the Earth, called by *Hel- mont Sabulum bulliens* or *Quellem*, it becomes pur- ged from much of its terreſtrial feculency it had ontracted in its ſolution.

6. By which embryonated Sulphur, I mean a Sul- hur *in ſuis principiis*, in its firſt appearance, whilſt it

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is yet in the kernel (as I may say) and not brought on so far as to become a real body, but only a volatile Gas, which contains the beginnings and impressions of Sulphur in it, and yet is not imbodyed in a Sulphur, but is as an Embryo before its imbodying in the Womb; from which, its name of an Embryonate Sulphur.

7. And that it is such an embryonated Sulphur, which predominates in these Sulphureous Springs, appears by evaporating some of that water, and you shall find that before half of the moisture be gone it hath lost all its Sulphureous odour; because so volatile as not the least of it discernable in any body of Sulphur or otherwise: nay, though one should distil it with never so much curiosity of exactly fitting and joynting Receivers, yet would nothing of a Sulphur become apparent, but would be gone insensibly; as happened to a solution of above a pound of thrice calcined Salt, which upon the affusion of water did exactly resemble the Sulphur Well, as I said, which filtred and placed over the fire to evaporate, before one half was gone it had lost all its embryonative Sulphur, being so volatile as it took wings, by the assistance of so much heat, and left no footsteps of its presence.

8. Thirdly, I conclude that such a solution of the *Sal Marine*, together with its embryonated Sulphur in a *fabulous* Spring (having received that previous digestion in the intrails of the Earth, as to make apparent its Embryo Sulphur) may be nearer the *Primum Ens Salium*, then a coagulated Salt; and may be better taken in order to the preparation of that great Solvent, the *Sal circulatum*. And my reason is partly grounded upon a sentence of the grave and long experienced *Helmont*, where he saith, *In Sulphure sunt fermenta, fraces nes, odores, sapores spe*

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cifici ſeminum ad quaſvis tranſmutationes, that is, In Sulphur are ferments, hogo's, ſmells, ſpecifick taſts of ſeeds fit for all tranſmutations; ſo that in the bo-ſom of Sulphurs, lyeth the main wheel of all tranſmu-tation: the beginnings to which are alſo putrefacti-ns, which thoſe Embryo-Sulphurs may much pro-note. For all bodies that are capable of reſolution nto Heterogeneities, their texture is ſubverted by the working of ferments upon the Sulphurs of ſuch bo-lies, whereby they may be readily analyz'd or taken n pieces.

9. Laſtly, That Spirits (ſuch I call the *Primum Ens ſalium*) before they are coagulated upon Mine-als or other bodies, are but in *Embryo*, or in their nfancy (as I may call it) or nonage; and therefore coagulable upon bodies to the impairing of their own ctivity, by locking themſelves up in the textures of odies: and ſo require a reſolution from their coagu-ation, before they can be brought to that purity and implicity they were in, when they found bodies to well in, *viz.* before incorporation.

10. Hence it is that *Paracelſus*, giving an hint con-erning the preparation of his grand Liquor *Alka-eſt* (which I do not remember he calls by that ame in all his Writings, ſave *De Viribus Membro-um. Cap. De Hepate*; but by *Sal circulatum, Primum Ens ſalium, &c.*) ſaith, *à coagulatione reſolvatur & terum coaguletur in formam tranſmutatam*; that is (as I apprehend) That ſeeing we can ſcarcely find the *Primum Ens ſalium* in its pure ſpirituality, and naked implicity, but as it is infolded in the arms of a Mi-eral body, and ſo coagulated into many ſhapes of alts, as Marine, Vitriol, Allom, Nitre, *&c.* which re ſeveral bodies, wherein this hidden Spirit or uni-erſal embryonative Solvent, appears to our view

in divers corporeal dreſſes, putting on (*Proteus* like) new ſhapes according to the Mineral veſtment, wherewith he is cloathed, requires therefore (if we would have him appear unmasked) to be reſolv'd from his coagulation; till then we cannot expect him capable of performing much in the way of a penetrating Maſter-Solvent, but acts according to the freedom of his keepers.

11. And though this Spirit or *Primum Ens ſalium*, while it is in its infancy or *embryo*, be ſo weak as to claſp hold of every body that comes near it, and proſtitute it ſelf to every woer, in many ſtrange Mineral bodies; ſo as to dibilitate it ſelf before it arrive to thoſe more mature and maſculine functions of penetrating and diſſolving bodies, without being contaminated with their touches, or debilitated and baffled by their re-action: I ſay notwithſtanding this weakneſs of the Spirit before coagulation; yet if after the the reſolution, it becomes ſet at liberty from its bonds, divorced from its firſt conſort, and then exalted and fortified in its own purity by a gradual proceſs, becomes ſo noble and virile a liquor, as that it acts upon all Mineral, Animal and Vegetable Concretes, diſſolving them into their *Primum ens* or ſeminal *Craſis*, whereby their medicinal virtues are at hand; and that without the leaſt re-actions of thoſe bodies upon this univerſal Solvent Liquor. But to return.

12. This *Spaw* as to medicinal uſe is not of much more efficacy than ſo much Trencher-ſalt, diſſolved in ſuch a proportion of water, anſwerable to that of the Sulphur-Well, which both alike would much-what have the ſame operation; only the *fœtid* embryonate Sulphur doth ſomewhat provoke nature, and therefore extimulate the expulſive faculty of the ſtomach, purging either upward or (which the rather) downward.

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13. The plenty of the Salt wherewith it is ſtrongly ſaturate, preſerves much againſt Putrefaction and Diſeaſes thence proceeding, *viz.* againſt worms, and wormatick corrupt matter in the ſtomach and inteſtines, which ſo much common Salt as I ſaid diſſolv'd in fair water would effect the ſame. The blackiſh Salt which remains after the boyling up of the water, hath no more virtue againſt worms (for which it is frequently uſed) than a like quantity of common Salt; for it hath no ſpecifical difference from common Salt, eſpecially when depurated by ſolution, filtration and evaporation: then it is exactly the ſame.

14. And though there be a *Marcaſite* or ſtone of Vitriol to be found about Sixſcore yards from this Well, which will fall in the Air in a moiſt place; and by ſolution, filtration, and evaporation, will become a tranſparent green Vitriol, as an ingenuous Friend of mine for tryal ſake made: I ſay though this be found near it, yet doth not in the leaſt partake thereof, neither in taſte nor virtue.

Concerning the Original of Hot Springs.

IT is not the leaſt amongſt Chymical Enquiries, to know the true original cauſe of heat, whether in Vegetables, Animals or Minerals; amongſt which, the cauſe of hot Springs, is not inconſiderable, ſeeing that in them are found many medicinable virtues, uſeful for the help of Man.

Where I ſhall proceed, firſt to ſhew, That hot Springs or Baths are from Mineral Salts; next, How Mineral Salts upon the contact of one another, or of Mineral bodies, are the efficient cauſes of heat in thoſe Springs; and thirdly, How artificial Baths may be made analogical in virtue and operation to the natural; and Laſtly ſhall ſhew the efficacy of hot Springs and Baths, whether natural or artificial.

As to the firſt, That hot Springs or Baths are from Mineral Salts, is evident, becauſe no Mineral or Metalline body, is diſſolvable or alterable in the bowels of the earth, without the concourſe of Salts; for in the Mineral and Metalline Kingdom there are but two Agents, which makes the great alterations amongſt thoſe bodies, and thoſe are Fire and Salts. by Fire, I mean not only the external and elementary fire, by whoſe force Metals and Minerals become ſeparated from their connate Heterogeneities, and brought to the beſt; but alſo the inward inbred fire, *viz.* the Sulphur of thoſe bodies which ripens and maturates the Minerals and Metals, making them more or leſs pure, according to the diſpoſition of the place and graduation of the Sulphur.

By Salts I mean the *Primum Ens ſalium*, with its various coagulations into ſpecificated Salts; for without theſe Agents, all Mineral and Metalline bodies are at

at reſt. There are neither ſolutions nor coagulations.

Now there are few ſorts of earth through which water in its current paſſeth (ſaving the *Quellens* or *Arena bulliens*) but they are impregnate with Mineral juyces, of one ſort or other, which by ſome ſleight touch of a Mineral Salt in the water-Spring, becomes diſſolv'd in ſome ſmall proportion, enough to give that great difference we find in Spring-water, both as to taſte (which ſome that have accurate palates, and have accuſtomed themſelves to drink water, can eaſily diſcern an eminent difference, in taſte of one ſort of Spring-water from another) as alſo to the frequent uſe waters are put to, both for boyling meat, waſhing and bleaching cloaths, Dying, Tanning, Brewing, *&c.* All which difference I ſay proceed ſome ſmall ſolution of different Mineral juyces, by the *Medium* of a little touch of Salt, diſſolv'd in the ſubterraneal chanels of water. Here I might expatiate and ſhew the reaſons of the difference of waters, both as to taſte, and alſo in order to the foreſaid uſes; but leaſt I make theſe papers ſwell too much I ſhall wave it.

My next work is to ſhew, How Mineral Salts upon the mutual contact of each other, or of Mineral bodies, are the efficient cauſe of heat in thoſe Springs I am now ſpeaking of. To which purpoſe, I ſhall propound ſeveral mechanical experiments of the productions of heat; as firſt from the mixing acid and alkalizate Liquors, as for inſtance of Oyl of Vitriol, with Oyl of Tartar, which upon mixing give a great heat, making a ſtrong ebullition, which when over, the heat waſteth; and that is either when the one by its greater proportion, over-acts or overcomes the other: or when both proportionable, they are reduc'd to an *Equilibrium* or neutral Salt, called *Tartarum Vitriolatum*. Which heat is caus'd not only by Oyl of Vi-

triol upon the *Alkali* of Tartar; but also by any other acid Spirit, as Spirit of Nitre, Spirit of Salt, *Aqua fortis*, Spirit of Vinegar or the like, which after the ebullition is over, give a *Tartarum nitrosum, salinum, acetosum, &c.*

And as Salts, mutually acting upon each other, cause heat; so in like manner do some Liquors or Spirits, affus'd upon Salts effect the same, as Spirit of Wine poured upon drie Salt of Tartar, will make a great heat, so that in mixing them, to rectifie Spirit of Wine therefrom, we usually do it *per vices* or by sprinkling the Salt leisurely therein, least we should indanger the glass by heating it too much. The like heat happens by pouring the Spirit of Wine upon Arsenick fixt upon Nitre, which as from the same cause, with that of Spirit of Wine upon Salt of Tartar; for the Nitre by the open calcination with Arsenick, is partly turned into a fixed *Alkali:* which that it is so, appears, because if to the dulcified Arsenical powder (after the washing away the Salts) Spirit of Wine be poured, no heat is contracted. So water poured upon *Calx vive*, gives a considerable heat, which it doth by resolving the acid and alkalizate Salts contained therein; who by their mutual contest cause an heat.

As Salts acting one upon another, and the affusion of some Liquors also upon them, cause heat; so also Salts acting upon Minerals or Metalline bodies by corrosion and dissolution, are the efficients of heat. Thus any corrosive *Menstruum*, fretting Mineral, or Metalline bodies cause the same; as for instance, in the solution of any Metal in *Aqua fortis*, during the ebullition there is an heat: so in making the *Vitriolum Martis*, upon the affusion of the *Menstrum*, the heat is so very strong, as that I have not been able to

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hold the glass in my hand. Which proceeds from the agile Spirits of Salts, fretting upon the Metalline compage, taking it in pieces, and reducing it *in minima*; in whose forcible (not natural) *Analysis*, through the agility of motion the heat is caused.

But in the pouring *Aqua Regia* upon Antimony or Spirit of Nitre, upon *Butyrum Antimonii* for the making *Bezoardicum Minerale*, there an heat is caused by an actual humid calcination of the Sulphur of that Mineral; where the Sulphur by those corrosive Spirits, almost takes flame, passeth off with a strong stifling Arsenical vapour.

Also the motion of bodies, one upon or against another, by concussion or frication, cause heat; so fermentation gives quickness of motion, and that produceth heat: which is sensibly perceived in some fermenting liquors, in others not.

Now the Query pertinent to my purpose is, Which of all these several causes of heats, may probably be the efficient of hot Springs? To which I answer, That it is most likely to proceed from Mineral Salts, one acting upon another; that is, from the Essurine Salt (which alone with a slight touch of a Mineral, give being to those *Fontes Acidi, viz.* Vitrioline *Spaws*) which meeting in the chanels of the Earth with some lixivial *Marcasites*, are by the current of a water-Spring dissolv'd and set a boyling; one working and fretting upon another, give that heat to the water, which dissolves them. Which two Salts, *viz.* Acid and Alkalizate, are sometimes embryonative in the same *Marcasite*, which may happen in some natural stone or middle Mineral of *Calx Vive*; into which a current of water being opened, presently dissolves the two Salts, makes them contest and struggle, by reason of the antipathy of their

natures; and thereby cause the heat in hot Baths.

So that in short, It is very probable that it is from a natural stone of *Calx Vive*; which being plentiful in the *Minera* thereof, may give cause for the perpetuation of heat. To confirm which, Some have found a white *Marcasite* about the place of those hot Springs in *Sommerset-shire*, which put into water gives an heat. Now that two such opposite Salts should be embryonate in the same Mineral stone, is an argument, that the seminal principles of Nature are at work in all places, according to the capacity and manner of the matters reception, *viz. ad modum recipientis.*

Calx Vive distill'd with fresh Urine, makes the Spirit thereof arise at the first, with that difference also ftom solitary Spirit of Urine, as that it gives cause to think, that some volatile *Alkali* of the *Calx* ariseth up with it, which hinders the coagulation of the Spirit into an *Offa* with Spirit of Wine, usually happening from simple Spirit of Urine, and Spirit of Wine mixed together. Which very thing argues the difference of Salts of *Calx Vive*; That it hath an *Alkali* in it, is demonstrable enough from its inriching of grounds; for which purpose it is frequently used in barren Soyls, which the Country-man chuseth for some grounds, rather than Manure. That there is an acid Salt therein, is somewhat distinguishable by the taste.

Another sort of heat I have observed to proceed from the contact of Salts, and the *Calx* of Metals; as for instance in the following experiment, I took of the *Caput mort*, of *Viride Eris*, from whence the *Spiritus Veneris* had been rectified, being a very subtile *Calx* of *Venus*, with which I mixed an Anatical proportion of *Sal Armoniack* pulverized very well

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in a large braſs Mortar; in mixing, it came to ſuch an impalpable powder, as the particles ſeemed to be as minute, and almoſt as continuous as the particles of water are, for it was almoſt as fluid as water: ſo that (by the by) it is plain, minuteneſs and adaption of parts amongſt themſelves are mainly, if not ſolely, conducible to fluidity; and fluidity the eſſential property of water.

When I had well incorporated them together, for ſo they ſhould be; in as much as when any ſutable body or Spirit, is to penetrate and work an alteration in another body, they then do it beſt when they touch each other *per minima*: thence Contritions and Sublimations are the *Piſtilla Chymica*, by which alterations are made of one body by another. I ſay, when I had well incorporated them, I put them into a paper, thinking the next day to have put them into a Retort; but within leſs than one quarter of an hour I perceived ſuch a ſtrong penetrating urinous ſmell, as made me admire whence it ſhould proceed, which put me in fear of ſome glaſs being broke in my *Balneum*. At length I came near the paper, and preſently found it to be that which ſent forth ſuch a ſtrong odour; which when I took up off the Table, was ſo hot as I could ſcarce ſuffer to hold it. I made haſt to put it into a Retort, which before I could do, it well-nigh burnt my hand.

By this experiment thus far, Two things conſiderable appeared; one, conducing to illuſtrate, as I ſaid, the nature of fluidity to conſiſt in minuteneſs of parts; the other is, That heat (and ſo conſequently the reſt of the qualities ſo call'd) are a certain diſpoſition and adaption of parts of bodies amongſt themſelves after ſuch and ſuch a manner, as to work differently upon one and the ſame body:

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so that a brisk motion of the constituent particles, either by an innate fermentation or extrinsick excitation from another subtile body, is sufficient to cause that we call heat.

Some other causes there are of hot Springs, *viz.* Subterraneal Fires, set on work by the flagration of *Bitumen* or Sulphur; which being kindled in some parts of the Earth, where being close pent up, not finding vent, causeth Earthquakes: but when it breaks forth, it sometimes forceth with that violence, as that if it break forth under the Sea, it throws up stones and earth in such abundance, as that a new Island is thrown up of a suddain in the midst of the Sea; and that for many Leagues together, the Sea is at that time covered over with the spongy Pumice-stone, which is the *Caput mort* in the flagration of that Mineral. Other places there are by which, as Chimneys or Flewes, the Subterraneal Fire finds vent, as *Ætna*, *Vesuvius*, *Strongilo*, *Vulcano*, *&c.*

These Subterraneal Fires, the ingenuous *Kircker* in his *Mundus Subterraneus* calls *Pyrophylacia*, which being conveighed by several Subterraneal Pipes or Chanels to those Cisterns or receptacles of water called *Hydrophylacia*, which thereby become heated, and that in places not far from day, I mean the superficies of the Earth, breaks forth in hot Springs. These *Pyrophylacia* it is very probable are the cause of some hot Springs, as the kindling of *Calx Vive* are of others. Of which last *Fallopius* tells us, *In agro Volaterrano ad castellum montis Cerbari vocatum, sunt lacus dicti vulgo, lagoni, quasi lacuna, ubi est aqua ferventissima, & undique cinis; quinimo & mons qui ibidem est, totus calce & cinere refertus est calido, adeo ut calceamenta exurat, uti ipse sum (inquit) aliquando expertus.* These *Phyrophylacia* heat

at the waters, sometimes *in ipsis cuniculis*; other-
hile they heat Mineral stones through which water
isseth: either way make hot Springs.

Thus having numbred up the several sorts of heats,
id amongst them pitched upon that which is the effi-
ent of hot Springs; amongst which also (by the by)
e preparation of the body of Steel is performed;
hereby it will the most part of it readily dissolve in
ny Vehicle, and make a Mineral water like *Tunbridge*,
psom and *Knaresborough Spaw*, Let us now consi-
er how artificial Baths may be made; and those are
ther such as are more common, as the decoctions
f Vegetables and Salts in water and other liquors,
herein Diseased Persons are frequently put, also to
ave the body (all but the head) inclos'd within the
eams of hot water, or to sit under a frame of
astboard with Spirit of Wine flaming in a large
amp-vessel, which is a kind of Stoving Bath or
oves, *&c.* or such Baths as are more rare, *viz.*
pirit of Wine with Salt of Tartar, either for some
articular parts of the body, or for the whole, if
me Patients upon extraordinary occasions would
o to the charge thereof; also Sulphur so artificially
ontriv'd, as that the flame thereof shall heat a large
essel of water, in imitation of the terrestrial fires,
herewith some Baths or Springs are made hot:
hich Bath might constantly be kept hot by the con-
nual supply of fresh Sulphur, in manner of the
ountain which the *Romans* made constantly by art
o flow hot; which was performed by some brass
ipes wound up in Gyres, *In spiras voluti instar*
Draconis, which were therefore called *Dracones*,
nder which they made a fire, by which the first
pires were made warm, the next more, the next a-
ain yet hotter, so that the water did continually

flow

flow forth hot. After which sort with some little variation, Physicians might keep hot baths with Medicinal waters, suted for the Patients Disease, constantly at work with a small charge, after the vessels were once artificially contriv'd. To which purpose I have had a *Balneum Mariæ* kept hot for digestions, by Leaden Pipes placed in Gyres in a wooden vessel.

The advantage of such artificial contriv'd Baths, is this, That the Physician may presently change his medicated waters, as occasion offers, can give what degree of warmth he pleaseth, and keep them constantly in an equal heat, which cannot easily be performed by the common sort of Baths; and therefore comes nearer in efficacy to the natural hot Springs than the other, and so consequently more effectual.

Now as to the virtues of Baths natural or artificial, they are of large extent, and may be, if skillfully managed, of much use in helping many Diseases, as the Palsie, Convulsions, *&c.* Which by opening the pores, and thereby removing the obstructing or afflicting causes of the *Genus Nervosum*, may probably be successful in all the Diseases thereof; also the Hypochondriack Melancholy, by opening the external portals, alieviating of the Spirits, giving vent for the *flatus*, and with the help of inward aperients, may dulcifie the blood and humours from their feculent tartness, whereby the cohobations and depurations of the blood, upon its *Caput mort* or rejection of its *feces* in its passage through the Spleen may succeed the better.

Also may be effectual in *Atrophyes*, *Aridura* Witheredness of the parts, by helping a fresh fermentation of the blood, which may force its passage into the otherwise deserted parts; and thereby be

come

ome capable of distributing an equal nourishment
o all parts.

Likewise Baths are of efficacy in all sorts of Stiffeſs, Pains, Numbneſs and Lameneſs of the Joynts, y opening the pores of the body, abſolving the Nerves from their obſtruents, di ting the acrimonius ſharpneſs of the *Latex*, giving current to the lood; and at length reducing the nervous and memranous parts to their due and proper order and tone: Alſo in other Diſeaſes, as Rickets in Children, Ullers, Tumors, and Defedations of the skin in elder People; towards the effecting of which, no ſmall ariety of the Chymical *Apparatus* or Mineral Drugs, are *in promptu* for that purpoſe.

A short Vindication of Chymical Physick.

1. THe strange uncouthness of Chymical Physick, is such; yea the very name of Chymistry hath been so much a stranger in these Northern parts of *England*, that, what through the *Odium* cast upon it by the *Galenists*, on purpose to keep it under hatches; and what through the empty, fruitless, boasting pretenders thereto, who not being Artists were its onely disparagers: By both which it hath suffered severely, in the ears of the generality of People, in so much that when they have heard of it, they have stood amaz'd. To venture the taking of any Medicine preparable thereby, they durst not. Why? What was the matter? They knew not, only they had heard strange reports, which frighted them. Their Physicians told them, *They were hot things, such as would burn their bowels; and therefore very dangerous.*

2. Yea, till within this ten or a dozen years, this Noble Science hath undergone much ignominy, or else mostwhat unknown in most parts of *England*; yes and in Forreign Parts too, unless here and there one, who if he practiced by it did it privately: so that he who hath bent his endevours that way, to find out more effectual Remedies by the *Spagyrical* Art, hath been lookt upon in these, as a Mathematician was in former days, who by the ignorant vulgar was esteemed no better than a Conjurer; so that a Mathematician and a Conjurer were accounted in the vulgar Idiom *Synonima's*, words of the same signification. For if they dealt with Circles it was enough; they knew no difference between a Mathematical Circle

Circle and demonſtrations drawn therefrom (which ſtill was as ſtrange to them) and a Conjuring Circle; like as a boy was once accuſed before a Magiſtrate for being a Fortune-Teller or Aſtrologer. It happened he had a little book in his pocket, wherein was ſome ſchemes I ſuppoſe drawn by the help of *Lillie*'s Introduction; which no ſooner did the Juſtice eſpy, but crys out, *Circles, Circles, Sirrah theſe are dangerous things, we'll take a courſe with you:* and ſo ordered the boy to be carryed away. By which you may ſurely conclude, that himſelf was no Conjurer, for he lov'd no Circles. Thus poor Circles and Chymiſtry hath been deeply accus'd.

3. It is not long ſince the genius of ſome pregnant wits began to ſet to work to underſtand and rightly prepare Chymical Remedies; firſt, Duely conſidering the nature of Ferments; and next, To ſearch after the various Solvents, and their manner of operation, without which nothing very conſiderable is preparable in Chymical Phyſick: ſo that very good improvement of late hath been made therein, witneſs the elaborate Pieces of ſome ingenuous Perſons.

4. We ſhall therefore, firſt, ſay what the *Spagyrical* Art or Chymical Science is; next, endevour to take off the reproach or calumny laid thereon, by anſwering the objections againſt it; and laſtly, ſignifie the great help nature hath thereby, above ordinary Shop-preparations, in order to the Cure of Diſeaſes.

5. Firſt, as to what it is. It is, in ſhort, ſuch a due Preparation of all Medicinal Concretes, whether Animal, Vegetable or Mineral, as the pure balſanick lively parts becomes ſeparated from the impure feculencies; for we ſee that in all Concretes there

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is a mixture of pure and impure, of grofs and tenuious parts; ſome feculent and dreggy; others refin'd and depurated, though indeed the mixture of theſe together makes up a complete body, which hath its uſe and place in the creation: yet, as to Medicinable uſe, it's the pure, nimble, ſpiritous parts of Vegetables or Animals; or the depurated fixt parts; or laſtly, the reunion of both after purification, which effects the work, in aſſiſting nature againſt the Malady.

6. Which Preparations are performed two ways, *viz.* either by digeſtion, or by diſtillation; under that of digeſtion is comprehended fermentation, ſolution, extraction and putrefaction, and that by agile Solvents, connatural with or emergent from the bodies of the Concretes themſelves, or by additional *Menſtruums*: all which doth macerate, ferment and diſſolve the texture of the body, and fits it for ſeparation by diſtillation. The additional *Menſtruums* for extractions, are either vinous, oleaginous, urinous or acetous Spirits; or a product from their commixtures: all which do prepare towards the ſeparation of the *Craſis* of the Concrete.

7. All Vegetables or Animals, or at leaſt the moſt, by bare diſtillation yield a Phlegm, a volatile Salt, an Oyl, and in the *Caput mort* a fit Salt, ſeparable from the remaining uſeleſs *Fæces*; but by a previous fermentation; if the juyces of Vegetables, they firſt yield a vinous Spirit, then a Phlegm, leaving their Tartar behind, out of which by diſtillation with a ſtronger fire, is got a Phlegm, an acid Spirit, an Oyl, out of whoſe *Fæces* again is a fixt Salt, ſeparable: but if the Vegetable undergo a more natural ſpontaneous fermentation, then that, which otherwiſe is an Oyl, ſeparates it ſelf by diſtillation, moſtwhat

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in a volatile Spirit, or volatile Salt. All sorts of Wood or Plants, by naked force of fire are distillable into an acid Spirit, Phlegm, Oyl and Salt; as we see in burning of Wood, by the bare fire, the Chimneys become the Receivers to which the Soot cleaves: and that again distill'd, yields a Phlegm, an Oyl, and a volatile Salt, which last, by rectification becomes pure and of a lovely white colour. A very penetrative Medicine, useful in Diseases of the *Genus nervosum*; also a great preservative against Putrefaction and Feavers thence ensuing. But I dare not prosecute particulars, least I swell the volume too much.

8. But in general all Vegetable separations of the pure from the impure, are made, as I said, by digestions and distillations, the two main hinges of Chymical Preparations, by which their Spirits and Essences become separated, which united with the extracted fixed Salt out of the *Caput mort* and further digested together, especially if the fixt Salt be made so as to dissolve in most rectified Spirit of Wine, give most noble absterstive and diuretick Salts, Whose virtues, in my Practice, I have much admired.

9. Not that I deny the great blessing of the Most High, in those specifical endowments he hath pleased to inrich some Vegetables and other Concretes withal; who perform their work to which by a Divine Hand they are destin'd, and that without any Chymical Preparation: And yet some Specificks are not altogether without some previous Preparations. An error in the due observation of which, many times prevents or intercepts the full efficacy of the Remedy.

10. There are it may be about a Score of choice Plants, which well managed with a skillful hand at

due seasons, may by their singular virtues, produce considerable effects; the rest are not (that we know) of much use, saving for ornament, pleasant smells, and food to Cattle. What heaps of Plants by some Physicians are ordered to stuff Diet-bags withal? whereas a few choice good ones might probably be more effectual. Some Physicians being call'd to consult about a Patient, who ordering a Diet-bag for him, having put in a sufficient number of Plants, yet some of them would have heap'd in more; one wiser than the rest, very merrily bid them put in a Hay-cock, and then to be sure they would have enough. And indeed it would have proved a very good Magistery for an Horse.

11. As for Animals, or the parts of Animals, preparable by the Chymical Art for the use of Man, are chiefly the Blood and Urine; the first of which, *viz.* the Blood, is as an *Elixir* of all the parts of the body, where if any Spirits, Life or Vigour be, it's there; the other, *viz* the Urine, is a *Latex* percolated through the Reins from the Blood, and retains in it self much of the very same principles the Blood hath in it: so that both unfermented without any previous preparation, only by bare distillation yields first a Phlegm, and that in a great quantity, then a volatile Spirit and Oyl, and volatile Salt; and in the *Caput mort* of both, is some fixt Salt, somewhat resembling Sea-Salt, if not really the same, separable by solution from the remaining *sordes*. But if both undergoe a previous fermentation, then the volatile Spirits becomes loosened from their bonds, and works themselves at liberty; and that whether in close or open vessels: So that then distilled, yield at the very first, with a gentle fire, their volatile Spirits, and the Phlegm after.

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12. So that fermentation inverts the order of the parts, coming off by distillation; and that whether in vinous or urinous liquors (by urinous, I also include the blood) For take the juyce of the Grape, or of any vegetable fruit, whether Apples, Pears, Cherries, or the like, distill them, and you shall at the first have nothing but a great quantity of phlegm, and at last a small portion of the true genuine Spirit, together with a fetid Oyl: even as is got (though with some difference of Spirit) from blood and urine distilled crudely.

13. But if you ferment the juyce of Grapes, Apples, Pears, Cherries, or the like, then is the vinous Spirit set at liberty from the bonds of the compage of the body, and in distillation with a gentle heat, comes up first, and the phlegm after; and that which was an Oyl before, is, partly by the volatizing ferment transmuted into Spirit; and partly by refining in the vessels, after fermentation, is setled to the sides thereof in form of Tartar, which distill'd with a stronger fire, gives, amongst other distillables, that fetid empyreumatick Oyl which we see it yields in plenty.

14. So that I say, Fermentation makes no small alteration, whether in vegetable, or animal juyces, by setting the true genuine Spirit, whether vinous or urinous, at liberty, from the fetters of the body thereof; which juyces, if neither distill'd, nor fermented, degenerate into acid, sowre, vinegarish Liquors, which if not kept from the Air by close stopt vessels, will very shortly contract a mouldiness, and decay into vapid useless Liquors: even so also the blood in its own vessels, if not volatized from its connatural ferment, becomes sowrish, degenerates into a vinegar, or rather blood in Chronical diseases, and by a further impoverishment of Spirits, becomes at length vapid, whence death.

15. And as blood and urine are Animal parts, which receive also a separation of their heterogeneous parts by distillation; and that differently, by being fermented, or not: so also Harts-horn may well be accounted another, whose parts are separable by the Chymical Art, and if well prepared, are of much efficacy. I speak the rather of the Horns of that Creature, because no other that I know of, renews his Horns yearly, as the Stag doth; which being vegetable, as well as animal (I mean the Horns) gives no small hopes of (yea, we know gives) a good Medicine.

16. This Creature, when fresh Grass cometh in the Spring, begins to have an efflorescence in his blood, which becomes turgent with volatile active spirits; and having more then can well be dispenced with in the vessels, begins from a natural instinct peculiar to that Creature to attempt a new production, by laying a foundation of new Horns: which increasing by the yet more turgidness of the blood with those volatile Spirits, i'th' conclusion part of which volatile Spirits, together with some succulent parts of the blood, become animated into little vermicles, by an incipient putrefaction, which begets a pruriency or Itching in the blood, and that makes the Stag run his Horns against every thing in his way, and never quiet till he hath knock't the old Horns off.

17. And that is the reason Harts-horn, above all other Horns, is so replete with volatile Spirits; which how to separate, requires the help of the Chymical Art. Its not by reducing it into Gelly, by boyling it in water, that's not enough; for in Gellies of Harts-horn, such as is made usually for weak persons in Fevers, Consumptions, or other lingring Distempers, the volatile Spirit wherein the real efficacy consists, is

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not at all set at liberty: but so closely hedg'd in with other parts in the compage, that Nature can find very little benefit therefrom. So that as a Gelly I look upon it as no better, than any other Gelly from knuckles of Veal or the like; for all flesh and horns by boyling in water are reducible into Broth: and that by further boyling into Gelly. Which is indeed a good Kitchin-Preparation of meat for weak stomachs: but as to matter of Medicine yields very small or none.

18. So that if we would share with its virtue, which lodgeth in its volatile Spirit or Salt, we must distill it, which may be well done in a glass-Retort; and by degrees of fire, it yields first a Phlegm; then by a stronger fire, a Spirit; and at last an Oyl, and volatile Salt. These separated and purified by reiterate rectification, gives the pure, nimble, volatile Spirit or Salt of Harts-horn, very proper in Fevers, both to help the ferment of the stomach, as also to absterse the sanguineous vessels, and to carry off a spurious tainted *Latex*, from the blood by transpiration; also proper for Colical-gripings and other pains from sharp fretting humors in other parts of the body: only it is not very palatable, which makes some disgust it, before they receive the expected benefit by it.

19. But how to make this volatile Spirit or Essence of Harts-horn come over the helm before the Phlegm; and that with a gentle heat, whereby it may be capable of insinuating the better, and more naturally into our digestions, that is, I say, the difficulty, because it wants such a copious moisture as Blood and Urine hath, by which they easily ferment, and give their Spirit first: but this is an hard drye solid body, and exposed never so long to the Air will nor resolve or ferment.

20. To which purpose there is a way, which now occurs to my mind, though I must confess I never tryed it, because it is the first time I thought of it, which though conjectural yet very probable; and it is thus. Take the simple Gelly of Harts-horn, put a competent quantity thereof in a *Matrass*, lute it exactly, set it in the heat of Horse dung or *Balneo* to putrefie, for Twenty or Thirty days; then put it a Retort or glass-body and head, distill: which very probably will yield its pure volatile essence with a gentle heat before the Phlegm, because its volatile parts by fermentation will become extricated from the other more sluggish constitutive parts.

21. As in Vegetables and Animals, so likewise in Minerals, the Chymical Art is no less requisite; for all Mineral Salts, middle Minerals or *Marcasites*, and Metals, are all either so crude, lockt up, or actually poysonous, as that without the help of the *Pyrotecknical* Art in opening, maturating, and correcting by the fire, they deny us that innate hidden virtue, granted to them by God for the help of Mankind. Mineral Salts unless they be distill'd or sublim'd (with other additionals) they communicate little of their operative virtue to us; whereas by fermentation, putrefaction or distillation, they prove noble Solvents for Mineral and Metalline Solutions. Middle Minerals, as Antimony, the *Marcasite* or Mineral stone of Vitriol, *Bismuth*, *&c.* have such venomous properties, that unless corrected by the power of fire and good Solvents, they do not only deny us the noble medicinal virtues, those native endowments, but actually impress their virulency, upon our vital principles.

22. Whereas if rightly prepared by the fire and proper Solvents, correcting their virulency by mortifying

tifying and ſeparating their malignant, Arſenical, combuſtible Sulphurs, and thereby ſetting at liberty their genuine inbred medicinable *Arcana's*, becomes noble Medicines for all curable Diſeaſes. All which is done by fire, or by that which is equivalent thereto (nay ſometimes more powerful than fire) *viz.* Solvents; which if rightly made, are only liquid fires, or *Ignis Aqua*; by which Mineral bodies are calcin'd *in humido*, as by an actual fire *in ſicco.*

23. Alſo all Metals if not wrought upon by proper Solvents, are lockt up, as to communicating their virtues, and therefore need particular Solvents to open their bodies; which if rightly done muſt be brought into an Oyl, of the colour of the Sulphur of the Metal, which are the *Hematina Metallorum Paracelſi*, irreducible to their *priſtine* Metalline form, Whence the true *Aurum & Argentum potabile, &c.*

24. Thus you ſee in ſhort, How neceſſary the Chymical Art is, to the unfolding of the various Concretes, whether Vegetables, Animals, or Minerals: How by that noble ſeparating Art, we learn to take things in pieces, to reſolve them by a genuine natural *Analyſis* into their native principles, to ſeparate ſuperfluities, to reunite the volatile parts with the fixt, and thereby produce generous eſſences; and all this without any great force of fire, except in thoſe bodies whoſe compage is more firm, and bends not to gentle ways of reſolution. Such bodies we examine with a ſtronger fire, till they yield and at length confeſs their natures.

25. Now I ſhall anſwer what the *Galeniſts* are ready to object againſt this Art. Firſt, they ſay Chymical Remedies are dangerous becauſe they are hot. Where in the firſt place, they do *petere principium*, ſuppoſing all ſuch preparable Remedies to be

hot; which yet we deny, according to the vulgar acceptation of heat, *viz.* such as is actually so to the palate, witness *Antimonium Diaphor. Bezoardicum Minerale*, *Cinnabar* of Antimony, *&c.* None of which are actually hot to the taste.

26. But we will suppose with them, that they are actually hot in taste and operation; and let us see what inconvenience will thence follow. First; we find it certainly true, that cold is the greatest enemy to life, and to vital heat the product of life; and therefore above all things care is taken against unseasonable cold. Why do we wrap our bodies and make our houses as warm as we can against the injury of the cold? Why have we our meat every day, yea in Summer (excepting those who are not able to go to the charge) provided warm for our stomachs? Why do we take our broths as hot as we can sup them? Is it not to help the fostering and cherishing our vital heat, and to preserve the digestions intire against the grand enemy of nature, cold? Which is not a meer negative and privative quality of heat, but is a real positive *Ens* or actual being; and therefore abhorr'd of nature, which she shuns and flies as the Harbinger of Death.

27. You will say then, If cold be so great an enemy and so dangerous to the vital heat, How comes Feverish Persons so much to desire cold things, *viz.* cold drinks, or any cold thing to hold in their hand, or cold part of the bed to reach their feet to? I answer, That they only desire cold things through a depravation of their senses and appetite, which now not being competent judges, requires things at random. It's a meer juggle upon the senses and appetite, being impos'd upon by the irregularities of the Fever; for first the *adust Alkalizate* recrement re-united in

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ne tunicles of the Stomach of a Feverish Person, egets that unquenchable thirst, and unsatisfied de- re after cold drink: which thirst that it is erroneous nd deceitful appears, because if great quantity of old drinks be poured down, yet the thirst remains; vhence, through the depravation of the ferment, the ppetite also becomes depraved. The ground of the leceitfulness of the sense of Feeling, I presume, pro- ceeds from some *sordes*, which also are impacted upon he sides of the vessels of the blood, together with ome Heterogeneities in the mass of blood, which Nature endevouring to absterse and separate, rowseth up a strong fermentation in the vessels of the blood; and the more the recremental Tartar, is fastened to the sides of the tunicles of those vessels; and the more the Heterogeneities are, the stronger is the *Nisus*, or endevour to separate them: and consequently the greater is the sensible heat, which thereby perverting the sense, makes it irregular in its pressing after cold things.

28. That the coveting of cold drink and cold things in Fevers, is (as I said) a deception of the sense, and a depravation of the appetite, further appears; because notwithstanding the inordinate desire of cold things, yet if by any cold drink taken into the stomach, or by any accidental uncovering of the body, the *Archeus* or Regent Spirit of any part, becomes offended at its antagonist, the cold, the Fever or other Distemper doth certainly encrease, the spurious fermentation of the blood becomes stronger, and consequently the Feverish heat (which is the constant product thereof) is more violent, and all symptomes grow worse: And all this because cold (the great enemy of vital heat) makes its onset upon the vital principles unawares, through some incautious accident,

accident, or designedly, through the depravedness of the appetite, which is bent to require that which is harmful to it, yea of which even in the very taking, it becomes convinc'd of its folly, by finding it doth not answer its expectation, *viz.* the quenching its thirst.

29. That cold is a real positive quiddity, something really existent in nature, and not a meer negative of heat (as some would suppose) which, if so, would in effect be nothing: but vital heat and mortal cold, stand both positives, counter, one opposing another, is, I say, demonstrable by matter of fact. In cold Countries, in *New-England*, *Freezeland*, *Swethland*, *Russia*, where in the Winter time, the cold is actually so intense, as that if they do not by some artifice defend themselves from the rigour thereof, it will freeze off their very Noses; yea their fingers will become mortified, if they are too much exposed to the injury of the cold. But we need not go so far; for we see in our own Country in the Winter time in strong Frosts that some parts become mortified; for instance, About three Years ago, a man was drunk at a Country Town, and in returning home his partner left him upon a Bridge, where expos'd to the cold frost upon the hard stones, he had his lodging that night; the next morning he was found alive, but his hands and feet (the most remote parts from the fort of vital heat, the heart) were absolutely mortified, grew black as Pitch, and never reducible to life or vital heat again, and therefore were cut off. It's very probable if the man had not been drunk, the cold would absolutely have kill'd him; but the Spirits of the Liquor fortified the vital Spirits against the total subversion thereof by cold.

30. And not only upon Animals but also upon Vegetables

Vegetables Cold exerciseth its tyranny. How are tender Plants in the Spring nipt with cold frost? How do they flag and as it were hang the wing after a sharp cold morning? Nay, How actually are the blossoms of fruit-Trees mortified and kill'd by frosts, the grass nipt and kept back from growing? And all this by the mortal enemy Cold. That it is not a meer privation of heat, appears further, because though the Sun be got into *Taurus* or *Gemini*, and thereby is in great force and very vigorous; yet we see that frosts come in *May*, and prove then mortal to many tender Plants: yea, as intense Cold will often happen in the latter end of *May* when the Sun is approching to the Tropick of *Cancer*; as when he is depress'd as far below in the Tropick of *Capricorn*, yea, and more too, it is sometimes warmer weather in *December*, than in some parts of *May*: So that the height and nearness of Sun, is not always the cause of heat; nor the lowness or remoteness thereof, of cold.

31. And though some suppose the cause of Cold and frosts in the Spring, to happen from the approch of the Sun into the Northern Signes, whereby the frozen Seas near the Pole become melted, and the cold being driven away by those winds which comes over us, give us the cold and frosty air at that season of the Year; which suppose it were so: yet would it nothing infringe our doctrine of the positive essence of cold, but rather confirm it; yet we cannot imagin that to be the cause of intense cold frosts in the Spring; and because, if it were so, then when the Sun came to such a point, as that its heat begun to resolve those frozen Northern Seas; as the heat, I say, of the Sun would be continually resolving those frozen Seas: so answerably the cold frosts which

which ſhould thereby annoy us, would prove as conſtant, which we ſee to the contrary; for in *March*, *April*, and *May*, the froſts and cold weather are very uncertain, ſome days and nights together very warm, others again as cold, then warm again, *&c.*

32 I rather think that Winds, Heat and Cold, Rain, Snow and Drought, are the Treaſures of God in the deep; and that they are committed to tutelary influences of the Stars, which have keys to let them out upon the face of the Earth, at their due ſeaſons appointed by God; and that by thoſe *Pereledi* and ſecret ſluces or chanels in the Air, over which the Stars are placed as Vicegerents, which whether they receive their influences immediately from God, or from ſome intermediate intelligences, or Angelical Powers, which are deeper than themſelves: yet certainly this Divine Chain of coordinate and ſubordinate cauſes, reacheth from the Earth (as the Poets feign'd) to *Jupiter*'s Chair, I mean from the ultimate product, to the primitive original cauſe, God himſelf. Although indeed its far otherwiſe, as to difference of weather in Iſlands, than upon the Continent; for upon the main Continent, the temperature of the Air is much at a certainty, according to the points of the *Aphælion* or *Perichælion*, remoteneſs or neerneſs thereof to the Sun: and that according to the ſeveral poſitions thereof in different Climates, which as the reverberation of the beams of the Sun is more or leſs in the loweſt part of the Atmoſphere, or along the ſurface of the Earth; ſo is the heat or temperature of the Air anſwerable in thoſe places. Whereas in Iſlands it's far different; for thoſe being environed with Seas on all hands, and it may be ſome of them old thrown up, as an Abortive Birth, out of the Womb of the Earth, by the great *Demogorgon* or

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Subterraneal *Vulcan*; witneſs the Iſlands of *Strongilo*, *Vulcano*, *&c.* As well as others have been ſwallowed up in the vaſt Caverns thereof, and drowned in the Seas; witneſs the *Terra Atlantica* which was reputed bigger than *Aſia* and *Africa*, was ſwallowed up by the *Atlantick* Ocean, as the ingenuous *Kirker* relates out of *Plato*: Of which great Iſland thoſe called the *Canary* Iſlands and others in the *Atlantick* Ocean are ſuppos'd to be the higheſt, and therefore left after that Deluge. I ſay ſeeing many (and for ought we know, moſt of the Iſlands have been belcht forth of the belly of the Earth, and alſo are incompaſſed with the waters, are therefore more inclinable to Subterraneal Belchings, Ructures, Vapours, Exhalations, *&c.* which in ſome Iſlands not finding vent, is the cauſe of frequent Earthquakes; in others finding Flewes or Chimnies belch forth fire, ſmoak, ſtones, *&c.* But in the third ſort of Iſlands, where there is neither thoſe actual Vent-holes (nor indeed is in need of them) nor is the Vapours ſo pent up as to force the Earth to a tremulation, but finding paſſages or pores large enough, breaks forth, and being carryed according to the *Lation* of the Air, is the probable cauſe of thoſe Storms, Winds, Hurrycanes, and other alterations of weather within the Orb of the Atmoſphere, to which Iſlands and the adjacent Seas are more expos'd than the large Continent.

33. Cold, we ſee in Animals, is that which benumbs the Joynts, ſtupifies the parts, forceth the vital heat to retreat into its inward and more ſtrong forts; which if aſſaulted there, and overcome, death's at hand, and the combat over. Now if Cold be ſo great an enemy to vital heat, as is evident, not only from what I have ſaid, but from what every doth or may experiment, than no Medicine as a Medicine is or ought to be cold in its operation. 34. And

34. And therefore to talk of Curing a Fever with cooling Medicines (as the *Galeniſts* frequently ſpeak) is very improper (not to ſay abſurd) and argues no leſs than ignorance of the eſſential cauſe of a Fever; which becauſe there is a great heat, ariſing from the boyling and ſpurious fermenting of the Spirits, therefore they think (according to their own maxim, *Contraria contrariis curantur*) that it muſt ſurely be Cured by cold things; and to that purpoſe, they follow a method of cooling to a purpoſe, both by frequent Phlebotomy, robbing the blood of its vital treaſure, whereby Cold (the great enemy of life) may indeed have better acceſs to the vitals and deſtroy the ſooner, as alſo by cooling Julips and cooling gliſters. Why do not they give them cold water in Gliſters, or blow a little cold wind into their breech? ſurely that would cool notably, and do the work more ſpeedily.

35. It is very ſtrange to me, that their own dayly obſervation, doth not convince of the folly of adminiſtring cooling things; They cannot but obſerve that no good effect follows thereon. It is much to me they ſhould notwithſtanding the fruitleſsneſs of ſuch a method, yet again and again trace the ſame trod; unleſs they be reſolved never to go out of their pace (*Spaniard* like) though they be laſhed for it, both in their Reputation and otherwiſe.

36. Next to which they cannot but obſerve (which alſo moſt old wives take notice of) that the beſt and moſt hopeful Medicines in Fevers, are ſuch as cauſe ſweat; and therefore ordinary people will frequently, without the advice of a Phyſician, give Feveriſh Perſons ſomething to endevour ſweating: and that often times with very good ſucceſs. Which is a very fair admonition to Phyſicians to be more

ſerious

rious and copious in Diaphoreticks; for therein deed lyes the main hinge of Curing all sorts of evers, which very thing is the least consulted of ay other. They will Blood twice or thrice, and urge as often; and yet scarce will they order one ood Diaphoretick: which if they do, is commonly ompounded with such a farraginous mixture, as Nature abhors, and as soon sweats to see the folly of he mixture, as naturally inclin'd thereto, by the virue thereof.

37. Now no Diaphoretick was ever cold in its peration, but always of an heating attenuating roperty; and therefore of power to promote, the atural fermentation of the blood, and of absterging he vessels of their recrements, and of carrying away y transpiration, the superfluous tainted *Latex* together with other Heterogeneities (before disturbing he œconomy of the blood) and that through the ores of the body, though not always actually by weat, but sometimes by insensible transpiration; for here is no better way of taking away the cause of xcessive heat in Fevers, than by removing or allaying he bastard fermentation in the blood, which is most ptly done by Diaphoreticks, especially after a prelous absterson of the primary digestions, by some enerous Salts, or well prepared Solutives, together with an anodyne as an additional auxiliary.

38 This and no way else according to the tenure f Nature, is (if we must speak in the vulgar Idim) to cool the immoderate heat in Fevers, or rather, according to our own language, to reduce the lood and humors from their spurious and Feverish, nto their own natural, genuine, fermentation, where the erratrick excentrick motions, becomes regular, and every thing falls into its natural course gain.

39. So

39. So that by this time I hope any ingenuous Person, will apprehend it to be dissonant to the rules of Nature, and contrary to reason to administer cooling things in order to the Cure of a Fever; and further that hot things (such I mean as are actually Diaphoretick, with their previous preparatory absterstive Salts) are the chief if not the only means to Cure burning Fevers, whether intermittent or continual; and consequently, that the *Galenical* notion and application of cooling things, is very flat and frigid.

40. They altogether prohibite the use of Wine in Fevers, as being (they say) too hot; mistaking still upon the old *Hypothesis*, that heat is the efficient essential cause of a Fever, and therefore must be abated, by the actual presence of a proportionate cold: whereas sometimes I indulge the Feverish Patient with a glass of the richest Sack he can procure, especially after the use of some noble absterstive Salt, or as a Vehicle to give my Medicine in: and that too, because I am satisfied, that heat is not the efficient cause of a Fever, but only a supervening symptome, consequent to the Feverish fermentation.

41. To confirm the truth of what I have said, in order to the application of hot things in Fevers, or acute distempers of Colicks, or the like, I have had an experimental observation upon my self, in a Colical Distemper, together with a Feverishness that accompanyed it, which surpriz'd me since the writing of the last Section or numerical division; which, whether it proceeded from cold, or the transmission of an acid juyce into the intestines, or from both, as the occasional cause thereof, or from what other concurring cause, I know not: but however this I am sure of, and felt to my own great trouble, the *tormina*, Pains, or Gripings of the Colick; which proceed-

ceeding from a fermental acidity, rouzed up an acrimonious *flatus*, that not finding paſſage *per inferiora* (that vent-hole of inteſtine *flatus* or wind) returned upwards, oppreſs'd the ſtomach and vital Spirits; thence I became very ſick, and was ſomewhat provoked to vomit.

42. Whereupon, in order to my aſſiſtance, I took a Doſe of a gentle Emetick; but that not reaching the *Minera Morbi* in the Inteſtines, I had little eaſe thereby, but rather grew worſe. Wherefore I ordered my Man to reach me a Doſe of an abſterſive Diuretick Salt; which, within two or three hours, wrought pretty plentifully by Urine, which gave me ſome eaſe: after which it began to incline me towards a breathing ſweat, and that I promoted by the advice of an ingenuous Friend, who came to viſit me, with a Doſe of the *Elixir Proprietatis*, a Medicine, than which (to taſte) nothing is more actually hot; which if ordered to another (who uſeth rather to conſult his palate than his health) he would have thought it, rather to encreaſe his heat, and to burn his bowels (as that whereof ſome of the *Galeniſts* accuſe that Medicine) than otherwiſe.

43. But the ſucceſs thereof was very conſiderable, for I had not taken it paſt half an hour, but my ſweat was very much increaſed, my pains and gripings abated, and my thirſt but ſmall; after which I ſweat very plentifully four or five hours, during which time, I took nothing but hot burnt Wine. Enough, a *Galeniſt* would have ſaid (who maketh heat to be the eſſential cauſe of a Fever) to have procur'd a Fever, though I found the contrary effect; and have not only taken it my ſelf, but have ordered the ſame: yea ſometimes accompanyed with volatile Spirits, as of Harts-horn or the like; and that with extraor-

dinary good ſucceſs in Fevers, it allying the thirſt (which nothing doth better than Diaphoreticks) aſſwaging the violence of pains, and abating moſt troubleſom ſymptomes, which accompany Fevers.

44. Not that I am ſtrictly confin'd to this Remedy, but I the rather mention it, becauſe it is one of thoſe which the *Galeniſts* ſeverely forbid their Patients; and all their reaſon is, becauſe it is hot: Whereas we have already ſhewed it to be not only ſafe, but alſo very neceſſary (I mean) that Diaphoreticks, whether they be hot in the taking, or actually ſuch in their operation, are moſt likely to Cure Fevers, and other acute Diſtempers; and that both by diſcuſſing the inbred *flatus*, as alſo by moving towards a ſeparation of Heterogeneities in the maſs of blood, both which are moſt pertinent to be done in Fevers.

The ſecond part of the Solution of the firſt Objection.

AND although Chymical Remedies are vulgarly accus'd of being Empyreumatick, or ſmelling too ſtrongly of the fire, as paſſing through the ſtreſs thereof; and therefore not ſo ſafe as other more gentle Remedies: Yet to that I anſwer, firſt, That although the *Galeniſts* do frequently whiſper this in the ears of their Patients, deſignedly to ſtartle them at Chymical Phyſick, as at a Bug-bear: yet let them and their Patients know, that the fire is no leſs uſeful for the preparation of Medicines, than for the Cooking of meats.

Now, How wholeſome would it be for them to eat their meat, as it is brought raw out of the Shambles, without any preparation of the fire, by boyling, baking, roaſting, or the like? To drink their Beer and Ale unboyled? To eat their Bread unbaked?

baked? All which to which to make them wholesom and nutritive, require the help of the fire, which prepares all our Food, and makes it more readily submit to the ferments of the digestions.

And as we can do nothing without fire, even in our common Coockery of meats and drinks; so can we do even as little without it, in the preparation of Medicines: which if they be of Vegetables, they are mostwhat as crude, even as those Vegetables we eat, as in Sallads; which what riftings and belchings they cause, especially to weak stomachs, such as eat them can best bear witness.

Besides which crudities, there doth also an acrimonious virulency adhere to many Vegetables, as well as Animals or Minerals, which are no way better tam'd than by fire or ferments; for if they contain the least footsteps of virulency, whereby they become actually hostile to the vital œconomy, they then must undergo a correction by the fire, or by ferments (which are equivalent to fire) before they can be made to fit to yield any Medicinal virtue, lurking under the mask of that virulency.

And therefore the *Adepti* corrects all poysonous Plants, Animals or Minerals, by that fiery Solvent, *The Alkahest*; by which, those mixts forthwith lose their venomous properties, and become exalted in their genuine (though before *dormant*) salutiferous endowments: whose poysonous properties (I mean of Vegetables) may not a little also be corrected by bare digestions, or the addition of succedaneous *Menstruums*; as that of fixt Nitre, or strongly calcin'd Salt of Tartar dissolv'd *per deliquium*, Spirit of Salt, Spirit of Tartar, *&c.* which often invert the properties of venemous Vegetables or Animals.

All which, together with distilled Vinegar, contribute not a little towards the castigating the Arsenical malignity of Minerals. The latter, *viz.* distilled Vinegar, is very requisite for the extractions of the Sulphurs, Tinctures, or Souls (as *Basil Valentine* calls them) of the Metals or Minerals after their reduction into a spongy *Calx*; which also doth not a little correct Antimony, whether in glass or flowers: yea if poured upon corrosive Mercury sublimate, from which *Aqua fortis* hath been distilled, and thereby sends forth a more suffocating steam, I say, distill'd Vinegar being poured thereon and thence distilled, doth so tame it, that no inoffensive smell doth at all arise therefrom.

Thus also Fire and Salts correct Antimony, as to its Arsenical Sulphur, making it innocent and harmless, only Diaphoretick in its operation: So fire raiseth up the flowers thereof, which (by a further strength of the fire) become only a sweating Medicine.

The corrosive Oyl of Antimony, as also another *Menstruum*, almost as strong as it self, though they are both very corrosive, yet when mixed together, after their mutual operation upon each other, the corrosive Oyl (by distillation) becomes a white powder, which by a slight dulcification proves to be an innocent Diaphoretick: Of which, I have frequently given Twenty four Grains, without any sensible operation at all, further then inclining to a breathing sweat.

Some admire the reason of the strong ebullition of these two mixed together: which are Liquors, as they suppose, muchwhat of the same original; for take (for instance) the *Aqua fortis*, which ariseth at first, in the making of Mercury sublimate,

only

only with this difference, that these Spirits arise at first in a liquid form, whereas the other that come up with the particles of Mercury are coagulated together in a dry form of sublimate; and therefore much what of the same original: I say, take this *Aqua fortis*, pour it upon the butter of Antimony, which is Mercury sublimate, distilled with Antimony, or *Regulus* of Antimony, and a very strong ebullition happens with a dark red coloured fume. This ebullition is not from the contest of the Salts, for then the same would happen upon the pouring of *Aqua fortis* upon Mercury sublimate (for the Salts in both are the same) which I know, upon tryal, it doth not.

Therefore it is only thus (as I conceive) the Salts in the corrosive Oyl of Antimony, close with the Spirits of *Aqua fortis*, or of Nitre (for the same happens to both) and thereby becomes a powerful corrosive, which presently set upon the flowers of the Antimony contained in the butter, do in effect no more than so much *Aqua fortis*, or *Aqua Regia*, poured upon crude Antimony (for in both the combustible Sulphur is ready to take flame) which calcining, in a humid way, the flagrable Sulphur, burns it off in a dark, thick, horrid fume, even as Tartar and Nitre, by the help of fire, doth burn away that Sulphur in a dry way.

After the Sulphur is burnt away by the corrosive Salts, the flowers become fixt into a *Bezoardicum Antimoniale*; which *Menstruum* being distilled off, is somewhat yellow, and will dissolve Gold, which it doth as an *Aqua Regia* of the best sort, having some of the body of the Sea-Salt which was carryed over the helm in a complicated form with Mercury, Vitriol, and Nitre: this distilled over with the other Salts into a *Butyrum*, close with the Spirits of *Aqua*

fortis, or the Nitrous Spirits, calcines the Antimony, and distill together in the form of an *Aqua Regia*; and all this by the help of fire.

Thus you see a *specimen* of the power of fire, which raiseth up corrosives, and those corrosives dulcifie one another, and correct Minerals of their Arsenical Sulphurs; and that by the dry and moist way, which is still by fire. It fixeth things that are volatile, as for instance, Nitre and Arsenick, both which if single are easily consum'd, but joyntly, and helped by the force of fire, the one fixeth the other, and becomes (by dulcification with Spirit of Wine) *Paracelsus* his *Balsamus Fuliginis*, proper against *cacoethical* Ulcers.

It also volatizeth things that are fixed, separates things that are separable, it sweetens sour things, maturates crude things, and hastens all productions, whether Fruits or Vegetables, to their perfection, or full state of ripeness; and therefore unripe Berries, Apples, Apricocks, *&c.* are by Coddling or Baking suddenly dulcified: and Sallads whether Lettuce or other herbs, are made more wholesom by boyling.

By a digestive heat in close vessels, caustick acrimonious plants, as *Flamula Jovis*, *Urtica Romana*, *Persicaria*, *&c.* become blunted and lose their sting; yea, even the same happens by bare distillation of them, though no stinging or pricking acrimony is at all perceptible in their distilled water.

These things duly considered, will necessarily evince the extensiveness of the use of fire, both as to Food and Medicine. Vegetables are not only crude, but many of them virulent too; and therefore need fire to ripen them, and by correcting their venomous properties to make way for their intrinsick Medical vertues

virtues to appear: Also Animals communicate not their virtue, which lodge chiefly in the Blood and Urine, unless helped by fire, or ferments, or both, whereby their parts become separable, and applicable to our mummial ferments.

And as for Minerals they are moſtwhat virulent, and lock'd up; and therefore of neceſſity require a correction and opening of their virtues by the fire: which muſt be done by ſuch degrees of fire as are proportionable to the ſtrictneſs of the texture of their bodies, and to the prevalency of their virulent properties, which cannot be done by ſuch gentle ſoft fires, as Vegetable ſeparations are uſually performed by.

It is for the ſake of the unlocking theſe Minerals, that the great ſtreſs of fire is ſo frequently us'd in the Chymical *Analyſis* of them; which gives cauſe to the *Galeniſts* to accuſe *Spagyrical* Preparations, with being too much fired: which how frivolouſly grounded, Let all that have skill therein, judge.

For a ſtrong fire is as requiſite, in ſome Mineral Preparations, as a mild fire to ſome eaſie Vegetable ſeparations; the one altogether as proper and neceſſary as the other. Would not a Cook-Maid be accus'd of ignorance, if ſhe intending to Roaſt a joynt of meat, ſhould lay it down at a diſproportionate diſtance from an ordinary fire, thinking to take a longer time to do it in? Surely if the diſtance from the fire was ſuch as only to warm the meat gently, it would not for many days, and (for ought I know) never Roaſt; but would dry up, become inſipid, and turn to a kind of mummial fleſh.

For as I apprehend, Roaſting of meat is perform'd thus, *viz.* When the meat is plac'd at ſuch a competent diſtance, as that the fire penetrating the midſt

midst thereof, foreeth forth the crude blood and moisture from all parts; which meeting with fresh assaults of fiery particles, are driven back again, and search all cavities of the flesh, thereby maturating the rawness thereof: which if the meat be taken whil'st this moisture remains, and yet thoroughly penetrated by the digesting particles of fire, it is then sapid, sweet, and savory; but if this be spent, and the meat yet kept longer at the fire, then it begins to be burnt, and thereby becomes tastless: but if it be perform'd by a pretty quick fire, it's the sooneſt and best done. So in Baking of Bread, if the Oven be not throughly heated, the bread will remain dough, and not wholesom for food. Though these be homely Examples, yet are they sufficient to demonstrate the necessity of degrees of fire, to be us'd according to the strictness or remissness of the texture of the body, applicable thereto. Besides I look upon my self here, as speaking to those who need familiar comparisons, to convince them thereby of the necessity of strong fires in some cases; for to those acquainted with Chymical Preparations, these are superfluous.

Again, What Preparations are there in Shops, which have undergone the fire, but are Chymically Prepared; and yet no less (notwithstanding) useful in order to the removing of Diseases? What are all the Spirits and Cordial-waters, but Chymical Separations of Urinous Spirits, marryed with the tinctures and odours of Aromaticks: and that by distillation by the fire? What are the best of their Purging Pills, *viz.* the *Extractum Rudii*, but a Chymical Extraction of the tinctures of so many Vegetables (as is requisite thereto) by a good rectified Spirit of Wine, which if neatly done, and drawn off

off in *Balneo* (as I do in the making it for my own use upon occasion) and the fixed Salt of the species after calcination and separation thereof, being reunited with its extract, is not only Chymical, as being prepared by the fire, but the very best amongst the Shop-Purges.

What are the best Emeticks or Vomitings in the Shops, but such as are Chymically Prepared, and that by force of fire too? Witness the infusion of *Crocus Metalorum* and *Mercurius Vitæ:* The one is prepared by fire and Salts, out of Antimony (which we call *Hepar Antimonii* from the Hepatick colour thereof) whereby the external malignant Sulphur of the Antimony, is most what consumed.

The other is prepared by fire and Salts out of Mercury and Antimony, but consists chiefly (if not solely) of the flowers of Antimony incorporated with the Salt in the Mercury sublimate, and carryed over together in a glacial Oyl: For in an accurate observation of a distillation thereof, with sublimate and *Regulus* of Antimony (which sublimate we also made, and so knew the quantity of Mercury therein) we in a manner got all our Mercury current again, and of Eighteen Ounces of *Regulus*, we had but six Ounces or scarce so much left in the *Caput mort.* Which very Experiment makes me close with *Barthius*, who concludes this gummous Liquor to be the Reguline parts of Antimony; and against *Gluckradius* who would have it to be from Mercury, affirming that the Antimony only by its addition helps the fusion and liquefaction of the Mercury in its distillation; and against *Bilichius* too, who, with *Gluckradius*, would have it to be nothing else but Mercury, brought over in a glacial Oyl, by the help of Salts, so as the Antimony only

onely contributes towards the liquidneſs of the Mercury, as bole, ſand, earth, or the like doth, towards the diſtillations of Salts, with which they are us'd as a *Retinaculum*.

But our Experiment doth wholy thwart this, for out of three Pound of ſublimate (in which, by compute, we find about Twelve Ounces of Quickſilver in each Pound) and Eighteen Ounces of the *Regulus* Antimony, we had one Pound an half of the Oyl, two Pound and about four Ounces of current Mercury, and in the *Caput mort* ſcarce ſix Ounces: here the whole weight of the matter we took, was four Pounds two Ounces, anſwerable to which, we got one Pound and half of Oyl, two Pound four Ounces of Quickſilver, and ſix ounces in the *Caput mort*; in all four Pounds two Ounces: ſo that we loſt nothing.

Now how ſhould Mercury make up the body of this Oyl, when we got it in a manner all current again, as it was at firſt before ſublimation, with Salts? And why ſhould not the *Regulus* make up the body thereof with the Salts? Seeing we loſt Twelve Ounces of the *Regulus* which muſt needs make up this butter; for that quantity of *Regulus* which we found defective in the bottom of the Retort, together with as much of the Salts out of the Sublimate, made up the whole of the butter (*viz.*) one Pound and an half.

Again, Whence ſhould proceed the ſtrong Sulphureous fumes, upon the pouring of *Aqua fortis* or Spirit of Nitre thereon, but from the Sulphur of the Antimony, which it has in greater plenty than quick Mercury has. Beſides if the white powder, *viz. Mercurius Vitæ* (ſo called) be put into a crucible, and try'd further by the fire, we have obſerv'd

it

to flow and fume; over which fume, though we rectly plac'd a *Spatula*, yet have we not discovered ie least minute particle of Mercury thereon: which om other vulgar Preparations of Mercury, brought the test of fire in a crucible, we found particles f current Mercury, *viz.* from Mercury precipite, Turbith Mineral, factitious *Cinnabar*, *Mercurius dulcis*, Mercury sublimate, all which gave a *pecimen* of the body of Mercury, but this of *Mercurius Vitæ* none; but melted into a kind of *Stibium* or black glass, in the same manner as any common preparation of Antimony will do.

As to the main argument *Bilichius* brings, which s, *Ego quoque* inquit *Mercurium vitæ, pulvisculo Tartari purificati permixtum, & modico, attamen diuturno calore in arena exercitum, vidi Liquoris æterni guttulam unam atque alteram sudasse:* which I rather judge might be a particle or two of the Mercury of Antimony, than of the vulgar Mercury, at first contained in the sublimate; for it is the very way, at least analogous, to that which some profound, towards the getting the Mercury of Antimony.

Yet we cannot but admire at that wonderful operation thereof, which *Bilichius* (and besides him none that I know) takes notice. After he has given a large *Encomium* of the virtues thereof, in order to the Cure of several Diseas, both acute and Chronical, he subjoyns, *Quin etiam mulierculis periculosissimè parturientibus felicissimè obstetricantem vidi: & quum debitos puerperio dolores crudelis Lucina negaret, jamque fere triduum irritis conatibus matrem fœtumque defatigasset, ut tenni filo amborum res penderet, imò omnium opinione, conclamatum utrinque videretur, in hoc discrimine non deseruit me pulvis familiarissimus,*

miliarissimus, sed ponduscolo siliquæ cum vini momento propinatus, effecit fortunante Deo, intra horulam, u pro justis funebribus soteria usuvenirent, & pro pa rentalibus celebrarentur Natalitia: Et quantum vi tæ studeat, non sine miraculo, demonstravit: si venena tâ qualitate grassatur in corpus humanum, non pe percisset tenellæ proli, non puerperæ doloribus exhaust benefecisset, sed afflictas afflixisset, & pene morien tibus acceleraſſet mortem. Nunc secus accidit; u tramque juvit, neutram lasit; vimque omnem ex pultricem non aliorsum atque in uterum convertit.

confess I never yet tryed the Experiment, thoug his authority is sufficient incouragement thereto.

So that both these foresaid Preparations, which are the chief Emeticks of the Shops, are, I say both out of Antimony, which very Mineral is tha the *Galenists* so deeply accuse, and tell their Patient how dangerous a thing it is, and that they will order no such dangerous Ingredient; when perhaps the next prescription will be infusion of *Crocus Metallorum*, or some few Grains of *Antimonium Diaphoreticum*, or the like: not to mention here the *Sal Vitrioli* or the *Gilla Theophrasti*, which they seldom prescribe, either because they have them not, or know not their virtues.

What is their best Medicine for worms, which they also frequently use against venereal Diseases, but a Chymical Preparation called *Mercurius dulcis*? Made out of Mercury (another Mineral (or rather Metal) they inveigh against) and that too out of the most corrosive sublimate, than which (save the Oyl of Antimony) nothing is more desperately corrosive, and yet out of this corroding product of Salts, Mercury, and Fire, with the help of more Mercury and the further use of Fire, is This innocent harmless

Medicine

edicine, Chymically Prepared, which is ſo ſafe, is frequently given to Children againſt the Worms; d that (ſo the Doſe be duely ordered) without the aſt harm, as all thoſe who uſe it can teſtifie, eſpe-ally if the Preparation be rightly done.

What are the fixt Salts in the Shops, as of Tar-r, Wormwood, Broom, Scurvy-graſs, *&c.* but hymical products made by force of fire? For the re, eſpecially the naked force thereof, ſeparates all parable parts; and in the actual flagration, the Ve-etable Salt takes hold of the Sulphur, the one bears own the other by force, to ſuffer all the injury the ames can do, and ſo become fixed together, whence roceeds the *ſaponaryneſs* of all fix'd Salts: and iat it is the Vegetable Salt (which while it's in the Concrete, before any violence be done, is neither x'd nor volatile) which catching hold of the Sul-hur in the flagration of the Plant, that gives ſtrength o the Salt, is apparent, becauſe in the burning of 'egetables for to get (or rather to make) their fix'd alts, if it be done whilſt the Plant is in its full trength, before it begin to ſpend it ſelf into ſeed, ie more in quantity, and the ſtronger, is the Salt ound to be. *&c.*

And therefore thoſe who burn Brakes for heir aſhes to make Bale-ſoap of, do it while they re green and ſtrong, cutting them down, and then ive fire to them, and ſo let them burn in great heaps, vith a ſmothering fire: Thus the Vegetable Salt atcheth hold of the Sulphur, and both being in heir full ſtrength, the one bears down the other, nd gives a great quantity of Salt; whereas if they hould let them alone till they turn yellow, and then urn them, they would not get (as they find by ex-perience) half ſo much Salt.

The

The like ſhould be obſerved in the burning of all Plants for their Salts, to take them at ſuch a maturity, as before they be impoveriſhed by waſting their ſtrength in ſeed; for at the time of ſeeding of Plants, the eſſential Salt, by a further digeſtive ferment, connatural to the Plant, becomes tranſmuted (for the moſt part) into a Sulphur, which gives an Oyl: and therefore Plants, during the time of their ſeed, yield Oyl moſt plentifully.

This Sulphur opens it ſelf yet further, and ſpends its ſelf in a flower, or fruit (*In Sulphuribus inſunt ſapores, odores, &c.*) and theſe decaying, the Plant grows weaker and weaker every day, till it wither; which withering, is nothing elſe but a ſpontaneal *Analyſis* of the Plant, by the *exit* of the Eſſential Salt, which gradually taking wing, or changing into Sulphur, and that alſo taking flight, the body thereof (as to the form) marcheth off the Stage, and is at laſt reducible into the *Leffas Terræ*. which begins the Wheel again to a new circle of Vegetation: So that the ſeveral *Stadiums* of this Salt gives the various apparencies of growth, maturity, and old age of Plants.

For this Eſſential Salt, in its circuit of Vegetation, aſſumes the form of Sulphur, at due ſeaſons; yea, is actually tranſmutable thereinto. Whence it is, that the more Plants yield of an Eſſential Oyl, the leſs they give of Salt, either fix'd or volatile; ſo that Salts and Sulphurs, are but the various diſguiſes of ſeed: and therefore may give hint to ingenuous ſearchers, how to turn Salts into Oyls, and by a further inſpection, how to reduce Oyls into Salts, which thereby (as *Helmont* ſaith) becomes noble, temperate, abſterſive, penetrative and balſamick Remedies.

What

What are all the Essential Oyls of the Shops, such of Rosemary, Sage, Wormwood, Cloves, Nutegs, Cinnamon, *Sassafras*, *Rudium*, *&c.* but hymical Distillations, of the Sulphurs of Vegetaes, and Aromaticks? One drop or two of which, ntain more virtue than is got from a whole handl or more, of the Vegetable infus'd, decocted, or epared any other ordinary way. These either uted with their fix'd Salts, or made into an *Oleoaccharum*, and given in convenient Vehicles, yield t a little of the *Crasis* of the Concrete; and therere are Medicines of no very inferior order.

So that, if we take a summary account of all the spensatory-Medicines, and make a separation of l the Chymical Preparations, from the rest of the rraginous compositions, we shall find (if any thing nsiderable be done in the Cure of Diseases) it is uefly effected by the Chymical Preparations, though ey themselves in respect of the more noble Chymil *Arcana*, are but Preparations of a lower rank: he rest as Syrups, Conserves, Electuaries, *Looch's*, *rc.* have little or no virtue.

If the *Galenists* would but improve that small tock they have of Chymical Remedies, by endevouring to graduate them further, by the help of re and ferments, they would not onely, not quarrel with the Chymical Practice of Physick; but also nd that whatever of excellency was perform'd, in rder to the Cure of Diseases, would really be mostwhat from such Preparations. A right understandng whereof, would compose them in their heat, and wellings, against Chymical Physick; and make hem ingenuously confess their former ignorance: and t length acknowledge the wrong they have done to hat noble Science, by accusing its Medical Preparaions of Empyreumatism.

For

For by a little experience therein, they would learn to know, the degrees of fire ſutable to the texture of Concretes, brought to the teſt thereof; and that no leſs alterations are made (in bodies adapted thereto) by gentle fires of digeſtions, and eaſie diſtillations: than by more ſtrong fires in operations upon more *robuſt* bodies. For there are and may be found out, many more excellent Chymical Preparations, which are perform'd by very gentle heats, without any ſtreſs of fire, and yet powerful in a benign operation.

So that the fire, by a skilful Artiſt, may, in its degrees, be adapted to thoſe bodies he takes in hand, according to the nature of the compaction thereof; alſo thoſe Concretes, eſpecially Minerals, which moſtly undergo the probation of the fire, do thereby become depurated from Heterogeneal combuſtible *ſordes*; and loſing all their droſs, become approved Remedies by the fire, able to penetrate the intimate *Receſſes*, and to purifie the digeſtions of our bodies, and to cleanſe our blood and other humour from their impurities, into theſe primitive elixicated juyces, from whence by alienation of the digeſtions they have degenerated.

The Solution of the ſecond Objection.

45. AN other thing, wherewith they impeach Chymical Phyſicians, is, That they are not methodical, but empirical in their practice. In anſwer therefore to which, we firſt Query, Whether that be not the beſt method, which Cures Diſeaſes beſt, according to that ternary of *citò, tutò, & jucundè?* Whether the *Galenical* or Chymical Phyſician doth perform this the beſt, is the diſpute. The next

Query

Query is, Whether to be so accurate, in the punctual observation, of all the injunctions of the Schools, be altogether, or at all necessary to make a Physician cure Diseases the more successfully?

As to the first. I say, The Methodists, I mean the *Galenists*, do pretend to a method in the curing of Diseases, according to the level of which, they pretend also to answer all indications, which gives yet further to Query, Whether this method they so much admire, be not more directed to the mitigating of the Luxuriant Symptomes, *viz.* the lopping off the branches, than to the immediate encountring with the essential cause of the Disease, *viz.* the stubbing it up by the roots? I mean, Whether (suppose in any particular Disease, for instance a Fever) their method doth not more aim at the suppression of the Symptomes, *viz.* the heat, thirst, want of rest, pains, *&c.* by Phlebotomy, cooling Juleps, Emulsions, frequent Purgations, *Laudanum*, and the like; than, I say, at the essential cause, which lies in the initials of the spurious fermentation of the blood, *&c.* so consequently level their Medicines in their methodical rank and file, against the posterior products and branches of the Disease, rather than against the Disease it self.

For unless the *Theory* of the Diseases were certain and infallible, the method of practice grounded thereon cannot be satisfactory to any ingenuous man; for if he espy a flaw in the method, by observing it, for the most part, not answering his expectation in the cure of Diseases, it will give him just cause to suspect an error in the *Theory*: and by that time begin to question both; yea, and lay them aside too, if he can but discern another more probable *Theory*, whose consequent practice, doth more certainly inable him to cure Diseases more happily.

Now to be better convinced of the inefficacy of the *Galenical* method in the curing Diseases, Let us consider how often, in most Chronical Diseases (for in acute they have not that time) is their method baffled. How frequently do they run over the same course of Physick, even till the Patient is tired out and out; having their vital Principles more really weakened, and linger in an hopeless manner, under the tyranny of the Disease; and after all this, that the Methodists have spun out their longest thred and left them, some honest Country-man or good old woman hath a specifick Remedy, which they have known, by experience, to have done good in the like case: and the Patient is now (though not before) at leisure to try it, takes it, and though his or her skill is not so good as to give it with such advantage, as some congruous circumstances might second it withal, yet (I say) often succeeds; and cures the lingring Patient of his Disease, made worse by a method.

Now because he which gave this Remedy, did it without the formality of a method, if by the good success thereof, he be encouraged to give it frequently, he gains the name of an Empirick, *viz.* one who gives a Remedy at random, without a method, or without being able to give a reason for the operation of his Medicine. Whereas indeed if we make a scrutiny into the essential reasons of the operation of Medicines, I am apt to question whether any Methodist, can give a solid satisfactory reason, of the operation of any one Medicine he gives, in his whole method; and that, because the reasons and causes of things are so very abstruse, as *Jurare in verba Magistri*, to subscribe to the *placets* of other men, is not enough, to any ingenuous man, to satisfie himself in the reasons of things, attainable thereby.

And

And if I ſhould Query, why the infuſion of *Stibium* or of *Crocus Metallorum* ſhould operate by Vomit and Stool? And why the ſame if further prepared by the fire and ſalts, ſhould operate by Sweat?

And to the firſt it be anſwered, That it provokes Vomit becauſe it hath an antipathy to, and diſagrees with the ſtomach. This would be no ſufficient reaſon, becauſe many other things may have an antipathy to the ſtomach, and yet not cauſe Vomit; but may either rouze up an incoercible *flatus*, or may march off by Stool. So that for things to diſagree with the ſtomach, is neither the real cauſe of Vomiting or Purging; though it is true, there muſt of neceſſity be a concomitant diſagreement of the thing with the ſtomach: But what that is that makes the antipathy, is the thing in queſtion.

To ſay that a Vomiting meeting with vitious humours upon the ſtomach, diſſolves them; and provoking the expulſive facultie of the Stomach, forceth them up by Vomit, is ſtill no ſufficient reaſon or anſwer to the Queſtion: For, What can one Ounce of Wine, only impregnate with a Mineral odour, do, as to the diſſolving of corrupt humours upon the Stomach, and to provoke the expulſive faculty with ſuch violence, as by the convulſive motions of the ſtomach, to throw up what is in the concave thereof? What are the humours of the ſtomach to it? It's in taſte and colour, almoſt the ſame, with ſo much ſimple Wine. How ſhould the expulſive faculty become thereby concern'd, unleſs we have recourſe to what we ſaid before, *viz.* the antipathy thereof with the ſtomach or *Regent* powers thereof; And ſo be at as great a loſs ſtill, as to a true Solution of the Query, as before.

As to what the Atomical Philoſophers ſay in this

case, I am not satisfied, that they give a resolve to the point; who would have all such actions of Vomiting and Purging, to be performed by the concourse of various fiz'd particles, acted by different motions: which impressing the like motions upon the nervous and membranous parts, cause that *Systole* or convulsive motion of the stomach, which by compressing and contracting it self, throws up what is contained therein. Who though they go on slily and cunningly, in the weaving their Atomical texture of bodies, and make all Creatures to be but as so many *Automaton's*; who like a Clock, or Watch-work, being once wound up, keep going from their Springie power of motion: Methinks, they do as much *petere principium*, as the former, in that they take it for granted, that what we call Life, is nothing else but a result of motion and figure, in all bodies. For though all bodies as to the whole, and to every seperable part, are constituted of form or shape, and acted by motion, as the body stands inclined to its *Genesis* or *Analysis* whereby all things are in a perpetual Flux, and constant transmutation: Yet this evinceth not motion and figure to be the cause of that we call Life, or, as they say, that there is no other existence of any *Anima sensitiva* than that, but rather that motion and figure, are the sequels of Life: Besides, methinks, the niceties of vital function, are too curious to be solv'd by so slight an *Hypothesis*.

Again if we endevour to answer the Query, according to the Chymists, *viz.* That it is the odour of the combustible Sulphur of the Antimony, wherewith the Wine being impregnated, becomes hostile to the *Archeus* or *Anima sensitiva*, which hath its chief residence in the stomach; which being provoked, ceaseth not by opposition to that which offends,

not

not only to through it off, but also the depraved humours, which lie fast impacted in the tunicles of the stomach. Which indeed is a fine notion, and very probable to be near the truth, yet, to me, the same Query remains as indemonstrated as in the former, *viz.* How rationally it gives a satisfactory account, Why the infusion of *Stibium* should act as an Emetick rather than any other way? What do we know, what this odour of the Sulphur of Antimony is? And why the *Anima sensitiva* should rather be offended than pleased thereat?

I say, how difficult a thing would it have been, to have given a rational account of the manner of its operation, so as to have said, so and so, according to reason, will it work, and this before an experiment thereof had been made; for when we see a Medicine to work by Vomit or Stool or Sweat, we then presently fall to conjecture the reason thereof.

But for one to have according to rational Prognosticks, predicted that *Scamony*, *Colocynthis*, *Sena*, *&c.* would Purge; and that before ever they had been found so to do, by experiment, would have been a satisfactory evincement of the reason of the thing: but this is more competible to the intuitive cognition of the immortal Soul, whose out-goings is pure reason; And therefore while we converse in these mists of the body, we must descend to a lower order of reason. Whereas in the *Mathematicks*, in that part thereof call'd *Algebra*, there are some *Petita* that so the *Quæsita* may the easylier be found out: So likewise in the ratiocination, about apparent *Phænomena's*, there is a necessity of laying down some *Petita*, which ought to be few, yet fruitful principles, which are indemonstrable *à priori*, to which all apparencies are ultimately reducible; and by which the *Quæsita*, things inquired after, may be found out.

These pregnant Principles ought to be grounded on solid experiments, towards which, the *Virtuosi* are performing a considerable work, in gathering experiments of all sorts; out of which, in tract of time, a noble demonstrative Science may be raised up.

Now, That sense and motion are the product and sequel of Life, and not the Life it self, nor cause thereof, the Life only should (as I apprehend) be that one primary Principle to which all the *Phænomena's*, or apparencies thereof are reducible; which being simple, and simple in it self, hath all fermentations, digestions, motions, sense and heat, *&c.* as subservient thereunto: All which as instruments, perform the various functions thereof.

Now, that sense and motion, are but the sequel of the *Anima sensitiva* (that *Regent* Spirit, unto which the whole œconomy of the body is subservient) is obvious in a Paralytick and Apoplectick Distemper; where sometimes sense remains, and motion is deprav'd; otherwhiles there is motion and no sense, and yet Life is present; yea sometimes in Hysterical Diseases, both sense and motion are abolisht for a season, and the body lieth as dead: and yet Life lying as it were in its embers, or in a crude smoak, by a Ray, from the immortal, which hath wrapt up the mortal Soul, darting from the heart, becomes inkindled, takes flame, and lives again, to the astonishment of the beholders.

Yea, sense and motion in violent Hysterical Passions, hath been so much deprav'd, as able Physicians, have sometimes given them over for dead; insomuch that a great Physician and skilful Anatomist coming to a Woman, who was suppos'd to be dead and being desirous to inform himself of the cause

so suddain a death, attempts to Anatomize her, who upon the very first touch of his dissecting knife, suddainly started up; which so terrified this Master of Anatomy, that he could scarce recover himself to consider how after all his skill and diligence in that Art, he should be so deceived, as to offer at the dissecting of a living woman: which struck him with discontent, and taking it to heart, despaired, and died.

And as sense and motion, so also fermentation and heat; also chusing, and eschewing that which is agreeable and disagreeable, are the products of Life: Whence also to raise a structure of reason, why some things work by Vomit, other things by Purge; though it may be plausible to some, yet will not be satisfactory to others.

That three or four Grains of *Mercurius vitæ*, should work so strongly by Vomit, and as many Grains, of the extract of *Colocynthis*, should work so forcibly by Stool, cannot rationally be imputed to any other efficient, but that *Spiritus impetum faciens* of *Hippocrates*, upon which these violent Emeticks and Catharticks seizing, by the disgust the *Archeus* or *Anima sensitiva*, takes at that which is hostile thereto (which yet how to describe we cannot tell) rouzeth up a spurious fermentation of the humours of the stomach and Intestines, which if strong, works up by Vomit, as is apparent in the administring of the infusion of *Crocus Metallorum*, *viz.* That, while the *Regent* Spirit of the Stomach, is most provoked by the force of the Emetick, it causeth such an hostile fermentation, which reacheth even to the bottom and round the sides of the stomach, till it forceth up the Emetick Wine, and with it the humours into which, it, as a ferment, hath wrought it self, and so nature disburdens it self of two Enemies at once; after

the violence of this emetick fermentation is over, that which remains, gliding through the *Pylorus* into the Inteſtines, doth there cauſe a further fermentation in the juyces therein contained, and ſo paſſeth off by ſiedge.

Now all Solutives operate one of theſe three ways, either as they are abſterſives, which raze off the *ſordes* from the ſides of the primary veſſels; of which ſort are all abſterſive Salts, ſuch as have a ſaponary *Alkali*, waſh off the adherent *ſordes:* and theſe are the eſſential Salt of Tartar, and ſometimes the volatile Salts of Urine or Harts-horn, as alſo the *Elixir Proprietatis* acuated or extracted with the Solution of the eſſential Salt of Tartar, in the *alcool* of Spirit of Wine, and chiefly the volatile Spirit of Salt of Tartar.

Or ſecondly, Solutives operate as they remind the digeſtions of their offices, of which ſort are *Pilulæ Ruffi*, *Pilulæ Alœphanginæ*, the *Scotch* Pills, *&c.* taken in a ſmall Doſe; which, though they are not properly ſuch Solutives, yet are pretty innocent *Succedanea's*: but above all, the *Arcanum Corallinum* of *Helmont*, is one of the true Solutives, which only puts the digeſtions in mind of their office, and as *Helmont* ſaith, only Purgeth what is corrupt in the body, not purging at all a ſound body.

Or laſtly, Solutives operate by exciting an exotick fermentation in the humours, or fluids of the firſt veſſels, and circumjacent parts; and that either by the virulency of ſome Vegetables ſeated in the reſinous parts thereof, as of *Scamony*, *Colocynthis*, *Jalap*, *Agarick*, *Elebor*, *&c.* or by the odour of the Arſenical Sulphur in Minerals, promoted by the operation of Salts, as of *Mercurius vitæ*, *Crocus Metallorum*, *Sulphur Antimonii auratum*, *&c.* All which

which become fermental in their operation, and if the Dose and strength of the Patient, be not duely proportion'd by the skill of the Physician, they become too fermental; not only carrying off all good, and bad humours from the stomach, and other common passages; but also by an *Hypercatharsis* colliquate the very blood, yea, and solid parts too, into a putrilaginous excrement carryed away by Stool.

Hence it is, that by the fermental venom of these Drugs badly prepared, and as unskilfully administred, that incredible number of Vomits and Stools, or only of Stools, happen sometimes to Patients, giving them Thirty, Forty, Fifty or Sixty Stools, even almost to an exhausting of the very strength of the body; which is done by an impressing, the almost indeleble venenous Character of the virulent Drug upon the *Pylorus*, which at first, working forth all the contained humours of the first passages, and still retaining the same fermental impression, to which as a virulent thorn in the part, all the other humours whether blood or other liquids, have their conflux, endevouring thereby to wash off the venomous stain; but not being able to perform that work, by reason of the prevalency thereof, are forthwith transmuted into a slimy putrilage, with griping pangs at every solution, and so carryed away by Stool, to the great impoverishment of the Spirits and strength of the body: Which sometimes brings on a sudden *Tabes* preying upon the very solid parts, and thence too hastens on Death it self.

Thus you have a reasonable account of the manner of the operation of Emeticks and Catharticks; though I dare not be positive therein, but only give fair and probable hints, which may perhaps incite some others to a further prosecution thereof. Yet how

how these malignant properties in some Concretes, and benevolence in others are found out, is better discernable by the eye and sense of the *Regent* Spirit of the stomach, then that of reason; for all are not alike virulent to all: so things which are very wholesom and useful to most, yet are disgusted as poysons to others. How far custom may prevail, as to cause some to take that quantity of a *Toxicum*, which would inebriate, stupefie, or kill another, may hence appear. I have known a man so accustom himself to *Opium*, as that every night he would take Ten, Twelve, or Fifteen Grains thereof, without any previous preparation, which if he neglected to take, he was commonly dull and stupifyed the next day; whereas the taking thereof made him chearful and lively, which given to another, would have stupified, brought a *Delirium*, or perhaps by the prevalency of the *Toxicum* might have proved mortal: all which are scarce solvable by the common Principles of the Schools, but are better reducible to that common Adage, It was *the nature of the Beast*.

Why Vegetables are found to have such virulent properties, we shall not long dispute. The ingenuous *Kircher* in his *Mundus Subterraneus* tells us that they proceed from Mineral Arsenical juyces, fermenting in the earth, where such Vegetable seeds are; which incorporating themselves therewith, become thereby the Authors of such virulent fermental poysons, or *Toxicums*, whence *Napellus*, *Hyoscyamus*, *Cicuta*, *&c.* take their virulency: but I shall wave that, least I too much lose my method.

If the reasons of things be so abstruse, as I have before shewed, I mean, the true cause of the operation of Medicines, be so difficult to understand; and that the very best knowledge we attain to therein,

is

is taken from and grounded upon experiments or tryals; and that these experiments are as likely to fall into the observation of those who are ignorant of a method, as of those who are skilful therein, What advantage there hath a Methodist, whose very grounds and Principles are either found unsuccessful in practice, or muchwhat contradicted by Experience the grand Mistress of Knowledge?

For the order of our knowledge is inverted, since it was intuitive, since now we only know *à posteriori* from the products and effects of things; whereas then we know from the very essential causes themselves. So that now experiment is the road to knowledge; all other (except that which is Divine) being mostwhat conjectural, and therefore fallacious.

In this sense if we were more Empirical, *viz.* adher'd more to tryals and observations of other persons (though under a mean form) about Concretes of this nature, we should probably be more successful in Curing of Diseases, be better Physicians, though perhaps less methodical; and that, because nature in the *Phænomena* of Diseases, and Cures thereof, is not tyed to any of our prescribed methods, though never so specious: but our method or manner of ordering due applications for natures help, ought rather to be confin'd to the laws and possibility of nature, and to good collateral observations from successful experiments.

To which purpose it doth not at all mis-become a Physician to enquire into experiments of all sorts of this nature, even from circumforaneous, Empiricks, Quacks, Barber-Chyrurgeons, old Wives, Farryers, Midwives, or from any other persons, to whom

whom experiments of this kind may happen: By whose ingenuous observation from such like ordinary Peoples experiments, no small light happens to the more ready Curing of Diseases.

For from such Persons (if credible) you have nothing but naked matter of experiment, unassisted by Art; which often, because simple, and therefore more singly co-operative with nature, proves more efficacious in performing Cures, than the splendid *Recipes* of most fam'd Physicians: and that because these are so learn'd, as that it would seem (as they suppose) ridiculous to insist upon one, two, or three Ingredients (and perhaps those but of ordinary account neither) for them to prescribe to a Patient.

And probably one reason, why great Physicians are often so unsuccessful in their Cures, though they attempt them by some such Concretes, as they hear a fortunate report of, is, because they are not content with the simple Remedy they heard of, but adding this and the other, and a third, *&c.* of such as they think have the like qualities (according to that saying, *Vis unita fortior*) do so confound the mixtures with their additionals, as they quite spoyl the operation of its genuine efficacy.

So that one may certainly conclude, that that manner, way, or method, which Cures Diseases most happily, sooner, and with less trouble, and debilitation of Spirits, is the best; which must be such as is most what grounded upon collateral observations of successful experiments, and not from farraginous *Recipes* in Books: and whether Chymical Physicians are the most likely to perform this, I shall refer to the judicious Reader. And this brings me to the other Query, *viz.*

Whether to be so accurate, in the punctual observations,

rations, of all the injunctions of the Schools be altogether or at all necessary to make a Physician cure Diseases the more successfully?

When I consider the tedious and almost inextricable Labyrinth, wherein young Physicians are commonly involv'd. How many great Volumes of *Galen*, *Hippocrates*, *Dioscorides*, *Actuarius*, *Rasis*, *Serapio*, *Ætius*, *Averrhoes*, *Heurnius*, *Fernelius*, *Severtus*, *Riverius*, *cum multis aliis*, they revolve? What tedious pieces of Anatomy of *Velsingius*, *Riolanus*, *Bartholinus*, *Spigelius*, *Pareus*, *&c.* do they peruse? How many unprofitable Discourses, for argumentation sake, in the Theory of Physick, are they ingag'd in? How many hundreds of Plants do they burden their Memory withal? And that both as to their form, which must be, as well when the Vegetables are young, as when come to maturity, together with some slight touch of their Virtues, according to the superficial description of the Herbals? What a confus'd jumble of the varieties of Pulses, do they puzzle their heads withal? What a multitude of Symptomes, good and bad? What long Discourses of differences of Urine? And to confirm all this, What long Pilgrimages into *Italy* and to the Universities there, must they make? And returning home after all this, cannot (as some of them have ingenuously confess'd, and the Country-People brought to the test) certainly Cure one poor Disease.

I say, when I consider all these things, I cannot but wonder and say *Quorsum hæc omnia?* What's the meaning of all this noise, and yet so little Wool? I mean, such a deal of doe to inform our judgments, and yet nothing the nearer to cure Diseases; being only inabled hereby, to discourse learnedly with

other

other Physicians, and with a great deal of elegancy, read a Lecture to the Patient of his Disease, that it is in this, and the other part, and proceeds from Phlegmatick, Cholerick, or *Adust* humours, or the complications thereof; whilst the poor languishing Patient crys, *Give a Remedy, or else I dye.* Thus they prove too eloquent to a languishing Patient, who had much rather hear of a good suitable Medicine, than to be tantaliz'd with learned Discourses.

Young Students in other Countries, commonly go along with a learned Professor, to whom he frequently reads Lectures, upon the sick Patients he visits; and doth it with such a grave method of Discourse, pointing out the Symptomes, answerable to the predominancy of such and such humours; and that in so learned a style, measuring out the lineaments and dimensions of the Disease in its rise, state, and declension, as that the young Students do verily believe (if their method of Medicine be but answerable to that of their Theory) that none of these Diseases can come amiss to them, but they shall surely cure them all.

But alas! When they come to matter of experiment in their Practice, they find, they are mistaken, they are puzzled at every turn; and some of them, that are most ingenuously inclin'd, begin to be convinced of the emptiness of their learned Theory, and of the barrenness of their fruitless method: and that in truth and good earnest, they are not certainly able to perform the cure of any Disease, not so much (as some of them have acknowledged) as a *Paronychia* or Whitlow.

To what purpose are the various Discourses of Physick, and that in a methodical way *pro* and *con*? asserting this and denying the other, troubling the heads

eads of Practitioners with empty ſpeculations; hich are no ſooner conceived, but before they are ell brought forth, are ready to be ſtrangled, even n the birth, with other equally, or more rational pprehenſions, and all this but in a putationary; and onſequently deceitful Philoſophy, whoſe principles ot being grounded upon experiment, prove themelves meerly fictitious, and at the beſt uncertain.

What ſatisfaction can an ingenuous man take, from he manifold Doctrine of Pulſes? Which are altogeher irregular and uncertain. What great number of their difference is ſet down? Enough to fright a nan, at the firſt ſight, from vexing himſelf therevith. How cumberſome to the Memory, are the ery terms of Art? Which alone were enough to nake up a Science, ſufficiently troubleſome to reain in the Memory, yea and ſometimes put it upon he rack too.

How do young Students trifle a great part of their ime away at the Univerſities, in the froathy Study of Logicks, Ethicks, Phyſicks, and Metaphyſicks? And all this in order (to thoſe who bend their Studies that way) to Medicks? From which beſides he empty ſpeculations and verbal janglings, little of worth doth thence proceed; And what is the reaſon? Only this, That they have not ſufficient matter of experiment in their Phyſicks, to ground a true Science upon; and as to Ethicks, they more conſult the ſayings and moralities of the Heathen, than the Life of CHRIST and Chriſtians: The other two are meerly verbal, conjectural, and moſtwhat chymerical.

If they would more liſten to a grand collection of experiments of all ſorts, according to the Lord *Verulam*'s advice, and totally ceaſe from all manner of diſputations; improving all other parts of Learning

ing to the utmoſt, It would be the only way in tract of time, to eſtabliſh a true ſolid Science of Philoſophy; till then, we may expect no conſiderable improvement, in thoſe places, of real Science.

How uncertain are Phyſicians in their diagnoſticks of Diſeaſes? In ſo much, as ſo many Phyſicians, ſo many ſeveral judgements of the ſame numerical Diſeaſe; and all this for want of ſome pregnant Principles, grounded upon ſolid experiment, which in time would beget a demonſtrable Science; without which, they erre in uncertainties, are moſtwhat eccentrical to the truth, and having no firm footing for want of a true baſis of experiments, ſlide too and again amongſt ſlippery notions.

To be ſo accurately skilful in Anatomy, as to be able to read a Lecture upon a cut finger, is not very neceſſary; to know the Veins, Arteries, Nerves, Muſcles and Bones by name, that are cut, is more burdenſom then uſeful to ſtretch our memories, with a great catalogue of ſimples, and to know ſo many hundreds or perhaps a thouſand by their heads, both in their Infancy and Maturity, brings a Phyſician no nearer to know ſpecificks, in order to the cure of Diſeaſes.

To be deeply vers'd in the knowledg of the Diagnoſticks of diſeaſes, of all good and bad Symptomes, reckoned, by *Galen*, *Hippocrates*, *&c.* onely inable a man to be confident, and thereby to commit folly, by being too poſitive in his determinations of Life and Death; and ſo expoſe himſelf, and all that profeſs Phyſick, to an ignominious report amongſt the vulgar.

The confidence of ſome Phyſicians herein, I have much admired, who truſting too much to their own skill, and being too credulous of the ſmiles of ſome flattering

flattering, though uncertain, ſymptomes, do conſtantly (at leaſt frequently) predict Life and Recovery, with ſuch like expreſſions as theſe, *I wiſh I had a Leaſe of the Patients Life. My Life for his, He or ſhe will recover. He may live many Years. He is ſafe, &c.* when the very next news we hear, is, The Patient's dead, the Leaſe is out, the Years are expired in one or two days time, and the Phyſician's Life and Credit is forfeited: Nay, and which is worſe than all this, the Phyſician will keep the ſame ſhare of confidence ſtill, and be as forward in his predictions of Life and Health, and to the next Patient as before, though perhaps, yea frequently with as bad ſucceſs.

I do think, that they eſteem it below them, for the vulgar not to judge, but that they have all the dimenſions of the Diſeaſe, or not to think, but that they know the height, depth, and length, and know the limits of its *exit*. And to ſettle this opinion in the vulgar, that they may be reputed Maſters of their Profeſſion, they put it to a venture, predict very confidently of Life or Death, which like a Lottery ſometimes hits, and then their fame becomes wing'd amongſt the ignorant ſort of People, but if it miſs, as it is very probable it may, yea frequently doth; then they huddle it up, and a little time wears it off, that it is forgot both by themſelves and others: yet this confidence being ſo obvious cannot eaſily be ſmothered in all breaſts, eſpecially in thoſe who are ſomewhat deeper ſighted than the reſt, to whom ſuch vain confidence gives occaſion to ſuſpect, that either the Phyſician predicts Life to pleaſe the Patient and Friends about him, or that through a confident ignorance, he rapps at the prediction, and at a venture, becauſe he would have it ſo, ſaith aſſu-

redly, his Life for his, he will Live and Recover: after all which, with many other circumstantials of his confidence, nothing is more frequent, than that the Patient dies. This makes Physicians a by-word amongst the vulgar, and gives occasion to other understanding Persons to conclude that Physick, as it is generally practiced, is nothing but a meer quacking, and a grand juggle, impos'd upon the vulgar, and others of inferior capacities; which gave occasion to one ingenious Person to say, That three grand Impostors of the World, in that Art, died in one Year; which was *Riverius*, Sir *Theodore Mayhern*, who the third was I know not.

Thus we see how injurious confident Physicians are to their own Art; how two or three days sometimes puts a period to their boasting in particular Patients; brings a Catastrophe upon all their fair predictions; blasts the deceitful hopes, they have lull'd the Patient and his Friends withal; and they live to prove themselves false Diviners: And all because they are too short-witted to consult the Oracles of Heaven, have not the right *Jacob*'s staff, to take the true altitude of the Disease, nor what degrees it wants of the Horizon of Life; they are too short-sighted to view the Records of Heaven, and too inferior to know the Counsels of the most High; and therefore it is just with him to baffle them in their judgements, and confute them in their predictions.

How uncertain are the predictions by Urines, which are as readily changeable as any liquid juyce in the body. It hath indeed mostwhat the same constituent principles as the Blood, *viz.* a Phlegm, a Sulphur, volatile Spirit or Salt, and a Salt *Marine*, with some resident *Faces*; so that sometimes the *Crasis* of the Blood, is indicated thereby. For as from a due

pro-

proportionable mixture, of the constitutive Principles thereof, the Sulphur well tempering and tincturing the volatile Salt in the Phlegm, gives that curious citrine colour to healthful Urines; yet are they not always sound, because so coloured, for we see that in any languishing Distempers, where some principal parts are much vitiated both in their native ferment, as also in the *Parenchyma* thereof, and yet the Urine keeps its natural colour: whence springs, as from one root, much deceitfulness in Urines, as to predict any thing of truth, as to the form of the Disease thereby; and any slight disorder of the last passages it runs through, will easily pervert the indication of all other primary parts, and this gives an other ground of mistakes, in the judgement upon Urines.

Some indications in some Diseases, may be had from the Urine, but they are incondesirable, if compared with those, we either have from conference with the Patient, or the Patient's Messenger. The truth of it is, the World is so generally trained up, with the custom of bringing their Waters, and expecting a large Lecture of their Disease to be read thereon, which many Physicians make a shift to do, pumping with a few considerable previous Queries; Insomuch that thePeople look not upon him as a Physician of skill, who cannot read to them the Disease out of the Water: which if he can do, though it be but from what he hath already gathered from them, by the by, yet he then passeth for a man of judgement, though he is wiser than to think himself so upon that account.

Many People are so credulous, that they verily believe, he whom they repute a skilful Physician, doth certainly know the Disease and every punctilio thereof from the Water, and look upon his con-

jectures as Oracles from the Urinal, which they firmly believe he speaks, from his depth of judgement therein, thus the People are willingly deceived. And some Physicians, of this opinion, *Si Populus vult decipi, decipiatur*, as the Learned Abbot, riding through a Country-Town, the vulgar People whom he passed by, desired his Blessing, to whom he replyed very gravely, as if he had uttered a form of Benediction, *Si Populus vult decipi, decipiatur*, stretching forth his hands after a solemn manner; which they received very thankfully, and perhaps did them as much good, as his Blessing would.

The gross mistakes that some are apt to commit, either accidentally or designedly, might methinks startle Physicians from being too positive in their predictions therefrom; as (for instance) a Maid mistook the Vinegar-bottle for her Mistresses water, carryed it very orderly to a Physician; who upon previous Queries gave his judgement very methodically, upon her Mistresses Infirmities: thus far all was pretty well, but the Maid returning, found her Mistresses water in the Urinal, in the same Window she had accidentally taken the Vinegar-bottle, away she carryed it to the Doctor, told him her mistake; but it's no matter, the Diseases he saw in the Vinegar-bottle, were somewhat alike with those in the Urinal-glass, and therefore the judgement he passed upon the Vinegar-bottle, was, for ought I know, as skilfully done as that upon the water it self: and perhaps more, for every ordinary Physician can make a shift, to discover some Maladies by the Patient's water, but to read a Lecture thereof out of a Vinegar-bottle, was indeed extraordinary.

But really, I could wish, Physicians were more serious and would deal more fairly above board, tha

in time they might unhinge the World from of this accuſtomed folly they have been by conſent trained up in, that the people may no longer be nuzzled up in the expectation of a Phyſitians looking at the Phyſiognomy of Diſeaſes; or ſtaring them in the Faces, through the Glaſs of the Water, that henceforward they may not look upon them as Oracles, to divine Life and Death therefrom.

Alſo, I could heartily wiſh, they would conſult, a more facil way of practice; ſuch as by the efficacy thereof might prove more delightful to themſelves, and more grateful to their Patients: which certainly cannot be better attempted, then by a ſerious Scrutiny into the natures of Concrets, into the ferments of the Blood, and humors, and Depravations thereof; alſo into the Sympathy and Antipathy of all medicinal ingredients, how the Vital or Animal ſpirits ſtand in agreement, or diſſonance therewith. All which, and the reſt, neceſſary to be known by a Phyſician, are beſt illuſtrated and confirmed by demonſtrable experiments, which are the onely ſatisfactory *Criterions* in all ſolid knowledge, the want of which makes Phyſicians too erratick, and inconſtant in their Judgments.

A probable way propounded for the improvement of Experimental Philoſophy.

TOwards a promoting an *Hypotheſis* of experimental Philoſophy (one large branch whereof would be this of Phyſick,) I think it would not be impertinent, yea perhaps neceſſary, to lay aſide all or moſt of our Books, excepting ſuch, as by ſome Judicious perſons, might be reputed faithful, in their communication of experiments.

For they are the fancies and conceits, that are found in books, which makes the Readers erre, by determining their Judgments to this, or the other apprehension, which before was unbyassed, and might as well be informed of the truth, through matter of experiment, as not; whereas commonly in books Men have learned nothing more then to erre, to which they are, by natural propensity inclin'd, besides to see what large Volumes a man turnes over, before he can reap even but a small Harvest, of satisfactory knowledge; and that cheifly, because few there are, who busie themselves to write, but they have some Novelty, either in History, Theory, or Practice, to present the world with, yet they commonly do so wire-draw, and spin it out at length, with so many circumstantial, and often impertinent notions, that they fill up a volum, with that that they might have comprised in half a dozen pages: all the rest are meer Flourishes, and Appendices, which being tedious, few men will cumber their heads therewithal, and therefore in effect they signifie nothing.

Now to avoid all this, and to lay a groundwork for a more facile, unprejudiced understanding of things, whereby, at length, a solid body of natural Philosophy might be raised up, I would propound to the Judicious, this following Method.

First, That so many understanding persons, as might be judged meet for the purpose, should be imploy'd, to the reviewing of most books, which promise any thing towards the improvement of natural Philosophy, and the large stem thereof, Physick; laying aside all the rest, though under specious titles, as useless: out of which books they should make a collection of all experiments; and that faithfully, and nakedly, as to matter of fact, waving all the Authors

Authors reflections, obſervations and diſputations thereabout, excepting ſome choice compendious obſervations, and natural Principles, which might genuinely reſult therefrom, and ſhould be noted in an Appendix with reference to the booke and page.

Theſe choyce experiments, being ſequeſtred from the impertinent Farraginous matter, which moſt books are ſtuffed with, ſhould be Methodically digeſted into a book, which might be intituled, *Clavis Scientifica*, or *Clavis Philoſophica*; and that to have an Alphabeticall *Index* to point out the place of experiments, belonging to any remarkeable thing, together with the author and page of his book.

For many books are like the *Indies*, where there are indeed real treaſures, but you muſt dig very deep and run over a great deal of waſt barren ground, before you can find it: ſo that in theſe ſearches into the rich Mines of books, a man had need carry his *Virga Divinatoria*, (*viz.*) his Penſil to point out the moſt choyce obſervables.

This *Clavis Philoſophica*, (conſiſting of the moſt ſelect experiments compil'd together, with reference to the Author and page, where if any pleas'd they might readily view the Author's obſervations thereon) would ſpare the learned afterwards, abundance of labour and toil; for it ſhould conſiſt of ſeveral Volums, to which a daily addition ſhould be made, either of experiments confirming and ſeconding, the firſt already ſet down; or of collateral experiments, or laſtly of ſuch new experiments, as might conſtantly ſucceed upon Marrying actives upon paſſives.

To the ſupplying of which *Clavis Philoſophica* that it might be well fraught with ſerviceable experiments of all ſorts, there ſhould ſome large Laboratory

or Laboratories be erected, fill'd with all manner of furnaces, for all kinds of purposes, in which many ingenious persons, with their under-operators, should be imployed, to prosecute experiments of every kind, in Vegetables, Animals, and Minerals; who conferring one with another and comparing each others trials, should daily place them down in the *Clavis*, with much accuratenes in every circumstance: and after that to epitomize the experiment: so that he, who list may read it at large in all its dimensions, or view it in short.

As an additional to which, some other persons, whose *genius* bends that way, should improve a large piece of ground consisting of many Acres, with all manner of Trees, Shrubs, Plants, Flowers, Fruits *&c.* imploying skilful Gardiners to plant, transplant, and dress them, keeping them in good order; in which garden should be Aviaries of several sorts, for all manner of Birds, foraign and domestick; also ponds for all sorts of Fish, Glass Bee-hives, and garden houses built at convenient distances, according to the best Architectonical Art, with all manner of glasses placed therein at proportionable distances, for reflections, refractions, and transmissions of *species*; and that for the improvement of dioptricks; also all manner of Dials, placed according to the several declinations of the Sun.

To which Garden, should adjoyn a large Forest with all manner of Cattle, with Herdsmen, Shepherds *&c.* Who should look to them and be able to give an account of the various occurrences.

From all which, should the most observables be collected, both from the sundry graftings, and inoculations, inarchings of one sort of fruit into another, whence are the great variety of fruits and flowers,

vers, many of which (perhaps) are such, as we never yet saw; out of which fruits, various sorts of potable liquors by fermentation, might be made, both pleasant and useful. Also observing the time and Method, of nurturing tender plant, both by hot beds, and several preparations of earths, for that purpose; also their time of gathering at their full vigour and maturity, and the seasonable drying of all or most remarkeable plants, together with the observation of their efficacy, as simple Specificks, upon diseased persons; to which purpose, one house therein should be dessign'd for all infirme people to come to and that freely, onely for experiment sake, some ingenuous persons being imployed, for making diligent search into the peculiar operations of Specifical plants, upon the diseased; whilst others in the Laboratories are imployed, to make Essences, Tinctures, Spirits, Extracts, Magisteries *&c.* therefrom; haveing the same liberty of making experiments thereof upon Sick Persons.

And in the Aviaries to observe the variety of Colours, Tones, and Food of Birds, with their manner of Propagations, observing the various process of nature, in the several stages thereof, from the *Punctum Saliens*, to the perfect formation; also by the dissection of many of them, to inquire which parts are the most essential and necessary Organs, for Vital functions; and in Ponds to observe the several sorts of the food of Fishes, and the manner of their increase, together with the various dissections of them, and also to make trials of the use of some of their select parts, in order to Medicinal use.

Also, observing the great variety of Cattle, their Food, Diseases and Cures, by Plants and the like: The manifold dissections whereof, would not a little in-

inform Anatomists; also noting their remarkable excressences inward and outward, the stony concretions ingendred in any of their parts; the tryal of the Medicinal use, of which parts, would very much add to the further inabling Physicians to cure Diseases more readily; as that the blood of an He-Goat should certainly cure a Pleurisie, taken after such a manner as *Helmont* prescribes, which would be no small encouragement to a further prosecuting experiments of this nature; seeing that so much blood of a Bull would strangle the Patient.

From all these, I say, such remarkable experiments should be noted down in the *Clavis*, as might be thought meet by the ingenuous Overseers and Contrivers; and that in one Copy at large, with all additional circumstances, very faithfully set down; in another more short Epitome barely describing the Essentials of the experiments.

This *Clavis*, thus furnished, and well fraught with Experiments of all sorts, would be as a Treasury or Store-house; out of which afterwards (in tract of time) another Book should be writ, of the body of Natural Philosophy, Intituled *Philosophia Naturalis*, which should be wholly grounded upon the *Clavis*, and have all its observations, demonstrable from experiments, therein contained: this Book of Natural Philosophy, should be the genuine result and product of that of the *Clavis*.

A Digression

BUt here I shall take leave to digress a little to the advantage of the last recited end or purpose. Whilst therefore some are imployed as abovesaid, other ingenious Scholars, maintained either in the same

ame Colledge, belonging to the Physical Garden, or in the Colledges of the Universities (such I mean as have Fellowships to live upon) should in lieu of reading Logick, and Metaphysick Lectures to their Pupils, be employed in clubbing together their wits about the invention of an Universal Character; which, if rightly contrived, would be of general use in all Nations throughout the whole known World.

By the Universal Character, I mean such a Compendious Character, as being known in all parts abroad, should signifie the same thing amongst all Countries; so that all People that are skill'd therein, should in several parts of the World, read it, every one in their own Language. As for instance, The numerical Figures which are same in most Nations, are a Character of Numbers, which signifie the same thing, to all those forreign places they are us'd in, and every Nation reads them in their own Language. Thus 1.2.3. *&c.* are numerical Characters, which we, in *English*, read in these words, one, two, three, *&c.* the *Latins* read, *unus, duo, tres, &c.* the *Greeks*, ἕς, δύο, τρεῖς, *&c.* the *French*, *uns*, *deux*, *trois*, the Low-*Dutch*, *een*, *twee*, *drie*; The *German*, *ein*, *zwey*, *drey*; The *Spaniard*, *uno*, *dos*, *tres*; The *Italian*, *uno*, *due*, *tre*; and *Portugals* read it, *hum*, *dous*, *trez*; and so all other Nations read them in their own Tongue, and that with difference of Dialects in the same Language, so that all these several, and many more sorts of People, understand the same thing, by these numerical Characters, though they read and express them, in their several Languages: Thus, Suppose this were the Character for a *Stone*, *viz.* □; The *Latins* would read it *Lapis*; The *Greeks*, Λίθος; The *French*, *Pierre*; The Low-*Dutch*, *Steene*; The *German*, *Stein*; The *Italian*, *Pietra*; The *Spaniard*, *Piedra*; The *Per-*

Portugues, *Pedra*; and so others differently, according to the varieties of Languages, though they all mean the same thing as we do by that we call a Stone, *viz.* a hard, compact, gritty body: So *Lat* we in *English* might read *Crabs-Eyes*; The *Latins*, *Oculi* or *Lapides Cancrorum*; and so differently in other Languages.

We see the Chymists partly for vailing their Art from the ignorant, but chiefly for contracting the terms, have given forth a form of Characters, thereby expressing many terms and things of frequent use, in a short but general Character, which is read indifferently, but understood the same in all or most Languages, every Country reading them in their own Dialect, yet apprehend the same thing; though some few words are of a large extent, and pronounc'd muchwhat alike in most Languages, as for instance, *Elixir* is originally an *Arabick* word, but is muchwhat expressed the same both amongst the *Greeks*, *Latins*, *French*, *English*, *&c.* So *Amen*, is a word that runs through several Languages, the same, without any, or with little variation.

We find a great deal of facility, both in writing or reading of *Recipes* by this short way of Characters, for much may be expressed by Pen, or read not in a few words, but in a few Characters, which are less than words; yea, and which are as easily impressed in the mind (perhaps more) then words at length. Thus ☉, ♃ and ☿, are more easily understood and more readily expressed by Pen, than Salt, Sulphur and Mercury, or than *Sal*, *Sulphur & Mercurius*, or the ἅλς, θεῖον καὶ ἑρμῆς, or ὑδράργυρος, or than the words writ at length of any other Languages: So the Planets or Erratick Stars, are known by these single Characters, *viz.* ♄ ♃ ♂ ☉ ♀

☿ ☽, The *Aſtronomers* with the vulgar, read
em thus, Saturn, Jupiter, Mars, *Sol* or Sun,
enus, Mercury, *Luna* or the Moon; and there-
r underſtand the Erratick Stars, in their Planeta-
r Orbs: The Chymiſts reads them in the ſame
ords, but thereby underſtands the ſeven Metals,
iz. Lead, Tin, Iron, Gold, Copper, Quickſilver,
nd Silver; and that becauſe each Metal poſſeſſeth the
redominancy of ſome one of the Planetary Orders,
n the properties of Nature, to which they are a-
cribed by the cooperation of the ſeptenary proper-
ies at Metallification, both as to *Pondus* and Tincture,
d quod eſt inferiùs, eſt ſicut id quod eſt ſuperius. The
Greeks read the Planetary hours thus, Κρόνος, Ζεύς,
Αρης, ἥλιος, Ἀφροδίτη, ἑρμῆς, καὶ μήνη, other Nati-
ons read them in their own Language, and yet all
intend, and mean one and the ſame: So that they are
a ſort of Univerſal Characters of the Planets, and
thereby are of general uſe to moſt Nations. So if
the terms of any Art or Science, more generally ex-
preſſ'd by a particular Character, would not a little
both facilitate the underſtanding thereof, but alſo make
it of more general uſe for other People of different
Languages; the want of which, debars many other
Nations from the knowledge of ſeveral Sciences,
and ingenuous Arts; for words writ at length, are
a platform of things, the Interpreters of and to the
mind, the ſame are Characters, but in a more com-
pendious form, and yet as ſignificant of and to the
mind (if not more) than written words.

The mind which receives the impreſſions of things
is the ſame, and informs it ſelf of the Signature of
things, after the ſame manner as to it ſelf; and that,
whether in words (and thoſe whether varied accord-
ing to all Languages of the World) in figures, in
Cha-

Characters, Hieroglyphicks, or the like; for before the Building of *Babel*, all Languages were as one. What the Character of that Language was, if written we do no know: but surely as the Language so the Character was but one upon the whole face of the Earth.

And though this primitive Language hath loſt its unity, by being involved in the Confuſion, and multiplicity of Tongues; yet we ſee, that the humane mind, in the Apprehenſion of things, underſtands the ſame in all, the whole variety of Languages, yea and the various changes, of the different *Idioms* of each of thoſe Languages: Onely the manner of expreſſing them and making them ſignificant to others cauſeth the great difference, and that ſince the Confuſion of Tongues.

Now onely the Primitive Chriſtians, were again taught this Original Language in the School of *Pentecoſt*, when they were filled with the Spirit at the appearance of Cloven Tongues; for it is ſaid they began to ſpeak with other Tongues, and every man heard them ſpeak in his own Language: (*viz.*) the *Parthians*, *Medes*, *Elamites*, *Meſopotamians*, thoſe alſo in *India*, *Cappadocia*, *Pontus*, & *Aſia*, *Phrygians*, *Pamphilians*, *Ægyptians*, *Romans*, *Cretes*, *Arabians*, and out of every Nation under Heaven; All which every man in his own Language, heard them ſpeak the wonderful Workes of God.

Here was the greateſt opening of the Univerſal Language of nature, that ever was ſince the Diviſion of tongues, at the Rearing of *Babel*: For they were all (it's ſaid) with one accord, in one Place, in one Houſe. Now it's very probable that for avoyding of Confuſion, one did but ſpeak at once, when he had done then another *&c.* But every man heard them

em ſpeak in his own Language: So that it is more en probable, they ſpoke in ſuch an Univerſal Lan-iage, as was Significant to all; and that the minds the people of all Nations, were ſo opened, as ey underſtood what was ſaid: Even as if it had en ſpoken in their own Language, much what ke an Univerſal Character, which every one might ad in his own Language; onely with this difference, at the tones of the Language of nature, was ſo pened at that time, in the mouths of the Apoſtles, that they reached the minds of all people, in their veral Languages.

Now if we would ſet our faces towards the build-g up of real Phyſiological knowledge, we ſhould y our heads together, to conſult a more facile, and eneral way, of underſtanding one another, in ſe-eral Languages, without that vaſt trouble of Learn-g the various Tongues themſelves: Which to do, in our power as God has given us a Rational un-erſtanding, whereby we may improve a more ge-eral way, in ſignifying our minds, and intentions ne to another. But to ſpeak again the Original anguage of nature, is beyond our power; and herefore we are to let that alone, until the time f the Reſtauration of all things.

In order therefore to the contriving of this Uni-erſal Character, thoſe ingenious perſons, or fellows f Colledges, who are ſet a part for this purpoſe, aving no other Study, or Imployment to divert or hinder them, To whom I would propound theſe fol-lowing Queries: Firſt whether they (laying their heads together) could not (I ſay) conſult the beſt and moſt Extenſive Character, that might have no dependance, upon any particular manner of wri-ting, peculiar to any particular Country, leaſt there-

by

by it should seem too much byass'd by that Language and so be somewhat estrang'd from the intended Universality; and thereby give cause to some people, to complain of Inequality and Injustice in the distribution thereof?

Secondly. Whether they should not search out so many Roots, or Radical Characters, as might express the most known and useful things in the world; as; *Man*, *Book*, *House*, *Stone*, *&c.* which should be orderly placed down in a Vocabulary: Which Radical Characters, should be writ prety fair, and large, for a Reason, I shall afterwards speak of.

Thirdly. Whether these Characters should not be so contrived, (as to their form) as that they might indicate to the mind, the things they represent; which (perhaps) might not better be done, then by making (where occasion offers) the Character to Signaturize the thing represented, thereby becoming a short *Hieroglyphick* of the things understood: which kind of *Hieroglyphick* (how much it is to be used and improved) is to be left to the judicious contrivance of the Students herein: For all *Hieroglyphicks*, Emblems, Words *&c.* whether writor expressed, are but Characters of intelligible things: Therefore those of them which carry a Signature of the things represented, are the sooneſt catcht hold of by the mind, and the easilyest apprehended; the reason is, because of their approximation to the *Identity* which is in the *Idea* of the things understood.

Fourthly. Whether, for the better understanding this Universal Character, the Syntax or Coherence thereof, could better be expressed, than by points in various places, and little dashes or strokes of different shapes, interwoven amongst the Characters? Whence proceeds the reason of the fairness and largeness (I

hinted)

hinted) the Character ſhould be *(viz.)* That the Additional points, and daſhes, which repreſent the the *Syntax* of the Character, might alſo be diſcernable enough, though much leſs, than the Character it ſelf. For which purpoſe, ſome few General and pithy Rules ſhould be contrived for the inſtitution of the *Syntax* thereof, which ſhould be taught in all Languages for the education of Children therein, and that at the firſt, without any exceptions at all; becauſe the giving many exceptions to Children too ſoon, in learning of any Language, hath prov'd no ſmall *Remora* thereto, by burthening their Memories too ſoon, with Grammar-Rules.

Fifthly. What this univerſal Character ſhould be? whether to be fram'd according to any known Character? Therefore whether the *Hebrew* or *Arabick* Charact would not be of moſt general uſe, in the Fabrick eof? Or, whether ſome new invented Character ght not be of a more univerſal extent? In the poſure of which (in my apprehenſion) it thou t be Alphabetical at all; and that for two reaſon , Becauſe there is no general concurrence of an the Languages in an Alphabetical order, in as m s the denomination of the ſame thing, in ſeLanguages, begins with different letters, acg to their ſeveral Alphabets, Thus, that which *Engliſh* call a *Church*, the *Latins* call *Templum*, the *Greeks*, the *French Egliſe*, the Low-*Dutch cke*, the *German Kirche*, the *Spaniard Ygleſia*, *Italian Chieſa*, the *Portugal Ygroyla*, *&c.* Moſt of which begin with different Alphabetical Letters; ſo that it would be impoſſible to reconcile the univerſal to particular Alphabets.

The other reaſon, Why theuniverſal Character ſhould not be Alphabetical, is, becauſe it would not

otherwise, be a Character, but a Language; which is a thing quite different from what I aim at: not to mention the tediousness of such an Alphabetical Character; seeing it is only required to be writ, and not to be spoken.

Sixthly. Also whether this Character, may not be perform'd by the Ten numerical Figures, and the various transposition of them; which would give variety enough, for many thousand words: for suppose the Alphabet of ours, or any other Language, to consist (as they do) of Twenty four Letters, there might out of the various transposition of those Letters be fram'd (if need were) ten thousand times ten thousand other words, besides those we frequently use; and that without any interfeering or coincidence of words, whose great variety would, indeed, be indefinite (not to say infinite) and puzzle the greatest Arithmeticians in the World.

Now, if we did but consider the great variety the number seven doth produce, by the various transposition of its unites, would perhaps facilitate our understanding, how the various transposition of the *Decade*, might produce sufficient variety, to signifie all things in the World.

In order to which, Let us consider the seven Tones or Notes in Musick, whether vocal or instrumental; it's all one, though they be numbred eight, yet in reality, they are but seven, and that because two of them are found to be flat, and therefore make up but one Note. These seven contain all the varieties of Tones in Musick; for these in three Cliffs (*viz.* in *F C* and *G*) make up the whole Scale of Musick; in as much as the Cliffs are but a repetition of the same Notes in different Keys, high or low: so that an *Octave* is but a *Unite* again, and therefore makes no alteration to the seven radical Notes. Now

Now ſuppoſe a *Monochord*, to be the Diameter
f a Circle; That to be divided into ſeven parts, in
e Semidiameter of which, one way is produc'd a
iateſſaron or fourth; the other Semidiameter up-
ard, a *Diapente* or Fifth; which Fifth is again di-
ded into a *Ditone*, or Third *major*, and a Third
inor. From the beginning of the Diameter to the
d of the leſſer Third, is a *Hexachordon* or Sixth:
t from *Uniſon*, or the beginning of the ſuppoſed
iameter, to the end or *Octave* thereof, is made a
iapaſon or Eighth: all which are reckoned Con-
rds; ſo they be not Seconds or Sevenths to the im-
ediately preceeding Note in the order of the Scale.
So that all Tones, whether Concords or Diſcords,
e wrap'd up in thoſe ſeven Notes, which are ex-
eſs'd by theſe almoſt Univerſal Characters, *viz.*
l, La, Mi, Fa, &c. or by a more facile way,
the firſt ſeven Alphabetical Letters: Which
otes, though in number but ſeven, yet (I ſay) the
inſpoſitions thereof are ſo various, as that all the
ompoſed Pieces of Muſick, of Voyce or Inſtru-
nt, in the whole World, hath not yet fathomed
depth of them; yea, and though a Hundred Ma-
rs in Muſick, were ſet a part, to Compoſe all
variety they could in an Hundred Years, would
l find a *plus ultra*, and ſome varieties they never
or before; ſo indefinite is this Septenary Number.
r : is a complete number, comprehending both
Creation, as alſo the Reſt or Ceſſation from
eation; in it is contained the wreſtling Wheel of
properties of Nature, and the Syſteme of the
netary Orbs, which are the bodies of thoſe pro-
ties; the number of the Metals are therein com-
ſed; alſo the number of the days of the Week,
Jubile and the Clymacterick are from it, multi-

plyed into its self: And Lastly, All Harmony is therein contained; though the chief Concords therein are the *Diatessaron*, *Diapente*, and *Diapason*; whence is the truth of that saying, *Tria sunt omnia*, yet the whole Scale of Musick is wrap'd up therein, as aforesaid.

Now if the Septenary, give this great variety, how much more shall the *Decade*, or number Ten give by the various transpositions thereof? Which number was called by the *Pythagoreans*, Κόσμος, οὐρανός, καὶ παντέλεια, The World, Heaven, and all Perfectness, thereby representing the large extensiveness thereof: it comprehends all number, for when we have numbred the Digits, if we could go further, we must begin again. This number (as the ingenious) Dr. *More*, in his Philosophical *Cabbala* observes, from the *Pythogorean* Doctrine) is made by scattering of the parts of four: Thus 1, 2, 3, 4, put together make Ten, παντέλεια, τὸ πᾶν, The Universe; which was reputed such a secret amongst *Pythagoras* his Scholars, that it became a solemn Oath with them to swear by him that delivered to them the misteries of the *Tetractys*, *Tetrade*, number Four.

But besides the extensiveness of the *Decade*, various transpositions thereof, it would also be more readily understood, by other Nations, in as much as it is generally known to most other People; for (if I mistake not) the *Chinenses* have the same Characters, for their Numbers, as we have now for distinction of them (as an Universal Character) from themselves, as representing numbers should be, by writing the one larger than the other.

Seventhly. Whether Children should not be trained up in the learning this Character from their infa-

For let the Character it self be what the Con-
ivers pleaſe, whether in Figures or other form'd
haracters of Lines, circular or angular, as they
all agree; yet this, whatever it be, is to be deliver-
to all School-Maſters, to whom the inſtruction
f Youth is committed, who are to teach them eve-
r day the ſignification of ſo many Characters
they find they are capable of; not burdening their
emories with too many at a time, and thoſe, of
ings moſt familiar, and of greateſt uſe: ſo skilful-
ordering their Method in teaching them, as that it
ay beget a kind of delight and pleaſure in Children
read them.

And inſtead of asking them, What letter is that?
ask them What word is that? Which (in a
hile) by being accuſtomed thereto, they will rea-
ly anſwer (as they uſually do,) to the name of
ch and ſuch a letter: ſo that in time theſe Charact-
s will eaſily be learnt, and take ſuch deep impreſ-
on, as they (in a while) will find a facile prompt-
eſs to read them without heſitation.

Now for the promoting the underſtanding of
hich, they ſhould neither learn to read, nor write any
ther Language whatſoever: not ſo much as their
Mother Tongue. For, as to their own Language,
ve ſee, Children get it faſt enough, by hearing others
alk to them: Where if we obſerve, we may per-
eive a Notable method, hinted to us, in Childrens
eginning to ſpeak that Language, that is firſt taught
hem (*viz.*) That, though we ſpeak to them, ac-
ording to the *Syntax* and *Connexure* of our Language,
et they onely (at firſt) admit of Vocabulary words,
ud of thoſe Monoſyllables, the eaſieſt, laying hold of
hoſe words where the moſt ſtreſs, and greateſt *Em-*
haſis of a ſentence appears, waving all Connective and

Concomitant termes, which we call by the name of *Adverbs*, *Prepositions*, *Conjunctions and Intejections*; singling out the significant words, without respect to *Case*, *gender*, or *Number* in *Nouns*: or *Moode*, *Tense*, *Number or Person in Verbs*. Which observation is no small hint to a method, both in the teaching of this Universal Character, as also for a Compendious instruction, in the teaching of Latine, or any other Language. For first, as to the Universal Character, it hints, that a bare Character is at first to be taught, without any variation, or respect whatever to the *Syntax*; or without the observation of any Rule whatsoever: Nakedly decipering the Characters of the most usual words, and things, which most frequently occurr in a Vocabulary, reserving others of less use till afterwards. And when Children are grown up, and fraught with a plentiful knowledge of these Characters; then to teach them to write nothing else, and withal to give them a few Rules, how to understand the Connexion, and *Syntax* thereof, which (as I hinted before) should be by some Additional points, and small dashes Variously plac'd: So that all the *Declensions of Nouns in Case*, *Gender*, *Number*, *and Person*, should be noted with a great deal of Succinctness.

For in the Character it self, there can be no *Declension* at all; onely it may by Additional Strokes, represent the differences of the *Case*, *Gender*, *and Number*, *of Nouns*. The *Genders* are to be but three, Masculine, Feminine, Neuter. Here all *Conjugations of Verbs* and special Rules of *Nouns* are to be omitted; the *Moods of Verbs* to be but three, (*viz.*) *Indicative* which is the Verb it self; the *Imperative*, and *Infinitive*, which should be noted distinctly; and *Tenses* to be but three, *viz.* *Present*,

Pre-

Preterperfect and Future Tense, Noted also with their distinct marks. The three *Concords* to be chiefly-oted; the *Pronoune* to be set down in a smaller Cha-acter; the *Adverb*, *Conjunction*, *Prepoſition*, *Inter-ection* to be marked with different pricks. And some ew pithy Rules should be given for the better con-truction of the Character, which might be compri-ed in short, without those tedious *Ambages* of the ultitude of Grammatical Rules, ordinarily given or the teaching *Latine*, *Greek &c.* And as the afore-aid observation gives a hint, as to the method of he Universal Character: so likewise is it as a com-endious instruction, for the teaching the *Latine*, or ny other Language, where the first thing considera-le, is a Vocabulary or Dictionary of most usual words; with a great number of which Children, or others (that intend the Learning the Language) re first to be well fraught, keeping as many of them n their menory, as they can well bear, before any Grammatical Rules of Construction be given.

Here I cannot but wonder, that the usual tedious Methods of teaching the *Latine* and other Tongues, have keept footing so long in these Northern parts, without further improvements, by more Compen-dious wayes: That we should be Six, Eight, or Ten Years in the Schools, to learn the *Latine*, and after hat perhaps 5 6 or 7 Years at the Univer-ities; at the end of which, many cannot manage current discourse in *Latine*. They can make an Extraordinary good peice of *Latine*, can adorn it with all the trops, figures, and floscul's of Elegance imaginable: They can correct the least mistake in any *Latine* Author, they meet with; and yet, let them come to make a familiar discourse in *Latine* (which is the noblest and most useful part thereof) there

there they find themselves at a loss; and what they do upon these occasions, is with such a deal of force, and racking of their parts, as that, because they do it not glibly, in a current Style, therefore (whilst ingag'd in such discourses) they seeme to have no small trouble upon them: Why, what's the Reason hereof? The main cause (as I apprehend) is this, that they are too much Grammatical: Attend more to Rules, then to a plenty of words, and Genuine propriety of speech, which to perform in a familiar Idiom, is certainly the most Noble and useful part of a Language, especially for a Traveller. For by beginning with, and dwelling long upon Grammar Rules, the true Method is inverted, as I shall shew afterwards.

The next Reason is, because we here in *England*, do not (no not in the Universities themselves) frequently manage familiar discourse in *Latine*; which without doubt is one great *Remora* in the way to a current Glibness, in the utterance of any Language: For we attain not to the knowledge of any Science, without a frequent accustoming, and familiarizing our selves with the Maxims thereof; nor to any degree of perfection, in any Manual artifice, without reiterate attempts, whereby at length, we make it become Habitual, and in a manner natural to us: So that nothing soonet begets a fluency in speech, then frequent familiar discourses therein.

The true Method of teaching the *Latine*, or other Languages in Schools, is mostwhat inverted (as I said) and that thus we usually in Schooles begin to teach Children in the Accedence, and after that in Grammar Rules, onely learning them some few words by heart: and by this means, Children spend a long time in Learning the Rudiments of the

he *Latine* Tongue; which Rudiments ſo long as we begin with them, are properly call'd Rudiments, but in reallity of a true method, they are not Rudiments: But rather a compleat treaſury of words in the memory: I ſhould much ſooner call them Rudiments, and that becauſe they are firſt to be learnt. And therefore a true method, would indicate inſtead, of teaching Accedence and Grammar Rules, to begin onely with words, teaching Children every day ſo many words, and thoſe at firſt ſuch as are moſt frequently us'd; and that without any toil of the maſter further then asking them (after he has taught them) what is *Latine* for ſuch a word, and what is *Engliſh* for ſuch a *Latine* word, and then making Children one to examin another, and to ſhew them the way of finding out the *Latine* for *Engliſh* words, and *Engliſh* for *Latine* words in Vocabularies, or Dictionaries: And thus, by a kind of ſport, to bring them on till they have got a competent number of words; which words they ſhould alwayes be uſeing (as occaſion offers) one with another, though they know nothing at all as to the *Syntax* thereof; how to make them agree one with another: I ſay, a true method ſhould proceed after the aforeſaidmanner.

Now, That I call a true Method, which is hinted moſt what in the natural inſtinct of Children, in the learning their native tongue, or any Language they are firſt taught; but we ſee plainly, that Children begin with words, which are ſignificant to expreſs what they mean, or what they would have, though they know nothing at all of the *Syntax* of thoſe words, or of putting them into a form of ſpeech. Thus if a Child want Beer, he cryes beer (as wel as he can) which we underſtand as wel almoſt, as if he ſhould have ſaid, give me ſome beer; I want ſome beer;

beer; pray help me to some beer: so, if he say, Garden, or go Garden, we understand him, as wel as if he had said, I would go into the Garden, or carry me into the Garden: though I say, the Child understands nothing of the Connection, or Congruence of words; yet he minds the significant words, while we in our minds make it into a sentence, and presently understand it as if he had spoken at large.

And although he onely singles out significant simple words, and knows no method of Congruence or applying them one to another, so as to make a sentence of them; yet is he never at all the further of from a right method of Learning that Language, but comes on forward, and Learns the *Syntax*, and congruence of words, amongst themselves afterwards; and that without any Rules, but familiarity of speech, which in continuance of time, begets a current glib Language, so as he is able to express himself (when he comes to that ripeness of years) readily at a pretty round rate, and that without the cumber of any Grammatical Rules: Which are indeed the greatest (if not the Sole) obstacle of Learning a Language so as to speak it fluently.

As this Method is hinted secretly (though to an observing eye openly enough) from the natural instinct of Children, in Learning the first Language put to them: so in our instruction in the knowledge of any other Language, as *Latin*, or the like, we should in these secondary or artificial Languages, attend the same Method, as is (I say) hinted from the Natural: And that to begin with words, and to lay by (for a time) all the supposed Rudiments of Accidence and Grammar, stocking the Memory of the Scholars only with words, which he may use to speak to other Boys, as Children use

their

heir words to us, without any cognizance of the coherence of them; and that afterwards, when he comes to ſutable Years, its requiſite he ſhould know he *Syntax* of the Language, and then he ſhould have ſome few pithy Rules given him; but ſuch as ſhould not be writ in *Latin*, but in his own familiar Language. For it hath been no ſmall hinderance to Children, in their ready attaining to the knowledge of the *Latin* Tongue, to have their Rules in *Latin*, and thoſe (many of them) frivolous and unneceſſary, burdening their Memories with impertinencies, which (while they are getting their Rules by heart, and before they can underſtand them) a great part of their time is ſpent, wherein they might (if proceeded in, with a right Method) have arriv'd to a great degree of knowledge, in the expreſſing and ready ſpeaking of the Language. So that the Rules thereof, hath been no leſs tedious, and perhaps more than the Language it ſelf, if taught by a facile, natural, genuine way.

For by right, the Maſter that teacheth *Latin*, or any other Language, ſhould (for the moſt part) ſpeak nothing elſe but that Language he teacheth, and ſhould ſuffer his Scholars to ſpeak nothing elſe to him, or to each other, but *Latin*; and that though they be only ſuch words, as whereby they can gueſs at each others meanings, as we gueſs at the meaning of Children, when they in ſhort pronounce only a word (and that the moſt ſignificant one) for a ſentence: And thus they ſhould do, though they ſpeak falſe *Latin* very frequently; ſo as the Maſter ſpeaking altogether or moſtwhat to them in *Latin*, will in time (and that not long if compared with that time which is ſpent in the common way) ſo familiarize the Language to them, that they will need very few Rules.

For

For by how much the more natural any Language becomes to us, the leſs cognizance we have of Grammar-Rules.

And therefore it is, that Children Twelve Years old in other Countries, ſhall, and do ſpeak *Latin* more familiarly and with abundance more facility, than we do at Twenty or above, though we have been train'd up in *Latin*-Schools, moſt of our young time. And all this proceeds from the wrong Method we take in the Learning the *Latin*, and that too chiefly from the puzzling intricacies of our *Latin* Grammars, which if we had never known, but followed the foreſaid Method, we had not loſt ſo much of our pretious time in hunting after that Language. For they in other Countries, by the uſe of Vocabularies and Dictionaries, together with the frequent cuſtom of ſpeaking the Language, become furniſhed with a great ſtock of ſignificant words, which being compos'd by ſome few general Rules, inables them in a little time both to underſtand and ſpeak the *Latin* Tongue very fluently.

Thus alſo the Univerſal-Character (we are ſpeaking of) ſhould be plac'd down in Vocabularies or Dictionaries, with the ſignification thereof in every particular Language, which ſhould be taught in all Schools, in every Nation, *viz.* firſt to be read chiefly and particularly in the native Language of the place; and if any after the through underſtanding it in their own Language, ſhould be deſirous thereof, may be taught to read it into *Latin*, *Greek*, or what Tongue they pleaſe.

And for the making it Univerſal, it ſhould be ſo ordered, as that no other form of Writing be at all followed, not ſo much as to Write their own Native Language, any other wayes than by this Character,

and

ind that leaſt any other manner of Writing ſhould gain ground, and thereby cauſe a deficiency in the general Character; ſo that let a man learn as many Languages as he pleaſeth, yet if he would expreſs any thing in any of theſe Languages he ſhould do it by the Character, and by that he may as well expreſs what he hath of experiment or obſervation to communicate to the World, from his own native Language, as from any other whatever.

Alſo all Books of publick uſe, and of general inſtruction, ſhould be writ or tranſlated in this Character, and Children ſhould be train'd up in no other from their Child-hood. Thus (in a few years) the whole Sceen of Writings, I mean ſuch as are moſt proper for the uſe of Mankind, would be tranſpos'd, and put into a new form of this Univerſal Character; ſo that one Nation may read the various Tranſactions, and rare Inventions of each other, in their own Language, without an Interpreter or Tranſlator of one Language into another, which would beget a community of correſpondence, even betwixt the remoteſt of Kingdomes.

And by the foreſaid Method, generally obſerv'd, and that by publick Edict of all Princes within their Dominions, Children and others, would make ſuch a proficiency in this new way of underſtanding each other by one ſimple Univerſal Character, as that the World, once in a Dozen or Twenty Years, would grow weary of writing their own Language, in letters and words at length, and finding ſuch a facile ready way of writing by this Character, would readily cloſe therewith, and willingly make it their ſole form of writing.

The benefit and profit of this Univerſal Character to Mankind, would be no leſs Univerſal than the

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Character it self; for by this means, Princes might readily understand the Policies of forreign States, and if good, make them presidents to themselves: Philosophers (hereby) might have a ready intelligence of the most remarkable occurrences and Philosophick Transactions throughout the World, to the great improvement of experimental Physiology. Also Mechanicks might improve their ingenuity, by having fair hints of ingenious contrivances from abroad. Mathematicks might also receive no less advantage hereby both by observing from abroad shorter Rules in the two Pillars thereof, *viz.* Arithmetick and Geometrie; as also in the branches thereon depending, *viz.* Astronomy, Dialling, Geography, Navigation, Architecture, Mensuration, *&c.* Physicians also might improve their skill, by having new Methods and rare observations communicated to them from all parts of the World; in order to the more successful Cure of Diseases. Merchants (hereby) might Traffique more readily, in all forreign parts of the known World, and that without having their Letters of Advice or Bills of Exchange Translated, by an Interpreter, out of one Language into another, or of being confin'd to have one of their own Language imploy'd as their Factor.

And (to conclude) all liberal Sciences, Ingenuous Arts, and thriving Manufactures, with Mechanical inventions, would receive no small improvement by this way of communication, through the help of the Universal Character; and by observations in Physiological Essays, from all parts abroad, the Structure of a body of true Genuine Philosophy, might (in a little time) be raised, to the great use, and benefit of mankind in all sorts of useful learning, both speculative, and practick. So that (thereby) in a few years,

ars, more might be done, as to the Compleating ereof, then hath been in whole Centuries of years fore.

And here concluding this Digreſſion, I re-aſume my ſt intended matter, and further aſſert, *That*——

THus would Phyſiology be advanced in every part and branch thereof, becoming more facile, rtain, and grateful, by being grounded upon expe- ments, then by any other conjectural *Hypotheſis*; ough as I ſaid, it is but *Scientia naturalis à poſteri-i*, being as far (or more) ſhort of that intuitive owledge which *Adam* had in Paradiſe, as con- ctural Hypotheſis is of it; yet is this very accepta- e, becauſe it joyns iſſue with our Senſes, whence e now, after a Prepoſterous manner, aſſume moſt f our knowlcdge of natural things.

A conſiderable part of this Book of *Philoſophia Naturalis*, would be ſpent in the Phyſical or Medical cience: By which we ſhould know, what concrets, ow us'd, and by what means they become helpful or the reliefe of our infirm and diſeaſed Bodyes; n which that improvement made in the Laboratories y various preparations and trials thereof upon ſick erſons, would be of great importance.

And this brings me to the third and laſt thing, I ropounded to my ſelf, to diſcourſe of, *viz.* to ſig- nifie the uſe and efficacy of Chymical remedies; mean, how much more aſſiſtance nature hath by he help of Chymical Medicines in order to the cure of diſeaſes, then by the vulgar Shop-preparations; nd here, me thinks, the Cabinets of natures rarities are opened and by this noble Art we are let into the grand Myſteries, and choyce Secrets of medicinal Preparations, which, being ſeperated from their terrene

terrene *Faces*, and corrected from their annexed virulencies, penetrate into the very intimate receſſes and ſecret *Meanders* of the Body, helping nature at every turn, both to manifeſt what is uſeful by ſolution, inciſion and abſterſion of the peccant *Sordes*; as alſo by fortifying the vital powers and functions, and the corroboration, and reſtauration of the vital Principal.

No Ingenious Perſon, can longer ſatisfie himſelf, in the common practice of the *Galenical* Phyſick; when he once begins to reflect upon the uncertainty of the Method, and unſuccesfulneſs of his Curing Diſeaſes; eſpecially when he comes to conſider the reaſons thereof, *viz.* the rawneſs, and incongruity of the diſpenſatory Preparations; the Farraginous mixtures whereof, render them leſs effectual, then if they were more ſimple; and puts the young practitioner to a great loſs (whilſt the elder (and therefore accounted the more experienced Phyſician) jogs on right or wrong, according to his methodical rules of Art) for when he expects, as well for his credit ſake, as his deſire of doing good, ſome great Cures, he finds nothing conſiderable done.

And this gives cauſe to many Induſtrious ſearching Phyſitians, now of late, to begin to throw off this *Galenical* yoak, and fall to work themſelves, making ſome neat Preparations according to the Chymical Art, for their own practice; by the efficacy of which, they are encouraged to proceed further, to the Preparation of more noble *Arcana*: which they muſt do, whilſt they are young, other wiſe when they grow old, they either become too lazie, to begin the work, or too much ſettled upon their Lees; then they think themſelves to old, to enter into the Chmycal *Matrix*, to be born Philoſophers by the fire,

The Chymical Preparations have theſe following advan-

dvantages of the Shop-Medicines; first, they are ommonly much less in bulk than the other are, and herefore they less offend the Patient in taking them. Vhat nauseating Potions are frequently prescribed not to say that they are in their taste, inferiour to lorse-Drenches) which are apt to make the stomachs f some, who have taken thereof, even at the sight f the next Potion to Vomit; whereas a few drops f a Spagyrical Liquor, given in a proper Vehicle: r a Mineral Powder given in a few grains (which in ome Preparations hath some taste, in others none) perates effectually enough, according to the inten- on of the Physician.

2. Chymical Medicines (if rightly prepared) are :s dangerous than the *Galenical*. I shall not here indicate the confident boastings of some quacking retenders to Chymistry, who presume to cure all Diseases with some secret Powder, Oyl, or the like; vhich (when known) is but a meer trifle, and scarce vorthy the name of a genuine Chymical Preparati- n: and yet (forsooth) these Medicasters boast them- :lves (though you shall scarce hear it from any of heir Patients) what great wonders they can do; ilifying all others that are more modest than them- :lves, and yet are Possessors of more noble Medi- ines.

I am not ignorant, how the *Galenists* have designed- y insinuated into the Vulgar, the great danger (as I aid before) of Chymical Medicines, which hath een no small *Remora* to the progress of Chymical hysicians; till their unwearied diligence hath, with ime, mostwhat worn off that apprehension of dan- ger: and they now begin to observe by ocular de- nonstration, the great efficacy, together with the afety of Spagyrical Remedies.

For where the *Galeniſts* in their Diſpenſatories ends, there the Chymical Phyſician begins, both to correct what they have done, by making their compoſitions more homogeneal; and to proceed further to what they have not done: witneſs the elaborate Chymical Animadverſions on the *Auguſtane* Diſpenſatory, by the ingenious *Swelfer*; who undoubtedly doth correct moſt demonſtrably the errors of the vulgar *Galenical* Preparations, ſhewing very evidently their incongruous and farraginous mixtures; and beſides adds other dexterous Preparations, both Vegetable, Animal and Mineral, which they have not. In whoſe Book of Animadverſions, with his *Mantiſſa Hermetica*, and *Appendix* thereto, the Reader may view plainly (as in a glaſs) the errors of the received opinions of the vulgar Practice of Phyſick.

3. The Chymical Remedies are more purified and refined from their terrene feculencies, than the *Galenical*; for in Decoctions, Syrups, Conſerves, Electuaries, *Lohochs*, and ſome other Shop-Preparations there are but very ſmall ſeparations of the terreſtrial *Faces*, little depurations made: as for Decoctions either the *Menſtruum*, which commonly is water (perhaps with the addition of ſome Wine) is not proper for extracting the virtues of the Ingredients, or by too much boyling, they let the volatile (and therefore moſt effectual) parts flie away, ſo that the virtues of the Concretes, are not ſufficiently hereby extricated from their bodily *Compage*; nor by pounding Vegetables, to make Conſerves thereof with the addition of Sugar; nor the like addition of Sugar to the juyces thereof, to make Syrups; nor the additions of ſeveral *Species* together, with Sugar and Honey for *Lohochs* and Electuaries; I ſay, None of theſe do ſuffer any conſiderable ſeparation, of the pur

pure from the impure: but the *Sanguis, cruor & ſter-cus* of Vegetables, the good and bad are all jumbled together; and therefore Noble *Helmont* ſaith, in his *Pharmacopœia*, *Error Scholarum fuit, ſuccos Herbarum, cum ſuo Parenchymate, Fermento prius non ſubigere, antequam optimarum partium ſelectio ſit poſſibilis*; Who (obſerving the frequent Preparations of Vegetables into Syrups, Conſerves, and the like, without any ſeparation of parts) tells us, That the error thereof, is for want of the knowledge of Fermentations, and thereby of due ſeparations of the pure from the impure; and therefore alſo he ſaith (in another place to the ſame purpoſe) *Diſcant Tyrones, ſanguinem à cruore & parenchymate plantarum diſtinguere, & ſeparare, ſi quicquam laude dignum exiſſe per ſimplicia meditentur:* ſo that, unleſs there be ſome peculiar ſeparations of earthly feculencies, and other impurities (which muſt be done by previous Fermentations in the Preparations of Vegetables) we can ſcarce reap the Eſſential virtues thereof. Now in Syrups, Conſerves, Electuaries, *&c.* there are made no previous Fermentations, or putrefactions; and ſo conſequently no ſeparations of pure from impure, *Abſque reſeratione clauſarum virium ſive vitæ radice, ac participatione, emendatione defectuum, cruditatum, excrementorum, & poteſtatum violentarum.*

Indeed Syrups and Conſerves, do by keeping, work and ferment; as we ſee that Syrups (whilſt working) being cloſe ſhut up in glaſs-bottles, frequently break them, though never ſo ſtrong; Conſerves eſpecially, if made with powder'd Sugar, and kept one or two years (not with Loaf-Sugar which is commonly boyl'd up, with a *Lixivium* of *Calx vive*) do Ferment, whereby the *Compage* of the Vegeta-

ble becomes opened, out of which (by a slight artifice) I sometimes prepare a curious Spirit, as of Roses, or Rosemary Flowers, which retains the taste and virtue of the *Species*, whence they were extracted.

4. Chymical Remedies are frequently more effectual in their operation than the *Galenical*. By Chymical Medicines, I do not mean such, as every ordinary bragging Chymist expoſeth to Sale, who themselves are (through their vain empty boasts) no otherwise than a reproach to the noble Art of Chymistry; and their Preparations spurious, in comparison to the genuine products of the *Spagyrical* Art: but such I call Chymical Medicines (whose efficacy I am treating of) as are made by a skilful Artist, who by continued experience, knows how to correct things corrigible; and how, by every succeeding Preparation, to further inrich his Medicines, with more noble virtues, by making exquisite depurations and gradual seperations. These will therefore more readily penetrate *in intimos naturæ thalamos*, into the more inward receſſes of the Digestions, and Fabrick of the vital and animal Spirits; and thereby become more capable of rectifying the enormities of those nimble Agents, who sit at the stern of the Digestions, and govern the vital and animal functions, much more than those clogging Medicines of Syrups, Conserves, Electuaries, *Lohochs*, Potions, *&c.* Which commonly are either rejected as nauseating to the Digestions; or carryed off by seidge as cumbersom, by reason of the unseparated Heterogeneities; or else stuff and clog the vessels, causing obstructions, and thence enormous Flatulencies.

Concerning

oncerning the conſtitutive Principles of all Conereves, whether Vegitable, Animal, or Mineral.

BEſides all which, the Preparation of Chymical Medicines, gives a diligent Searcher much in-ght into the Principles of Natural Philoſophy; hich firſt inſinuated the *Tria prima* of the Philoſo-hers, *viz. Sal, Sulphur, & Mercurius*, to be Prin-iples of all things; and that becauſe they found in ie *Analyſis* of Bodies by the fire, that they were educible to ſome, or all of thoſe three: for in re-uction of Metals and Minerals to their firſt Princi-les, as they ſuppos'd, they found by this Art, that ey were ſeparable into a Sulphur or Oyl, which as the *Hematina Metallorum*, retaining the true ncture of the Metal; and into a Mercury, which the Mineral Kingdom is current Quickſilver; and ie key to this ſeparation they found to be in a Mi-eral Salt, which alſo needed reduction by Art, to s primitive ſimplicity and graduation to its greateſt ctivity.

They find alſo that Vegetables and Animals were, y the Pyrotecnical Art ſeparable into a Sulphur, *viz.* nto an Oyl, or in Vegetables (by Fermentation) nto a vinous Spirit; which is the ſame thing with an ſſential Oyl, ſaving the different determination it eceives from Fermentation: alſo into a Salt, and that ither fixt or volatile; for in the Concrete they are he ſame, owing their difference to no other than to he force of fire; and laſtly, into a Mercury, which s their Phlegm, or watery parts, ſeparable by fire, r otherwiſe, by the exiccating *Blaſs* of the Air.

Now ſome of our modern Chymical Philoſophers (as the ingenious Dr. *Willis*) multiply theſe three in-

to five Principles, which in effect are but the three first still; the five, which he reckons Bodies, are most-what separable into rare Spirit, Oyl, Salt, Water and Earth; if by Spirit he means the vinous, got by Fermentation, What difference is there, for both are Sulphurs, both take flame and burn alike, only the one is made by Fermentation, the other not; and being they have both the same Essential properties of Flamability, What should hinder them from being Sulphurs? But if he mean by Spirit, the volatile saline Spirit, which is not combustible: This volatile Spirit, by frequent rectification, may be brought into the form of a volatile Salt, whose Vehicle was water Phlegm or Mercury; but the body of volatile Salt i Salt and therefore should not be accounted as anothe Principle. As for that Principle which he calls Earth, a Concrete may be volatiz'd and brought over th helm, without any resident *Caput mort*, as the Chymical *Adepti* can perform, Then (I pray) what becomes of his fixt Principles, he calls Earth? So th in the conclusion, we shall find his five to be reducibl into the first three.

These three Principles of *Sal*, *Sulphur*, and *Mercury*, into which many Concretes are reducible, b the *Analysis* of the fire, are again reducible into two and those are *Aqua & Semen*, Water and Seed which are the primitive constituent Principles of a Bodies in the *Mundane Systeme*, to which two, th *Sal*, *Sulphur*, and *Mercury* are but posteriour products, or offsprings of that double Original: Yea, whatever parts, or supposed simple Principles, any so of Bodies are reducible into, they are but the seque or after-products (variously extorted by force fire) of those two real Principles, Water and Seed

Water we suppose (and perhaps may prove)

be the first matter of all visible Bodies. It is the true subject matter of all Concretes, which we thus prove, *viz.* That is the first material Principle of all Bodies, into which they are ultimately, by a natural or artificial *Analysis* reducible; but all Bodies are ultimately, by a natural or artificial *Analysis* reducible into Water; *Ergo*, Water is the first material Principle of all Bodies. The *Major* is plain, and granted on all hands; for the *Aristotelians* (who plac'd the Principles of all things, to be in the quaternary of Elements) did it, because they suppos'd (but could not prove) that all Bodies were reducible into those four Elements, *viz.* of Fire, Air, Water and Earth: so in like manner the Hermetical Philosophers, in their weaving all Concretes, out of their *Tria prima* of *Sal*, *Sulphur*, and *Mercury*, did suppose them to be the first Principles; because many Bodies by the artifice of the fire, were reducible into somewhat analogous thereto. And so those who encrease those three into five Principles, do it because some Concretes are resolvable by fire into those five distinguishable parts; which indeed are rather new products of the fire, than genuine resolutions into their first Principles.

The *Minor* thereof rests to be proved, *viz.* That all Bodies are ultimately reducible into Water, by Art or Nature. That it may be done by Art, I shall demonstrate from an infallible Experiment of the most profound Chymical Philosopher, *Van Helmont*, who in his Tractate, Entituled *Elementa*, saith thus, *Nostra Mechanica mihi patefecit, omne corpus (puta saxum) Lapidem, Gemmam, Silicem, Arenam, Marcasitam, &c. transmutari in Salem actualem, aqui ponderantem suo corpori, unde factus est; & quòd iste Sal aliquoties, cohobatus, cum Sale circulato* Paracelsi, *suam omnino fixitatem amittat, tandem transmute-*

tur in liquorem, qui etiam tandem in aquam insipidam transit: & quòd ista aqua æquiponderet, Sali suo, unde manavit, viz. That by his liquor *Alkahest* (for so I understand his words *Mechanica nostra*) every Body, whether Stones, Gems, Flints, Sand, Marcasites, Earth, Brick, Glass, *Calx*, Sulphur, *&c.* might be transmuted into an actual Salt, of the same weight with the body it was derived from, or was made from; and that Salt being cohobated sometimes with *Paracelsus* his *Sal circulatum*, would lose all its fixity, and be transmuted into a liquor, which at length would be turned into an insipid water, of equal weight with the Salt whence it came.

He saith further, *Plantam, carnes, ossa, pisces & quicquid similium est, novi redigere in mera sua Tria, unde postmodum aquam insipidam confeci; metallum autem propter sui seminis anaticam commistionem, et arena (quellem) difficilimè in salem reducuntur; viz.* by the same grand Solvent liquor, he knew how to reduce any plant, Flesh, Bones, Fish, and the like into their three first Principles, which also were further reducible, yea actually (by him) reduc'd into an insipid water: but the reduction of a Metal was difficult, by reason of the equal mixture of its Seed, and so also of the reduction of Sand.

Further he saith; *Terra originalis sive arena, tam arti quàm naturæ resistat, nec queat ullis adminiculis a primævâ sui constantiâ recedere (unico duntaxat Gehennæ artificialis igni excepto,) quo arena sal fit, ac tandem aqua; quia vim habet agendi super sublunaria quævis absq; reactione; viz*: that the original Earth or Sand (*arena, Quellem*) resists both art and nature, as to its reduction; nor can it, by any means recede from it Primitive constancy, unless by the onely artificial fire of the *Alkahest*, call'd by the name

me of *Gehenna:* by which Sand, is made Salt, and length converted into water, becauſe this ſolvent th power to act upon all ſublunary bodies, and at without any reaction of bodies upon it.

By all which, we may ſee, that all bodies whatever, are by art ſo tranſmutable, as that at length ney, may be reduced into their ſimple Element of ater; which if it were not their firſt material Priple, they could not ultimately be reſolv'd thereinto; or both Vegetables, Animals, and Minerals, are y the natural *Analyſis* of the *alkaheſt*, at laſt reduible into common water. Concerning Vegetables he aith, *novi aquam, cujus medio omnia vegetabilia in uccum diſtillabilem ſine ullâ ſui in fundo vitri reſidenià commutantur, qui ſuccus adjuncto alkali totus in quam tranſit inſipidam.* This is perform'd by the ame Solvent liquor as the other was; ſo that Vegeables by the powerful operation of this liquor re changed into a diſtillable Juyce, which will paſs over the helm, without any *Faces or Caput mort* left behind: which diſtilled Juyce being re-diſtilled from *Alkalies*, becomes totally reduced into a ſimple Elemental water.

As to Animals, he ſaith, he reduc'd Fleſh, Bones, Fiſh and the like into an inſipid water; and as to Minerals or Metals the ſame is done, though with more difficulty. *Paracelſus* tells us that his *Circulatum majus*, which he alſo calls *acetum acerrimum metallicum, & primum ens liquidum Mercurii*, if digeſted upon any of the Metals, doth reduce them to any oyl, or ſupernatant fat, tinctured according to the property of the Metal; by which, Metals are deducable into a magiſtery. Now *Helmont* ſaith; *Olea & pinguedines per ignem ſeparata; adjecto pauco ſale Alkali, ſaponis naturam aſſumunt, atq; in aquam*

aquam elementalem abeant viz. That oyls or fats, ſeparated by fire, by the addition of a little *Alkali* becomes Saponary, and afterwards paſſeth into a ſimple Elemental water. So that whether minerals and metals be by the grand liquor reſolvable into a ſalt or into an oyl, they are either way (at length) reducible into a water.

He tells us, that the moſt rectified ſpirit of wine (which is *totus cremabilis*) by the intimate touch of ſalt of Tartar, may be tranſmuted into an incombuſtible ſalt, to the quantity of the ſixteenth part of the whole; the reſt (*viz.* 15 parts) becomes a ſimple Elementary water: and further, that every diſtilled Oyl is changeable into a ſalt, *Depoſito ſemine pinguedinis*, and that ſalt *per adjuncta*, is convertible into water.

Carboquercus (inquit Helmontius) aquâ quadam, tepore balnei, ſpatio tridui, verſus eſt in duos liquores diaphanos, fundo & colore varios: Quibus diſtillatis nil fæcum remanſit; at ambo æquiponderabant maſſæ carbonis; liquor diſſolvens manet in fundo paris ponderis, ſibi & virium; by which, the excellency of the *Menſtruum*, and the reducibility of Compound bodyes in to clear liquors, and thoſe again (by other additions) into ſimple water, is evident; *viz.* that a charr'd coale of Oak ſhould (by being digeſted with this ſolvent, in the heat of a *Balneum* for the ſpace of three dayes) be turned into two diaphanous clear liquors, diſtinguiſhable in colour and conſiſtence, which being diſtill'd, ſhould leave no *Fæces* behind, but ſhould be equal in weight to the Coal it ſelf; I ſay, this is very remarkable towards the evincing the truth of the ſimplicity of the material Elementaryneſs of Concrets.

For as it is in this, ſo alſo is it in other reductions, by

y the same solvent; What becomes of the Salt, Sulhur, Spirit, and earth? If these were real Principles, ney would not be convertible one into another; neiher would they be reducible into something more imple then themselves: in as much, as it is essential or Principles to be Primary, and to be the last in reluction. What becomes of the Spirit, one of the Principals of the Moderne Chymical Philosophers? which whether it be Vinous, got by Fermentation; or Saline, got by distillation, yet is it really convertible into Salt: witness the *Offa* from Spirit of Wine, and Spirit of Urine; the *Sal Alkali* made out of spirit of Wine which before was Flagrable, but being chang'd into a Salt hath lost that; and lastly the rectification of Volatile Urinous Spirits, whether of plants or Animals, until they distil or Coagulate into the very body of Salt.

What becomes of Sulphur, or Oyl another supposed Principle; for Sulphurs are convertible into Salts, as I have seen in an experimental process, too tedious here to be related; and *Helmont* saith *Salia aromatum ex eorum oleis facta, primi entis illorum vices subeunt*; and that Oyl of Cinnamon if united to its own *Alkali*, by an artificial and secret circulation for the space of three months, without any water, wil be totally changed into a volatile Salt.

Also what becomes of Salt, another main Principle of both antient, and Modern Chymists? For whether it be fixt, or Volatile, neither of them is an ultimate, and so consequently no primary Principle; in the concrete it is neither volatile, nor fixt, but made so by Fermentations or force of Fire; for in all simple distillations of Vegetables, without previous putrefaction, there alwaies remains an *Alkali* or Salt, besides the Volatile Salt which ariseth by distillation

lation: So in the actual Flagration or Calcination of Vegetables, the Salt catcheth hold of the Sulphur, and both become fixt together into an *Alkali*; which Assertion *viz.* that part of the Sulphur in the actual force of the Fire, is fixt with the Salt into an *Alkali* is apparent from the Saponarineſs of every *Alkali*, whether of Tartar or any dried Vegetable.

So that Salts, as they lie woven up with the Sulphur, in the Texture of the Concrete, are (as I ſaid,) neither fixt, nor volatile; but in the mutual imbraces of each other, become pregnant with the Medicinal Vertues, Odours, Sapours, *&c.* proper to the Plant: and from different operations of fire, and ferments thereon, doth proceed both the Volatility and fixity of the Salt, their mutability of one into another, and Separation each from other.

Now both theſe are ultimately reducible into Mercury, or water, (which I look upon as *Synonyma*; for *Helmont* ſaith, *Omne oleum diſtillatum, in ſalem eſt mutabile, & in aquam per adjuncta*; ſo that, into neither of them are bodies, by a genuine *Analyſis*, ultimately reducible, and therefore they are conſtitutive Principles of things.

Laſtly, what will become of earth, that firſt Principle of the Modern Chymiſts, and fourth of the *Ariſtotelians*? And although thoſe who contend for five Principles, becauſe Vegetables and Animals, are by a common *Analyſis* of the fire, ſeparable into ſo many diſtinguiſhable parts *viz.* an Oyl, Spirit, Salt, Phlegm, and Earth (I ſay) though they do find, after the ſeparation of the firſt four, an other part, as a feculent droſs of all the reſt, which they call earth; yet do we deny the Separation of theſe parts from a concret by force of fire, to be any true *Analyſis*, or proper way of taking bodies in pieces.

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id therefore it is no genuine reduction thereof, into ir primary Principles; but onely a forcing the ts asunder, by violence of fire: so that, being put on the Rack, if they make any confession of their t parents, its onely extorsive. Also the *basis* of *Aristo-s* Elements falls, *imo ruit totum quaternarium ele-ntorum, præter aquam*; for if we strictly examine iat earth is, we shall find, that it enters not the mposition of any body as a primary constitutive gredient thereof: and that, because if we search into e great variety of Earths, we may observe them l to be but fruits, or products of the primitive rinciple (*Water*;) except hence that *Arena* (*Quel-m, terra virginalis*) which never enters into the mposition of any body, *quoad generationem*; in-ed artificially it enters the composition of Glass, of rick, cement *&c.* but that is *sine semine prævio*.

And that the several sorts of Earth, are various coa-lations of water, according to the difference of the racedinous seeds, dispersed, and implanted there-n; and that they are no less products of water, nen Mineral Salts, middle Minerals, Stones, and Me-alline Bodies are, all which receive a Specifical de-ermination from the difference of the Fermental seeds, Is (I say demonstable by granting the verac-y of *Helmont's* experiment aforesaid, *viz.* that all hese Earths, Stones, Marcasites, Minerals *&c.* are ultimately reducible into water, by his grand Solvent, the *Alkahest*; and that without any residence or *Fæces* at all: so that, if earth were a permanent Prin-ciple, it would be so as long as bodies are bodies and would alwayes remain earth after the reduction of the concrete into Elements.

As earth is no Element, so neither doth air enter, as such, into the composition of Bodies; and though it's

its true, that air is both useful, and necessary for Ve getation, and Animation, without which neither d plants grow, nor Animals live: yet is it onely *respi raculum vitæ*, promoting in Animals, both circula tion and volatization of the Blood, and helps ever part to perform the motion proper thereunto, ina much as we cannot go to stoole without the help there of, compressing the muscles of the *Abdomen*, an so of Urine, and the like; but still it enters not th composition of any body, as an Elementary Ingre dient thereof. Nor is any body ultimately resolva ble thereinto; for though there be a *flatus* arisin usually from the Enormities of the digestions, ye that is quite another thing then air.

And as neither earth nor air, so neither fire ente the composition of any concrete; for though ther be heat, and consequently a kind of fire, in the bod of Animals: yet that is no other than a product c Vital Fermentation, and no radical Principle; an therefore *Paracelsus* was to be laughed at, who i his Tractate *De separatione Elementorum*, teacheth th separation of the Element of fire, and out of it agai a new separation of Elements. For if I should with him, suppose an Element of fire; yet if tha be further reducible, it forthwith looseth both th name and nature of an Element: and although he and other *Hermetical Philosophers*, tell us of th separation of *Elementum ignis de vitriolo Veneris*, ye by that we must onely understand, the *Sulphur* sepa rated from the Vitriol of Copper, which *Sulphur*, a well as that of *Antimony &c.* they call fires, be cause, they have a power of maturating, and digest ing the Mercurial Crudities, into a penetrative ting ing *Elixir*.

Thus we se, that neither the Ternary of Principles

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Hermetical Philosophers, nor the quaternary of the *Peripateticks*, nor yet quinary of the Modern Philosophers, are sufficient to be accounted real radical Principles, into which all Concretes should ultimately be reducible; because they themselves are yet remigrable into a more simple Element: and therefore *(ipso facto)* forfeit the Prerogative of primary Principles.

The very hinge of the matter now is, Whether we believe the truth of *Helmont*'s Experiments or no. As for my own particular, I do not pretend the possession of that great Liquor, though I have several Preparations (I hope) in the way towards it; but methinks I cannot suspect the veracity of so Noble and Grave a Philosopher, in matter of fact, as to the Experiments he hath made by that Solvent, though I should never live to enjoy it. I cannot but think it dissonant to reason, that he who wrought Thirty Years with his own hands in Chymical Experiments, that he might not take things upon trust, nor *Jurare in verba Magistri*, should (whil'st on the verge of the Grave, in his old Age) leave figments and palpable Lies, in matter of fact to the World.

Besides, he seems to be consistent with himself, in matter of Experiments; in which he is abundantly more plentiful than ever *Paracelsus* was, though he also had the knowledge of that Liquor, from some of the *Arabian* Philosophers: but, I am apt to believe he did not know half the extent of its use. *Geber* and others of the *Arabian* Philosophers, so also *Lully*, was possessors of this secret *Menstruum*, as may be seen in his *Theorica*; where he tells us that he coagulated Quicksilver into a fixt Powder, *Et nemo scivit modum, salvâ Regiâ Majestate.* Also a Countryman of our own, an *Anonymus*, who (if yet

yet living) hath it. It's not many years since he was in *England*; some of whose Manuscripts I have by me, who certainly gives more light to the Writings of another of our Country-men, *viz. Ripley*; also to Count *Trevisan*, and other *Hermetical* Philosophers, than ever yet was done.

The greatest light *Helmont* gives, in order to the Fabrick of this Liquor, is as followeth, *viz. Chymia indagando sollicita est corpori, quod tantæ puritatis Symphoniâ colluderet nobiscum, ut à corrumpente nequiret dissipari, tandem stupefactaest religio, reperto latice, qui ad minimas reductus atomos, naturæ possibiles, cœlebs omnis fermenti connubia spernit. Desperata est ejus transmutatio, digniùs se corpus non reperiens, cui nuberet. Sed labor Sophiæ anomalum in naturâ fecit, quod absque fermento commiscibili, à se diverso surrexit: Serpens seipsum iste momordit, à veneno revixit, ac mori deinceps nescit.* Of which he saith, *Unus & idem Liquor Alkahest omnia totius universi corpora tangibilia perfectè reducit in vitam earundem primam, absque ulla sui mutatione aut virium diminutione, Mundat etiam nauram virtute sui ignis: Nam ut ignis omnes perimit insectas, ita Alkahest consumit Morbos, &c.*

Now as by the highest Preparation in the Chymical Art, Concretes become reducible into water; so likewise we see in a natural circulation, out of one shape into another, that water is found mostwhat to be the last: For all Vegetables are distillable into a great proportion of water, also all juyces of Vegetables, are by Fermentation brought into potable Liquors, and those again into Vinegar, and that into a vapid Liquor, which at length is nothing but simple water. The Vine we see, which is the noblest of Vegetables, according to the nature of its

Seed,

seed, specificates the water or *Succus (laffas) Terræ* into its own shape, attracting like a *Syphon* the Elementary Water in great plenty, out of the Earth, into its leaves and clusters. This innate Seed which makes the difference of water, coagulated in this Vegetable, from that coagulated in other Vegetables, by the concurrence of the influence of the Sun, and Season of the Year, begets a Salt and a Sulphur; these mutually acting upon each other in the Mercurial part, beget a Fermentation; in which Fermentation, there happens a separation and rejection of a feculent part, to the sides of the vessels, which is called *Tartar*, from which *Tartar*, by force of fire, is separable a Sulphur, Salt, Mercury, Spirit and feculent Earth; all which are not really pre-existent in the *Tartar*, but are new products by the fire, whereof the Salt and Empyreumatick Sulphur digested together, do by Distillation give a water; and the Spirit at length degenerate into water.

Now by Fermentation, and while the feculent *Tartar* is separating the Sulphur, by working upon the Salt, become united, and so graduated as they both combine in the Fabrick of a vinous combustible Spirit, which is promoted by a secret Fermentation, after the actual working is over; which is nothing else but a more firm and closely riveted union of the Sulphur and Salt, maturating the Mercurial part into a generous Wine.

This Wine, either distill'd, is the most part of it left, as an insipid Phlegm or water; yea and the very flammable vinous Spirit, is by the touch of Salt of *Tartar* in Fifteen or Sixteen parts thereof (according to *Helmont*) reducible into simple water, or if the Salt thereof become too much exalted And letting go its Sulphur, then it degenerates into Vine-

gar; which Vinegar (if dulcified by making *Saccharum Saturni*, or the *Sal Sennerti*) is totally reducible into an insipid water. The like happens in all Vegetables, for Water is the material Principle of Vegetables; and therefore they ultimately resolvable thereinto.

That Water is the material Principle of Vegetables, is apparent, both because without water, whether distilled down upon the earth, in the circulation thereof in Dews or Rain; or by the overflowing of Rivers upon the grounds, whence the fertility of *Ægypt* from *Nilus* his overflowing the banks; or by any other sort of watering grounds, because (I say) without water, from some of the foresaid ways, neither do Plants take nor increase, nor is any Vegetation perform'd: also because in water many Vegetables grow, shoot forth roots, and spread very largely, witness Mint, and several other Plants, whose tops being only nipt off, and put into a glass-viol, full of water, they begin in a few days, as I have seen, to shoot forth spriggy roots; and from thence to grow up to a great height, even as if they were actually planted or set in earth; whose growth and increase is from nothing else but simple water. So also many Vegetables (as I said) grow in water, and have no roots at all fastened in the earth.

To confirm which further, that remarkable Experiment of *Helmont* is very considerable, *viz.* He planted the Trunk of a Willow Tree, of five pound weight, in Two hundred pound of earth dried in an Oven; having put them in earthen vessel, he moistened it with Rain-water; after five years the Tree weighed One Hundred Sixty nine pound, three simple Ounces: and the earth being dried was of the same weight as at first. Now, Whence should proceed th

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great addition of weight to the Tree, of no less than One Hundred Sixty four pounds, unless from water, than which it had no other additional? The wood of which Tree I suppose no man will deny to be different from any other wood of the same *species*; and therefore upon Distillation must yield a sowre Spirit, an Oyl, Phlegm, and Salt; if burnt and separated into soot and ashes, that soot again would yield a volatile Salt, Oyl, Spirit, Phlegm and Earth: all which are but the products of water, as by the Experiment is demonstrable.

To the like purpose the most ingenuous *Robert Boyl* Esq; hath an Experiment which was thus. In a weighed quantity of digged earth, baked in an Oven, and put into an earthen pot, he set the seed of a Squash; this he ordered to be watered only, with Rain or Spring-water, I did not (saith he) without much delight behold how fast it grew, though unseasonably sown, which was about the middle of *May*; the hastening Winter hindred it from coming to its wonted magnitude: About the middle of *October* it was taken up, whose weight, with the stalk and leaves, was two Pound twelve ounces; the earth he baked as formerly, and found it the same weight. The like Experiment he had of Cucumbers, he had two fair ones, the weight of which were ten pounds and an half; the branches with the roots weighed three pounds, fourteen ounces: then baking the earth twice, and its weight was decreased one pound and an half; which twice baking might somewhat minorate the weight of the earth.

Now, Whence should proceed that great bulk, both in the Squash and Cucumbers, unless from water, which was the only matter additional thereto? And what happens to these planted in earth, and fed with

water, whose increase is found to be simply from water, The same (I say) doth, more than probably, happen to all other Vegetables, springing up from their innate Seeds, or transplanted into other Soyls; and that the Earth is only a receptacle or *Matrix*, where the variety of Seeds conceive in the common Mercury, Water (or *Leffas Terræ*) and bring forth a Salt and Sulphur, from whose acting one upon another in the source of corruption, ariseth the Vegetation; and in that the formation of the Plant, according to the *Idea* wrapt up in the bosom of the Seed: for these two active secondary Principles, being hewed out from the seminal *Archeus*, work themselves extensively downward, but chiefly upwards, cloath themselves with a body from the primary Element of Water, and shoot forth into stalks, leaves, flowers, fruits, seeds, *&c.* shapes the body according to the platform of the seminal *Idea*, extraverteth the properties thereof, whence the variety of colours, odours, sapours and other specifical qualities, flowing from the essence thereof, better known to the humane *Archeus*, by assisting it against many Diseases, than apparent to the reason of man.

As we have demonstrated Vegetables to have their original material Principles from water, so also Animals have water for their constitutive Element.

For all Animals (I mean *superterrestrial*) have their nourishment, either immediately or mediately from Vegetables and Water; immediately as all manner of Cattle, proper for the food of Man mediately as Man, who feeds upon the flesh of Beasts and sometimes immediately upon Herbs themselves so that in Beasts that feed of Grass and Corn, Water becomes once more remov'd from its primitiv simplicity, undergoes a further transmutation by a

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Animal Ferment, that whereas before it had received a ſimple tranſmutation, or coagulation into plants and fruits of the earth, it now (by Beaſts feeding thereon) ſuffers a ſecond alteration; and by the Ferment of an Animal, is turn'd into a *Chyle*, *Chyme*, Milk, Blood, Urine, Fleſh, Bones, *&c.* and all theſe different one from another, according to the difference of the *Species*.

Now theſe Creatures, or parts thereof, are further tranſmutable by the Ferment of other Animals that feed upon them; as for inſtance, the fleſh of Beaſts, or milk therefrom (which is water twice remov'd by the *Medium* of Ferments) is by the Ferment of an humane ſtomach, altered again into a *Chyle*, *Chyme*, Milk, Blood, Fleſh, Bones, Urines, *&c.* wherein the ſpecifical Salt and Sulphur, do act variouſly upon each other; which in ſound perſons by the aſſiſtance of the Ferment of the heart, work each other into a ruby balſamick Animal *Elixir*: and that coagulated in the capillary veſſels, becomes Fleſh.

And we ſee, if Blood be diſtill'd, the greateſt portion thereof is Phlegm or Water, ſo that, above two thirds thereof is an Elementary water; in like manner, Urine is moſt part of it ſeparable into a wateriſh Phlegm; and Milk diſtill'd ariſeth, the moſt of it, in an inſipid water: in the diſtillation of the fleſh of an Animal, a great part thereof ariſeth into water; amongſt which the fleſh of Eeles, if diſtill'd (as that great Naturaliſt Squire *Boyle* witneſſeth) yield a very great proportion of water, in which (while diſtilling) they ſeem to boyl as in a pot of water, or like *Dantz* Vitriol in an earthen pot, placed in the fire, ſeemed to be nothing elſe but water, ſo theſe to be nothing elſe but Phlegm congeal'd.

To which purpoſe *Helmont* tells us, *Anguium Carnes*,

nes, piſces, Mucilago ſemel glaciata, eo ipſo mucaginem amittunt, & in aquam redeunt; item omnis Terræ Mucilago, quæ aliàs facilè in vermes vertitur; for that Izinglaſs, Fleſh, Fiſh, *&c.* ſhould by being frozen, loſe their form, and thereby be reducible into water, is no leſs than an evident Argument of what I am proving, *viz.* That water is the primary ſubjective Principle of all Vegetable and Mineral Concretes. And that Seed together with the potential Ferments thereof, are the Authors of all tranſmutations; by the operation of which, Water becomes differently coagulated and ſpecificated, according to the variety of the Seed, and the innate Ferments thereof, into this or the other formal Concrete or part thereof: which Ferments being connatural with the Seed, is more powerful than fire, and therefore fitter Agents for tranſmutation than fire; and that becauſe, fire can only burn Stones into a *Calx* (as the moſt profound Philoſopher *Helmont* ſaith) and wood or Vegetables are thereby turned into aſhes, than which (unleſs by addition of Sand, it may further make glaſs) the ſolitary fire can operate no further; and yet theſe very *Calx*-ſtones and aſhes, may, by a Ferment in the earth, be tranſmuted into the *Succus* (or *Leffas*) *Terræ*; and thereby fertilize barren grounds, and ſo aſſume the ſhape of Graſs and Corn, which a while before was in the form of Stones, Dung, Aſhes, *&c.* and that which was lately Graſs and Corn, preſently by the Ferment of an Animal, becomes Blood, Milk, and Fleſh, of a Beaſt; theſe again by a putrid ſolution of the *Compage*, are tranſmuted into Worms, Flies, and other Inſects, which often retain ſome ſhape of the Animal whence they proceed; and that which even now was in the ſhape of a Beaſt, as Beef, Mutton, *&c.* is forthwith by the Ferment of an

humane

umane ſtomach, tranſmuted into Man's Blood, leſh, &c. and theſe again degenerate into Worms r other Inſects in Fevers, and being let out of their eſſels, they undergo any other *Analytical* putrefacti-n, they become animated in ſtrange different ſhapes; ll which is but Water, *Proteus*-like, under various liſguiſes, tranſmuted by Seed and Ferments out of ne ſhape into another, according to the great round f Circulations: And all as they have their begin-ning and ſubſiſtence, ſo are alſo reducible into Wa-er. Yea further, as Vegetables and Animals have heir original from and are reducible in water, ſo al-o Minerals and Metals. And though this is not ſo demonſtrable as the former, becauſe we have not hat occaſion uſually to converſe with the Subterrane-al Products, as with Vegetables and Animals; yet I find to this purpoſe, what the Learned Squire *Boyle* cites out of a *French* Author, Monſieur *De Rochas*, who, as a Chymiſt, ſpeaking what he could perform by water, "Having (ſaith he) diſcerned "ſuch great wonders, by the natural operation of "water, I would know what may be done with it "by Art, imitating Nature; wherefore I took wa-"ter, which I well knew, not to be compounded nor "mixed with any other thing, than the Spirit of Life; "and with an heat artificial, continual and proporti-"onate, I prepared and diſpoſed it by graduations, "of coagulation, congelation, and fixation, until it "was turn'd into earth, which earth produced Ani-"mals, Vegetables and Minerals; the Animals did "move of themſelves, eat, &c. and by the true Ana-"tomy I made of them, I found they were compos'd "of much Sulphur, little Mercury, and leſs Salt: "The Minerals began to grow and encreaſe, by con-"verting into their own Nature one part of the

"earth; they were solid and heavy, and by this tru-
"ly demonstrative Science, namely Chymistry, I
"found they were composed of much Salt, little Sul-
"phur, and less Mercury.

By which Experiment, according to the relation of the Author, Minerals were generated out of water, which I suppose was done by some Mineral Seeds, or the *Analysis* of some Mineral Concretes, into their secondary Principles, which by due digestions assum'd Water for their bodies. For Mineral Seeds in their due *Matrixes*, concenter water more or less according to the nature of the Seed, and fitness of the place; and accordingly give more or less *pondus*, as the purity of the Seed and disposition of the place is; whence are lighter and heavier Minerals and Metals.

Also Metals are reducible into water, witness what the foresaid Author saith, That by a certain artificial way of handling Mercury, without any addition, may be separated therefrom, a fourth, or fifth part of water, or clear liquor, which for ought I have heard, or seen (saith he) is not reducible into Mercury again, and so is more then a disguise.

That Mercury, or rather Quicksilver, should in its weight to the like bulk of Water, be as fourteen to one, is from the Seed of the Quicksilver, concentring the body of water, according to that proportion; towards whose reduction, two credible Persons told the foresaid Ingenuous Author, That after (as he saith) many trials which they made, to reduce Mercury into Water, in order to Philosophical work, they did once by divers Cohobations reduce a pound of Mercury into almost a pound of water; and this without the addition of any other thing, but onely by pressing the Quicksilver by a skilful

ilful managed Fire, in purpoſely-contriv'd veſſels.
o the like purpoſe *Iſaac Holland* and ſome others,
eak of ſeparating a water from Quickſilver, which
ey call *Aqua Nubis, quâ tanquam Hydrops, Mer-*
rius turget.

Not to mention the experiment of increaſing the
ulk of a ſtone, by the ſingle addition of fountain-
ater, till it ſwell to the bigneſs, and figure of the
aſs it's put into; for we ſee, that water needs no
ore then a petrefying Seed, to compreſs it ſelf, or
her things it meets with, whether Vegetables or
ne like, into a ſtony concretion; as for inſtance, the
etrefying well at *Knarsborough*, which hath, in con-
nuance of time, wrought the earth, and graſs
hereabouts, into a rocky *Compages*, with petrefied
ſicles hanging down, where the very Streams of
vater, as they run along, are actually congealed into
tones, which (I ſay) can be from nothing els, ſave
petrefying Seed, connatural to that ſort of water.

This *Succus lapidificus*, may haue its Seminals (I
ay) from a petrefying Nitre, according to the ex-
periment of the learned *Kircher*, *Si ſaxum inquit,*
quodcunq; in tenniſſimum pollinem reſolveris; et aquâ
perfectè commixtum, permanicam Hippocratis *colaveris,*
illa nil prorſus ſaxeum, ſed præter arenaceum ſolum-
modo ſedimentum nil relinquet; ſi verò Nitrum, vel
Tartarum aquæ perfectè commixtum addideris, illa,
quæcunq; tetigerunt intra ſubjectam concham poſita,
ſive frondes ſimiliaq; poſt exiguum temporis curricu-
lum aeri expoſita, vel in Saxum ejuſdem generis con-
verſum, ſi non totum, ſaltem cortice Saxeo veſtient;
So that the petrefying Seed, whether in Water, or in
Nitre, or in the Stone it ſelf, is, in effect, all one.

So that underſtanding the nature of a petrefying
Seed, and the extent of ſubterraneall Channels, from
the

the Sea at great distances upon the Land, we need not wonder, that some fish is digged up in some places petrified; several of which was to be seen amongst *John Tradescan*'s Rarityes. That there are Subterraneal Channels, not onely from one sea to another, but from the seas, at very great distances upon the land, the Ingenuous *Kircher* doth fully demonstrate. The first by a *Dolphin*, which was taken in the Red Sea; which by the command of the *Bassa* of the place, was put into the water again *cum laminis in bronchia insertis* with these words in *Arabick* Characters ingraven *Amed Abdalla Bassa Sues tibi vitam, una cum hoc munere donavit, anno Hegiræ, 720:* which Dolphin was, the very same year, taken in the *Mediterranean Sea*, *prope Damiatam*, which could not possibly be, that the *Dolphin* should swim that vast compass, round *Affrica*, and take in at the *Streits*, and so up to the furthest part of the *Mediterranean Sea*: whereas from the *Mare rubrum* to *Damiata*, is but a small neck of land, little above 30 Miles; and therefore must pass along those subterraneal channels, whereby one Sea communicates with another.

As there are Subterraneal passages, from one sea to another; so (as I said) from the seas, to great distances upon the land; whence all Fountains, Springs, and Rivers, have their Original, and return again into the sea, contrary to the opinion of Dr. *Wittie*.

In which Subterraneal currents, the things carryed along with the water, whether fish or the like, may (when they come in places, pregnant with a petrefying seed) become congealed into a stone, from which lapidifying Juyce, all Stones, whether Rocks Quarryes, Marcasites, or what Stones soever, within or upon the surface of the earth, had their concretion originally. Hence

Hence is the reason, why some Animals are found loſed in some Stones, or other Mineral concretions; for instance, that a Toad ſhould be found alive in midſt of a Stone: or that a Spider, or other Inſt ſhould be found in a peice of *Amber*. It is (I ſay) cauſe theſe Animals are there, whilſt theſe Stony, other Mineral Concretions are in *Succo*; for *mber* is of late, found to be a Mineral, and no proct of the Sea, as it was uſually ſuppos'd. There lately a Mine thereof found in *Germany*, which ings in a great profit, to the *Duke* of *Brandenburg* conſiſts chiefly, of a ſulphur, and a Salt, as we find r the diſtillation, and rectification thereof.

Now all Minerals are, or have been, at ſome ne or other, *in ſuis Principiis*, in their firſt Succulenes; in which at the time of Concretion, if any her thing happen to be there, it's wrap't up togeer with it; which keeping the incloſed bodies from e air, and conſequently from any *Analytical* putridefs, are as a conſtant defenſive Balſam, preſerving them perpetually from corruption.

All Mineral Seed is inviſible, and to make themlves viſible, according to the appointment of God nature, having got ſutable *Matrixes*, begin, by Subterraneal heat, peculiar to the place, to work pon the Element of water, which it impregnates, nd tranſmutes into a Mineral Juice; in which uyce, the Seed begins to work it ſelf into a Mineral Mercury, and Sulphur, and in ſome places, into a Mineral Salt.

Now according to the purity or impurity, Volatility or fixity of the Sulphur, ſo becomes the Mineral, more or leſs pure, retaining a Specifical difference, from the firſt *Ens* of the Seed: Amongſt which, ſome have their Mercurial parts ſtained with

a malignant Arsenical Sulphur, *viz. Realgar*, *auripigmentum*, *Antimony &c.* but if the Sulphur be so strong, as in its union with the Mercury, it rejects the most Heterogeneities, which usually in Mineral productions, adhere thereto, then doth this combination of the Sulphur, and Mercury, arise to a Metalline *Compages*.

For, The first specification of the Mineral Spermatick Mercury, is into Quicksilver, or Metalline Mercury; the next coagulation of Mercury, after the rejection of some Heterogeneal *Sordes* by Sulphur, is *Saturnine*, where the Mineral Seed, first puts on a Metalline form, which is called *Saturn*, or Lead whose Mineral is *Antimony*; when or where this Sulphur becomes more depurated, it coagulates the Metalline *Mercury*, into *Jupiter*, or Tinn: But if the sulphur attain a *Solar* tincture, and yet retain many permiscible Heterogeneities, it coagulates the Metalline Mercury, into *Mars*, or Iron; If this Sulphur, in its *Solar* tincture, receive a depuration of some of the aforesaid Heterogeneities, it coagulates into *Venus*, or Copper, which comes nigh in tincture, but is farr short in *Pondus*, of *Sol* or Gold; for as *Basilius Valentinus* saith, that in *Mar.* and *Venus*, lodge *Solar* tinctures, which, graduated by Nature, or Art, are deducible into *Sol*: and that, because the soul or seed of *Sol*, is found therein, and not onely in them, but in their Minerals where they are nearer to their *Primum ens*; in which also (by the way) doth lodge the *Sulphur Philosophorum*.

But if this *Sulphur* be so far graduated, as that there is a through-separation of all Heterogeneities and that the *Sulphur* hath almost inseparably united it Self with the *Mercury*, then they are coagulated into

) *Luna* or Silver: which though it come short
h in Tincture, and *Pondus* of *Sol*, yet becauſe there
a total ſeparation of Heterogeneities, it lies in
direct road, by further maturation to both, and
reby to become *Sol* it ſelf, which is *Apex Metallo-*
n, the prefecteſt of Metals: whoſe Sulphur and
ercury are inſeperably united, and by maturation
aduated in tincture and *pondus*, to this unary per-
ction of the beſt of Metals.

Thus we ſee how Water the primary Element, by
e ſpermatick efflorescence of a Mineral Seed, be-
mes wrought into a Mineral Juyce; and that, by
peculiar fermentation, is turned into a Mercury,
id Sulphur: and thoſe again by maturating or
pening, each other, according to the degrees of the
rity of the Sulphur, rejection of Heterogeneities,
id union together, become tranſmuted, or rather,
alted into metalline Bodies, where at length, wa-
r by the concentration of the metalline Seed, puts
n the *Pondus* and tincture of Metals.

As the Seeds of Minerals are inviſible, ſo likewiſe
e the Seeds of Vegetables and Animals; as for
egetables, indeed the grain, or husk (which is im-
roperly called Seed) we ſee; but the prolifique
rt thereof, which is truely the Seed, cannot be
ſcerned, by the moſt acurate artificially contriv'd
Misroſcropes; being as the *Coſmopolite* ſaith (his
anner of computation I know not,) but the 820th.
art of the viſible grain: however they are ſo mi-
ute, as not to fall under the ſenſe of our Opticks,
ough helped with the beſt contriv'd glaſſes; and
lthough ſome plants are propagable otherwiſe then
y Seed (I mean, then by the husk (where uſually
he Seed works) as Roſemary, Mint, Sage *&c.*
whoſe tops, or ſlips ſet in the ground, take from
whence

whence they grow, and increase) yet in such as al
in the Scions, Imps, and Grafts of fruit Trees, t
seed or prolifique part is dispersed, almost though t
whole body of the Plants, and Trees; whose ma
ner of assuming a body from the *leffas terræ*; and
that from the Element of Water, I have alread
described.

And as I have shewed the progress of Vegetable
and Mineral Seed from Water, into all the visib
clothings of their bodies; so now I would obser
to my self, how the Animal Seed, works upon that
which originally is Water: and from that, do
shape it self, according to the appointment of God
into a body consisting of Blood, Flesh, Bones, S
news, Nerves, Arteryes, Head, Stomach, Heart
Spleen, *&c.*

First then, the *Sperme* it self is nothing else or
ginally, but Water altered by the several Ferments
the body, and circulated in the Seminal vessels, t
it becomes impregnate, with an efflorescence of t
whole body, which indeed is the Seed, or prolifiq
part thereof; for the *Sperm* is onely the receptacl
or vehicle of that Seed. Now when the efflorescen
becomes maturated (For a Child Chicken *&c.* whil
such, are not capable of propagating their like
and that the *Spermatick liquor* is throughly digested
in the vessels adapted for that purpose; then begi
that *Titillatio* (that sixth sense according to *Scaliger*
or *Prurigo Venerea*, by which, being conveighe
into a proper capacitated *Matrix*, the efflorescen
of the Masculine Seed, doth impregnate, or breat
upon (for I know not how better to express it, the
by a kind of occult breathing) the Female passiv
Seed, which is a Juyce, preparable from all the Fe
ments of the Female body, and also circulated i

the

ir proper *Spermatick* veſſels, which conveyed in-
the *Matrix*, receives that prolifique *Halitus* or
ath of the Male's efflorescence; and that often-
ies, with the reception of a very ſmall part of
Sperme, the body of which, is moſtwhat re-
ted, and the very prolifique odour or breath there-
retained, which doth become *Succum fœmininum*,
complet (*ſecundum Dei Opt. Max. beneplacitum*
id, Creſcite, & Multiplicamini; For the *Matrix*
ver opens its foldings (*utpotè pars membranoſa,*
nplicata, ſemini virili nutriendo à deo ordinata,)
t at the time of Conception; *Nulla unquam fit*
iquit Helmontius) *plicati uteri Expanſio, in con-*
eſſibus ut voluptuoſis, niſi in ipſo conceptûs inſtanti;
uc brutorum ferè infallibilis conceptus. Therefore
e opening of the Womb, is the gift of God, in
much as it hath a *Regimen* of its own, which, as
conception, conſiſts in a peculiar Magnetick Blaſs,
t to be opened, or ſet at work, at the will or plea-
re, either of Male or Female; whence proceeds
e very cauſe of ſterility, or barrenneſs; that
ough the parents have never ſo eager a deſire, to
ve Children, yet becauſe the *Expanſio Vteri* or
ening of the Womb, is not at their beck, nor
bject to their will, we ſee many are denyed the
eſſing thereof; others, though they have no deſire
Children, yet often have many: ſo that the *Mag-*
etiſm of the womb, is not at the beck of the hu-
ane will. Another cauſe of ſterility, or barren-
eſs is, *Quùm uterus ſemen malè imbutum, ſemel*
ecipiens, illud rejecit, nec deinceps ſe aperit, ut
ntrò fugat invitum iſtius viri ſemen; for many
mes, a woman conceives by the ſecond husband,
ough ſhe had been (as it were) barren to the
irſt.

Now

Now, as soon as the *Matrix* opens it self, by its proper *Magnetism*, and receives the prolifique breath, of the Male efflorescence, contained in the *Sperme*, the Feminine Seed, or circulated *Succus* becoming impregnate therewith, then forthwith is the *Matrix* closed up; *& deinceps nullus patet aditus semini virili in intimos uteri thalamos, quanquam iteratis conatibus congressus irritatur:* The Seeds then begin to act upon each other, I mean the efflorescence of the Male, to act upon the Feminine *Sperme*, and to make intimate commixture, each with other.

Now in different *Animals*, the Formation of the *Embryo*, is somewhat different; for in all *Oviparous* creatures, the first alterative motion in generation is the *Punctum saliens* (according to the experienced Naturalist, Dr. *Harvey*, which sendeth forth little streams of blood, which are coagulated into the vessels, and parts of the body of the *Animal* out of the *Albumen*, which is nothing els, but water congeal'd, by the Seed of the Cock, and the Hen: But in the humane Feminine *Matrix* the conceived seed *Per occultam Syngamiam*, becomes an opace liquor being *in puncto putrefactionis*; of which mortification of the seed, the anguish of sickness, faint fits, vomiting, provocation and nauseating of the Stomach gripings in the body, pains in the back *&c.* are sufficient *Symptoms*: without two or three daies, after the *Turbines* of this Seminal Juyce, it assume (as *Helmont* observes) the similitude of a transparent *Albumen*.

The sixt day appears the *Archeus utpote seminum Incola, tanquam vapor nubilus*, which after the thirteenth day, shapes the Seminal liquor, into the form of an humane *Embryo*, which is then very minute

and

nd, as yet, without *Sexual discrimination*, being nely an *Umbratilous figuration* of the *Micro-sme.*

Then doth this *Aura figurata*, hide it self for a hile in its own *Chaos*, and soon after cloths it self ith a visib le Secundine, and then becomes impres'd ith the Signature of the Sex, in which all the essen-al Organs of the body, with their Topical *Ferments* epending wholy upon the Specifical Seminal rinciples, become formed, and made manifest; which eceive their increase from the maternal blood, sepa-ated from the whole mass thereof by vessels fitted for hat purpose.

This *Embryon Anchorite*, in its first rudiments, very small, and yet hath the exact proportion of all he parts belonging to the humane body; as I have een it, in an abortion, scarce half so big as my little inger, at about ten weeks after Conception, which et hath had an uniform *Symetry* of parts, with visible difference of the Sex; whose constituent rinciples hath been so tender and near to its primary *pernatick liquor*, as that it hath, *suâ sponte*, *liquated*, r melted into its primitive Juyce, or *Liquor*, it swam n; and that because the tender *Embryo* is very near, o its *Succus solutus* or *Primum Ens* (if I may so call it) nd therefore, easily reducible thereinto.

The *Plastick spirit* which is in the Seed, and orms the *Embryo*, is that which we call the *Archeus*, r *Faber Plasticus*, which by degrees (all other ne-essary causes cooperating) awaken the Powers, de-ending essentially upon the seminal Principles, forms he parts, brings forth the Ferments, strikes the Vi-al fire in the heart, whence springs up the *Anima sen-sitiva*, *illuminates* the blood, and Animal functions, with the *Aura vitalis*; and so out of one thing, gra-

dually brings forth another, whilst on the wheel of formation, until all the Parts, Organs, Ferments, Animal and Vital Functions, be brought forth, belonging to the formation and animation of the humane *Embryo*.

And as this *Archeal Faber* is concern'd in the formation of the parts *&c.* before the appearance of the *Anima sensitiva*, so also the *Regimen* of the ferments, and management of the Vital concerns, is committed thereunto, after the Vitality of the *Embryo* is performed, both as to the nourishment, and encrease thereof from the Arterial Blood, brought into the *Matrix*.

Now, the reason why women (during the time of Conception, and Maturation of the *Fœtus*) are frequently sick by fits, and have many troublesome *Symptoms* upon them, even many times, till after the birth, is, because after the nourishment of the *Fœtus* which onely takes the purest parts, and most defecate Juyce of the Mothers blood, for its refection; the remaining *Sordes* are many, especially the Womb being the *Cloaca Humorum*, which now not being carried away by the usual Emunctories of the Womb, do regurgitate into other parts, vitiates their Ferments, alters the tone of the membranous parts, disturbs the *Oeconomy* of the blood, whence arise Gripings, Vomitings, Nauseatings, Pains in the Head, Pains and Weakness in the Back, *Febriculæ's* yea sometimes Feavers in an high degree *&c.* which also happen, many times, to women who have not conceived, having *aliquid amplius*, and are denied the benefit of natural evacuation, by that Emunctory; and therefore are subject to the like passions, and disorders of health, as those with Child are; who are many times apt to vomitings, though indeed,

there

ere is another cauſe of the frequent illneſs of wo-
en with Child; which now I have not time to
ention, but it hath relation to what was mentioned
the foregoing Page.

And therefore to uſe gentle purgations, even in
e firſt months after Conception, is not ſo dangerous
Phyſicians uſually ſuppoſe; and not onely harm-
s, but alſo of great uſe for preventing bad fits,
d making them more healthful, during the time of
ing with child: Nay I have known pretty ſtrong
urges given, ſoon after conception, which hath
rought pretty ſmartly, and yet no prejudice at all to
e *Fœtus*; ſo that Phyſicians need not be ſo curious,
or women at that time ſo cautious as by denying
em the benefit of gentle purges, to prevent them
that healthfulneſs, which otherwiſe they might
uch more happily enjoy, then otherwiſe they
).

That there is a Sympathetical combination betwixt
e *Matrix*, and the Stomach, is evident; both
cauſe, if a good *Uterine* medicine be given, in
ſes of *Uterine* diſcompoſures, that many times,
hilſt the Medicine is yet in the ſtomach, hath an
fluence upon the *Matrix* compoſing the diſturban-
s thereof, and allaying the *Furibund* inragements
that unquiet Animal; as alſo in caſes of difficul-
of birth, I know a certain *Specifick*, of whoſe
ficacy I have had frequent experience, even to
lmiration: Which while it is yet in the Stomach
eſpecially if the birth be brought to Maturity)
opens the mouth of the womb, enlargeth the paſ-
ges, unhingeth the *Os ſacrum* and making the throws
ectual, expelleth the *Fœtus* whether dead, or a-
e, which I have experienced upon ſeveral Women,
at have laboured, one, two, or ſometimes three

daies in vain, and within half, or a whole hour, have been very safely delivered; with the same and some other additions, I have known a *Mola* expell'd out of the womb, almost as big as my head; and to expel the after-birth (those *Quisquiliæ Matricis*) nothing is more effectual; and all this, from the influential vertue of a Medicine (whilst in the stomach) upon the Womb. But to return:

All the Nutriment which the *Fœtus* hath, is either from the blood, which in young women, or such as do not conceive, gives matter for the Natural evacuations; or from the *Succus Spermaticus* digested, by a peculiar Ferment of the parts it is circulated in: both which, saving that they receive a particular and determinate difference by Ferments, are materially nothing els, but water; out of which by the power of the *Plastick Spirit*, is the *Fœtus* form'd, both as to the parts containing and contained, *viz.* both as to the solid parts and vessels, as Juyces *&c.* but the specifical Ferments, are peculiarly inherent, in the *Syngamical Spermatick Liquor*, which being gradually transmuted into blood, by a further maturation of the *Spermatick* Principles, becomes settled in several parts of the body, after the following manner.

The Plastick *Faber* lurking in the *Spermatick* Juyce, begins to hew forth the form of an humane *Embryo*, out of that Albuminous liquor which is brought in, together with the blood, from the Mass thereof, as Materials for this Animal Fabrick; out of these two, by the *Energy* of its own power, it shapes the body, gives a current to the newly ingendred Juyces, in their own pellicles or membranes; and begins to make these Juyces circulate, which as they circulate, are coagulated upon the Solid

parts.

rts, whence the *Accretion* thereof, and upon some rticular parts they impreſs a tincture, which re-ns a ſeminal Character, being ſome ſeparable parts the circulating juyces which by further maturation come radicated and eſſential Ferments, but are not t vital, till they are inſpired with the *Aura vitalis*: as one riſeth up after another in the wheel of For-ation; and thus all the powers and ſeminal Cha-cters of the prolifick *Sperme*, become awakened e after another, until the *Fœtus* become complete. ow, I ſay, the Ferments are nothing but levened rts, ſeparable from the primary Spermatick Juy-s, with a ſeminal impreſſion, which makes them ſential Agents, eſpecially after their illumination the *Aura vitalis*; till then, they act not; and after at ceaſeth, their operation alſo is at an end; for all e Art we have, cannot make them perform the onted Tranſmutations, after, as before death; and erefore as to their ſeminal impreſſions, they are s *Helmont* ſaith) indemonſtrable *à priori*, becauſe ey owe their ſpecifical *Energy* of Tranſmutation mediately to the Seed and *Plaſtick* power thereof.

Now the Elementary Juyces, and blood brought to the *Matrix*, are nothing elſe but a *Carva* of ater, and ſo alſo the blood and ſucculent parts of e *Embryo* are the ſame, yet further remov'd by dditional Ferments; for the *Plaſtick* Spirit awaken-th the Ferments and *Anima ſenſitiva* out of its own oſom; and by the mediation of the Ferments, makes ll thoſe Tranſmutations, requiſite for the nouriſh-nent and growth of the *Fœtus*. The ſubject matter hat the Ferments work upon is water; from this by he alteration thereof (as I ſaid) by Ferments, our odies are ſhaped, nouriſhed, and increaſed in the womb; and after that, when we are brought forth,

we feed upon Milk generally, and that either of Wo
mans Milk, which is nothing but water or the succu
lent parts of Meat and Drink, altered first by th
Ferment of the Concrete we feed upon, and nex
by the Ferment of the stomach and Intestines, an
lastly by the Ferments of the Breasts themselves
which perfects the *Lacteous Cremor*, or Milky Juyce
passing from the Intestines, by the *Venæ lacteæ, glan
dules*, and *Thoraical* vessels, through the *Mammilar*
Conduits into the breasts themselves; or of Cow
milk, which is nothing else but water, first altered by
Seed out of the *Leffas terræ* into Vegetables, and the
again altered by the Ferment of the Cows stomach
and lastly is completed by the Ferment of the dugg

When we grow up to feed upon stronger meat, a
flesh and the like, this is nothing but the foresai
Cremor or milky Juyce, transmuted, by other Fer
ments, into flesh: For we see that when Cows ar
dried of their Milk, and have good Pastures, tha
they then fatten a pace; becaus that which other
wise passeth into milk, and by the plenty thereo
keeps them poor, is now, by other Ferments coagu
lated into flesh, so that flesh is but water, yet fur
ther remov'd by Ferments. And as for bread, whic
is the staff of Life, that, I mean Corn, may be reckon
ed amongst Vegetables, which (with them) hath it
Original from the *Leffas*, and that from water, an
is only altered in its shape, from the seed thereof
which gives difference to all things.

And for our Drink (as I shewed before) it's no
thing but water, which, whether it appear under th
form of Wine, Sider, Perry, Ale, Beer, *&c.* is nothing
but the disguises of water, altered only by
Seed and Ferments. Thus like Plants we grow from
water, as if indeed we had taken rooting therefrom.

and

nd like *Amphibions* we live, and walk upon the face
f the Earth, whilſt we feed upon water.

Alſo we grow and increaſe in bulk, from water,
ntil we come to our full ſtature, and then the Fer-
ents are moſt vigorous and active; for in the be-
innings of Animals, the Ferments are very languid,
ſpecially (I ſay) in the *Matrix*, and therefore the
ranſmutations they make, are but very ſlender and
enuious; whence is the facil reduction of the mi-
ute *Embryo* into its firſt *Spermatick* Juyce or Ele-
entary Liquor. In Children the Ferments grow
tronger, but yet is very weak; whence is their apt-
ieſs to breed worms, which proceed from a debilitude
of the embalming Ferments: as Children grow up
n years, the Ferments grow more ſtrong, and there-
ore they require ſtronger meat, and the Tranſmutati-
ons of the Ferments are more vigorous; whence
he bones and fleſh of young Men, become more
olid and firm; and that increaſeth till the body come
to its full ſtature: ſo that it is the vigour of the Fer-
ments that gives flower and ſtrength to the body, and
their defects give being to Diſeaſes, make the Spirits
flag, the ſinews ſhrink, and the fleſh waſt away,
by a lingring *Tabes*; and that too, oftentimes in
the very ſpring of Youth; even, many times, whilſt
we are upon the *Meridian* of our days, occaſionally
from the aſſaults of many Diſeaſes.

When we are once arrived to the *Zenith* of our
Years, that the florid ſtrength of our bodies, are de-
monſtrable *Indexes* of the agil vigour of our Fer-
ments and vital Functions, we ſtay not long here, but
then begin to decline and to go down the hill; our
ſtrength begins gradually to be impaired, and that,
becauſe our Ferments and Vital Powers (when once
mounted to their ἀκμὴ) are *labil* and in continual

Flux (for ſo all mortal powers are, they begin, grow, come to their full ſtate, decline and come to a Period, either by a further tranſmutation, or reduction into the firſt *Hyle* or primitive *Chaos*) therefore they ſpontaneouſly decay, and with them the Fabrick of the ſolid parts of the body; ſo that old Men that live out the full number of days, do but ſpin forth a longer conſumptive thread, than others; they wear away with an inſenſible *Tabes*, having their ſucculent parts dried up by the exiccating *Blaſs* of the Air, and that through the deficiencies of the vital Ferments.

And thus Old Age performs that, at the long run which a lingring Diſeaſe, whoſe Seminals are deeply ſeated in any principal part, as ſtomach, lungs, liver veins, *&c.* vitiating the Ferment thereof, doth in a leſs time, as perhaps in a year, half a year, three month or leſs, *viz.* wear away the body by a continual waſting or Conſumption until the parts are reduced to a *Skeleton*, which being after entombed in the earth, doth (as all other bodies) by the *fracedinous* odour thereof, *Fatiſcere in ſuccum ſuum primitivum legeſque aquæ ſubire*, turns into a ſort of *Leffas*, and that, by a further reduction is nothing elſe but water not to ſay, what a great quantity of *effluvia* or vapour (which for the moſt part are materially water) paſs continually through the pores of our bodies; perhaps, if duly computed, not much leſs than the one half of the weight of the food we take in, and yet is nothing but water circulated in our bodies through various Fermentations, and at length reduced to its primitive ſimplicity.

Thus we begin, we grow, we come to our full ſtature, from the operation of Seed and Ferments upon water, whoſe degrees of vigour upon the materia

ſtag

ſtage thereof, gives the various *Stadiums* of Life: Then we bend to Diſeaſes, we decline, we die; when the vital Powers and formal Ferments march off the ſtage, and have their *exit* into their primitive *Hyle*, and the body then, ultimately reducible into water by the *Fracedo* of the Grave. Hence I conclude all bodies in the *Mundane Syſtem*, whether Vegetable, Animal or Mineral, from water as the material Element, and by Seed as the efficient Agent, have not only the Beginning, But

THE END.

AN APPENDIX Concerning the ORIGINAL of *SPRINGS.*

1. IT is not the leaſt part of Dr. *Wittie's* Book, to Diſcourſe of the Original of Springs, and therein to aſſert their original to be from Rain and Snow-water; from the confluence of which two, he ſuppoſeth all Springs to flow: and that after this manner, *viz.* the Snow and Rain, falling from the Clouds in great abundance upon the Earth, do by moiſtening the *Superficies*, cauſe it to bring forth Vegetables; which we grant, *viz.* That the moiſture exhal'd from the Sea and Earth, carryed up into the Clouds, becomes impregnated with an influential Nitrous Salt, or *Sal Hermeticum* (floting to and again in the Atmoſphere) And circulated or cohobated upon its *Caput mortuum*, the Earth gives fertility to the ground, and makes it apt to bring forth Vegetables.

2. The remaining part, ſaith he (except what ſuddenly runs into Rivers) ſinks down by ſecret paſ-

ſages

ſages into the earth, with which the *Superficies* doth abound; and in rocky ground it runs through the clefts, and by them is conveyed to the Subterraneal Chanels more or leſs deep, in the earth, where it is concocted by the earth, and moves as blood in the veins, *&c.* We ſhall indeed admit thus far of what he ſaith, *viz.* That Rain and Snow-water are the proximate cauſe of all Land-Springs and ſudden Flouds, filling the Poroſities and Chanels of the *Superficies* of the Earth, the remaining part reſtagnates, till it find declive Currents out of Brooks and Ditches into other Rivulets, and thoſe again, by further paſſages, ſwell into Rivers, and thereby cauſe inundations of low grounds, till thoſe Rivers empty themſelves, by other intermediate ones, into the Sea it ſelf: But that the ſame ſhould be the cauſe of the *Fontes perennes*, *viz.* of Living Springs, I altogether deny, as ſhall afterwards be evinc'd more clearly.

3. This Water (ſaith he) at length, in its paſſage through the veins of the Earth, finds vent, and runs forth; which place of eruption we call a Spring or Fountain: And this ſpringing forth or eruption of the water, I conceive (ſaith he) to be made from its own natural inclination and tendency towards its proper place, aſſigned to it by the Creator, which is the convex part of the earth, it not reſting till it meets with its natural correſpondent, the Air; under which it muſt needs lie, becauſe of its greater gravity, as above the Earth, by reaſon of its levity: And this I think (ſaith he) to be the natural reaſon of its ebullition out of the Earth,

4. Here the Doctor hath at once conceiv'd and brought forth the cauſes (as he ſuppoſeth) of all manner of Springs, and their manner of iſſuing out

of

f the Earth, *viz.* from rain and Snow-Water, and heir tendency in the Channels of the Earth, to their roper place the convex part thereof, For he having numbred three general Opinions, concerning the Original of Springs, *viz.* first by percolation of the ea. secondly by transmutation of Earth, or Air nto Water, within the Bowels of the Earth. Or lastly by Rain or Snow, with the last of which he loseth. As for the second *viz.* the Opinion of the transmutation of Earth into Water for the supply of Springs, it's so absurd, that its enough to name it although the Dr. is too credulous, in telling us, he can easily believe, That the thinner part of the Earth, may be turned into Water, as also the grosser parts of Water, into Earth: So the thinner and more subtile parts of Water, into Air, and the grosser parts of Air, into Water, arguing a Transmutability of the Quaternary of Elements amongst themselves: which I wish, he could make me believe too, by any ocular demonstration.

5. As for that Transmutation of Air into Water, for the supposed supply of Springs, it's *Aristotle's* opinion; and Dr. *Wittie* denying this *Thesis*, yet saith, that reason tells us, that more then ten parts of Air, will not serve for the making but of one part of Water, I think (saith he by *Parenthesis*) twenty would be to little. But if I should be heard to speak in this case, it should be Paradoxical; and that thus (*viz.*) that five parts of Air, would be too much, and five thousand parts thereof, would be too little, for the making one part of Water.

6. I shall therefore first, endeavour to impugne his *Thesis* of Snow, and Rain-Water, to be the Original of all Springs, by being Negative therein: Next to which, I shall, assume a positive *Thesis*, from the

the Circulation of Water in the Terraqueous Globe, by the mediation of Subterraneal Chanels, from Sea, to Sea: yea and from the Sea, to the Heads of Springs, from them into Rivulets, and thoſe again into Rivers, and thoſe into the Ocean, and ſo circulate round.

7. Firſt therefore that Snow, and Rain-Water, ſhould give Original to living Springs (as we call them) cannot be, becauſe then upon deficiency of Snow and Rain-Water, as uſually happens, in long droughts, theſe Springs would certainly fail: But we find the contrary, *viz.* that in long continued droughts, when all Land-Springs are thereby dried, that yet the true Quick Springs are as fluent as ever. *Ergo*, they are not fed by Snow or Rain-Water. I cannot indeed, deny but that Quick-ſprings, are not without their additional ſupplies, from Land-Springs which are fed by Snow or Rain-Water; and thereupon may, in long droughts (having thoſe auxiliaries drawn off) become leſs able to manage that ſtrong current they had before: yet doth it not therefore follow, but that theſe Springs, when ſolitary, fetch their Original deeper then Rain Water can ſink.

8. Yea, ſuppoſe we ſhould grant, that ſome few of theſe Quick-Springs, ſhould (for the generality of them do not) prove deficient through long continued droughts: yet this may very probably happen upon a double account. Firſt, becauſe the Quick-Spring it ſelf may be lengthened, by the additional ſupply of a Land-ſpring, being (ſuppoſe) but an arme of that larger Channel, which is carried under ground, at a greater diſtance, to another Spring, of a more ſtrong current; and therefore a drought, taking away its Auxiliaries, may thereby break off an arm, and make it run in its ſtrong ſingle Channel,

el, along the *Sabulum bulliens*, to an other Spring-ead, where it glides currently away.

9. The next reason, why some few Quick-Springs as I said) may in long droughts prove dry'd up, , becauſe the *Superficies* of the earth, is ſo exhauſt-d of that Natural moyſture, which ſhould ſupple for Vegetation, and the like; as that it imbibes into its ſelf like a Spung, and the Spring ſpends its tock, to moyſten the thirſty earth about it, and ſo roves deficient in its current, But when the earth be-omes again ſatiated, by irrigating ſhowers, then, that which before was diverted to moyſten the Earth, nds its Channel again, and runs as fluently as ver.

10. The ſecond reaſon, why Springs have not heir Original from Snow and Rain-Water, is, be-auſe we find Springs break forth upon the tops of Hills, or Mountains, which flow, even in the great-ſt droughts: Now if Rain-Water ſhould at that eaſon, onely ſupply them, then of neceſſity, upon want of Rain, and continuance of long droughts, heſe muſt be dryed up; yea, and that very ſpeedi-y too, becauſe they want a ſupply, from their eſ-ential conſtituent Cauſe, which according to his *Theſis* s Snow or Rain-water: But, by experience, we ind the contrary, (*viz*) that Quick-Springs, even n long droughts, do keep their current; therefore Snow and Rain-Water are not the conſtituent, or efficient Cauſe of Quick-Springs.

11. The third reaſon, that makes me ſcruple the Veracity of this *Hypotheſis*, is, becauſe neither the Dr. nor the reſt of the Aſſertors thereof, have duly aſſign'd the manner, or Method, the Pipes, Channels, or Conduits, how Springs, having their Original from Snow, or Rain, ſhould aſcend and mount the

tops

tops of Hills, and ſpring forth in the uppermoſt parts of high Heaths: And why upon the truth of the aſſertion, they ſhould not rather alwayes be thruſt down into Vallies, and confin'd to low, declive places, as being more proper for the heavy body of Water (according to their own ſuppoſition, of its being next in weight to Earth) to deſcend then contrary (as they ſay) to the nature thereof to aſcend: To make Water climb a Hill, forcing it *volens nolens* up the inſide, when all the contrivance they have, cannot do the ſame upon the outſide thereof. Me-thinks they ſhould have indeavoured to have extricated themſelves, and the world from theſe ſuſpicious doubts, before they had impos'd their *Theſis*.

12. For, by this ſuppoſition, a great part of Rain-Water, falling (for the ſupply of Springs) ſinks down, by ſecret paſſages, into the Earth: What then muſt force this Water, contrary to its natural inclination up the bank, to make it ſpring forth out of the tops of Hills, and high places? Surely the contrivers of this *Hypotheſis*, had not their eyes every way, did not caſt about, to ſalve all the incident *Phænomena* of this Doctrine. All the reaſon I find Dr. *Wittie*, gives, for its Ebullition out of the Earth, is a tendency towards its proper place, which is the convex part of the Earth: By which, it ſhould ſeem, that the Water (while in the Bowels of the Earth) is out of its place, and therefore muſt by a certain force, *ab extra* as to its ſelf, be reduc'd to its natural place. What this ſhould be, that may make the Water recoyle, or drive upward, contrary to it; own Nature, the Doctor would have done well to have aſſign'd; For no body can be ſuppos'd to have a natural tendency, in that where a force is impos'd; but here is a natural tendency to the

proper

proper place, *viz.* the convex part of the Earth; and yet this is carryed upwards, a contrary motion so that that is proper to water: so that, in good earnest, it implyes no less then a tacit contradiction.

13. For he expresly saith, That the Springing forth, or Eruption of the Water, is not made by any forcible agitation, compulsion, or violence that is put upon it, *ab extra*, within the Earth *&c.* but from its own natural inclination, and tendency towards its proper place, *viz.* the convex part of the Earth: and yet these Springs sometimes break forth, in the top of high Hills, and in the uppermost part of high Heaths, as (to go no further) that of *Knaresborough Spaw* (the vitrioline I mean) is a pretty strong Spring, and yet is upon the uppermost part of that high Heath, which in the greatest droughts, ceaseth not to spring: so that He and the followers of his opinion, must of necessity grant, that either it is not improper, for water to ascend, and then they must assign the true efficient causes thereof, that forceth Water, after it has fallen from the Clouds, and sinks into the cavityes of the earth, up again to the *Superficies* thereof; and that too, to the tops of many high Hills: Or else they must retrive their Opinion, that the convex part of the Earth, is the proper place of the Water: For if water (as in many Springs it's found) ascends, and breaks forth above the level of Plains, (and that too without any compulsive force) is a more firme argument, that the Water (whilst there) is rather in its proper place, then when thrust forth into *declive* Places, along the convex part of the earth, where it doth forthwith undergo *Hydraulick* Laws, is ponderous, and runs down any *Declive* Current.

14. The arguments, Dr. *Wittie* urgeth, for the confirming his Opinion of Rain, and Snow-Water, to be the Original of Springs, are Three. The first of which is, because it is found by experience (saith he) that Fountains, and consequently Rivers, are greater, and do abound more with Water in Winter, and moyst weather, than in Summer. To which I answer, That it's granted, that they do (indeed) abound more in Winter, and moyst weather, but yet I deny, that therefore it should follow, That Fountains, and Rivers should have their Original therefrom: For it is onely Land-Springs, or (at the most) a Co-incidence of them with some few Quick-springs, that receive so great increase from Rain, and Snow Water, as joyned with *declive* Currents of Water, that run down Hills, Mountains and other steep Places; which fill Rivers, make them overflow their banks, and drown the Fens, and other low grounds, in Winter, and sometimes in Summer, by great sudden falls of Rain-Water: whereas Quick-Springs (saving their additionals, the Land springs) are the same then, as at other times: I mean as to their own Channels, from their proper source.

15. Secondly, In those years, when great floods of rain do fall in Summer, and great store of Snow in winter we find (saith he) Springs durable, whereas in droughty Seasons, when there is but little, or no Rain, or Snow, the Springs dry up. To which I answer, that first, as to the durablenes of those *Fontes perennes*, the sudden falls of Rain contribute no thing; and that, because they indure after the draining away, and exhausting of the Land-Springs by continued droughts: Whereas if the continuance of these Quick-Springs, did depend upon those falls of rain; then would they, in great droughts (being

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enied of their ſupply) alſo (as I ſaid before) ceaſe
The great plenty of water in wet Seaſons, do indeed
as I ſaid) ſet the Land-Springs a-flote (yea and be-
gets other Springs that appear not at all in other Sea-
ons, witneſs the *Gypſies* in the *Woulds* in *York-ſhire*)
which by the in-lets of Chanels each into other,
nay, for a time, increaſe the current of Quick-Springs;
ut adds nothing at all to its durableneſs; for the
arth is no ſooner dreyned of the ſuperfluous water,
which come by great falls of wet, but the living
prings (as they may not improperly be call'd) are re-
uced *in ſtatu quo prius*.

And, as to what he ſaith, That in droughty Seaſons,
when there is but little or no Rain or Snow, the
prings dry up. As to the truth thereof, I ſhall (I
ay) appeal to the obſervations of all ſuch Perſons
s have taken notice thereof. A ſure Proof of which,
ve had (he ſaith) in *England*, in the Years, 1654,
5 and 56, when our Climate was dryer than ever
ny Stories mention, ſo as, we had very little Rain in
ummer, or Snow in Winter, moſt of our Springs
vere dryed up, even thoſe ſorts of Springs we call
'ontes perennes: which (I ſay) as to matter of fact,
he Country-People can teſtifie was not ſo: and
hough I grant, many Springs were, through the
rought and penury of Rain-water dryed up, yet
o I deny theſe to be Quick-Springs, excepting ſome
ew, which (as I ſaid before) might be diverted by
he extream dryneſs of the adjacent thirſty ground,
vhich might drink it up as it came, or by having its
Auxiliaries of a Land-Spring drawn off; or laſtly, by
aving its current intercepted and carryed by longer
tretch'd Subterraneal Chanels into other Springs. I
muſt confeſs that it's more than probable that thoſe
Land-Springs, which are ordinarily fed by Snow and

near the Kingdom

water, and which ſupply many Draw-Wells, were (indeed) dryed up, for the moſt part, in thoſe droughty Seaſons: but that the true Quick-Springs, thoſe I mean which always run along the *Sabulum bulliens*, or bubbling Sand, ſhould be dryed up in droughty Seaſons (excepting as aforeſaid) is neither agreeable to reaſon, or obſervation.

17. A third reaſon, which (ſaith he) perſwades to this original from Snow and Rain, is, Becauſe in thoſe Climates and Countries where little Rain falls, few or no Springs and Rivers are ſeen, as in the Deſarts of *Æthiopia*, and in moſt parts of *Africa* near the *Equinoctial*, they have little water. To which I anſwer, That though this ſeemingly be the moſt cogent Argument that Dr. *Wittie* urgeth for the vindication of this Opinion; yet I ſee no more that it evinceth, than this (*viz*) That in thoſe places where there are but rare falls of Rain-water, thoſe Auxiliarie helps, and conveyances by Land-Springs (which in other places by great daſhes of Rain, fill other Rivers very plentifully) are moſtwhat cut off, and the ſimple Quick-Springs are left ſolitary, which as ſuch cannot make many Rivers, nor much ſwell thoſe already made.

18. Hence in *Ægypt*, where it Rains very ſeldom, they are ſupplyed, inſtead thereof, by the overflowing of *Nilus*; whoſe River begins to ariſe on the the Seventeenth of *June*, ſwelling by degrees until it mounts to (ſometimes) Twenty four Cubits, though heretofore Sixteen was the moſt it attained to, repreſented by that Image of *Nilus*, having Sixteen Children playing about it, brought from thence and dedicated to the gods by *Veſpaſian*, in his Temple of Peace, and now to be ſeen (as *Sandys* in his Travails ſaith) in the *Vatican* in *Rome*.

19. Which conſtant riſing of *Nilus* at ſuch a da

s aforesaid) is imputed by *Diodorus Siculus*, unto e abundance of Rain falling on the *Æthiopian* lountains for Forty days together, at such time, the Sun approcheth *Cancer*; which is affirmed to true (saith *Sandys*) by the Inhabitants of *Ægypt*, ho receive it from Strangers, frequenting *Cairo*, from ndry parts of *Æthiopia* and *Libya*, who come own with the floud, and bring with them Slaves, lonkies, Parrots, and such like Commodities: Al- before that time, for divers days, the Air is trou- ed, being full of black and ponderous Clouds, ith a continual rumbling, threatning (as it were) drown the whole Country, yet seldom so much dropping, but are carryed Southward by the Nor- ern Winds, which constantly blow at that Season.

20. Now these Clouds being, kept together by ese Northern Winds, and not suffered, by the force ereof, to be let down upon the Country of *Ægypt* showers, are upon the reversion of the *Peroleds*, e soft Southern, or South-East Winds, wheeling om an other point, make the hovering Clouds ischarge themselve; in great Rain for many days gether, which falling upon the Mountains of *Æ- iopia*, are partly washed down from the Mountains, nmediately into *Nilus*, and partly (running into ntermediate Chanels and Rivulets amongst the hills) re, at length, conveyed into *Nilus*, which together ake the River gradually to swell, from the Seven- enth of *June*, until the beginning of *August*; at hich time, they cut the banks, and let it overflow e whole Country, for the enriching the Soyl there- f.

21. Now that the overflowing of *Nile*, is from ain let down near the head thereof (which is found o be in the Province of *Agaos*, near the Kingdom

of *Goia*, in the Land called *Sabala*, in the top of a Mountain (whose Diameter is not past one Foot and an half) is (I say) further apparent, because the temperature of the Air, all over the Country is the same at that time as it is in other places, where Rain falls in moist Seasons: For we see in our own Island of Great *Britain*, where Rain happens frequently, that for some days together the Air will be so cloudy and moist (and yet kept off from showers by Winds that bear them up) as that it moistens the walls and floors of Stone-buildings, and make the stones look wet and moist, as it it had actually rain'd upon them, when not a shower has happened for many days together.

22. In like manner (I say) the temperature of the Air in *Ægypt* at that Season is very moist, yea so moist, as though we suppose it did rain, yet could it not be much more moist; a Demonstration whereof, is this following Experiment, *viz.* Take of the earth of *Ægypt*, adjoyning to the River; preserve it carefully, that it neither come to be wet nor wasted; weigh it daily, and you shall find it neither more nor less heavy, until the Seventeenth of *June*, at which day it beginneth to grow more ponderous, and augmenteth with the augmentation of the River: Whereby they have, amongst themselves, an infallible knowledge of the State of the Deluge.

23. So that hence it clearly appears, that great falls of Rain upon the Mountains near the head-Spring of *Nilus*, at such a Season, give increase to that River; and that these Clouds, which contain that great quantity of water (which well nigh would threaten the drowning of the Country) is carryed over the face of the Land by Northern Winds, which meeting with other Winds from different quar-

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rs, are there ſtay'd, and let down in great abun-
ance upon the Mountains of *Æthiopia*.

24. And whereas Dr. *Wittie* ſaith, That in *Ægypt* ere are no Springs at all, I am very much apt to ſpect the truth thereof; For how ſhould the Inha-tants and Travellers, in that Country, be ſupplyed ith water (who Live and Travel at remote diſtan-s from *Nile*) both for themſelves and Cattle, eir Camels, Aſſes, *&c.* The waters they find, uſt needs be from Springs, and thoſe Quick-Springs o, becauſe no Rain falls on the Country, to cauſe ny Land-Springs or Rivulets therefrom.

25. And although he ſeems to himſelf, to give a lution to that objection made by *Seneca*, *viz.* That ie greateſt Rain that can fall, never ſinks above Ten oot into the ground; by alleadging that though into ie ſolid earth the Rain ſinks not above Ten Foot: yet, What becomes (ſaith he) of that immenſe quantity f Rain which continues for many Weeks together, ay oft times for ſome Moneths, beſide the infinite uantity of wet and Snow that is falling all Winter ng, cauſing inundations of water over all the Coun-y round about? Can it be ſuppos'd (ſaith he) that en Foot of earth will drink up all this water? To hich I anſwer,

26. That in thoſe great and long continued falls of ain, which cauſe inundations of water, the greater art thereof falling upon hills, champion and high rounds, runs down into Rivulets, and from thence conveyed into Rivers, which coming ſuddenly o-erflow their banks, drown Marſhes and adjacent low rounds, but preſently after are diſcharged into the Ocean. Now that Rain, which falls upon low Fenny rounds, where the water has not that uſual current nto Rivers, either reſtagnates upon the *Superficies*,

and causeth Marshes, Lakes, Ditches, Bogs, *&c.* or sinks into the earth, especially where the crust or course of earthy Clay, is but thin, before an other *Fundus* of Gravel or Sand appear; for in some low mooriſh grounds, the outward *Fundus* or crust, is a bituminous spongy earth, such are the Turf-Moors into which Rain-water sinks deep; others are of a more stiff Clay or Marle (and those both high and low grounds) which cause Rain-water to restagnate or lye long upon them.

27. So that, It's the difference of Soyls, which makes Rain-water either sink or lye above: where the Soyl is sandy, the Rain sinks presently; and therefore such High-ways are the best to Travel in Summer or Winter. Now (I say) ten foot is deep enough to contain all that which remains after the greatest part is carryed away by Runnels, and divers Currents into Rivers, and those again into the Sea; for I have observ'd that in two or three days Rain it hath scarce sunk a Graft-depth in our Garden-earth. But suppose we should say with Dr. *Wittie*, That by some secret passages into the caverns of the earth, it should sink much deeper than ten foot: yet we shall meet with two difficulties, the solving of which, will prove Ominous to the Doctor's Opinion of the Original of Springs. The first is, How shall rain-water sink into the earth by empty crevises or clefts, which I imagine he supposeth to be at some distance from each other: Now what is that that must bring the intermediate particles of water (which fall between one crevise or cleft and another) into the distant crevises, He should have done well, to have assigned those particular Conveyers before he had determin'd these crevises. I am apt to think he hath grounded his supposition of these crevises and clefts, from those chinks and clefts in

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e earth, which he hath ſeen happen in a long drought; if thoſe were not forc'd by the extream dryneſs f its *Superficies*, and fill'd again upon the acceſs of ain, when the earth being moiſtened, comes toge-ier, the Rain ſinks no more down thoſe clefts or cre-ſes, than down any other more ſolid part thereof.

28. Why might not he rather (and that more truly) ppoſe the earth to imbibe Rain-water as a ſponge: here it meeting with capillary veins (as I may call hem) or ſmall pores (not clefts or creviſes, which are carce to be found but amongſt Rocks, and Rocky oyls) ſinks down by degrees into larger veins, and hoſe into Subterraneal Chanels, where it makes Land-prings, which ſupply many Draw-wells; yea and nany of them run into Rivers too, which help to keep Rivers high in Winter time, above the ordina-ry pitch they are found to be upon droughts.

29. The next difficulty that ſprings up (which indeed is the moſt conſiderable) is, If Rain-water ſink much deeper than ten foot into the caverns of the earth (as he ſuppoſeth) Then, what ſhall fetch it up again, to make it ſupply Springs that are upon Hills or high Heaths, nay upon the very level of Plains themſelves? For it muſt be a *retrograde* motion of the ſame water, which before deſcended into ſuch low caverns of the earth —*Facilis deſcenſus Averni, Sed revocare gradum ſuperaſque aſcendere ad auras, Hic labor, hoc opus*—

30. The next Objection he brings out of *Seneca*, and his ſolution, evince no more than what we grant, *viz.* That there may be additional Land-Springs, and that amongſt Rocks, which receive their ſupply from Rain and Snow-water, which upon droughts are dry-ed up, and therefore are not Quick-Springs, whoſe Original, I ſhall ſhortly hint to be otherwiſe; beſides

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he acknowledgeth that in solid Clay Soyls, it is very rare to find any eruption of water, because such are sad earth, and have few or no caverns or chanels in them: but our Springs, Saith he, break out ordinarily in rocky and gravelly ground, especially the best and most lasting Springs, such as we call *Fontes perennes*; which indeed is most certainly true, for they are not found but as accompanyed with a boyling gravel or sand, called by *Helmont Quellem* or *Sabulum Bulliens*, which makes nothing at all towards the proving his Assertion.

31. The last Objection he brings out of *Seneca*, is, That in the dryest Soyl, where they dig Pits two or three hundred foot deep, there is often found great plenty of water, which he calls Living-water, as not coming from the Clouds. Dr. *Wittie*'s Solution of which Objection is thus, From whence then should it come? from the Sea? Perhaps (saith he) the Sea is as many Miles from that water, as the *Superficies* of the earth is feet from it. Suppose it were (say I) What might hinder, but that water might be carryed from the Sea, by Subterraneal Chanels, at far greater distances than so? If Seas communicate with each other (as we shall shortly endevour to prove) it must be by Subterraneal Chanels, many of which must be of far greater length.

32. Perhaps it may come, saith the Doctor, from the Transmutation of Aer into Water; for such a Transmutation, I cannot, saith he, deny: so that (in short) to me it seems as if he hovered between two, whether to ascribe the Original of Spring-water, to the Transmutation of Air into Water, or to Snow and Rain-water; Only he saith indeed, It's most probable to come from Rain; so that, That at the hardest and at the long run carries it; yet that of the Transmutation

utation of Air into water, is not without its per-
venture, and that he thinks very well confirm'd too,
r an instance he brings in, which is, We see, saith
, Churches become wet, before Rain falls, from
is cause. Why, What is the cause? (*viz.*) the
ansmutation of Air into Water: and truely, I
n apt to believe, that in moyst weather, as sure as
ie Air is transmuted into water, which moystens
ie Stone-Walls of buildings, so sure is Air in the
owels of the Earth, transmuted into Water; yea
nd so sure is the Original of Fountains from Rain,
nd Snow Water.

33. I wonder the Doctor's Philosophy, in his se-
ond Edition, should not come forth more matu-
ate, then to adhere to this old, and long since
xploded transmutability of *Elements*, which has
o true solide *Basis* to be grounded upon: For if the
vatryness we find, in moyst weather, upon stones
f Walls, and Floors of Buildings, be from the
ransmutability of Air into Water; and that he informs
is before, that reasons tells us that more then ten parts
f Air, will not serve for the making one of Water,
I think, saith he, twenty would be too little: if so ma-
ny parts (I say) of Air, be too little to make one
of water, and yet so much water is made (accord-
ing to his own supposition) as serves to moysten
Stone-Walls, and Floors, in moyst weather, before
rain; then what must supply the place, and fall into
the rear, of so much transmuted Air: The water
thence made is but as one to ten, or twenty, which there-
fore cannot supply the necessary vacancy, because one
cannot make up nine, much less nineteen: Where-
fore a horrible vacancy would (if this Doctrine were
true) long ere this, have surprised the body of
Air.

34. Ye

34. Yea and suppose we should, with him, admit of the possibility of the transmutation of Air into Water, in the bowels of the Earth, for the furnishing of Springs, [for such Transmutation (saith he) I cannot deny], and keep our proportion of twenty to one: What a vast *Vacuum* (long ere this) had the *Mundane Systeme* groan'd under? Which would have impos'd one of these two grand absurdities thereon, *viz.* either the circulation of bodies, one upon another, (requisite for the maintaining the unity, and intirenes of the World) would be intercepted, by the great contiguous *Vacuums*, which must follow, wanting other bodies, so to tear themselves in pieces, as to supply the place of the deficient Air; or else, those who live in the last Ages, or the longest, might have cause to fear, least the same mishap might fall to their lot, as happens to those poor Animals, that get into Squire *Boyl*'s Air-pump *viz.* to dye of Spasmes, and Convulsions, through the thinness of the Air, which would be so interspersed with contiguous *Vacuums*, made wider yet by the frequent transmutation of Air into Water, as that we should not be able to live therein: or lastly, we should constantly be expos'd to the same injury, that those are, who travail over the Mountains, call'd *Andes* in *America*, where the Air is so thin, and rarified, as they travayl not without danger of being stifled, for want of Air: and therefore usually they carry Sponges moystened with Water, for the condensing the Air, or the vapours therein; which Air is so dispos'd there to Inflammations, as that Travellers (as the Ingenious *Kircherus* observes) seeme to belch forth flames, and being all in a sweat, appear as if incircl'ed with Fire.

35. I

35. I must needs (indeed) grant, that the Air th its *Vacuolams* or little *Interſtices*, its texture ing like a net, or ſpong, by which it becomes the ore capable of being as a vehicle, for tranſmitting rifyed Water, and other vapours of the *Atmoſphe-*, becoming thereby, the better Subſervient to e performing the great circulation of water, from ie Sea, and Earth, up to the Clouds, and from ience down again, to the Earth: but that the moy-ure in the Air, ſhould be reputed Air tranſmuted ito Water, *viz*: That which falls upon ſtone-walls moyſt ſeaſons, is ſo abſurd, as it's enough to onfute it to name it: So that we may conclude, hat the moyſture in the Air, which ſettles it ſelf pon the Walls, and floors of Stone-buildings, nei-her is, nor ever was Air: and that the tranſmuta-ility of Air into Water, in the bowels of the Earth, is impoſſible; and laſtly that Springs, *viz.* ie *fontes perennes*, have not their Original from Rain, and Snow.

36. Thus I have run through the moſt conſidera-le things which the Doctor offers, in order to the con-rming his opinion of Rain, and Snow Water, to e the Original of Quick-ſprings, and all along (I hink) have probably (if not demonſtratively) o-erturn'd his Opinion, together with the grounds, ar-guments, and reaſons thereof. I might (I confeſs) nultiply more words, in proſecuting at large, his whole diſcourſe; but ſtudying brevity, I have couch'd ll he hath to ſay, that is any way pertinent to his purpoſe; ſaving the ſtory he relates, out of Dr. *Heylin*, concerning the Iſland of *Cyprus*, in the *Mediterranean* Sea, which (without reflection on that worthy Author, who, as well as other Hiſtorians may probably take many things upon truſt) which

I say, as to the verity of matter of fact; I should very much scruple, *viz.* That a drought should continue so long, as thirty six years, so as all the Springs, Torrents, or Rivers, were dried up; and that in the dayes of *Constantine* the Great: It's very probable, he had it by Tradition, which many times to wing Fame, makes large plumes. That an Island so near the *Mediterranean* Sea should want rain, for 36 years together, would certainly put an ordinary credulity upon the Tenter-hooks, and stretch a *Thomas*, beyond his ordinary pitch; for, of all places Islands are the most frequented with Showers: And that it should be done designedly by God, upon a miraculous divine account, I do not well understand because that has its ends, and aims, for the punishing the Natives, where judgements are brought forth, which done, they frequently cease; but here (according to the story) they were forc'd to forsake the Island and to seek for new habitations; so that probably it may pass for a drought in *Utopia*.

37. And lastly, the two Rarities, he mentions that are to be found; upon the Castle-Hill in *Scarborough viz.* the deep Well, which reacheth to the bottom of the rock, which hath no water; and the spring-Well, which is within half a yard of the edge of the rock, towards the Sea, which never wants water, which (he saith) doth somewhat illustrate the point in hand: The first of which seems (to me) onely to be a Well digg'd, within whose compass no Chanels have happened, and therefore it is dry; for so narrow a compass, as a Well is, may sometimes happen to miss of subterraneal Chanels. And as for the other, which is so neer the edge of the Rock, towards the Sea, which never wants Water, I look upon it as supply'd from

th

ſame cauſe, that other digg'd reſtagnant Wells
, *viz.* from Land-ſprings, which are feed from
in, or Snow Water, which yet makes nothing
reality, towards the confirming his *Theſis*; for
is no current Spring, to the beſt of my remem-
ance: which yet ſuppoſe it were, it will not be
eaſy to conceive the manner, and way of its ſup-
y, when I have propounded what I have to ſay, in
der to the eſtabliſhing a new *Theſis*, which will be
ſitive to the point in hand.

38. And that is (as I hinted before) from a
culation of Water, in the *Terraqueous* Globe,
the mediation of Subterraneal Channels along the
bulum bulliens, from Sea to Sea; yea and from
e Sea to the Heads of Springs, and from them into
ivulets, and thoſe into Rivers, and thence into the
cean; and ſo circulates round: which alſo in-
udes an other circle of Rain, and Snow,
hich firſt ariſing by exhalation from the Sea, and
arth, is carryed down again, upon the Earth, and
a; joyning Iſſue with rivulets from Springs,
ell Rivers, which again diſcharge themſelves
to the Sea.

39. So that a Circulation of water is as juſtly
quiſite (according to the order, and appointment of
e primitive Cauſe) for the upholding the *Symmetry*
parts, and intirenes of the whole *terraqueous*
lobe, as the Cirulation of blood is neceſſary for
ie preſervation of life, and vital functions in the
Microcoſme or body of man: The earth can no
ore produce Vegetables, or Minerals without this
onnatural circulation, of water repleniſh'd with
eleſtial influences, than the blood in the body of
an can produce Vital, or Animal Spirits, requi-
te for abſolving the functions of life, without its

inbred

nbred circulation: which concatenation of parts in the circulation thereof, gave cause to some Ph losophers of old, to call the world, a great *Animal* either because that *animarum omnia plena viz.* th the Seeds of all things are at hand, and at the bec of the primitive *Fiat,* alwayes at work; or because the great *Symmetry* of parts, or coordinate circulation of the constituent Particles of the World, whose pr portions were so exact, and actions upon each other, the circle of nature, so uniform, as if actuated by son *Panspermion* or universal operative Spirit

——*Spiritus intus alit, totumque infusa per orbe*
mens agitat molem——

40. Not to say, how Analogous the Sea, an *Hydrophylacia,* those great Cisterns of Water, ar Springs of the Deep (that in *Noah's* Food, joyn Issue with the *Cataracts* of Haven, for drowning th World) are to the heart of the *Microcosme*: no how Analogous the Channels of the *Quellem or S bulum bulliens,* which cary the Waters into the utte most circle of the Earth, for the supply of Miner *Glebes,* Minerals themselves, and Vegetables upo the Green Carpet thereof, are to the Arteries, i the body of man; by which the blood circulat from the Heart, for the nourishment of the whole nor yet to determine the analogy of these circul ting Waters, further drawn up, by Solar exhal tions, which clime up the slender Threds of Aere *Syphons* into the *Capitol* of the Air, to be impregna there with Cœlestial influences, or Animal spirit (if I may so call them) which cohobated upon the own body, promote vegetation, yea and animati too, by becoming that *cibus occultus in aere,* which, the *Cosmopolite,* and other *Hermetical Ph losophers,* discourse at large: I say, not to determi

th

he Analogy of theſe Waters, repleniſh'd in their cir-
uit with Heavenly influences, with thoſe Animal
pirits in the little World, *Man*, which in the Head,
eceive a determination, for obſolving the functions
f ſenſe and motion

41. Nor laſtly, to determine thoroughly the
nalogy of water (whilſt circulating in the bowels
f the Earth, along the Channels of the *Sabulum*)
o the blood, whilſt circulating in the Veins and Ar-
eries of the humane body: though (I confeſs) to
luſtrate this Point, will not a little conduce, to the
olving ſome *Phænomina*, incident to our *Theſis*.

42. And firſt, we ſee that blood (whilſt circu-
ting in its proper veſſels) knows no ſuch difference
; either going up or down; For it to aſcend the
orta, and from thence up into other Arteries, which
e carried into the Head and Arms, is the ſame, as to
eſcend by other Veſſels, into the lower parts. The
ouriſhment, the blood gives, in the habit of the body,
hether carried upwards, or downwards, isthe ſame:
ea it aſcends (with as quick a motion) as it deſcends,
nd that becauſe it's carried in its own proper veſſels,
nd mov'd by the *Syſtole* of the heart, whoſe vibration
o parts (whether upwards, or downwards,) is equal.

43. Now in like manner, Water whilſt circula-
ng from Seas, and the *Hydrophylacia*, and carried
its proper Subterraneal Channels, along the
uellem, is in its proper place, and becomes the
ſother of Mineral Earths, Minerals, Metals,
ones, and Marcaſites; and ſo long knows neither
o, nor down; and can as eaſily (whilſt in theſe
hannels) climb up the tops of Hills, and Moun-
ins, and there make Springs, as break forth in
alleys, and in the Level of Plains: yea it can as well
ount the tops of Hills, and high Heaths, as the blood

in the Arteries, can ascend into the head: and all by the natural circulation of Water, set on work by the Original *Fiat*, for the upholding the functions of the *Terraqueous* Globe, where (if such a thing be *in rerum naturâ*) you may view the Perpetual motion.

44. Now that the *Quellem*, or *Sabulum bulliens* is the proper Conduit, and Subterraneal Channel for water to circulate in, whilst in the bowels of the Earth, is hereby apparent, That a true Quick-Spring never breaks forth, but this sand also appears; yea where ever any dig in the Earth for the said Springs they are not found, but at the bottom or verge of the *Fundus* of Mineral Earth, Clay, or marly ground, where sand is alwayes seen to break up with the living Spring, which frequently break forth under the Channels, and banks of River (whence it is that plenty of sand is wrought up in Rivers) also in Plains, Valleys, Heaths, Hills and Mountains, or in any places thereof, digg'd for Springs, are found, (as I said,) store of this Sand.

45. And that there are Subterraneal Channels, by which Sea's, at great distance, communicate with each other, will appear, first, if we consider the Ocean (which is the whole bulk of waters that compass the Globe of earth) is but one, which receives different names according to various Regions it washeth; as *Oceanus Atlanticus*, *Germanicus*, *Deucalidicus*, *Septentrionalis*, *Tartaricus*, *Aethiopicus*, *Mare Arabicum*, *Mar di India*, *Mar Del Nort*, *Mar Del Zur*, or, *Mare Pacificum*, *Archipelagus*, *&c.* And there is no In-land Sea which receive Rivers, and let none forth visibly, but they communicate with the Ocean.

Thu

Thus the *Mediterranean* Sea, is joyn'd to the *Atlantick* Ocean, *per Fretum Herculeum*, and to the Red-Sea by occult Subterraneal Channels, as the Story (related by *Kircherus*) of the Dolphin first taken in the Red, and soon after in the *Mediterranean* Sea: So the *Caspian* by the mediation of Subterraneal Channels is annexed to the *Euxine*, or black-Sea, and this to the *Ægean*, and that to the *Mediterranean*. Thus these great Seas in *Asia* communicate with each other, according to the mind of *Scaliger*, *Wendeline*, and *Kircherus*: So the *Baltick* communicates with the *German* and *Deucalidonian* Seas by the two Arms, *Bosnicum*, and *Finicum*, *per Fretum Cymbricum*.

46. In like manner the *Asphaltick* Sea or *Mare Mortuum* in *Palestine*, communicates with the Red-Sea, by the same Subterraneal Channels, and thereby are conveyed into the Ocean: So the Lake *Zaire* in *Æthiopia*, by the same manner, empties it self into the *Æthiopian* Ocean; And that great River in *Æthiopia* call'd *Fluvius Niger*, flowing from the Lake of *Nilus*, and being shut up, by a Chain of Mountains, in the Kingdom of *Nubia*, where privately breaking forth of the Western part of the Mountains, empties it self by Subterraneal *Meanders*; where, meeting with several other Rivers, increase them, and at length is carried into the *Atlantick* Ocean: After the same manner the River *Tigris* in *Mesopotamia*, being carried through the Lake *Arethusa*, meets with resisting *Caucasus*, thrusts down its head, into a large den, and after a great space of ground, peeps up again; where scarce passing the Lake *Thospis*, but it is begirt again with other Mountains, and hides it self again in Subterraneal Chanels, and breaks forth 24 Miles, on the other side of the Mountains, then continues to

flow, and neer *Babylon* is let into *Euphrates*.

47. Now I say, that these In-land Seas, Lakes, and great Rivers, do communicate with each other, and at length, are carried into the main Ocean; and that this is done by Subterraneal Channels, will be apparent as followeth: First that the *Caspian* hath intercourse with the *Euxine*, or black Sea, by such passages, is evident; because it receives into its bosome, a constant flux of great Rivers, and lets none forth (visibly) by any arme into the Sea; and and yet, notwithstanding, is not at all increased; and *Kircher* guesseth, that before the deluge, it might be contiguous with the Ocean, overrunning all the Sandy Desarts of *Tartaria*, and afterwards was broke off by the Chain of the Mountains of *Caucasus*. This is onely conjectural, but however it appears, as if it were a Lake shut up on all hands, having Rivers let into it, but none let forth; and yet shews no footstep of inundation, and therefore, must of necessity, have communication with other Seas by private Chanels. The same is also further confirm'd by observation, That has been made upon that Sea (as *Kircher* reports,) by *Paradia Persa* in *Geograph.* *viz.* that when ever the Eastern Winds have rul'd strongly over the *Caspian*, at the same time in the *Euxine* Sea, the boylings has been observ'd greater then wonted, with a great agitation of the whole Sea: And on the contrary when the Western Winds blew strongly, upon the *Euxine*, the like perturbations have been seen, in the *Caspian* Sea; and when the *Caspian* hath by the agitation of winds, emptied it self into the *Euxine*, it is again repleniished by the like secret passages, from the *Persian* Sea, which is done by a kind of *Charybdis*, or *Vertex*, along the shore of the

Sinus

inus Persicus, whereby the Sea, seems to be ometimes) drunk up with a notable decrease, hich, by a fresh flowing of the Sea, the *Vortex* hid again: So that the *Caspian*, by Subterraneal hanels, receives a supply, from the *Persian* Sea, d by the like Chanels communicates, with the *Eu-ue* Sea.

48. That the *Asphaltick* or *Mare Mortuum* com-unicates, by the same hidden passages, with the d-Sea, is evident, because, upon the coasts of Red-Sea, which looks towards the Deserts of *abia*, at the noted place, call'd *Eltor* (as the in-isitive *Kircher* relates) where (not far from the re, from the bowels of the Sea) is found, at netimes, great plenty of *Naphtha* and *Bitumen* ich comes from the *Bituminous* Sea, call'd *Mor-m*, from its *Lentor* or toughness; it's call'd also *are Asphalticum*, from *Bitumen*, of which it has at plenty; whose shores have great store of *Bi-minous* Pits. Into this Sea *Jordan* runs, which ing no other way to emptie it self, but by these terraneal Chanels, carries along with it its *uminous* offspring into the Red-Sea, and that by hanel of 62 Leagues, for so far is the *Asphal-* from the Red-Sea. The same happens to all s, Lakes, and great Rivers, which receive others themselves, but let none forth by visible arms, therfore do it by Subterraneal passages.

9. Other Lakes there are, whose *Superficies* lies l with that of the *Hydrophylacia*, and therefore as Springs of the deep, kept for a reserve, for furnishing (upon occasion) the grand Circulation: ny other Rivers, besides what are named, do their Chanels in the Earth, for many miles to-ner, and appear again, as the *Rhine* in *Germany*,

Padus in the *Alps*: but especially *Guadiana*, of old call'd *Anas* a River in *Spain* which runs under ground, in a subterraneal Chanel, for 32 Miles together, and breaks up again; which gave occasion to the *Spaniards* to boast of their great Bridge, which will feed so many thousand Sheep: also the River *Rye* in *Yorkshire* (as Dr. *Wittie* acknowledgeth) runs under ground a quarter of a Mile, and then appears again.

50. And as by this Circulation of Water, all In-land Seas, Lakes *&c.* communicate, by Subterraneal Chanels, or by visible arms, one with another and at length with the common Ocean it self: So by the mediation of the same hidden pipes, conveyed along the *Sabulum*, the Water circulates, from the Seas, and *Hydrophylacia* unto the Spring-heads, which breaks forth at great distances, either in Level Valleys, Hills, or Mountains.

51. Now to determine the cause of the Water rising above the Level of the *Superficies* of the Sea up into the tops of Hills, and Mountains, a motion seemingly (and indeeed really according to the *Hydrostatick* Laws of water, considered as *Extravasated*) contrary to the nature of the weight of Water, will be here very considerable, being the main thing, objected against the *Hypothesis* of Springs taking their Original from the Sea. To the better understanding of which, we shall propound

52. First that this *Thesis* supposeth, and has hitherto partly proved, a Circulation of Waters, or a running round, from the Ocean into In-land Seas and Lakes, and those into each other, and back again into the Ocean; but whilst running into each other, they also run along other Subterraneal Chanels, at great distances under the Earth, until they

eak up into Springs, Fountains and Rivers, and
oſe often (as I ſaid) above the Level of the Sea:
ow in every Circulation or Circle, there is (ſtrict-
) neither beginning nor end, becauſe round as a
neel or ring; ſo that wherever you determine a be-
nning in a Circle, there alſo is the end.

53. But that we may be the more demonſtrative,
hall, for better apprehenſion, determine a begin-
ng of this Circulation; and that ſhall be from the
a, and from the efficient cauſe moving the Seas,
nich will be the laſt again in the Circle: and this
ſuppoſe to be the Winds, Storms and preſſure of
e *Atmoſphere* upon the ſurface of the Seas, toge-
er with the influence and *Ellipſis* of the Moon,
nich (probably) gives being to the *Flux* and *Re-*
x of the Sea, by cauſing a depreſſion of the wa-
s, at two oppoſite places in the *Terraqueous* Globe,
d an accumulation of the Seas, anſwerable thereto,
the two other *Quadrants* of the Globous Circle;
nich ſwelling of the Sea, is always oppoſite, each
mor poſſeſſing a whole *Quadrant* of the vaſt Oce-
: theſe Tumors rowl about the earthy Globe in
venty four hours, thereby agitating the whole
lk of the Seas, and driving up the waters by the
bterraneal Chanels into the *Hydrophylacia*, and
om thence by *Hydragogal Syphons*, up Hills, Moun-
ns, and high Heaths, to the heads of Springs and
ountains.

54. That there is (beſides the weight of Clouds,
orms, Winds, *&c.*) a preſſure of Water by Air,
evident in common *Hydroſtatick* Experiments;
r if you put down a glaſs-*Tube* into a veſſel of
ater, you will find the water in the *Tube* to be a-
ve the level of the water in the veſſel, and that for
other cauſe than that the preſſure of the Air upon

the ſurface of the water in the veſſel, is ſtronger than the reſiſtance of that Ayr that is pent up in the *Tube*; and that it is ſo, is evident, becauſe if you ſtop up the upper end of the *Tube* with your thumb or the like, you will find that the Ayr in the *Tube*, not having the liberty of recoyling, becomes ſtrong, and preſſeth ſo much upon the water, as that it raiſeth up the water in the veſſel to ſuch a height, proportionable to the compaſs of the *Tube*; which I have thus tryed, by taking a pint-white-Viol, fill'd with water to about a fingers breadth of the mouth, into which I let down a glaſs- *Tube*, ſtopping the upper end cloſely with my thumb, the Ayr in the *Tube* would ſo preſs upon the water, as that the glaſs would (in a manner) be quite full: but upon removing my thumb, the water would immediately run up the *Tube*, two or three fingers breadth above the level of the water in the Viol, and bubble up to and again, till it ſettled a little above the ſurface of the water in the Viol: and that ſtill becauſe water follows the ſtrongeſt impulſe of Ayr, which while the *Tube* is cloſely ſtop'd, beat down the water, and raiſeth it on the ſurface thereof whereas when the Ayr in the *Tube* has liberty again then the water being preſſed by the Ayr upon the *Superficies* thereof, mounts up ſpeedily above the level of the water in the Viol.

55. So in like manner we ſee in a Weather-glaſs which is (ſuppoſe) a Globe or Egg-glaſs inverted into a veſſel of water, which if you do, without altering the tone of the Ayr in the glaſs, the water riſeth very little within the *Tube*; and that becauſe the reſiſtance that is made by the unaltered Ayr in the glaſs: but if you heat the glaſs, and thereby thin the Ayr, you will find the water to aſcend gradually to a conſiderable height, above the level

he water in the veſſel, which ſuppoſe to be done in he foreſaid pint-Viol, and you ſhall ſee the water ve or ſix fingers breadth above the ſurface of the ater in the Viol: which when cool, ſet it before he fire, or expoſe it to the heat of the Sun (ſo the eat be proportionable) and you will find it deſcend s faſt, as it aſcended before.

56. Which argues, That Ayr, when altered by eat, gives a different (and that a leſs) preſſure upon he body of water, than when it is in its natural tex-ure; and therefore, upon the attenuating of Ayr, by heat, in an inverted oval glaſs, the water ſeems o be drawn up by a kind of *Suction*, as ſome would ave it, or to prevent a *Vacuum*, as others think: but moſt probably (if not demonſtratively) it a-ſcends gradually, and ſenſibly, for this cauſe *(viz.)* That when the Ayr in the glaſs, which before by heat was attenuated, is either by cold reduced into its priſtine form, or having (as ſo thinn'd) but a lan-guid preſſure, is therefore by a more ſtrong *Elaſtick* force of Ayr, upon the ſurface of the water, forc'd up, till it come to ſuch a height as the preſſure of Ayr within, and that without the glaſs, are brought to an *Æquilibrium* or equal poyſure; I mean till the ſprin-gy power of the Ayr, within and without the glaſs, be of an equal force, and there it ſtands, till the ſprin-gy power of the Ayr within the glaſs, by heat, be-comes dilated, and then it forceth down the water in the *Tube*, and makes the water in the Viol riſe higher, proportionable to the degree of the attenuati-on of the Ayr.

57. That the Ayr receives a conſiderable alterati-on by heat, is further confirm'd, by the experiment of inverting a glaſs *Cucurbit*, over a Candle, faſtened with tallow upon the bottom of a glaſs or earthen Ba-

ſon

ſon (wherein water is firſt poured, to the height of two or three fingers breadths) where the heat of the Candle doth ſo weaken the ſpring of the Ayr within the Glaſs, that it wanting the help of the circulating Ayr (always requiſite to the perpetuating the motion of bodyes) which is intercepted by the body of water, that in ſtead thereof, the Water it ſelf circulates, being forc'd thereto by the ſpring of the Air, that preſſeth upon it from without, and therefore it riſeth up to a great height of the glaſs-body (as I have ſometime ſeen upon tryal thereof) and puts out the Candle: which Experiment ſeems ſomewhat to contradict the former of a Weather-glaſs, though in reality it doth not; for although there heat makes it deſcend, but here it makes it aſcend: yet if we conſider, that in that of the Weather-glaſs, the Air in it is firſt thinn'd by heat, before the glaſs be put into water, and therefore when it's condenſed by cold, it draws up the water, or rather, the water is forced by the outward Spring of the Air, and follows it to an *Æquilibrium*; but in this laſt Experiment the glaſs is inverted into water, without any previous alteration of the Air therein: which being to ſupply the motion of a body, *viz.* the burning of the Candle, doth it for a while, but wanting a freſh ſupply from other Air without, to promote the Circulation thereof (always neceſſary for the motion of bodies) the want thereof makes the ſtrong ſpring of the Air upon the ſurface of the water, to force up the water it ſelf, into the glaſs-body: From which Experiments, reſult theſe following Corollaries, *viz.*

Firſt. That a Circulation of Air, is requiſite for the motion of all bodies; the Candle in the glaſs we ſee extinguiſheth for want thereof, by forcing up the water in lieu of Air. Secondly.

Secondly. That Air may be attenuated by the eat of the Sun, whereby the ſame portion of Air ay be made to extend it ſelf over a larger ſpace, witneſs the heating the glaſs, in the firſt of the two aſt Experiments.

Thirdly. That this Air thus attenuated and extended by the heat of the Sun, is the reaſon why ulinary fire dies or goes out, when the Beams of he Sun are caſt upon it, becauſe they thin the Air, and the Air is the natural Bellows of Fire, which Fire burns according to the intenſeneſs or remiſneſs of the Air.

Fourthly. That the Air thus thinn'd, makes way for water to aſcend up the ſmall veins thereof, which are like ſo many ſlender *Syphons*, by which it mounts from Earth, Waters and Seas up into the Clouds, for the ſupply of Rain and Snow; which *Syphons*, in droughty hot weather, are moſtwhat at work, carrying it upward, whereas in moiſt weather, the water deſcends by the ſame *Syphons*, and moiſten the Ground with Dew, and Walls or Floors of Stone-buildings, in wet Seaſons: ſo that the reputed Exhalations of moiſture by the Sun, for the ſupply of Rain, is no other than this gradual ſteaming up of ſlender *Syphons*, whereby water mounts inſenſibly the uppermoſt part of the *Atmoſphere*.

Fifthly. That in great heat of weather many Diſeaſes happen through the thinneſs of the Air; for the Air in the Lungs, is the Bellows of the vital Fire in the Heart, which if it become attenuated, either through a general heat in the Air (whence ariſeth frequently ſome *Epidemical* Diſeaſe) or through the obſtructions of the Lungs themſelves, whereby the Air, for want of ſoundneſs of Organs, becomes thinn'd before it come to volatize the Blood, in its current

current from the right to the left Ventricle of the Heart, cauſeth *Faintings*, *Laſſitudes*, *Cardialgia's*, *Aſthma's*, *Deliquiums*, and (in Women) *Swoonings*, *Palpitations*, rouſing up the *Spleen* and *Mother*, *&c.* yea (in fine) makes the Lamp of Life burn dark and dimly; whereas the Air, by cold, being reduc'd to its priſtine form, and the Lungs freed from obſtructions, quickens the vital Ferment, ſharpens the appetite, makes the vital Fire burn clearly, and makes evident, that the Ferments of the ſeveral Digeſtions are vital; for in cold weather, we find our appetites more acuated, our Ferments more vigorous, and the Digeſtions more powerful. But I will not (though I might) here further enlarge to ſhew how the Air in a due order, contributes to the invigorating the Ferments, and how much it conduceth in the change thereof, towards the curing Diſeaſes. But I proceed.

Sixthly. And (which chiefly concerns our preſent purpoſe) aſſert, That the heat of the Sun, contributes (by thinning the Air) towards the circulation of water, from Seas to Springs, and from water upon the earth, to Clouds; For the Sun whilſt he is (ſuppoſe) in the Northern Signs, eſpecially towards the Tropick of *Cancer*, caſts his rays pretty powerfully upon thoſe Places, which are within the oblique poſition of the Sphere (though not perpendicularly, as it happens to thoſe Places, ſituated under the right poſition of the Sphere, where the *Æquator* cuts the *Horizon* at right Angles) whilſt he is (I ſay) in the Northern Signs, by his heat he thins the Air of thoſe Regions; eſpecially, as thoſe Places fall under the *Meridians*, as ſome Places muſt alwaies do (the Sun in his ſuppoſed Diurnal Circuit, making Twenty four *Meridians*) the Air under theſe *Meridians* (eſpeci-

ally

y in those places where the Sun is, or inclines to *Vertical*) being attenuated, makes the Air circulate the more strongly towards the other *Quadrants* of the *Terraqueous* Globe, causing there a stronger pressure upon the Surface of the Seas; and this must be constantly done, because the Sun (really, or apparently) is alwayes in motion about the Earth, who in his Circuit thins the Air of those Places, which lie most directly under his Beams, and so makes the Air (as I may say) split it self (I mean as to its uniform texture) towards the Poles, where it causeth a constant pressure upon the Northern and *Atlantick* Ocean, and upon the *Mare del Sur* or *Pacificum*, towards the South; as also driving the Clouds (whilst he is Northern) into the South side of the *Æquator*, enough almost alone to give Being to Springs, by forcing the water along the Subterraneal Chanels, up at great distances up- the Continents.

Seventhly. That Air, attenuated in one place of the *Atmosphere*, is as much condensed in an other part thereof; and what it is deficient of force in that thin'd part, so much more it is of force in the other; as to give a proportionable pressure, answerable the weakness of its Spring elsewhere.

8. Now the natural pressure of Water by Air, and the upper parts of water upon those below, is by perpendicular lines; and that by *Vorticles*, as *Archimedes*, and after him *Des Cartes* and *Kircher* demonstrate: Natural (I said) because accidentally by Winds or Storms, the motion may be oblique; so supposing the Seas to be at their bottom perforated in many places, with Subterraneal Chanels and set *Vortices*, the surface of the Sea being press'd by Winds, Clouds and Storms, the circulated and condensed

condenſed Air (which recoyls from the other thin
ner part of the *Atmoſphere*, where the Sun-Beam
have attenuated it) together with the oblique moti
on of the Flux and Re-flux of the Sea, begins th
motion towards the grand Circulation.

59. For the *Superficies* of the Ocean being preſs
by the foreſaid weight, ſends down its water b
Subterraneal Chanels into the *Hydrophylacia* or con
mon Ciſterns of water, which are the Springs
the Deep, where it not only comes to a level, wi
the ſurface of the Sea, keeping a *Horizontal* Para
lel therewith (which any water will do in a *Syph*
or duplicated *Tube*, though unaſſiſted by any con
derable preſſure of the Air) but alſo, by the for
of the preſſure upon the ſurface of the Sea; it
eaſily carried up above the level thereof, into Hil
Mountains and high Heaths, which breaking for
give Being to Springs and Fountains; which run ir
many Rivulets and from thoſe into larger River
eſpecially joyning iſſue with Rain and Snow-wat
and from Rivers are again carried into the Seas.

60. That this is a Circulation, whereby wa
is carried in a round, is apparent, becauſe the S
being preſſed by the foreſaid natural Cauſes, are c
ried, by Subterraneal Chanels, along the *Sabu*
bulliens, breaks forth at Spring-heads, in Valle
Hills or Mountains, runs along into Rivulets, wh
with ſhowers, moiſten the earth, and then car
up again by Aereal *Syphons*, in droughty Seaſon
to the Clouds, makes the *Atmoſphere* ponder
which, together with Winds out of Subterra
Caverns, and the ſtrong Spring of the Air, rec
ing from the reſt, attenuated by the heat of the
together with the Current of all Rivers into the
All theſe (I ſay) joyntly together, conſpire the

re of the Seas again, into the heads of Springs; d ſo ſtill more on in a circular motion: and that in der to the ſupplying the grand Concerns of the *erraqueous* Globe, both for Mineral and Vegeta- e productions.

61. That the Air doth preſs, is evident in *Pneu- atick* Engines, as that of the Wine-Coopers Bel- ws, which will by the meer preſſure upon the ſur- ce of Wine from Air, force forth the Liquor in- other veſſels; the ſame happens in Pumps, which y forcing forth Air, carry up the water; as alſo a pair of Bellows be ſo contriv'd, as to be plac'd over veſſel of water, cloſed up on all ſides, with two Pipes ing to the bottom of the veſſel, ſo ordered as whilſt ne one Bellows is drawn up, the other falls down with flap, which, preſſing upon the ſurface of the wa- r, makes it yield, which finding no other way, ill mount up (ſuppoſe two Pipes which are carried to a Ciſtern at a competent diſtance) above the ſſel, which again being let forth by an other Pipe the oppoſite ſide, falls into a chanel, which car- es it upon a Water-wheel, and gives motion (ſup- oſe) thereto; the *Axis* of which, turns about a uare handle, to which is faſtened the handle or ole of the Bellows, poys'd upon a leaver, plac'd ually betwixt the two Bellows: ſo that as the wa- r runs out of the Ciſtern it turns about the wheel, nd that moves the Bellows, which preſſing the wa- r in the veſſel, forceth it up again into the Ciſtern, nd ſo in a round; whereas if it could ſo be con- iv'd, that this water which moves the wheel about, ould by an other chanel, be conveyed into the top f the water-veſſel, it might give a good probability f finding out (at leaſt fairly hinting) a *Perpetual Motion*: A Type of which may be ſeen in *Kircherus* is *Mundus Subterraneus*.

62. So

62. So in like manner, the ſurface of the Seas, being preſs'd by the foreſaid cauſes, which joyntly together conſpire its preſſure, as the bellows doth the water in the Veſſel, they force it up along Pipes or Subterraneal Chanels, to the Head of Springs and Fountains: Which Pipes, by how much the more they are oblique in their windings, by ſo much the more eaſily, the Water is carried up to the tops of Hills, and high Grounds.

63. And as the Air, by its own innate Spring doth preſs, ſo ſometimes it becomes more weighty by having the burden of Clouds lying and preſſing upon it, which alſo contributes to the former preſſure upon the ſurface of the Sea; For we ſee, that when the Clouds are about to diſcharge themſelves in Showers, and that in large drops, that they ſo compreſs the texture of the Air, as they cauſe a Wind commonly to go before each Shower, which is nothing elſe, but a *Latio Aeris*, or Motion of the Air from the preſſure of the Clouds, and the greatneſs of the drops, which compreſs the Air, and bear it down, till it hath made its thorough paſſage to the Earth, whereas, when the Rain comes down in ſmall drops, and thin threds, it paſſeth gently through the *Vehicle* and *Colander* of the Air, without any conſiderable preſſure thereof.

64. Now for further Demonſtration, let this following experiment be obſerv'd, where ſuppoſe (See Figure 1 in the Scheme at the end of this Book,) an *Oval* Glaſs, with a long neck, revers'd ſignified by *a*, *b*, *c*, and a Glaſs *concha* annexed thereto, by *k*, *k*, *k*, with a little Pipe noted by *e*. Now let us imagine the *Oval* Glaſs firſt to be heated, whereby the Air contain'd therein, becomes thinn'd: then immediately let water be poured in at *c*, by a Glaſs-Funnel

el; till the Tube is fill'd at the parallel *F*, *G*, where e Spring of the Air in the *Oval A*, *A*, *A*, is so eakened, as that when the cold gradually comes, e Air concentering it self thereby, the water in the ube falls from *F* to *N*, *O*, or *H*, and riseth up as uch from *G* to *L L*, or *M M*. But when the Spring f the Air, in the same *Oval*, is set fresh a work gain by heat, it gains a fresh pressure, and forceth own the Water from *M M*, *L I*, *G* to *I*, and rais- h up the water answerably, in the other side f the Tube, from *H* to *O*, *N*, *F*; and thence to *K K* , and *C*, where it comes forth into the *Concha*, nd thence runs out at the Pipe *C E*.

65. So in like manner, the Air in the *Atmosphere*, resseth by its Spring, set on work by the foresaid auses, upon the Surface of the Sea, which lyes in ight-Lines with the *Hydrophylacia*, according to ne Line *F*, *G*, which may represent the level-sur- ice, both of the Sea, and springs of the deep: Vhich being press'd at *G* towards *I*, raiseth up the Vater, from *F* towards *C*, which represents high Hills, and Mountains, where Springs break forth, ither at *C*, or *E*. Hence we see, that as the Spring f the Air is invigorated, or weakned; so its pres- ire upon water, is more or less.

66. The second Figure (See the 2 Figure of the cheme) is the same, save the *Oval* which it wants, aving instead thereof, a small *Concha*, where the Air from without has a free pressure; and that part f the Tube to be larger, and the other part revers'd, o be much smaller: which suppose to be fill'd with Water at *A*, where by the Solitary pressure of the Air, contain'd within the cavity of the Tube, made by the Palm of the Hand laid thereon, forceth the Water, which is in the Pipe *A B C*. with a great

ſure, from *F* to *C*, and that too, a great Height above *C*: in the ſame manner the Air in the *Atmoſphere* being preſſed with Winds, Storms, Clouds, and condenſation thereof, and the like cauſes aforeſaid, forceth upon the ſurface of the Sea (which with the *Hydrophylacia* are alwayes at an *Æquilibrium* according to the Line *F G*) beyond the *Æquilibrium F G*, into the *Conchas* of Mountains *E*, *K*, *C*, which are much higher then the Mathematical Circle of Water (I mean then that circle of Water, from which all Lines drawn to the Centre, are equal): So that, ſuppoſing a conſtant preſſure, upon *A*, or *G*, which is certainly done at all times by ſome, or all of the foreſaid cauſes, the Water muſt as conſtantly be preſs'd from *F*, to *K*, and *C*; and there as certainly make Springs to break forth: for from the ſame cauſes alwaies at work, the ſame effects are alwaies produc'd.

67. Hence the great difficulty may eaſily be reſolv'd, why Springs are ſometimes found upon the tops of the higheſt Mountains; and that becauſe the bulk of Waters, to be carried above the *Æquilibrium F. G.* is in a manner inſenſible, in compariſon of the great weight, and preſſure of the Water in the Ocean: and that thus (as the ingenious *Kircher* computes) that the *Semidiameter* of the Earth is 3600 Miles, of which 60 anſwer to every Degree of the *Æquator*: which *Semidiameter* is computed from the *Superficies* of the Sea, where the lines (as I ſaid) from any part thereof to the Center, are equal: and ſeeing that the *Baſis* of Mountains are level with the Mathematical globous earth, ſo that the tops of theſe Mountains, muſt be very protuberant: Therefore it onely remains to be demonſtrated, how much higher the Sea ought to mount beyond its *Æquilibrium F, G*, or *Periphery* of its globous circle, to make Springs break forth on Mountains. 62

68. To which purpose, suppose the line (See the Figure in the Scheme) *A B* to be the *Semidiameter* of the Earth, 3600 Miles long, which terminates the line, *D, E,* which cuts the *Superficies* of the *Terraqueous* Globe in the point *B*. Now suppose the height of the tallest Mountain, to be *C*, which added to the *Semidiameter* of the Earth, *A, B*, will produce the line *A, C*, which expresseth the top of the highest Mountain: Therefore as *A, B*, is to *B, C*, so is the *Semidiameter* of the Earth, to the highest Mountain, so is 3600, to 30, with which computing the immensness of the surface of the Ocean, pressed on all hands with the foresaid causes, makes it very easie to apprehend, how readily Water may be carried from the Seas and *Hydrophylacia*, to the heads of Springs in the highest Mountains.

69. For the proportion, betwixt the *Semidiameter* of the Earth 3600, (together with the vastness of the immense Ocean, forc'd by the Spring of the *Atmosphere*) to the Line, *B, C, viz.* the top of the highest Mountain 30, is in a manner insensible; and the more insensible, by how much Hills, or Mountains are less in height then 30 Miles: insomuch that (as the learned *Kircher* observes) the Picke of *Teneriff*: *Olympus* in *Asia*: *Ætna* in *Sicilia*: *Caucasus* in *Asia*: *Otho* in *Macedonia*, would be to their proportion, with the vast Ocean, disappear: whence he concludes, (*Unde infero (inquit Kircherus) Oceani aquas, sive fluxu refluxuque, sive tempestatibus, ventorumque vi, sive nubium descensu pressas, nullo negotio, etiam in altissimos vertices montium, ejaculari posse.*

70. And as this pressure of the Sea, by the said causes, is constant, and as constantly keeps Springs, and Fountains in flowing upon Mountains, and re-

mote places upon Continents, ſo alſo thereby the *Hydrophylacia* are alwayes kept fill'd, from whence, as from a Store-houſe, the *Alps* comprehended by *France*, *Germany*, and *Italy*, pour forth ſo many Torrents, and Rivers, which by a perpetual current never have ceaſed, nor never will (as long as the Wheels, and Springs of Nature, are kept at work, by the Great Maſter *Mechanick* of the world) ceaſe to flow: from which Springs of the deep *Danubius*, *Rhenus*, *Moſella*, *Moſa*, *Rhodanus*, *Araar*, *Padus*, *Ticinus*, together with other ſmaller Rivers, have their ſupply.

71. Beſides, Some Springs ſeeme to emulate the Flux, and Reflux of the Sea, as that which *Pliny* tells us of, in the *Gades*, which obſerves the motion of the Sea, in ebbing, and flowing: and perhaps that in the Peake of *Derby-ſhire*, may be from the ſame cauſe, which ebs, and flows every 12 hours: And how Dr. *Wittie* comes to be ſure, that this laſt (together with the Spring at *Giggleſwick* in *York-ſhire* hath no correſpondence with the Sea, he might have done well to have inform'd us, that we might have been as ſure as he.

72. As for the Spring at *Gliggleſwick*, which ebs, and flows many times a-day, we may (perhaps not unaptly) attain to ſome Foot-ſteps of the knowledge thereof, if we remind (what I have already delivered above,) *viz.* that if a glaſs *Tube*, ſtopt cloſe at the one end with ones Thumb, and the other end let down into a Vial, or other veſſel full of Water: as ſoon as ever the air gets liberty, by removing the thumb, the Spring of air from within preſſeth up the Water 2, or 3 Finger breadths above the Level of the Water, and bubbles up to and again for a while, then ſettles to its ordinary pitch

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which is an exact resemblance of the Spring at *Giggleswick* and such like.

73. For in these Springs, the Air is so pent up, by the streightness of the Chanels near the Spring-head, and by the denseness of some interposing *Glebe* of earth: which may, and doth probably for a time, very much, (though not totally) intercepts the motion of the Air, which hinders the Spring from flowing alwayes to high, (as if the Air had liberty it would) therefore it onely flows at that time, when the pressure of the Water forceth it through the dense Earth, and gives thereby liberty for the Air, which before was pent up: for we see in all *Hydrostatick* Experiments, that water follows Air, as well as Air circulates after Water; and that Water alwayes obeys the more strong impulse of Air, though it be to ascend to a great height.

74. Now having run through all the causes, and demonstrated the reasons of those causes, which promote the grand Circulation of Water: it is now time to consider the final End, Aim, and Intention of the first Mover in Nature, who sets all these Wheels, and Springs a going, in the great Clock-work of the World, and who orders all things in Time, Weight, and Measure; and that to the end, that one part, and Wheel, may mutually promote the motion of an other, that all the parts, and motions thereof, may joyntly conspire the good, and intirenes of the whole. But that we may (in some few particulars) view the Wisdom of God, in ordering this Circulation of Water; and that it is not done in vain, but hath its various uses, and those of larg extent, for the benefit of man, and other Creatures, and that as followeth.

75. First, Waters, by this great Circulation, are

kept from putrefaction, and corruption; motion being to Waters, as it is to the vapours in the Air, *viz.* hinders them from corrupting, and as wind fan the Air from putrid vapours, so motion keeps Water from *Stagnating*, and consequently from putridness: and therefore a peice of raw flesh, laid in a constant current of Water, will keep from corrupting a considerable time.

76 Secondly, In times of drought, when Land-Springs are mostwhat dryed up, These *viz:* the Springs, Rivulets *&c.* contain'd in the great Circulation, serve for the use of Man, and Cattle; and that in places, at great distance from large Rivers: for the Quick-Springs, constantly moving in the great Wheel, are never dry, and that by reason that, where the cause doth perpetuate, the effect must do the same, but the causes as aforesaid are alwaies at work, therefore Springs (I mean Quick-Springs) must never fail, as long as the Fabrick of the World is upheld by the same *Fiat*, as at first.

77. Thirdly, By great Rivers, which are made of Rivulets, and Fountains, which in the great Circulation, run thereinto, we can easily pass from one Place, and Country, into an other; and that by Oaken vessels, which if the Water, whether in Rivers, or Seas, were *Stagnant*, could not move thereon half so well: so that in Ships, by the motion of the Sea, and Winds, we visit forreign Countrys; and the Merchants Traffique abroad, and that for a general good of Mankind.

78. Fourthly, By this grand Circulation, all Mineral Springs, for the health of man, are produc'd. For the Water circulating in the bowels of the earth (being pressed by the foresaid causes) as it meets with various Mineral Earths, and Salts, becom

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pregnated with the Tinctures, or tasts thereof, aking some slight solutions of the Mineral juys into it self, passeth on to the head of the next ring, where breaking forth, makes *Spaws* of fferent sorts, as *Vitrioline*, *Alluminous*, *Nitrous linous*, *Sulphureous &c*, according to the nature of e mineral *Glebe*, the Water passeth through to the ring-head, whence is the great variety of Wa-rs

79. Fifthly, Water by this great Circulation the bowels of the Earth, being dispers'd (as I ay say) by capillary veins, into the whole habit of e earthy body, is coagulated by various Ferments d Specifick Mineral, or Metalline Seeds, into such ke Bodyes: For (as we have else where demonrated) Water is the Material subject of all Mineals, and consequently of Metalline Bodyes; and that needs onely different Seeds, with their various *Archeal* Ferments, to shape it into all sorts of boyes, found in *Vulcan's* shop, each according to its eminal difference. For from whence proceeds the reat variety of all Stones, Marcasites, Minerals, lineral Earths, Metals *&c.* but from Water shap'd y Seeds, and Ferments into bodyes under various sguises? Which here, by this grand Circulation, is wayes at hand, and ready for the Seminal *Faber* *Vulcan* to work upon.

80. Sixthly, This circulation, joyning Issue ith that lesser one of Rain, and Snow, Impregnaed with Cœlestial influences, doth make the round fruitful, and makes the *Superficies* thereof, ring forth all manner of Seed: Bearing plants and rees, according to the kinds of the first Seeds, or eminal Principles, implanted by God therein, at he first; and so being impregnated with the Salt of

the Earth; promotes vegetation upon the green carpet thereof: For when when I view Plants, and Trees, in their Verdure in the Spring or Summer-times, methinks, I see nothing but Water altered by Seeds, and Ferments, which thereupon (*Proteus* like) puts on various Garbs, and appears in different dresses: and to me its as easy to apprehend, how Water moved by the foresaid causes, riseth up into Hills, and Mountains, there breaking forth into Springs, as to conceive, how Water riseth up into the tops of the highest Trees, and there to bud forth into leaves, Fruit, and Seed: or how between the Bark, and bole of the Tree, Water should ascend up, like as in *Syphons*, and that in some Trees, without any considerable alteration of taste, or consistence, from simple distill'd Water, save a slight touch of a Medicinal *Odor*; as for instance, cut a Vine in *January* or *February*, but especially in *March*; and you shall find it weep forth a deal of insipid Water, at the knots or joynts where it's cut: so if you wound a Branch of the *Birch* Tree, or lop the bole thereof in *March*; if it be done below, near the ground the *Latex* thence issuing, is a mere insipid Water; but if a Branch, of about 3 Fingers thickness, be wounded to the *Semidiameter* thereof, and filled with Wooll, it Weeps forth a *Subacid Liquor* in great abundance, insomuch that in one day, such a wounded Branch, may give 8 or 10 pound of the Liquor: concerning the vertue whereof *Helmont* saith, *Qui in ipso lithiasis tormento solatur afflictos, tribus quatuorve cochlearibus assumptis*, *viz.* that it gives help, in the torments of the Stone, being taken to the quantity of three or four spoonfulls: which he saith, is *Balsamus Lithiasis merus*: which great quantity of Water, must come from the roots

nd that must receive it by its Fibers, from the Capil-
ary Veins of the earth, carryed thither by the grand
Circulation of Water, with its included circle of
Rain and Snow, which (the one meeting with the
other) becomes the material subject of all Plants,
Trees, and Fruits of the earth, which earth is onely
the *Matrix*, where water becomes coagulated, by
the Fracedinous *Odor* thereof, and by the Fermental
operation of Seed, into all sorts of Vegetable *Con-
cretes*, which spring up in the *Superficies* of the
Earth. Now the Medicinal virtue that this Liquor
hath, is from a Ferment which it receives from the
Tree, as it passeth along the Channels thereof; for
the same Liquor, weeping from a wound of the bole,
near the Earth, hath not that virtue; Therefore it
must be from a Medicinal Ferment it receives from
the Tree above that place: also if a *Pompion* be cut
(while it's growing) will (as a Friend of mine told
me, upon his own triall) run a great deal of a limp-
pid Water, which by the heat of the Sun, will be
congeal'd into a pulpie substance: and that because
the Water, which comes for the nourishment there-
of, hath received a Specifical Ferment from the *Pom-
pion*, which if it were intire, would presently be
coagulated for the growth and increase thereof, but
being let forth by a wound, is at last, by the heat of
the Sun, coagulated into somewhat *Analogous* there-
to: so probably *Melons*, *Cucumers*, *Hollands
Squash*, *&c.* would, if wounded, do the like;
for they have great store of Water, which comes for
their supply, which by the Ferment of the Plants,
is easily coagulated into the pulpous substance thereof:
so the heads of wounded Poppies, weep forth a con-
siderable quantity of Liquor, which condens'd by
the Sun, becomes *Opium*, or the heads of the same
bruis'd,

bruis'd, make *Meconium*. In both which, Water is the material subject, which passing up the secret *Meanders* of that Plant, is by the Ferment thereof (particularly appropriate to that Plant, and its kindes in the same family) determin'd into that coagulating juyce, of which *Opium* and *Meconium* is made; and so of the rest of Plants, Trees, and Fruits. Thus we see how Water (in the great Circulation, taking in the lesser of Rain, and Snow, which is repleted with a volatile *Nitrous* Salt, the one joyning issue with the other) becomes the Material subject of all Vegetable Fruits of the Earth.

81. Seventhly, And lastly, The Circulation of Water, passing through varieties of Glebes, in the *Meanders* of the Earth, makes different Waters of various uses for the service of man: as for instance some Waters will bear Soap, and Yeast, *viz.* River-Water; and some River-Water better then others: also some Waters are better, and more peculiar for Bleaching, dying, Washing, Brewing, salving, boyling of Meat, *&c.* than others.

82. Now the great difference, as to the common use of Waters, is betwixt that of Springs, and that of Rivers; for the Rivers are generally supply'd from Springs, in the round of our Circulation, yet passing along the Surface of the Earth, and sometime running down Hills and steep places in torrents, and mixing with Rain-Water, as it runs along into Rivers, it both may and doth give a considerable difference to Waters in Rivers, from the same, as running immediately from Springs: and that because it washeth over several sorts, or soyls of Earth, as Marle, Limestone, Manur'd ground, and the like, where it licks up the *Nitrous* Salt, wherewith several Sorts of Earth, are repleted, and by the help of this

his, becomes *Saponary*, *viz.* bears Soap well, bears yeast, bleacheth well *&c.*

83. Whereas simple Quick-Spring Water, passing through the Colander of the *Sabulum*, is frequently drein'd of all the Salts, it had imbib'd in other more *Patent* places of the Earth, and perhaps only retains a small portion of a minute *Sabulum*, inconspicuous in Water, but remains visible after distillation thereof, or being little indiscernable Fragments of some Marcasites, or Stones, which it razeth off, as it runs along: which water (I say) being percolated from all Salts, through the strainer of the *Sabulum*, hath not that *Saponary* property, that River-Water hath; and therefore will neither wash, bleach, nor bear yeast. Besides, many Land-Springs, which drein through *Nitrous* Earth, empty themselves, by their proper Chanels, into Rivers: Which also frequently, upon sudden falls of Rain, overflow low grounds, and so do wash from thence a *Nitrous*, or *Alkalizate* Salt, which contributes much to the making River-Water more useful, for the common intentions of Washing, Bleaching, Brewing, *&c.*

84. For, that which makes Soyls more fertile, makes Waters also more useful, which is an *Alkalizate* or *Nitrous* Salt; For what doth Limestone, Manure, Marle *&c.* add to the inriching of Soyls, but either by impregnating the ground with a *Nitrous* Salt, or making the Earth to become more Magnetical, to center upon it self the Volatile *Nitrous* Aereal Salt, which floats to and again, in the *Atmosphere*: whence it is, that the Country-man lets some part of his tillage or arable ground, ly fallow every year, on purpose that this *Nitrous* Salt which circulates in the Air, and is the main wheel of Vegetation, may coagulate it self upon the ground, made fit thereto, by

by the addition of Limeſtone, Marle, or Manure; and thereby become fitter to bring forth many fold: which if the ground be exhauſted of this Salt, as in a few years, by bringing forth much Corn, it will, then it becomes barren, until it be manur'd by dung, aſhes, limeſtone, or marle, and is laid *fough* or fallow (as the Country-man calls it,) which in the concluſion, impregnates the Soyl again, with a freſh Salt, or ſpirit, whereby it is made fruitful. You are the Salt of the Earth (ſaith our Saviour to his Diſciples) which, if it hath loſt it's ſavour, where-with ſhall it be ſalted: So that the Earth hath a Salt which makes it fruitful, and the loſs of that Salt makes it barren and uſeleſs.

85. As for Lime-ſtone, that contributes to the manuring, and inriching of ground, after a double manner; and that firſt by communicating its *Alkalizate* Salt (which it hath in it) to the ground, and next (which indeed I think is the cheif) that it becomes as a proper *Magnet*, to attract (if ſuch there be) or center upon it ſelf, the volatile fructifying *Nitrous* Salt, which floats in the Air: in which I am confirm'd, becauſe the Country-man obſerves, that though it be quench'd already with Water, or Rain, before it be thrown upon the ground, (as moſt frequently it is) yet nevertheleſs, it makes the ground as fruitful, as if it were not; yea Lime, that hath laid long, and that one would think hath had all its Salt waſh'd from it, if it be thrown upon impoveriſh'd ground, will yet make it fruitful. The ſame will the *Faces* of Soap-Aſhes do, after all the Salts are waſh'd, both from the Aſhes of *Breccans* or *Brogg* (as they call it) and from the Lime: which is much us'd (where it's to be had) to lay up grounds to fertilize them. And that certainly for no other cauſe,

cauſe, but that it helps, as a proper *Magnet*, the *Nitrous* Salt to ſettle upon that ſoyl: whence it is, that they plow that ground often, thereby expoſing new parts of the Earth to the Air, to become impregnate with the Salt thereof: ſo dung, and aſhes have Salts in them, the one a volatile, the other a fixt, but are both much altered by a Ferment both from the Air, and Earth, before they become tranſmuted into the *Leffas terræ*, or are turn'd into the true fructifying *Nitrous* Salt: Alſo Marle doth inrich Soyls two manner of wayes; the one is by having a *Nitrous* Salt inherent in it ſelf, as I have found, by imbibing it in diſtill'd Water, Filtering, and Evaporating, where I have had actually a *Nitrous* Salt: The next way is, by being as a *Magnet* to the *Nitre* in the Air, to make it ſettle upon that Soyl, where Marle is moſt found; therefore that Soyl which is naturally a Marle, or is (at leaſt) well manur'd therewith; keeps in heart as the Country-man ſaith) the longeſt, and will need little, or no other aſſiſtance, for many years, becauſe its a proper ſort of *earth* for the fructifying *ſalt* in the *air* to ſettle upon, which makes that *ſoyl* hold fruitful the longer. And from the different diſpoſitions of ground, in order to the degrees of reception of this *ſalt* in the *air*, the great variety of *ſoyls* proceed.

86. And from the ſame cauſe, it's very probable that the fertility of *Ægypt* is promoted, by the overflowing of *Nilus*, for Rain-Water doth contain of this Salt, which (as I ſaid before) being carryed over the Country by Winds, are not let down, (ſave what moyſture drills down by the *Syphons* of the Air) till the clouds come to the Mountains of *Æthiopia*, where being let forth in great abundance, they waſh down along with them a *Nitrous* Salt from the Earth of the Mountains, which ſtill adds to

the fertility of the ground; and that the Air, at that time, hath plenty of this Nitre in it, is found, because if a turfe be digg'd up from the ground (as they usually do, to know the height of the floud) and weigh'd, they do find it to increase considerably; as the Water doth in height, with a moysture, which is impregnate with a Nitrous Salt: For the Earth of that Country is very *Magnetical*, and therefore is fertile, without showers falling immediately thereon and in lieu thereof, hath plenty of dews (which commonly has the greatest quantity of the fructifying Salt in them) and the flowing of *Nilus*, which River is strongly impregnated with this Nitrous Salt, from which much Nitre is made, and brought into these Northern parts.

87. Yea, all the great difference of natural Soyls, (for some far exceed others in fruitfulness) seems to depend upom this very hing, *viz.* that some are naturally more replete with, or at least, are more magnetical of the Nitrous Salt, then others.

88. Thus we see, that it's a Nitrous Salt, that both fertilizeth Earth, as also maketh River-Water serviceable for the foresaid uses: for as it distinguisheth Earths, as to their fruitfulness, so likewise it makes the difference betwixt River and Spring-Water: and that it doth so, I am confirm'd by an experiment I tryed, for my better information therein *viz.* I took of a Well-Water in my own ground, which is supply'd by a true Quick-Spring (though it never runs over, because in our greatest droughts, it is never nere dry) I took (I say) a gallon or more of this Water (which alone never bears Soap,) in which I caus'd two dragmes of Nitre to be put, over night: which heated the next morning, I ordered the Maid to put some of the usual Soap thereto, and

to

wash me some linnen therein, which she did, and made a very good Lather (as they call it) and as as fit for the purpose (and perhaps better) then she had taken so much River-Water: The like I suppose) Spring-Water would do, if it were offered to run through a Tub fill'd with Earth: especially if that Earth hath not been too much exhaued of its Nitre, by previous Vegetation.

89. So that we see that Water in its great Circution, with its included circle of Rain, doth (in s passage through, or over such Earths, pregnant ith this Nitrous Salt) become so much salturate erewith, as to make River-Water useful for the oresaid purposes, towards which, as also to Vetation, Rain-Water doth not a little contribute, y carrying along with it the influence of this *Aeal* Salt: for it will bear Soap, and Yeast, and I ppose, Bleach as well (if not better) then River-Vater: not here to say, how much dew, especially Iay-dew, is repleniish'd with this volatile Nitrous alt, which contributes not a little to the Vegetation f the fruits of the Earth; nor to say what key to Philosophick *Menstruum* is hereby hinted: conerning which, consult *Sendivogius* and the Tractate *e Sale Philosophorum*, *Filemannus* his *Appendix* nd other *Hermetical* Philosophers.

90. Now to conclude, as Water in the grand Circulation, in the Bowels of the Earth, meets with ifferent Salts, and Mineral Earths, it becomes the ubject matter, wherein these work upon each other, nd make Mineral, or hot Springs: and that from nitrous, or volatile *Hermetick* Salt, floating as vell in the Air of the Caverns, as above the Earth, which being condensed upon a proper Magnetick, or Virgin-Earth, which the Water, in its passage,

runs

runs thorough, dissolves the Salt, and after meeting with a Mineral Earth of *Sulphur* or *Sulphure vive*, makes an ebullition therewith, and not being carryed far, breaks forth in a hot Spring, witness the experiment of *Monsieur de Rochas* in his Tractate, *De Aquis Sulphureis*, which I find plac'd at the latter end of the Sixth Volum of the *Theatrum Chymicum* who tells us, that finding a hot Spring, near that Mountain, whence the River *Padus* in the *Alps* takes its Original, and desirous to search out the cause thereof, digg'd along its Chanel, with Laborers for 15 days together, who found as they came nearer to the source, the hotter was the current, and that too, though the Mountain was covered with Snow. [But first he evaporated 40 Ounces of the Hot Spring-Water, and 5 was left of a slimy matter, which being further examin'd, gave three Ounces of a Sweet, and fusil Salt; the rest was a slimy fat matter, which by Fire, shewes it self to be of a Sulphureous Nature] after digging as aforesaid, he found the Original of the hot Spring, by observing a very great ebullition with much froth: who, to search yet further, digg'd on for three hours along the Chanel of the same Spring, and found the Water beyond it to be very cold, which was the Current of the same Spring, and had lost both it's tast, and heat.

wherefore he took a part of that hot Earth, which seem'd to give heat to that Spring, and also some of the Water, in the very source, tryed them both found the Earth to be a pure simple *Minera* of *Sulphur*, and found the water to be impregnated with Salt, which he calls (for want of an other name) *Sal Hermeticum*, by which, it was manifest that the spirit or salt contained in that water, by penetrating the substance of that sulphureous earth, was the cause of

ıe great Ebullition: which is the ſame as in pour-
ng Water upon *calx vive*, or in making *Tartarum*
itriolatum. But, to be further ſatisfied, he ordered
he Labourers to dig 12 days longer; and found the
urrent to be clear, and ſweet, like ordinary Foun-
ain-Water: but the Earth to be Salt in taſt, with
vhich the current of water was impregnated; and
herefore he examin'd the Earth, by infuſing it in
Rain-Water, decanting off the clear as it was ſettled:
he one half whereof he boyled up in a Copper
Veſſel, the other part he diſtill'd in a Glaſs-*Alem-
ick*, to try whether way would yield the more Salt:
nd found much leſs, both as to quantity, and
uality, in that done in the Copper-Veſſel, than in
hat diſtill'd in the Glaſs-body. Then he infus'd this
Earth again in the ſame Rain-Water, and found a
Salt of the ſame nature as before, but leſs in quan-
ity: which extraction he repeated a third time, but
ound no Salt at the laſt. The earth therefore he ex-
os'd to the Air, and found after a time, it was
impregnated with the ſame Salt; which Salt being
ſeparated, and the Earth become inſipid, upon be-
ing expos'd to the Air again, was freſhly impreg-
nated with the ſame Salt; which he did alſo a third
ime *&c.* with the like effect: by which he gather-
ed, that, that which renew'd the *Terra mortua*
(as he calls it) was the *Spiritus Univerſalis*
or *Anima Mundi*, or, as I ſaid, the volatile nitrous
Salt, which is to be found both in the Earth, and
the *Atmoſphere*. Which experiment, though it ſhould
have been inſerted in our diſcourſe of hot Springs:
yet is not very impertinent in this place; becauſe af-
ter all this digging they found no bottom, or be-
ginning of the Spring it ſelf: and was the ſame cur-
rent whether cold, or hot; whether ſaturate with

that *Hermetick* Salt, or insipid; and therefore might probably, by its Channel, come from the Seas, in the great Circulation, set on work by causes aforesaid.

A TERNARY OF Medicines, FOR Curing most DISEASES.

HAving, in the foregoing discourses of my *Hydrologia Chymica*, had occasion to treat of the Essential, and efficient causes of many Diseases, as the *Palsy*, *Apoplexy*, *Asthma* or *Shortness* of *Breath*, *Scurvy*, *Dropsy*, *Hypochondriack Melancholy*, *evers*, *&c.* and there, onely in a cursory manner, nted the most effectual Spagyrical remedies, as the reatise it self will shew, I shall, here, in order to ie practical part, comprize most of them in three *atholick* Medicines, whose use are of large extent, id may (with a little Latitude) be called, *Univer-l* Remedies, answering the three grand Indicati-ns or Requirings of Physick. Those be 1. *Cathar-ck*, or solutive: 2. *Cordial* or expelling of Wind: . *Diaphoretick* or *Sweating*. The first I call *Scor-atick* Pills, or Pills proper against the *Scurvy* 2. The

ſecond is call'd *Elixir Proprietatis* or *Cordial Elixir* 3. The third I call *Diaphoretick* or *Sweating Pills.*

Theſe three Preparations are compos'd of the beſt, and moſt uſeful Vegetables. The *Menſtruums*, and Salts, wherewith they are extracted, are graduated to the higheſt pitch they are well capable of, *viz* by Digeſtions, Circulations, and Diſtillations, being exquiſitely depurated from all *Phlegms*, and *Heterogene Faces*: The very Salts, and *Menſtruums*, given alone, are Medicines of no inferiour order, being abſterſive, and aperient of the Veſſels: but further, They alſo open the bodyes of Noble Vegetals; and being impregnate with their additional virtues, become very conſiderable helps to nature to proſcribe what is noxious, and comberſome to th digeſtions (which is the cauſe of flatulencies, o Winds) and to fortify, and ſtrengthen the vital Fe ments, in their functions for the health of th body.

The operation of theſe three Medicines are i nocent, ſafe and harmleſs, as I have found them, b frequent, and conſtant experience; and not onely but alſo I have found them very ſucceſful, in ord to the cure of diſeaſes: with which three, right prepared, I had rather chuſe to manage a practice than with ſo many ſcore of the vulgarly prepar'd ſho Medicines, whoſe larg portions, and Farragino mixtures, rather oppreſs, and nauſeate the digeſ ons, than give any laudable help, in the proſc bing that which is noxious, or ſtrengthening to t vital powers.

And firſt, as to the *Scorbutick*, or *Cathartick* Pi which are proper againſt the *Scurvy*: That being a diſeaſe which though at its full ſtate, it vitiates t

ltimate digeſtion, and whole habit of the body, ith its various Symptoms; yet (as you may ſee fur- her, in our diſcourſe of Diſeaſes) the firſt Semi- aries thereof are laid in the Stomach (*viz*) in he error of its Ferment, which by ſome recremen- al *Fæces* being clogg'd, and hindred from making a horough digeſtion of the alimentary Juyce, laies foundation for the vitiating the ſubſequent digeſti- ns. For as the Ferment becomes clogg'd, and there- y weak, the more *Sordes* are every day heap'd up n the Tunicles of the Stomach, which doth ſtill add o the debilitating the Specifical Ferment thereof; to- vards which, conduceth the plentiful drinking of Ale: nd that often not thoroughly fermented, or wrought ut thick, and muddy, which leaves abundance of reggs upon the Stomach, dinting and dulling the erment thereof. Alſo the great uſe, of late, of Su- ar, both in Sweet-meats, Drinks, and Sauces, do ot a little clog the Ferment, and add to this diſeaſe; o the eating of Salt-meat, and Rye-bread, by rea- on of an *Alienated* ſourilh Ferment therein, which not being *Similar*, to the Acid Ferment of the Sto- mach, begets flatulencies, and leaves much *Sordes*, ſpecially to weak Stomachs: to which diſeaſe, alſo he plentiful feeding upon varieties of Diſhes, and he too often eating, and drinking, between meals, efore one part be digeſted, and carried off, an o- her part is freſhly thrown down: which ſometimes, nakes that part of the nutritive Juyce, which ſhould ave paſſed forth, ſtay longer than of right it hould, and thereby become too much Fermented, which over-acidneſs thereof paſſeth uncorrected into he ſecond or third digeſtion, and ſo vitiates the blood therewith: which alſo, in the Fabrick of the Animal Spirits, vitiates that prolifique offſpring:

whence proceed *Scorbutick* Palsies, and Apoplexies *&c.*

And we frequently find, that those who indulge their appetites too much (as many do, who make it most of their business to eat, and drink at all times of the day) as also those who foster, and debauch their Stomachs with strong cawdles, are the most apt to have this disease of the Scurvy, and it various Symptoms, creep upon them; and after all this indulging of their appetites, with plentiful variety of food, many add to that, idleness, or want of exercise: the want of which, in the midst of plentiful feeding is the speedy way to bring this disease, and that accompanied with *Asthma's* or shortness of breath, with which we see many (who are addicted to sedentary lives, and yet feed high) are very much troubled, which I may properly call, a *Scorbutick Asthma.* Upon this account of the depravation of the Ferment of the Stomach, whose error is continued down to the following digestions, thereby levening it self with the whole mass of humours of the body, this disease of the *Scurvy* (with an inseparable *Flatus*, or wind of the Stomach, and blood) disguiseth it self under the mask of most diseases, and appears complicated therewith: so that, there are few diseases, whose *Seminals* are not *Identical*, with that of the *Scurvy.* Therefore, that which is proper for the curing or preventing the Scurvy is also proper for the curing, or preventing other diseases, that depend thereon, whose *Bases* are much what the same *viz.* the depravation of the *Stomachical* Ferment.

In order therefore to the assistance against the prevalency of so *Epidemical* a disease as the *Scurvy* which creeps insensibly from the foresaid causes, upon most men, and women, I compose these *Scorbutick*

Pills

ills, whose operation is to purge gently, thereby carry off from the Stomach, and other *Officines* the digestions, the *Stagnant Recremental Sordes*, hich are apt to settle, as residences of the Food we ke in; and that, many times, for want of a pene-rating volatizing Ferment, which should, after igestion, leave no *Faces* or *Caput Mort* behind: or with such volatizing Ferments, strong constituti-ns are endued; the constitution being most what be computed from the natural vigour, or weak-ess of the Ferments (which are the Authors of all ransmutations of Food from one tast and con-istence to an other, in the whole circuit of the ody.)

These Pills (I say) taken at due seasons, help ature to carry off that, which is every day precipita-ed to the bottom and sides of the Stomach, which s a kind of *Tartar* or slimy sediment of our meat nd drink, not volatiz'd by the Ferment, which day-y increasing, doth still more, and more, dull, and lead the foresaid Ferment: But if by such help, as hese Pills, or other direct courses, the digestions be reminded of their due separations, then these pre-posterous precipitations, may probably be preven-ted, and the diseases, thence springing, (whether so-litary Scurvy, or others complicated therewith) be anticipated: for these *Scorbutick* Pills are so prepa-red with noble vegetal Extractions, by a depurated *Menstruum* and generous Salt, as that they not only are gently solutive and absterstive of the *In-herent Sordes*, but also are (withal) restaurative (by their Balsamick Ingredients) of the lapsing Ferments; and that first by taking off the weights that oppress, and load, and next by inciting them to a vigorous activity; especially if seconded by tem-

perance in meat, drink, and excerciſe; together with a Doſe (ſometimes) of our *Cordial Elixir*: which, taken after a previous abſterſion, by the *Scorbutick* Pills, proves the more effectual in rectifying the Ferment of the Stomach, and in diſcuſſing of Wind, which proceeds from the reluctancy of the Ferment to the *recremental Sordes*, and therein proves a great Cordial, if rightly prepared. For indeed, to ſpeak properly, nothing can truly be call'd Cordial, which doth not allay this *Flatus*, or wind, by taking away the cauſe thereof (at leaſt mitigating).

Theſe Pills alſo are proper for Dropſical bodies, by making gentle evacuations: for ſuch remedies as are abſterſive, and diuretick, and withal have a reſtaurative aſtringency, communicable to the debilitated *Membranous* Parts, reducing them to their proper tone, are the moſt proper in Dropſical maladies: Of which ſort are theſe Pills; for they are not onely abſterſive, but alſo by their included eſſential Salt of *Tartar*, are not a little *Diuretical*, and by its reſtaurative Ingredients, gives a gentle aſtringency to the *Membranous* Parts, promoting the proper tone thereof in their due *Syſtole* and *Diaſtole*. To which alſo ſhould be added the uſe of our *Elixir Proprietatis*, to ſtrengthen the bowels, and Ferments thereof; not that I ſay, theſe will cure a confirmed Dropſye, where the very *Omentum*, or kel, and *Peritonæum*, are become putrid, and rotten, through the long *Stagnation* of the extravaſated liquor: in which caſe I queſtion whether the nobleſt Chymical *Arcana*, *viz.* the *Mercurius Diaphoreticus Fixus*, or *Precipiolum Paracelſi*, would effect the Cure.

In Hectick Fevers, and incipient conſumptions, theſe *Scorbutick* Pills are alſo effectual (being taken in a ſomewhat leſs quantity than in the other

Caſes)

caſes) for beſides their moderate abſterſion (by vegetable Salts) of excremental *Sordes* (which otherwiſe oppreſs the digeſtions) they hinder the reſolution of the compage of the blood, which frequently, in thoſe caſes, is apt to ſhew it ſelf by faint ſweatings, arguing thereby a Solution of the *Vinculum* of the blood: But by ſome Balſamick, and gently aſtringent Ingredients therein, the *Retrograd Analyſis* of the maſs of blood is prevented: in which caſe theſe Pills are well ſeconded, by ſome Doſes of the *Elixir Propietatis*, taken every other Morning, faſting, two hours after, and the Pills alſo to be taken every other Morning, two or three at a time, according to directions given afterwards.

Theſe Pills are alſo proper againſt *Hypochondriack Melancholy*, by keeping the body ſoluble, removing ſome *Sordes*, whoſe reluctancy (as I ſaid) with the Ferments either of the Stomach, or Splene, begets that *Hypochondriack* Wind, which friſks to and again, and floats round all, or moſt parts of the body: and ſuch perſons, commonly feel themſelves moſt at eaſe, and free from the cumber of the wandring *Flatus*, when their bodies are moſt ſoluble. To a further aſſiſtance wherein, the frequent taking of *Elixir Proprietatis* contributes not a little, by helping to compoſe the otherwiſe irregular *Flatus*.

Yea, in all diſeaſes that are *Symptomatical*, or ſecondary to the Scurvy, theſe Pills are helpful, as in *Scorbutical Palſies*, *Apoplexies*, *Aſthma's &c.* which depend upon the prevalency of the *Scorbutick* Ferment, and *Flatus* thence iſſuing. The like ſucceſs they have alſo upon *Colicks*, *Diarrhea's* or Looſneſſes, and *Dyſenteries* or bloody Fluxes; eſpecially if ſeconded with ſome Doſes of the *Elixir Proprietatis*, and ſweating Pills.

Fur-

Further as to Fevers, whether intermitting, or continued (so they be not malignant,) *viz.* whether *Quotidians*, *Tertians*, *Quartanes*, or *Acute* continued Fevers, these Pills are very helpful; first by absterging the recremental *Sordes*, which adhere to the vessels, and while they are there, they promote the feverish fermentation of the blood, and humours: for that the *Crasis* of the blood, and humours, have an immediate dependance, upon the *Regimen* of the Stomach, and *Regent* Spirit thereof, is apparent in the *Febris Ephemeris*, or sudden *Febricula*, which happens from a disorder of the Ferment of the Stomach, not being able to subjugate the in-taken food, which causeth a perfect Fever, in all its Symptoms, till the digestion be either compleat, or the deprav'd mass be thrown up out of the Stomach by vomit; which done, that sort of Fever ceaseth: so that the *Minera* of a Fever, whether intermittent, or continued, yea even of all, or most diseases, is radically in the Stomach, after whose pipe (as I may say) all the rest of the Ferments of other parts, dance, and are really subject to the beck, , and influence thereof. And that Fevers do much depend upon the *Regimen* of the Stomack, is evident from the frequent vomitings, pains in the head, and back, thence proceeding; as also from the strong pressing thrist therein: and is more manifest, because, if while the blood boyls strongly, by a Feverish Fermentation, a good medicine be given, while it is yet in theStomach,the blood ceaseth from its spurious Fermentation, and perhaps onely breaths forth in a gentle moysture, the Pains cease, the thirst is quench'd, and all is at ease and quiet for a while. So that in truth, Fevers are but secondary in the blood, and humours, but primarily in the Stomach;

to

o which alſo, all Medicines primarily are to be evel'd. I ſay therefore, as theſe Pills work upon ome of the deprav'd matter (which lyeth heavily, s long as it is unvolatiz'd by the Ferment) of the tomach, by their ſolutive property, and irritating he *Syſtole*, or compreſſion thereof, (vulgarly call'd he *Expulſive Faculty*) together with the orderly *Syſtole* and *Diaſtole* of the *Pylorus*, carries of part of that recrement, which otherwiſe yeilds fuel to the feveriſh fire, and promotes the *Febrile* Fermentation in the whole maſs of *Liquids* in the body: ſo that theſe, by their gently purging quality, leſſen the *Alkalizate Sordes* which cauſe thirſt, and feveriſh burnings, and boylings in the blood; and beſides by their *Menſtrual* Salts, blunt the acrimony of the ſpurious fermentation of the Stomach, and with the help of *Elixir Proprietatis* (which I call the *Cordial Elixir*) taken as I ſhall ſhew afterwards, the cauſe of the feveriſh *Flatus*, will be much abated, which *Flatus* is the neceſſary concomitant, and reſult of the ſpurious feveriſh fermentation in the Stomach, from which incoercible *Flatus*, or *Spiritus Sylveſtris*, all thoſe uſual ſick and faint fits, proceed.

And if, upon a previous vomit, which, skilfully ordered, leſſons theſe *Alkalizate* burnt *Sordes*, which ſometimes lie faſt riveted in the tunicles and fouldings of the Stomach, theſe Pills be afterwards given, two or three dayes together, and a Doſe of the *Cordial Elixir*, be given in the afternoon, about 3 or 4 by the Clock, as alſo laſt at Night; one of our *Diaphoretick* Pills, with a glaſs of burnt Wine after it, will ſo blunt the acrimony of thoſe burnt recrementall *Sordes* (the *Mixera* of the Fever) as that the feveriſh Fermentation will be abated, the cauſe of the *Flatus* (whence ſick fits) will be mi-

tigated,

tigated; the boyling Spirits will be settled: The *Archeus*, or regent spirit of the digestions (that *Spiritus impetum faciens*) will be composed, and all the clutter will be hush'd into a silent calmness, with a gentle breathing sweat: which *Diaphoretick*, or sweating Pills are but to be taken every other, or every third night; and that too after a previous evacuation either by our *Scorbutick* Pills, or at least by a *Clyster* ordered that afternoon, before they be taken.

Thus the causes being removed, the Fever will begin to decline (*nisi mors sit in ollâ*) unless death be at hand; not but that the disease will rally up again, but with less force: then you must still repeat the Method of your solutive pills in the morning, and *Cordial Elixir* in the afternoon, and sweating Pill at night, which last (when repeated) let alwayes be done that night, after the solutive Pills has been before taken in the morning. Thus you will, by the Blessing of God, find a considerable abatement of the violent Symptoms of a Fever, in a very small time.

And as in continued, so also in intermitting Fevers, whether *Quotidians*, *Tertians*, or *Quartans*, the same *Ternary* of Medicines, are of great use and benefit: and that thus (*viz.*) by taking (the day before the fit) 2 or 3 of the *Scorbutick* or *Cathartick* Pills, and the night after, a Dose of the *Cordial Elixir* at bed-time, and then (that day the fit comes) to take one or two of the *Diaphoretick*, or sweating Pills, two or three hours before the usually expected time, drinking a draught of hot drink after, as of Mace-ale, Posset-drink, or Burnt-Wine, and to indeavour, with one covering more than ordinary, to fall into a gentle breathing Sweat, which these will

will readily procure: And during the time of the Patients ſweating, he or ſhe is to take nothing but hot drink as aforeſaid, and to lye in bed (if the fit come on the day time) till the next morning; and then to renew the taking of the *Cathartick* Pills, and *Elixir*, as alſo an other of the ſweating Pills, before the next expected fit, according to former directions: and by this means, the Patient will find ready help, ſooner in a *Quotidian* or *Tertian*, than in a *Quartaine*, that being ſeated more deeply, in the radical Ferment of the Stomach, and Splene. Theſe as well as continued Fevers (if not all diſeaſes) are radically begotten in the Stomach: primarily there, and ſecondarily, or Symptomatically in other remote parts, to whoſe *Regimen* this *Ternary* of Medicines is cheifly made to correſpond.

For the general *Indication* of moſt diſeaſes, are reducible to three; and thoſe are, firſt, a *Recremental Fæces* or deprav'd humour, from the error of the Ferments, both of the Stomach, and other digeſtions: I ſay, the abſterſion of theſe degenerate *Fæces* in the ſeveral digeſtions, is the firſt, and cheif *Indication* in moſt diſeaſes: The ſecond is a *Flatus*, or Wind ingendred between the reluctancy of the Ferment, and the foreſaid *Sordes*, which conſtantly begets (according to the degrees thereof) a freſh ſupply of an inbred *Flatus*, or Wind, the Author of many Pains, diſturbances, in the vital œconomy, and thence Sickneſſes. I ſay, the quieting, or allaying the Wind, by curing, or preventing the the true cauſe thereof, is the ſecond main *Indication* requiſite, in the Cure of moſt diſeaſes.

The third and laſt is an acrimonious acidity, with a ſpurious *Latex*, in the intermediate Juyces, and Liquor of the Blood, and *Genus Nervoſum*, whoſe Senſi-

Seminals are desum'd, from an error of the Ferment of the Stomachical digestion. The correcting which acrimony, and reduction of the blood to its genuine, Sweet, Balsamick *Encrasia*, is the third Indication requisite to be performed, in the Cure of many diseases.

The general ignorance of this *Ternary* of Indications among some Physicians, doting (in lieu thereof) on the quaternary of fictitious humours and the like number of external barren qualities, by which they groap'd (as in the dark) after the heat and cold, drineſs, and moysture of diseases, and ordering their medicines accordingly, hath been no small *Remora*, in the improvement of this noble science of Physick: which (through the *Tacite* Subscriptions, to the *Galenical* prescripts, by most Physicians) hath thereby long been kept in obscurity; but now at length (by the sons of art) become more manifest, and are expos'd to open view.

To which triplicity of Indications, this *Ternary* of Medicines are cheifly, and primarily adapted: For first, the *Scorbutick* or *Cathartick* Pills are ordered for the carrying off those *Recremental* Fæces, which are begotten through the depravation of the Ferment of the Stomach, and other digestions, which give Beginning, and layes the foundation of most diseases: Secondly, the *Cordial Elixir* appeaseth, and quieteth the *Flatus*, or wind, begotten from the reluctancy of the Ferment, and corrupt matter oppressing it; and therefore it is proper for those diseases, where Wind is most predominant, *viz.* in those diseases where the Ferments are most weakened; for where the Stomach in its Ferment is most debilitated, there Wind is most prevalent: And thirdly; the *Diaphoretick*, or sweating Pills, dint, and correct the acri-

crimonious acidity of the ſecondary digeſtions, nd liquor of the blood, and of the *Genus Nervoſum*, and carry it off, with the ſpurious *Latex*, in gentle breathing ſweats; and therefore it is proper n all diſeaſes which depend thereon, as in Fevers, Colicks, Defluxions of rheume, dyſenteries or bloody Fluxes, and pains of all ſorts, in all places of the body.

Now as to the *Cordial Elixir*, whoſe preparation is with a *Menſtruum* impregnated with vegetable eſſential Salts, and is either red or white according to *Helmont's* proceſs: (and not with Mineral acidities (according to *Crollius*) who falſly reports *Paracelſus* his *Elixir Proprietatis* to be made, with the addition of *Oyl* of *Sulphur*) beſides its uſes aforeſaid, as an auxiliary to the *Scorbutick* Pills in the cure of many diſeaſes: it is alſo exquiſitely proper for moſt diſeaſes in women; and that whether the diſeaſe be from the Splene, *Matrix* or mother, or *Genus Nervoſum*: yea, if I ſhould comprize all theſe in one, and ſay from the Stomach, and its *Regimen* upon all the parts at the remoteſt diſtance, I ſhould not (I think) much ſay amiſs: For otherwiſe, why doth a proper remedy while yet in the Stomach, give help to other parts, as for example to the Splene, *Matrix*, *Genus Nervoſum &c.* not, but that the *Matrix* hath a proper *Regimen* of its own, which being diſcompos'd, puts the Stomach, and other parts (by the Links of the *Animal* Chain) out of order.

The *Elixir* (I ſay) gives help to moſt diſeaſes incident to women, whether with Child, or not; for it appeaſeth Wind very much, which accompanieth moſt diſeaſes women are troubled with: It is a very good remedy againſt fits of the mother, which is an incoercible *Flatus*, or Wind, ariſing from a reluctancy

luctancy between the recremental *Faces* of the *Matrix*, and *Archeus*, (or *Spiritus impetum faciens*) thereof, especially if taken after a gentle evacuation made by our *Scorbutick* Pills, which may be done very safely to women breeding or with Child, as I have further treated, in my *Hydrologia Chymica*. To both, (*viz*) to women breeding, and to others with Child, I have given the like, yea stronger purges, and that did its work not onely innocently, but also with good success, both to the woman, and Child; and that too, not without very good reason: For whence is it, that women frequently (during the whole time of their breeding, and being with Child) are so tormented with Pains, Vomitings, Grippings, Faintness, Sickness, and the like; but cheifly from a great foulness of the Stomach, and plenty of recremental *Sordes* heap'd in the Womb (and that from causes not pertinent here to speak of)which often procure feverish Fermentations, in the Blood, grippings, weakness of the Back, illness, faintness of the Stomack: and by any sudden passion of the mind, rouseth up the Splene, and Mother, to the great discomposure of the whole fabrick of the body.

Now what is more pitiful, than to see miserable women, groaning under the weight of these recdiseases, while they are with Child; and under the colour of being so, they fancy to themselves, they are to take nothing of Physick for their assistance, lea they harm the Child: and so willingly languish under distempers that might easily be helped, and the themselves live more cheerfuly, and bring forth the Child more livelily; For if they take sometim 1 or 2 of these gently purging pills, over night, n the morning (onely taking some broth at noon

a

nd eat a little warm meat, without any further rouble) to keep their body open, carrying off hereby, the droſs which oppreſſeth the Stomach, auſing wind, ſickneſs, and faintneſs, and withall f they take often of the *Cordial Elixir*, according o following directions, they would (I ſay) find them elves more healthful, and cheerful, and might there- y be inabled (through the bleſſing of God) to ring forth with more ſtrength; and that, not onely or their own good, but alſo thus doing (together vith an orderly diet) it helps to make the conſtitu- on of the Child, to be more ſound, and healthful. or if the blood and humours, wherewith the *Em- ryo* is nouriſhed, be tainted with impurities and iſtempers, may eaſily thereby lay the foundation f a weak conſtitution; and make the Child prove ickly, and diſeaſed, and all for want of help, in aring the Mothers infirmities.

That theſe pills, and *Cordial Elixir*, are ſafe and armleſs, in this caſe; yea and ſtronger Medicines han they (not to ſay vomits themſelves, which I ave ſometimes ordered to women in that condition nd that with good ſucceſs) is evident; Firſt from he mildeneſs of the vegetable Ingredients (having not grain of a Mineral in it) and next from the expe- imental good effects thereof: ſo that if women at ength would admit of taking ſome thing for their wn, and Childs good, they might live more com- ortably, and cheerfully, during that time, than o- herwiſe they do.

Alſo theſe Pills, and *Cordial Elixir* are proper or the infirmities of young women, as the *Green- ickneſs*, *Aſthmatical Cachexies* and other diſeaſes epending upon the *Aliquid amplius*, (*viz.*) upon he obſtructions of the *Menſes*: For thoſe obſtru-

ctions are (originally) from a rejected *Sordes* of the blood, which furs up the Orifices of the veſſels of the *Matrix*, whereby the blood, being prevented of its natural critical evacuation, flows back, and cauſeth a *Plethory*, and ſometimes Fevers, and *Stagnation* of the Blood in the Lungs, and other parts: whence ſhort-windedneſs, ſtuffing, and ſtopping of the Stomach, want of appetite, indiſpoſition to action, with other Symptoms, pains, ſwellings, and the like, which are the ſequels of this obſtruction of the uterine veſſels. Towards the correcting of which Enormities, theſe *Scorbutick* Pills, and *Cordial Elixir* avail much; For the eſſential Salts, wherewith theſe preparations are impregnated, are aperient of the veſſels: and with the other Ingredients, are abſterſive with all, thereby anſwering the chief Indications of theſe diſeaſes.

And as to the *Diaphoretick* or ſweating Pills, their uſe is of pretty large extent, as an auxiliary to the other two: and that chiefly, in all Fevers, whether continued, or intermittent, in all colds, and coughs (which require (to the cure thereof) ſweatings and breathings, of the blood) alſo in all Colicks, Looſeneſſes, Vomittings, bloody Fluxes, Defluxions of Rheume, Head-aches; and generally of moſt pains to which they certainly give eaſe; eſpecially if they are taken after an opening of the body by the *Scorbutick* Pills, for ſo taken, they frequently give eaſe in the greateſt torments, and gripings, as alſo ſtay violent vomitings, and purgings, by compoſing the inragements of the *Archeus*, or regent ſpirit of the Stomach; and putting the *Pylorus* in good order, makes it obſerve the due ſeaſons of its opening, and ſhutting.

Now as to the directions for the manner of uſ

of these three Medicines take as followeth: and first, as to the *Scorbutick* or *Cathartick* Pills, the *Dose* is from one, to four, or five, but two or three is the common ordinary *Dose*, swallowing them down, in a spoonful or two of Posset-drink, or any other liquor, alwaies beginning with a less number, as one, or two; and as they work, so accordingly to keep to that number, or to take more, to four or five, according as the body is more difficult to work on, or the disease more radicated. If you take but one, that may be done over night, last to bed-ward, which will give one stool, or perhaps two, the morning following: if you do so, you may go about your occasions the day following: But if you take two or three, then you are to take them betime in the morning, in bed, or up: if you take them in bed, you may lye two, or three hours after: and when you get up, take one draught of hot Posset-drink, which let commonly be three hours after the taking of them, and sometimes to take nothing after them till noon, and then take a porringer of broth, and eat a little warm meat, airing the drink at dinner, and for that day, (if it be cold) not to stir abroad. They may be taken two daies together, and rest the third; or may be taken every other day, or every third, fourth, or fifth day, or once a week, as the necessity of the disease requires, and opportunity gives leave. For diseases of long continuance, will require frequent takings thereof: while you take them, eat but sparingly, but especially at Suppers. You may with safety take often of them, for they do not work, by any fretting corrosion of the Liquids and Solids of the body, but by gentle reminding the digestions, of their due separations; and by their Balsamick Ingredients, make the patient more cheer-

ful and lively, by adding vigour to the ferment of the ſtomach: and that in all the Diſeaſes aforeſaid. They may be taken at any Seaſon of the Year.

Secondly. As to the Cordial *Elixir*, the doſe is from a thimblefull to a ſpoonful; and that either taken alone, to thoſe who can ſo take it, putting a piece of Sugar or Sugar-Candy into their mouths, which diſſolving, takes away the bitterneſs, and heat of the mouth and *Larynx*, which the *Elixir* taken alone, leaves behind it; or elſe thoſe who cannot take it ſo, are to take it in a glaſs of Sack or White-Wine: but the other way of taking it alone is the better, for though it be more bitter and hot, while it is going down, yet as ſoon as it comes into the ſtomach, it becomes grateful, and thereupon acceptable thereto, doing its work more really, by becoming a more effectual Cordial, for diſcuſſing Wind and Diſeaſes thereon depending. The Patient is to Faſt two or three hours after the taking thereof, and to take it thoſe mornings they take not the *Scorbutick* Pills; and ſometimes (as afore directed) to take thereof, about three or four by the Clock in the afternoon, of that day the Pills are taken, or at going to bed, according to former direction; and that in all the Diſeaſes afore named.

And Laſtly, As to the *Diaphoretick* or Sweating Pills, The *Doſe* thereof, is one, two, or three Pills, but two is the ordinary *Doſe*, which are to be ſwallowed down in a ſpoonful of Burnt-Wine, Mace-Ale or Poſſet-drink, taking a draught of the ſame hot-drink after them: But thoſe who cannot ſwallow them as Pills, may diſſolve them in any of the foreſaid Liquors, and waſh it down with a little of the ſame clear drink. Theſe are to be taken laſt at night, at bed-time, which, without laying many more cloths

oths than ordinary, will bring the Patient into a leasant, gentle, breathing Sweat, more than any ther Medicine I ever yet met with, and will allay ie greatest thirst, and bring the Patient into a desired lmness and quietness of Spirits, abating the most gorous *Symptoms* of most Diseases, whether *Acute* or *Chronical*. The next morning after the taing the Sweating Pills, the Patient is to take, either *Dose* of the Cordial *Elixir*, with a glass of Burnt-Vine, or a draught of other hot drink after it; or nly so much clear Burnt-Wine, Mace-Ale or Posset-rink, while he is in bed, and to lie two or three ours after; which will bring the Patient again into n easie breathing Sweat; which (if he please) he ay help forward, with the addition of one Coverg more than ordinary. But these are generally to e taken after a gentle evacuation by the *Scorbutick* ills, in *Chronick* Diseases; or by them, or Clysters n Fevers.

Lastly. To number the varieties of Cures, that ave, by the Blessing of God, been performed by the elp of this *Ternary* of Medicines, would but prove edious, and therefore I shall purposely wave it.

THE Epilogue: OR, The ESSENCE OF *SCARBOROUGH-SPAW.*

THat I might inform my self more satisfactorily of the true Constituent Parts of the water of the *Scarborough Spaw*, without any other additionals, I took three Gallons and three Pints thereof, which I let stand a while to settle; whose first Precipitation was a reddish Sediment, from which I filtred the water, and this, dryed in the Sun, proved to be a red Earth or a kind of *Ocre*, or rather *Terra Vitrioli*, being that which falls to the bottom of the Chanels of all, or most Mineral Springs, whether Sowes or others, and tingeth the Earth, it runs along, red. Then I placed the water in great glasses, upon a sand-Furnace, with a gentle heat, and in a days time a thin crust or film swom upon the top thereof, which I took off with a silver spoon, and dryed it in the

Sun, and it was a white scaly light *Floscule*; after a while longer, some more of the same separated it self by heat in the water, some of which swom, and other parts precipitated to the bottom; therefore I filtred all the water therefrom, which dryed in the Sun (as the former) was muchwhat the same: Then I evaporated the clear filtred water (in glasses) to a dryness, which I found to have an *Alumino-nitrous* taste, or rather indeed more nitrous, and would relent in the Air. This I took, and dissolv'd it in simple distill'd Rain-water, and filtred it; which left an other insipid, gritty powder, with a sparkling lustre. The clear filtred water (which with Oyl of Tartar poured thereto, I found, gave a milky separation, as if taken fresh from the Spring, but with Gauls it gave no purple Tincture, after the precipitation of the red earth, but became pale-coloured thereby) This filtred water (I say) being again evaporated to a dryness, was dissolv'd, filtred, and evaporated again, and so a third time, separating still, what would be separated, by frequent filtration.

Of the foresaid quantity of *Spaw*-water, I took about two quarts; which having filtred, I put it in a skillet, and boiled away two thirds; then I let it cool, and a sediment of an insipid *Calx* fell to the bottom, from which I filtred the water, dryed up the *Calx*, and then boyled up the water to the dryness of a Salt, which was pretty white. This I dissolv'd in simple distill'd Rain-water, and then filtred, and the *Calx* being dryed in the Sun, was a bright sparkling powder: The filtred water I evaporated in glasses with a gentle heat, to almost a dryness, then I filtred it again, and so on.

Thus I can separate from the limpid *Spaw*, as it's taken out of the Fountain, eleven or twelve distinguishable

tiſhable Earths or *Sabulums*, ſomewhat different colour, ſhape, and conſiſtence one from an other; which the *Alumino-nitrous* Salt in the water razeth off from ſeveral Rocks or Quarries of Stone, which paſſeth through, as I can ſhew at any time, to thoſe whoſe curioſity prompts them to ſee Rarities of this nature; I being the firſt (I think) that hath made ſo many ſeveral Separations therefrom. All theſe Earths or *Sabulums* were equally dryed in the Sun, or a gentle heat *Analogous* thereto, and therefore could not have different colours from different degrees of heat; none of them underwent any *Calcination* or ſtreſs of fire, nor received any alterations from any additionals (being ſimply done, without mixture, ſave of diſtill'd Rain-water) all theſe *ſabulous* ſeparations were inſipid; for the Salt, where the taſte was, became concentred in a ſmall room.

Now if the water be drunke, while theſe ſtony concretions are in it, as it is in all that is drunke at the Spring, or elſewhere; if any harm (I ſay) happen to any Patients that drink of it, for want of other good Medicines to carry away the feculent dregs thereof, it is chiefly from theſe *ſabulous* concretions, which precipitate upon the bowels, ſides, and *Orifices* of the Veſſels, which preventing, or obſtructing the wonted fluidneſs of the blood and intermediate juyces, occaſionally in ſome bodies (apt thereto) may cauſe Fevers, Dropſies, Defluxions of Rheume, and the like; It may alſo increaſe the *Sabulous Duelech*, and thereby become improper for thoſe afflicted with the Stone. For the Spirit of Urine (that *Calculorum Architectus*) meeting with theſe Earths or *Sabulous* Concretions, becomes coagulated thereon (in bodies prone thereto) and by its *petrefying Coagulation* gives beginning (at leaſt) increaſeth

creaſeth the *Duelech.* The ſame *Sabulums* may alſo contribute to the Torments, or Gripings of the Guts, by clinging to the Tunicles thereof; and further may vitiate the *Syſtole* of the Membranous parts of the veſſels, and thereby may ſuffer the (otherwiſe *current*) *Latex* to *ſtagnate* in the veſſels; and thence produce ſwellings in the belly, legs, or elſewhere, as ſome, after returning from the *Spaws*, find themſelves troubled with.

For we are to conſider, That the ſeveral Digeſtions firſt have a concomitant heat, by which the water may be inclin'd to a *ſabulous Precipitation* upon the bowels themſelves, unleſs it be carried off by ſome other good *Abſterſives* (which ought of right to be given upon the drinking of the Waters) and next to that we are alſo to conſider, the *Anaſtomoſis* of the veſſels, each into other, in the whole circuit of the body, to be as ſo many Colanders, Streiners or Filters, by which the recremental *Sabulum* may (ſuppoſe) as to the courſer part, be left upon ſome of the bowels; and the finer part, by cloſer Colanders, may be left upon other more remote veſſels, and in both cauſe obſtructions, ſufficient ſometimes to procure trouble enough.

Not unlike to theſe ſtony Concretions, is the *Tartareous* Sediments of our meat and drink; and though *Helmont* laughs at *Paracelſus* for his bringing in a *Cl-ſſis* of *Tartareous* Diſeaſes: yet after that, rectifying the Notion, tells us, That there may be a *Tartarum reſolutum in primâ vel materiâ ultimâ exiſtens.* I ſay, the better Kitching-Preparations and Fermentations our meat and drink undergo, and the ſtronger the fermental Digeſtions are, the leſs of a Tartar, or rejected Sediment, is thrown upon the parts; and conſequently, the more raw our meat and

drink

ink is taken, and the weaker the ferment of the omach is, not throughly volatizing the nutritive nyce, the more of this *tartareous* Sediment is, by e Streiners and Filters of the several parts of the ody, left behind, which encreaseth the *Duelech*, ves beginning to Obstructions, Dropsies, Imosthumations, *&c.*

Now from what stones these *Sabulous Rammenta* re, I know not, and at present have not a *Microcope* by me, to make Observation of the various hapes thereof; and though Masons tell us, That the ame stone differently cut, nay, though with the same Tools, doth by various reflections, give several, and omewhat distinguishable colours: yet here the wacer only (as we may suppose) running over, or along the *superficies* of a *Quarry*, or other Stones, cannot penetrate into the inward parts thereof, and so cannot make several colours from one stone. Therefore it's more probable, That these Concretions are from several stones, sands, or earths. And if it were water turned into earth, according to the Experiment of an ingenious Friend of mine, communicated to that great Naturalist, Squire *Boyl*, it would retain muchwhat the same colour and figuration of parts, but here the parts separated, seem to the unassisted eye, to be very dissimular, some gritty and hard, others soft and impalpable, some bright and glittering, as if from *Talke*, scales of *Venice*-glass, or other bright Mineral stones, and others are more dull.

The last of these stony Concretions, which was separated, and which one would have expected to have been the most subtile and impalpable powder, I found to consist of larger siz'd particles, and those bright and sparkling, as if they had been razings of Crystals: And that these should lie *dormant*, and incon-

inconſpicuous in the water, after ſo many previous ſeparations of powders much more impalpable than it ſelf, gives cauſe to ſuſpect that there is a variety of pores in the body of water, and thoſe two of different ſizes and *angularities*, wherein *ſabulous* Bodies and Salts of various ſhapes, may lie undiſcovered to the bare eye, in the texture of water. Therefore if *Microſcopes* were ſo contriv'd, as to take a view of Liquors, we might diſcover many conſiderable things, pertinent to the ſolving diverſe Philoſophical *Phænomena's*, whereof we are yet ignorant.

Now as to that which remains, after all theſe *ſabulous* ſeparations, I mean the *eſurine* Salt, which I call the Eſſence of *Scarborough-Spaw*, is a kind of *alumino-nitrous* Salt, or *Sal Hermeticum*; and therefore where you meet in our *Hydrological* Diſcourſe, with the word [*Aluminous Salt*] you are to read it, *Alumino nitrous Salt*, or *Nitro-hermetical Salt*. This Salt, if duly ordered, is Cryſtalline, ſhoots into long *Stiria's*, and brancheth it ſelf forth in curious ſhapes, upon the bottom of the glaſs, which I cauſe to be cryſtaliz'd in *Balneo Mariæ*.

Its taſte is more diſcernably nitrous than otherwiſe, yet is a ſuch a ſort of a *Nitro-hermetical* Salt, as being exactly dryed, and caſt upon hot coals or a glowing *Spatula*, takes no flame; nor doth it melt, nor boyl in a *Crucible*, as that Nitre Dr. *Wittie* ſpeaks of doth: for he means the common Nitre, to be had in Shops (*viz.* Such as is added to Cerots and Plaiſters, as his own words teſtifie.) Now this *Hermetical* Salt in the *Spaw*, flows not in a *Crucible*, in a ſtrong fire, but keeps in a dry white body, and loſeth ſome of its taſte by the force of fire. Therefore what we have ſaid againſt Nitre, in our foregoing Diſcourſe, is to be underſtood the common inflammable

e Nitre, which is vulgarly uſed. And it's very pro-
ble, that there may be a Magnetical earth, not
r from the breaking forth of this Spring, upon
hich, the Aereal Nitre (whether in the *Atmoſphere*
on the ſurface, or in Caverns of the earth) doth
ntre it ſelf, which joyning iſſue with a Mineral aci-
ty, may become a competent cauſe, for the pro-
uction of all Mineral Springs: For (to my know-
dge) there are ſome Bodies to be found in the
World, that are truly Magnetical of the Univerſal
pirit, or *Nitro-hermetical* Salt, which flotes other-
iſe indiſcernably in the Air; which very thing,
ghtly underſtood, is no ſmall Key to the *Hermetick*
hiloſophy, which I ſhall, at preſent, purpoſely wave
rther to diſcourſe upon.

Now the Proportion of this Nitrous Salt, to the
hole bulk of the water, after the ſeparation of all
eſe ſtony Concretions, is no leſs (according to
y compute) than as one is to one hundred twenty
ight: ſo that it is at leaſt but the one hundred twenty
ighth part of the whole. This pure Salt (which as
o taſte is ſomewhat bitter) diſſolv'd, is that I call the
ſſence of the *Scarborough-Spaw*; a little of which, ta-
en in a glaſs of White or Rheniſh Wine, or in a
laſs of ſimple Spring-water, will (as I have tryed)
urge gently by Stool: and without doubt is that,
y whoſe efficacy, whatever the *Spaw*-water drunk
lone effects, is performed, and that too with a triple
dvantage.

Firſt, In that the *ſabulous* Concretions are ſepara-
ed by Art (which ſometimes precipitating other-
viſe (as I ſaid before) upon the bowels, may do harm.)
And ſecondly, the ſmallneſs of its quantity prevents
hat hazard to ſome bodies, which the gulping down
great draughts of water may produce. For ſuch

large

large quantities of *Spaw*-water, as are usually drunk doth in some Constitutions too much dilute the Ferment, debilitate the Digestions, and vitiate the ton of the Membranous parts, both of the stomach and other bowels, and so cause Fevers, Dropsies, defluxions of Rheume, *&c.*

And lastly, The fitness of it to be taken at any Season of the Year, whether Winter, Spring, Summer or Autumn; whereas the waters from the *Spaw* itself, are only to be drunk in the Summer-Season. But this Essence may not only be drunk then, which at that time of the year, may be taken in three, four or five glasses of any good simple Spring-water; especially to those who cannot come to the *Spaws*: but also may conveniently enough be taken in the Winter and in the Spring (when the *Spaw*-water it self cannot with efficacy be drunk, because too much dilute with Rain or Snow-water) in a glass of White or Rhenish-Wine, as I said; which though it be taken in such a proportion, as not to work sensibly by stool, yet will it have a safe and innocent, though a insensible, Operation.

Yea, What Diseases the *Spaw*-water is found proper for, being taken from the Fountain, for the same the Essence thereof is also as proper, and according to all reason more effectual, as in the Scurvy, Scorbutical *Asthma's*, Dropsie, *Hypocondriack* Melancholy, Fevers, Obstructions of the Vessels in Women, and Diseases thence depending, together with several other Distempers, as may be further seen in the Discourse it self.

The Essence of the *Spaw* hath this priviledge in the Cure (at least in the assistance of the Cure) of Fevers, above that of the whole body of the *Spaw*-waters, *viz.* That it may be administred in a glass of

Wine,

Wine, and so may readily be carried to absterse the vessels of the blood, and other spurious fermenting liquors, from their *Heterogeneities* and *recremental Tartar*; which, if taken in the whole bulk of water, would be prejudicial and dangerous on all hands; as hazarding too sudden a stop to the Fermentation, and thereby occasion a preposterous stifling of the volatile Spirits, before they can work themselves into a new state, by separating *Heterogene* parts, which they constantly attempt in most Fevers.

Also if this *Spaw*-water contribute (as it's highly extoll'd to that purpose) to the making Women fruitful (by removing Obstructions of the Womb, the frequent concurring cause of Barrenness) it doth it (I say) by virtue of this *Nitro-hermetick* Salt, *viz.* That which I call the Essence of the *Spaw*; which indeed, is muchwhat of the same nature with that Salt which fructifies all Plants and Fruits of the Earth, makes all Soyls multiply in great plenty, and may give probability of fruitfulness to Women, by opening those Obstructions which frequently hinder Conception.

By the help of this concentred Essence, every simple Current-Spring may be made a *Spaw*, by dissolving a competent quantity hereof, in four, five, six or seven glasses of any Spring-water in the Summer-time, which may also not a little increase its purgative quality, in as much as the *Spaw*-waters often Purge downward by their very weight, witness the *Vitrioline-Spaw* at *Knarsborough*, which rarely purgeth any other way, than downwards by its very weight, either by Stool or Urine. So that this very Essence, might very properly be taken in the same Sweet *Spaw*, at the Season of the Year; and so you might have the virtue of both *Spaws* in one, which would pro-

probably thereby anſwer more general *Indications.*

And laſtly, By the help of our aforeſaid *Ternary of Medicines*, together with ſome other good *Specificks*, joyning iſſue (at the Seaſon of the Year) with the uſe of the *Scarborough-Spaw*-water, might effect very conſiderable Cures in moſt Chronick Diſeaſes; or the ſame, with the Eſſence of the ſame *Spaw*, to be taken in the Winter, Spring, or any other Seaſon of the Year, might not improbably effect the like Cures.

FINIS.

FRAGMENT I.

Insert this first Fragment between the 28th and 29th Section [*ending with these words,* the extinction of the vital flame] *and the beginning of the* 30th Section [*thus,* 30. This fourth Digestion, as I conceive, *&c.*] *in* Page 75. Part II.

NOw this regurgitated *Latex* or separated *Serum* of the Blood, let forth of the *Abdomen*, by tapping the Bellies of such are afflicted with that sort of Dropsie call'd *Ascites*, is a limpid liquor; whose *Tabes* (whereby it depraves and corrupts the membranous parts where it restagnates) is not originally from the Liver, that part so generally accus'd by the *Galenists* for being the grand Patron of Dropsies, is apparent by matter of Fact, both by the observation of the profound Inquisitor into Nature, *Baptista Van Helmont*, who upon the dissection of Bodies, whose Diseases were Dropsies, has found the Liver firm and sound, both in colour and solidness of *Parenchyme*: The same, an ingenious and skilful Physician, an Acquaintance of mine, told me, that upon his cutting up a Dropsical Body, which Dropsie had worn away the Patient with an *Atrophy* of all the parts like a *Tabes*, The limpid Liquor

that he took forth of his Belly was near two Gallons, the Liver was ſound and good as any could be, ſo likewiſe his Heart; but the Spleen was diſcoloured and vitiated, the *Omentum* was black, rotten and fœtid. Some of this Liquor he caus'd to be plac'd over a fire, to evaporate ſome of the moiſture; the remaining part thicken'd: and was as ſtiff as a gelly, and that of a very green colour. It was of ſo ſtiff a conſiſtence as that a ſpoon might have ſtood in it. Which Experiment evinceth the truth of theſe following Conſiderations.

Firſt, That the Liver is innocent in the *geneſis* of Dropſies, *In Hydrope inſons eſt hepar*, ſaith *Helmont*; and therefore all Medicines that are directed in the *Galenical* road, to the opening Obſtructions in the Liver, or to any other Indication thereof, in order to the Cure of Dropſies, is ſhot at random, yea quite by the mark: and ſo to be rejected as frivolous.

Secondly, That the Spleen is a part ſomewhat concern'd in the Fabrick of Dropſies (to which I may without doubt add the Stomach) the Blood doth not undergo thoſe wonted Circulations or Cohobations upon its own fixt body or *Caput mort* in the Spleen; and ſo conſequently doth not receive thoſe due Separations, nor is inrich'd with the indowments of that noble ferment, which doth not a little contribute to the *Eucraſia* of the Blood: Hence the Blood in part becomes too much dilured and waterish.

Thirdly, That that, which completes the wateriſhneſs of the Blood is Obſtructions of the Reins, which has a double indication; and that is, firſt the ſmall quantity of Urine that Dropſical Perſons make, and next, the reſtagnation of a great quantity of this rejected *Latex* into the *Abdomen*, which actually ſwells the Belly.

Fourthly,

Fourthly, That in tract of Time, when this re-tagnating *Serum* begins to putrefie (as it will in no ong time do, both becauſe it is extravaſated, as alſo ecauſe it wants a volatizing and embalming Fer-ment) it corrupts alſo and periſheth the *Omentum*, urns it black and fœtid; then the whole Maſs falls pon the Bowels, ſpoyls their Tone, and brings Death. Hence the Rot in Sheep, is nothing elſe but, f I may ſo call it, a Dropſical *Aſcites*, from a reſtag-ating *Latex*, which by moiſtneſs of wateriſh Ground, or continuance of wet Weather, putrefies nd corrupts the *Kell* and ſo other Bowels, thence Death. For in continuance of time it Rots the prin-ipal Bowels of the Body.

Laſtly, That if this reſtagnating *Serum* have ontinued ſo long without a genuine reduction, or at eaſt a ſeparation by the proper Conduits, *viz.* the *Ureters*, Pores, *Siedge*, *&c.* as to begin to under-go a putridneſs, by whoſe *fœtid ſulphureous* Odour, or corroſive Saltneſs, the *Omentum* becomes corrupt nd mortified; that then all hopes of Cure is over, ecauſe of the periſhing of the Bowels, by the *Ana-ytical* putridneſs of the Spurious *Latex*, which uffering all the thin parts to be evaporated by the atural heat of the adjacent parts, retains only a de-raved Sulphur and Salt, which by a retrograde *Analyſis* corrupts the Bowels, hinders the Circula-ion of the Blood, perverts the tone of all the Mem-branous parts, and in the concluſion ſtifles all the Spirits, both Vital and Animal, whence Death. But if this be taken before the corruption of the *Omen-tum*, or any other Bowels, it may then more readily be cured, I mean ſent away by paſſages and chanels a-dapted as proper *Emunctories* for that purpoſe. But to return. But if this ſpurious Acidity, *&c.*

FRAGMENT II.

Between the ending of the second Section *and the beginning of the third, in* Page 136. *read this second Fragment.*

BUt if you pour Oyl of Tartar upon some of the fresh water, it makes a frisking spawny motion, which with a little Gaul turning Purple, if thereto a few drops of Oyl of Vitriol be poured, it instantly boyls, and immediately becomes clear again; upon which if Oyl of Tartar *per Deliquium*, Spirit of Harts-horn, and any other volatile saline Spirit, either simple or aromatiz'd with Essences, be again poured, it causeth a frisking motion with a sudden dash of Purple upon the middle of the glass, which no sooner appeareth, but vanisheth, and becomes clear; which, with a little Oyl of Vitriol, makes a fresh boyling, heaving up some Particles of the water above the glass, from the Intestine Ebullition of the Salts, each contending with other. Which water I have, after this was done, drunke off in the presence of some Gentlemen and others, before whom I made the Experiment; which left such a pleasant relish upon the Palate and *Larynx*, as that all the water I drunk after, for that Morning, went down with much more delightfulness and sweetness then was wonted.

FRAG-

FRAGMENT III.

In the third Section *of* Page 136. *between the words* [as alumeniſh Solutions will do] *and the following words*, viz. [and that in effect, *&c.*] *read this third Fragment as in a Parentheſis.*

(Saving that they do not admit of a Milky Coagulation by the addition of Oyl of Tartar, Spirit of Harts-Horn, or the like, as thoſe of Allom Springs do)

FRAGMENT IIII.

In Page 157. Part II. line *the ſecond, ending with theſe words* [to all parts] *between them and the beginning of the third* line, *in theſe words* [likewiſe Baths are of efficacy, *&c.*] *read this fourth Fragment.*

ALſo againſt Dropſies, eſpecially cold Springs or Baths: and that becauſe it's found by Experiment, that Bathing promotes both Urine and Sweat. For a Man ſhall ſcarce well get out of the water but

he ſhall be inclinable to Urine, and then Sweating doth moſt frequently follow; which, if promoted by ſome inward Diaphoretick, will help notably to tranſpire the ſuperfluous *Latex*, eſpecially in that ſort of Dropſie called *Anaſarcaſis*, where the Blood is too much diluted, and the *Limpheducts* obſtructed in the habit of the body. So that two grand Indications of Dropſies, and perhaps a third (*& tria ſunt omnia*) are hereby anſwered (*viz.*) Stopping or difficulty of Urine; ſecondly, Obſtructions of the Pores; and laſtly, Debilitude of Ferments in their ſeparative Functions, by the intenſe coldneſs of the waters, which reminds the Reins, *Ureters* and *Sphincter* of the Bladder, of their Duty, opens the Pores, making both (eſpecially by the concurring help of inward Diaphoreticks) the inward and outward parts perſpirable; and laſtly, ſo fortifies the Digeſtive Ferments, as that it begets a very good Appetite to Meat, by whetting the Ferment of the Stomach, and by promoting the *Syſtole* of all the Membranous parts, thereby ſeparating the accumulated *Sordes*.

Likewiſe Baths, *&c.*

FINIS.

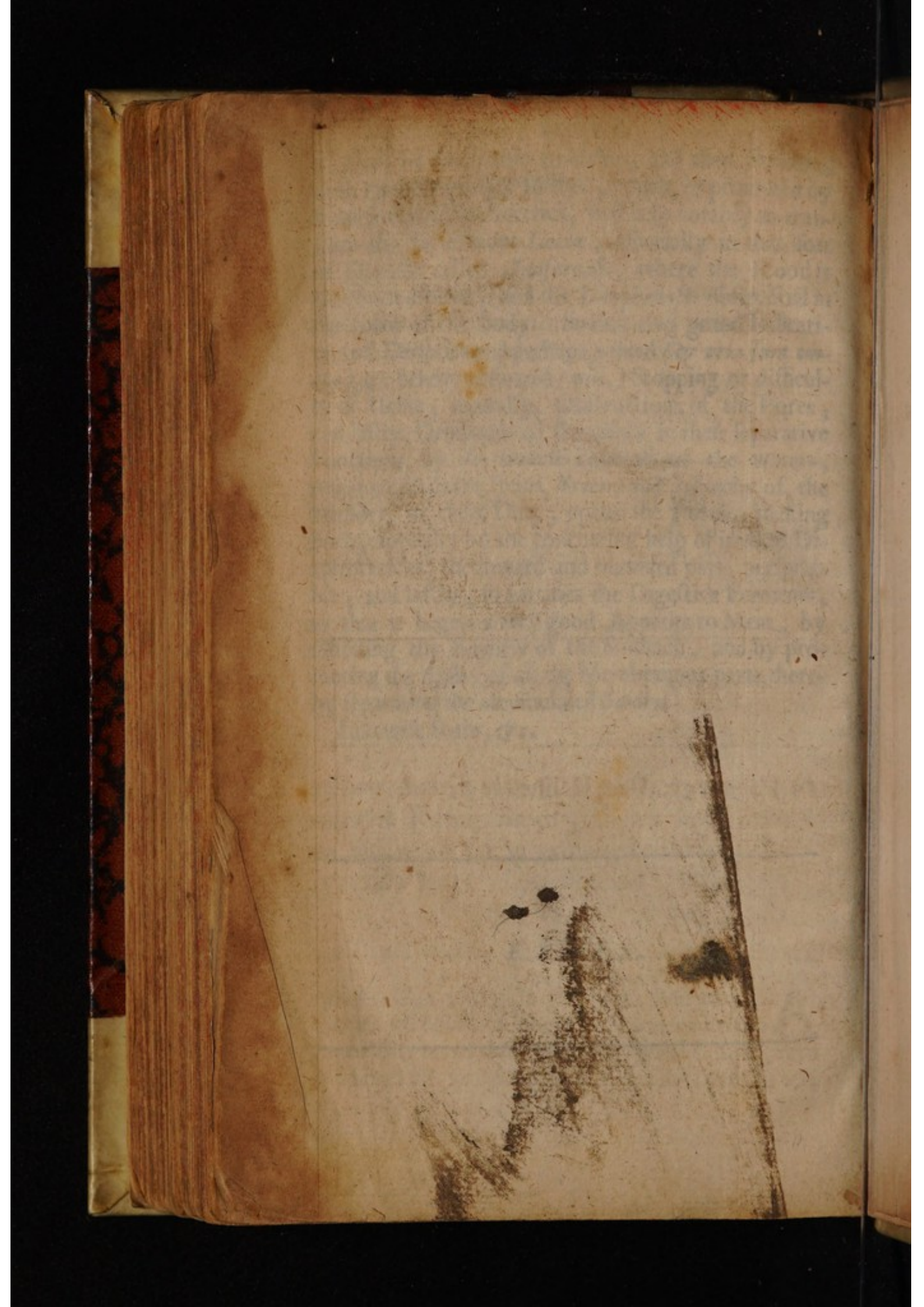


Fig: i. pag: 320

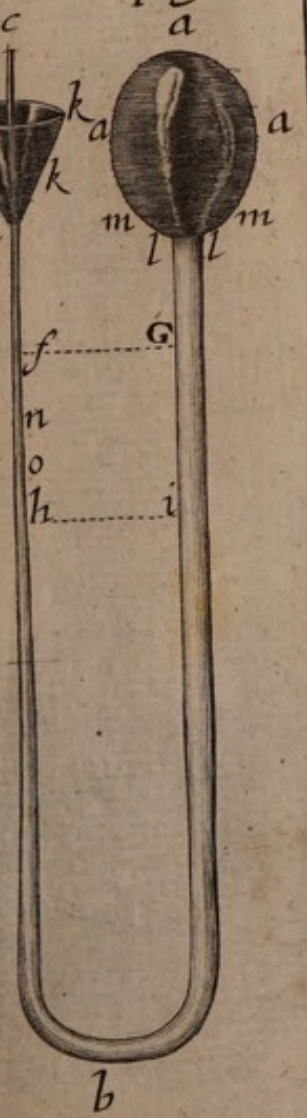


Fig: ii. pag: 321



Fig: iii. pag: 323

