

An enquiry into the nature and principles of the Spaw waters. With a mechanical explanation of their virtues and uses in many diseases. To which is subjoined, a cursory enquiry into the nature and properties of the hot fountains at Aix la Chapelle / By Charles Perry, M.D.

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AN
ENQUIRY
INTO THE
NATURE and PRINCIPLES
OF THE
SPA WATERS.

WITH A
MECHANICAL EXPLANATION of their
VIRTUES and USES in many DISEASES.

To which is subjoined,

A CURSORY ENQUIRY into the NATURE and
PROPERTIES of the HOT FOUNTAINS at
Aix la Chapelle.

By CHARLES PERRY, M. D.



LONDON:

Printed for JAMES, JOHN, and PAUL KNAPTON,
at the Crown in Ludgate-Street. 1734.

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TO THE

Most LEARNED and RENOWNED

Dr. *BOERHAAVE*,

PROFESSOR at *Leyden*, &c. &c. &c.

Much Honoured SIR,



THE following Treatise has a more than common Call to throw itself at your Feet; as it has already been partly perused by you in Manuscript, and, so far, honoured with your Approbation: But besides that, the Nature of the Subject, and the particular Manner I have

treated it in, give it a very natural and just Appeal to you.

Mineral Waters in general, and those of *Spaw* in particular, (though strictly speaking complex Bodies) constitute an illustrious Branch of the *Medicina simplex*. This beautiful and excellent Part of Medicine, (*viz.* the *Medicina simplex & genuina*;) is what you have always been a firm Votary to: And your Endeavours to promote, cultivate, and restore it to its ancient Purity, (after it has for so many Ages been oppressed and darkned by a Succession of enthusiastical System Writers and Methodists,) have been more happy and successful, perhaps, than those of any other Person whatever.

The *Utile Dulci* of *Horace*, is in nothing more fully exemplified than in the *Spaw* Waters; for every one's Experience testifies that they are not less grateful

grateful to the Palate, than they are beneficial to the Constitution. A very singular Happiness to Mankind This! That a Medicine indued with so many and so great Virtues, should (contrary to almost every Thing else in the Medicinal Sphere) be even coveted, on account of its Delightfulness to the Palate and Stomach, as well as other instantaneous happy Effects it produces in the human Fabrick.

It was the high Opinion I had of these Waters, founded partly on Experience, and partly on Tradition, that first inspired me to this Undertaking; and I embraced it with the greater Zeal and Ardor, as I flattered myself, that by visiting them at their Source, and analyzing them by all the Ways that Reason and Information could suggest to me, I should be able to rescue them

from the Confusion and Obscurity in which they have been immersed by the chymical metaphysical Definitions of their own Country Men: And, indeed, it were a great Pity, but so excellent and usefull a Part of Medicine, as mineral Waters in general, and those of *Spaw* in particular are, should be set in the justest and clearest Light they are capable of. Such is the real End and Design of this Treatise; in which I have endeavoured to strip them of their Masks and Disguises, whether Chymical or Empirical; to reduce their Forces and Operations to a sort of *Calculus*, and to explain their Effects *à Priore*; that is, from their inherent mineral, and other Impregnations: And this Method of determining on the Effects of Medicines, *à Priore*, is certainly in great Measure practicable, notwithstanding

notwithstanding the great Difficulties some Persons make about it.

Treating the Subject in the Manner I have done, necessarily led me into such Reflections and Definitions as relate to the Chymic Sphere; and especially whilst I was employed about the first Part, or Basis of the Work: *viz.* The Analyzation of complex Bodies, and the Separation, Investigation, and Definition of their Minerals, or other Principles: But after that, in accounting for the Virtues, Properties, Operations, and Effects of them, I have strictly confined myself to the most abstracted mechanical Reasoning.

I shall not in this Address (conformable to the Example of Dedicators in general) attempt to bribe your Favour, &c. by reciting a long Catalogue of your great Merit and Abilities.

No! There is no Occasion; neither, indeed, is there Room for it. You need no Assertors; your great Merit and Abilities, and your consummate Skill in every Branch of the Medicinal Science, are avowed and acknowledged throughout the whole World, at least, all its disciplined Kingdoms and Estates. However, though I had no such mean temporary Views and Motives, in seeking for your Adoption to this small Performance; yet I confess am not a little pleased, that I have the Liberty to prefix your Name to it: For that alone (the Merit of the Work apart) will guard it against the Poison of Detraction, Calumny, and Slander: And moreover, as it will greatly contribute to draw the Eyes of the World upon it; so will it increase the Number as well as the Attention of its Readers,

Readers, and by that Means render the Benefits it's designed to recommend more diffusive.

It may, perhaps, seem strange to the World, that I don't publish this Piece in *Latin*, or some other Language, with which it may be judged you are better acquainted: But all Surprize upon that Account will vanish, when People come to be informed, that you are a very good Judge of the *English* Tongue; a Thing well known to an infinite Number of Persons, who yearly go to *Leyden* for your Advice, upon the various Diseases for which they could find no Cure at Home. But moreover, this Treatise is particularly written for the Benefit and Instruction of the People of *Britain* and its Dependencies; therefore publishing it in a Tongue not familiar to that Community,

munity, would have been going from the main End and Design of it.

That you may long live in uninterrupted Health, for the Honour and Advancement of the Science of Physick in particular, and the Good of Mankind in general, is the sincere Wish of,

S I R,

Your Most Obedient, and

Most Devoted Servant,

CHARLES PERRY.

T H E
P R E F A C E.



AS the following Treatise took its Rise from one Accident, so its Publication has been postponed by another: Otherwise, it had appeared seven Years ago; that is, soon after my Return from Spaw.

*The great Opinion I always had of the Spaw Waters, ever since I have been conversant with them, and capable to judge of them, determined me in the Purpose of visiting them at their Source, and inspired me with the Design of publishing my Sentiments upon them one Time or other: But, I confess, I had no Thoughts of writing upon them during my Stay there, 'till the very Day I set about it. I must acknowledge (however,) that I made a Journey to Spaw, chiefly with Design to examine into the several mineral Springs there;
and*

and thence to furnish myself with Materials for writing upon them, when I should be more resolved upon the Undertaking, and have more Leisure to execute it.

For, the first Part of the Time I spent there, I applied myself very assiduously to the Examination of the several Waters: At the same Time, I insinuated a Design of writing a Treatise upon them, (meaning one Time or other) on Purpose to give Birth to some Practice; that so I might have an Opportunity of experiencing the Virtues of the Waters at their Sources, as well as examining into their Principles.

Several Gentlemen of my Acquaintance, mistook my Meaning, as to the Time of writing upon them, judging I proposed to do it there, whilst upon the Spot; and they reported my Designs under this mistaken Sense. Hence, by the Time I had compleated my Examinations and Experiments upon the Waters, I gathered from some Hints, that my Insinuations of a Design to write a Treatise upon them, were misapprehended as to the Time of doing it; and that it was expected I would do it then. Hearing this, I resolved to fulfill
my

my Words, even in this mistaken Construction, rather than subject them to Censure, and disappoint my Friends.

The whole Piece (I will venture to say) is wrought up mechanically. There is not a Sinew, nor so much as a Thread, in the whole Frame, of any other Nature or Temper, except only the Basis or main Springs: And these are certain, real, and evident Principles inherent in the Waters; from the Consideration of which, in their various respective Natures, Mixtures, and Proportions, I have rationally deduced all their Virtues, and have directed them to their respective Diseases and Uses.

This Subject (I confess) has for a long While been my particular Favourite: And, as I have advanced some Thoughts and Reflections upon it, which are altogether new, and which Writers who have gone before me seem not so much as to have thought of; so I hope they will be no less singular for their Use and Benefit. As I have always been a great Admirer of these Waters, and a great Votary to them; so I have been of Opinion, could we once adjust and ascertain their Virtues and Uses upon
the

the Principles of true mechanical Reasoning, we might by that Means render to the World, a more agreeable and safe, as well as a more effectual Remedy for an Infinity of Diseases, than either the Galenical or Chymical Systems are capable of affording us.

If what I have advanced in the following short Treatise, has the good Fortune to place these Waters in a stronger and more distinguishable Point of Light, than they at present enjoy; to raise the Opinion of the World in their Favour, and to encourage, as well as instruct Mankind, when and how to use them; I shall think the small Pains I have taken amply recompenced, as I may then assure myself I have advanced something which will promote the publick Good.

I have touched but very briefly on the Aix Waters, by Reason my Enquirys were confined to some of their abstracted Principles; having no Opportunity of examining into those Waters at their Source, except only by the Sight and Taste.

The following Piece is but small in the whole; but then it contains scarce any Thing more than what is really essential to
the

the Subject: And I only wish the Publick may accept it with as much Sincerity and Candour as I offer it. It is meerly designed to place not only the Waters, but their Virtues and Uses likewise, in such a Point of Light as may render them visible to every Body; and to instruct the Publick when and where to apply to them: that is, upon what Disorders, and what particular Water to make Choice of under the different Kinds of Diseases. I have proved their Principles by Analyzation, and their Virtues from their respective Principles; considered first simply and separately, and afterwards in a compounded State; from the Relations they have with, and the Proportions they bear to one another. My Design is to serve the Publick; by recommending to those who are, or may be diseased, the Use of such Remedies as, when rightly applied, will be innocent, agreeable, and effectual; instead of those that are too often not only nauseous and ineffectual, but destructive too.

I wish every Thing I have said in the following Treatise, in Behalf of the Spaw Waters, may be justified by Proof and Experience:

perience: To which End it is necessary to admonish the Publick in a Point or two. And, First, That in all Cases of Importance, Persons rather go to Spaw, than content themselves with taking its Waters transported to England, or elsewhere. For, whereas in and about Spaw, there are several mineral Springs (as I shall shew hereafter) which have their distinct Virtues and Uses; of all these, the Water of only One will stand the transporting: And even that, which is called the Pouhon, must undoubtedly lose both in its Force and Vigour, by Time and Transportation. Secondly, There are great Quantities of spurious Waters carried to England and other Places, under the Colour and Name of Spaw: As for Example; the Water of Cheveron, (commonly called Bru Water) which is much inferior to the true transportable Spaw Water: And besides, the said Bru Water having been faithfully and accurately examined by the Faculty of Physick at Liege, appeared to be impregnated with a noxious Mineral, on Account of which it ought rather to be condemned than recommended for any medicinal Use.

But

But here methinks! at a Time when I am about to enumerate the many excellent and useful mineral Springs, which Providence had endowed a foreign Dominion with; I should be wanting in Gratitude to that Providence, did I not acknowledge the like Benefits which our own native Isle, Great-Britain (justly deemed the Rival of the Universe, on many Accounts) is blessed with.

Our mineral Waters, I allow indeed, are, in Nature and Excellency, inferior to those of Spaw and Aix: But these excepted, and those of Piermont, are seconded to none yet discovered for medicinal Qualities. We have a great Number of Springs, conspicuous for their Virtues of this Kind; but the most remarkable and renowned, are those of Bath, Bristol, Scarborough, and Tunbridge. There is likewise (besides several other mineral Springs of less Note in the same Kingdom) one very famous Well at Waxford, in Ireland, called St. Peter's Well. This has been reported to me, to afford a Water highly impregnated with Minerals of excellent Virtues and Qualities. Thus much is certain, that it brings a great

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Concourse

Concourse of People there every Season, and very great Cures are ascribed to it.

Each of these Waters has been thought worthy to employ the Pens, as well as the Practice of some one, or more eminent Physicians. I have read Pieces on the Bath, the Bristol, and the Scarborough Waters: And tho' I acknowledge these Pieces are not ill wrote, yet I cannot omit to offer as my Opinion, that they may be treated in a different Light, to much greater Advantage: That is, in such a Manner as will more effectually obviate, ascertain, and illustrate their respective Virtues and Uses: In Consequence of which, the several Waters will obtain their due Weight in the publick Estimation, and People will be naturally led to have more frequent Recourse to them.

The Method I would recommend, and which I would take myself in examining the said Waters (could I spare the Time, &c. necessary to go through such an Affair,) should be, First, To make exact and complete Analysis of each Water; Secondly, When I had duely discovered what Minerals, or other Principles they were impregnated with; I
would

would mechanically explain the *Virtues and Properties* of their respective Principles; considering them first in their simple and genuine, and afterwards in their compounded State: And lastly, determine and direct each particular Water to its proper Diseases and Uses.

This is the Method I have strictly observed in the following Treatise on the Waters of Spaw and Aix. I take this to be a plain and fair Way of dealing; and 'tis what, perhaps, may be more persuasive with Mankind, as well as more Instructive to it, than the Methods generally used by Physical Authors, of enforcing the *Virtues and Uses* of this or that Water, or other Medicament, by reporting a long Catalogue of its Cures; which, notwithstanding the *Veracity and Merit* of the Author, the World will perhaps give but little Credit to.

The ingenious Doctor Cocquillet, senior, of Spaw, (who, besides some actual Helps, gave me many Directions and Instructions in analyzing the Waters of Spaw,) is intirely of my Opinion in this Particular. He assured me that he declined writing a History
of

of the Cures effected by the Spaw Waters, (though much importuned to it as well by Physicians as others) because he imagined a great many real Truths would appear to the World mere Romance. And yet, I believe, there is no Man better qualified to give a practical Treatise on them, and History of their Cures than him; He having been intimately conversant with them, and constantly in the Experience of them, for above thirty five Years past, computing to the Time I was there.

AN
ENQUIRY
INTO THE
Nature and Properties
OF THE
SPA WATERS, &c.

SECT. I.

Contains a brief Description of the Town of Spaw, and its adjacent Country; an Account of the principal Mineral Springs in and about it; and an Enquiry into the great Volatility of their Waters.

THE whole Country, for a considerable Extent, about the Town of *Spaw*, is very mountainous and rocky. The Town it self is situate in a Bot-

tom, at the Foot of a Mountain, whose Declivity is very steep, and describes a Semi-circle about it; extending from the West-North-West to the Southward of the East: Whence it is no Wonder the Place is healthy; being so entirely covered from the Winds of the North-West and North-East: Quarters, which constant Experience teaches us, are extremely hurtful and pernicious to our Constitutions. The Mountain, which thus half encompasses the Town, is exceeding rocky; and, upon a clear and serene Day, affords an agreeable, though romantick Prospect. The Town is small, but pleasant and commodious enough. The Spot, on which it stands, is unequal, and somewhat rocky. It has a Fountain of soft Water in the Midst of it; which is not brought thither by Art, but rises out of the Earth naturally: It is excellent in its Kind; is perpetually running; and supplies all the Inhabitants of the Town.

I decline giving a more particular Description of the Town, or any Detail of its Customs and Regulations, (which may be found to Exactness in abundance of Writers,) those being foreign to my Design; but shall hasten to my Purpose.

There

There are in and about the Town of *Spaw* several Springs of Mineral Waters; of which only five are remarkable. These are the *Pouhon*, *Geronster*, *Sauveniere*, *Tonnelet*, and the *Wartroz*; of which, only the three first are now in Reputation and Use: To them, therefore, I shall chiefly confine my Reflections. And,

First: The Fountain called the *Pouhon*, (from whence all the Water, which is transported to *Britain*, and other foreign Parts, is or ought to be taken) is in the Midst of the Town, about thirty Paces below the abovementioned Fountain of soft Water. It derives itself from that Part of the Mountain which lies to the Northward of it; and springs up out of the Earth into a Basin made on Purpose to receive and contain it; which is so plentifully supplied, that it seems almost inexhaustible.

The *Geronster* is situate on a Hill, about two *English* Miles from *Spaw*, to the South-westward of the Town; and springs up into the Hollow of a Rock, shaped like the Basin of the *Pouhon*. This Water (which is much to be lamented) will not stand transporting to foreign Parts; for upon several Trials it has always turned feculent and putrified;

whence it becomes nauseous to the Sight, as well as to the Taste; and all its Virtues are very much enervated, if not entirely lost.

The *Sauveniere* lies on the Side of an Eminence, about half a League from the Town, to the South-East of it ; and springs up out of the Cleft of a Rock, which naturally forms a convenient Basin to receive and contain it. But this Basin, as well as the Spring that rises into it, are much less than either of the former, infomuch, that sometimes it has been insufficient to supply the Concourse of People, who come to drink of it: In which Case every one is limited to a certain Quantity. This Water (like that of the *Geronster*) is unfit for Transportation ; but from a very different Cause: For the Strength and Volatility of its mineral Impregnations are so great, that they would certainly burst the Bottles; except they were left uncorked for a considerable Time, that the more active, elastic, and volatil Particles might fly off; by which Means it would loose much of its Virtue, as well of its Force and Vigour.

Within about six Paces from the *Sauveniere* is another small Source, called *Groesbeeck*; which derives its Title from a Baron of that
Name

Name; who meeting with an extraordinary Cure by that Water, after all the other Springs had failed him, caused a Stone handsomely carved to be placed over it, (supported by two others, one on each Side,) which are a very pretty Ornament to it. The carved Stone that is placed at Top, bears the following Inscription, as a Testimony of the Water's Excellency. *Paulus Johannes Baro a Groesbeeck. Archi. Cond. Serenissimæ suæ Celsissimæ Cancellarius, Vitiantem a vera sepe-
rabat.* This Water, though almost out of Use now, is exceeding volatil, and has a delightful Flavour.

The *Tonnelet* and the *Wartroz* are likewise very strongly impregnated with Minerals; though perhaps they may be different in Kind, Mixtures, and Proportions, to the rest. But, as these latter are now almost out of Date, and quite out of Use, I shall be very brief in my Reflections upon them.

The three Springs first described, as they are impregnated with the same general Principles, or nearly so, though different in their Degrees, Mixture, and Proportions; so their Virtues correspond and agree in the general; notwithstanding that in many particular Dis-

eases, they sometimes produce different Effects, and seem repugnant to each other in their Operations. But these Things, which are the Dictates of Experience, are no less obvious in reasoning mechanically on the various Appearances that present in analyzing these Waters; as I promise myself, I shall be able to demonstrate.

Upon examining the Waters of the three first-mentioned Fountains, I confess I was much surprized to find so small a Quantity of Feces produced from them; and those so tasteless and insipid in their Nature. But, when I had tried them by Fire, and by that Means discovered the true Nature and Essence of their respective constituent Principles, and the Proportions they bare to each other; I concluded them to be of very little Account in themselves; and no more than the Expressions and Testimonies of such Principles existing in the Waters in a much greater Degree, and in a more spirituous, volatil, and excellent Nature. This Conjecture is not only very rational, but is likewise manifested by Experiment: For, did all the mineral Particles and Principles, as well the subtil and volatil, as the gross and fixed, virtually

ally remain in the Feces after Evaporation, they would, when reincorporated with the same Quantity of Water, which had been exhaled from them, contain the same Virtues, and exhibit the same Taste and other Appearances as before; none of which do in the least appear. This is a Proof drawn from Experiment; which is beyond all Arguments. But, because it is agreeable, as well in Physicks as Mathematicks, to bring Matters of Fact, and Things evident to our outward Senses, to quadrate with our Reasoning; so I shall endeavour to discuss it in that Light too.

It is universally maintained, That Nature is, in general, the best and most perfect Operator; and I presume it will be allowed me that she is, in particular, the best Chymist. Hence (without making the least Digression, to explain how and wherefore Things are so ordered and disposed) it will appear, that the fundry Minerals, and other Principles, with which these Waters are impregnated, must be constituted in the justest Proportions, to obtain the Ends they are designed for. It will thence no less appear, that their individual Particles must be more perfectly elaborated, more infinitely divided, more intimately

mixed, more highly sublimed, and, consequently, their Virtues and Properties more perfectly unchained, rarefied, and displayed, than they could be by any human Art or Power.

It is this perfect Elaboration, this infinite Division, and intimate Mixture of the Particles of different Species of Matter, that unchains the hidden Properties of Matter, and calls forth its most latent Virtues to Sense and Action. In a Word, it is in the Perfection of these various Operations, that the Spirituosity, Volatility, and Elasticity of Bodies consist. Thus we see, that by the Mixture of two Bodies, (each of which shall seem fixed and absolutely void of Volatility,) the Mixture becomes volatil; and the Volatility, which results from the Mixture, will always be in Proportion, as the Elaboration, the Division, and intimate Mixture of their Particles, are more or less perfect. Now, it is to be supposed that these volatil Particles or Essences did exist in the several Individuals before their Mixture; but were so fettered and imprisoned, as to be undiscoverable by any of the human Senses: For, *Nihil dat quod non habet*, is an Axiom which I believe no one will go about to controvert.

One

One Advantage of the volatil Essences, which so greatly abound in the *Spaw* Water, is, That they render and preserve the more gross, terrene Particles in a State of Commi-
 nution, Rarefaction, and Fluxion; and so prevent them from aggregating together, and precipitating. And this is so true, that if you expose any of these Waters to Heat, or let them stand some Time open to the Air, (that their spirituous, volatil Essences may dissipate,) their more gross, terrene Particles shall aggregate, and combine together: The more ponderous of which will subside and fall to the Bottom, at the same Time that the lighter, and more tenacious or greasy, rise to the Surface, and appear in the Form of a Star. This Ascent of tenacious, greasy Matter to the Surface, in the Circumstances just now mentioned, is more conspicuous in the *Pouhon* Water, than in the others: But set any of them over a Fire, and the first Access of Heat will immediately put them into a strong Ebullition, even whilst to our Sensation they are perfectly cold. Indeed, this Ebullition is greater, and manifests itself sooner in some of them, than in others: But in all of them, the Instant they grow hot, their

their gross, terrene Particles fall into Confusion, and so aggregate and combine together, as to render the Water troubled and muddy: Which demonstrates, what I have already observed, That the Existence of the spirituous, volatil Essences in the Waters, is the necessary Condition of their Perfection, and their sole Barrier against Corruption or Depravation: But when, by the Heat of Fire, Access of Air, or Length of Time, those spirituous, volatil Essences, and elastic Powers are dissipated, That Water, which before was pleasing to the Sight, as well as delightful to the Taste, becomes extremely nauseous and offensive, both to the one and to the other. The *Pouhon* Water, however, is not so subject to Decay by Length of Time, as the others; though equally so from the Access of Air or Heat. As a Proof of this, Doctor *Cocquillet* assured me, that he and Doctor *Chrouet*, being consulted together for a Patient in a wet Season, (at which Times the Springs must be, and actually are very much diluted and weakened,) they compared together, approved, and accordingly ordered the Use of Waters, which had been bottled from this Fountain six and twenty Years before,

preferable

preferable to those, which then flowed from the same Source.

I flatter myself, the Arguments I have already urged, prove beyond Contradiction the great Volatility of these Waters: And I will now endeavour to make appear, in what Qualities and Degrees the subtil, volatil Essences, with which they are manifestly endued, must transcend the same Specific, through fixed and terrene Principles, from which they were themselves derived.

It is very obvious to Reason, as well as evident from Experience, that two or more mineral, or other Principles, being mixed together and volatilized, their individual respective Parts are not only more infinitely divided, but are likewise more intimately mixed; and thence not only their own respective Virtues and Properties are greatly heightened in themselves, but new and neutral Virtues may possibly result from that intimate Mixture and Union of their several Principles, which before were not proper or peculiar to either Individual. And this proves (what I have observed above,) that the Volatilization of different Principles or Species of Matter (being first mixed together,) unchains
their

their respective Particles, and calls forth their most latent Virtues, as well as utmost Vigour to Sense and Action. For, notwithstanding what I have just now said of new and neutral Virtues, which were not proper and peculiar to either Individual; yet they must be understood to have pre-existed in the Matter, though so fettered and intricated, as to be undiscernable to the nicest Scrutiny, 'till Volatilization had given them Birth.

But, besides the supposed Superinduction of new Virtues, those that manifested themselves before in each individual Part of the Compound, are infinitely multiplied in Force, as well as Activity, by Volatilization. Hence it is, that whilst the gross, dull, terrene Particles require a formal and long Digestion in the Stomach, demand to taste the *Bile* in the *Duodenum*; and after that, require many auxilliary Forces to thrust them through the *Lacteals*; and yet a longer Time to concoct them in the Blood Vessels, and to mix and incorporate them with the Blood: After all which long Apparatus, (by Reason of their slow Progression and Inactivity,) they act perhaps by Piecemeal; without any Harmony or Concert: I say, hence it is, that whilst the
nauseous

nauseous Lump of gross, terrene Matter (no less offensive to the Palate, then oppressive to the Stomach) is going its tedious Course, the volatil Particles or Essences (on the contrary) have a Transition, as swift as Lightning. They no sooner salute the Palate, than they enliven the whole Frame of the Body ; which I, myself, as well as many others, have experienced. I have more than once fasted four and twenty Hours, on Purpose to prove the Effects of a large Draught of the *Pouhon* Water : When my Stomach was empty, and all the Blood-Vessels and Glands cleansed, and relieved from their undue Distentions ; and all the gross, spiritless, and excrementitious Humours thrown off by Perspiration, and the other Secretions ; and, in this Situation of Things, I must confess to have found admirable Effects from it : That is, I have immediately perceived my whole Machine greatly enlivened, and my Spirits much invigorated by it.

The Virtues and Properties of these Impregnations being, naturally and simply considered, very excellent ; how extensive must their Force and Power be, when we consider the infinite Subtilty, Elasticity, and Activity they acquire by Volatilization ; especially

cially when mixed and complicated together? What Coagulations may they not be supposed able to dissolve? what Combinations and Concretions of Matter not destroy? what Humours, whether acid, acrid, or corrosive, not correct? what Obstructions not remove? what Relaxations not restore? and, finally, what Secretions not regulate? Experience confirms (what Reason in this Case plainly dictates) that all these great Ends are evidently and imminently effected by some one or other of them, when directed by the Advice of a good Physician, and with such Preparatives, and other Assistances from Medicine, as are convenient.

S E C T. II.

Treats of the various Ways of analyzing the Waters; of the several Principles, or Minerals with which they are impregnated; and their respective Virtues and Properties considered, both in a simple and a compounded State.

I will begin with the *Pouhon* Water; as well for its being the most eminent, and generally used, as because it is the only *Spaw* Water

Water which is, or at least, ought to be transported to *Britain*, and other foreign Parts.

The first Trials I made upon this Water, were by adding and mixing different Bodies with it; amongst which I first used the known Experiment of a Gaul. By scraping some Gaul into it, the Water immediately turned of a deep purple Colour: But upon the Addition either of a little Quick Lime, Oil of Vitriol, or Spirit of Sal Armoniack, the borrowed Colour soon subsided, and the Water became clear as before. This purple Colour, produced by the Scrapings of a Gaul, proves a predominant Vitriol in the Water. I could make no further Discoveries, by any Experiments actually made upon the Waters, except the above mentioned, of a Gaul, and the Precipitation of its purple Tincture.

It is universally maintained (and indeed Experiments confirm it beyond all Doubt) that mineral Waters turning of a purple Colour, by projecting Scrapings of Gaul into them, always denotes a Vitriolic Impregnation. But what then (chymically speaking) can be the Cause of the purple Colour's subsiding upon the Admixture of the various Things above named; and especially the
Oil

Oil of Vitriol? I don't remember to have met with a proper Explanation of this *Phænomenon* any where, nor any Attempt to explain it; therefore shall endeavour to solve it here. And first of its Precipitation by Quick Lime. *Calx viva*, or Quick Lime, is a very powerful Alcaly: Whence it is no Wonder, that upon its being mixed with the Water, it should immediately engage the acid, vitriolic Salts, keep them in close Commerce with itself, and carry not only them, but likewise the Particles of the Gaul they had before associated with, to the Bottom, and so leave the Water clear.

Spirit of Sal Armoniac is likewise an Alcaly of the volatil Kind; and being instilled into the purple Water, associates itself with the acid, vitriolic Salts, so as to brake their Force: And thence the Particles of the Gaul, which were before held suspended in the Water, and uniformly diffused through it, being freed and released from their *Vinculum*, aggregate and combine together, and fall to the Bottom. As to the like Effect produced from the Instillation of Oil of Vitriol, (though in *prima Facie* it would seem a Paradox,) yet if we examine it closely, the Mystery may perhaps be cleared up. I shall
first

first premise, by way of Parallel, that many Diseases are cured by Salts, some of the acid, and some of the alcalic Kind; when (if we credit many illustrious Writers of past Ages, as well as some of the present) the Diseases were owing to the same specific Salts, by which they were cured: So that in Fact, (allowing these illustrious Authors to be in the Right,) such Diseases were cured by increasing the Quantity of Morbific Matter. The Case here is pretty much the same: For, though the Water was capable of retaining a certain necessary Quantity of Vitriol; of keeping it suspended in it, and uniformly diffused through it; yet upon the Addition of Oil of Vitriol, the Water might be overcharged with that particular Ingredient. And, as the Vitriolic Particles would necessarily come into a nearer Contract with each other; so they might aggregate, cluster, and combine together, and fall to the Bottom; carrying the Particles of Gaul along with them. Or otherwise, the Oil of Vitriol, by its Tenacity, might first engage the Particles of Gaul associated with the Vitriolic Principles of the Water; and afterwards by its Ponderosity sink them to the Bottom.

I had next Recourse to Evaporation: By which Process fifty Pounds of Water afforded six Drams of Feces, like a dry Powder, of a bright Cinnamon Colour, and not ponderous. I strewed some of this Powder upon a polished Iron Plate, made red-hot, and set over a Fire proper to keep it in the same Degree of Heat; but that Experiment produced nothing remarkable. It is a received Opinion, (and maintained by all the Writers upon this Water,) that it has a Sulphur in it: But if so, it must be a mere Effence of Sulphur; and that, in a very small Proportion, which dissipates imperceptibly. Every one that has gone through a Course of Experiments upon this Water, will, I believe, agree with me, That as it is not at all perceptible by the Taste; so neither is it discoverable by any other Trials. Was there a Sulphur residing in the Feces, after Exhalation, it would liquify upon the hot Iron Plate; cast a blue Flame, and a sulphurous Smell; neither of which appeared in the least, upon my Examination of it. In the above-mentioned Experiment, the Powder lost a fourth Part in Weight: Nitre discovered itself in a considerable Degree, by a great Quantity of
bouncing

bouncing Sparkles. The Iron became very distinguishable in the Feces, after this Experiment; as also some Vitriol, and a subacid Salt. Some Writers take a great deal of Pains to prove that there is Allom in it; of which, I own, I could discover no Marks. The Principles, however, with which it is evidently impregnated, are by no means inconsiderable: And these, when justly proportioned to each other, duly mixed, and perfectly sublimed, may be supposed capable of producing very many and great Effects, without our being at the Pains to search for the Discovery of Allom, or any Thing else to assist them.

It appears, as above, that the Principles, with which this Water is impregnated, are, Mars, Nitre, and Vitriol, with a small Quantity of subacid Salts; of all which, the Mars is the greatest in Proportion. I will first enquire into their Virtues and Properties, as simple and separate; and afterwards consider them in their compounded and medicated State.

Mars or Steel, which, from its excellent Virtues and Qualities, claims so great a Share in the *Materia Medica*, is modelled and disposed

disposed by Chymists into a vast Variety of Shapes; and by those different Modifications, is rendered applicable to, and useful in very many and opposite Maladies. This is demonstrable, beyond all Contest; and yet, if I may credit the Authority of Writers, as well as common Report, and the Testimony of my own Reason; that great Chymist, Nature, has, by one single Preparation, fitted and qualify'd it to obtain all those various and opposite Ends, in a far more eminent Degree of Perfection. For,

Mars or Steel, in its native Dress, displays its first Effects on the Stomach. It creates Appetite, by increasing the Stomach's Attrition; and, when Appetite is the Effect of such an increased Attrition, a good Digestion will certainly follow. But besides these Benefits, (which it eminently procures to the Stomach,) it scowers and cleanses it of Slime, and other Impurities; and, lastly, greatly inspirits it. Hence our Aliments pass into the Blood better elaborated, and less disposed to feed it with gross, feculent, slimy, or other noxious Humours. This Mineral increases the attractil Force of every Moles of the Blood, and of all the Solids; at the same Time
that

that it breaks to Pieces, and destroys all gross, tenacious Concretions, and other Combinations; which may be either forming, or already formed in the Blood Vessels, or elsewhere; and so, of necessary Consequence, must open Obstructions. It seems to communicate a Spirit to the Blood; and, in Reality, it does so; or else greatly actuates and invigorates those already existing in it. And yet (which may seem strange) it achieves all those great Ends and Purposes without any extraordinary Virtues and Properties visibly inherent in it: But, it is supposed to act chiefly by Means of its specific Gravity, and the Figure of its constituent Parts. That is, First, by Means of its specific Gravity, it attenuates the Fluids, and increases their *Momentum Motûs*; and, of necessary Consequence, tends to break down and destroy (as observed above) all gross viscid Concretions or Combinations of Humours, which form and constitute Obstructions in the Vessels. And, lastly, by the Figure of its Parts, it increases the Nifus of all the Blood Vessels, and the attractil Force of all the other Solids: Therefore we ought not to wonder that very great and various Ends are obtained by the Complication and Joint-

Action of two such Powers, as appear to be impressed, one on the solids, and the other on the Fluids.

It is not my Design to write a Treatise upon Steel in this Place ; but I cannot dismiss so great and important a Branch of the *Materia Medica*, without taking a nearer View of it, by examining cursorily into its consistent Parts, or first Principles ; and the Manner of its Generation and Formation in the Bowels of the Earth. And, first, as to its Generation and Formation: It is, doubtless, like all other Minerals and Fossils, produced by a regular and proper, though a subterranean Vegetation. This Doctor *Chrouet* (a Physician of that Country) asserts ; but unluckily destroys his Thesis in the very Attempt to explain and prove it. After various Analyzations of this Mineral, he does not hesitate to assert, That the constituent Principles of Mars, is an Earth resembling Potter's Clay, a very fixed Sulphur, and a double Salt ; that is, a Salt partly acid, and partly alkaline. I will not pretend to deny that Mars is constituted of these Principles : Because, as I have not been at the Pains of analyzing that Mineral ; so I cannot judge what *Phænomena* might be present to
favour

favour ſuch an Opinion. But further, Doctor *Chrouet* is of Opinion, and peremptorily afferts, That the whole Bulk of the ſuppoſed conſtituent Principles aſſemble at once together, and ſo mix, and incorporate one with another, as not to be eaſily ſeparable; except only the acid, of which the Salt partakes, and which (for that Reaſon) he looks upon to be the grand Operator in the Formation of this Mineral. Things being thus ſituated and diſpoſed, he ſuppoſes the Air to deſcend upon the Maſs, and to inoculate or impregnate it: And there, by its intimate Commerce with the fixed Salts; to ferment, ſwell, and dilate the Maſs, like, as *Leaven* does *Dough*. By this Fermentation the various conſtituent Principles (ſays he) are more intimately mixed and interwoven with one another; and, conſequently, their Parts diſpoſed to come to a cloſer contact, and a ſtronger Union: And, laſtly, (if I have comprehended the Doctor's Meaning, for he does not expreſs it,) by the ſuppoſed Fermentation, its Fibres are rendered ſo ſtrong and eluſtic, as that the whole Maſs contracts itſelf together into a cloſe, compact Body, to the Expulſion of the interpoſing

Air ; and so the true Marcasite of Steel remains.

This, indeed, is a very specious, or rather vociferous Definition, (though in my Translation I have much abridged and curtailed it ;) and it is supported by a good deal of the Chymical Bombast and Jargon. I declare it is no small Mortification to me, that I must again differ from Doctor *Chrouet*, and dissent from him, in this his so learned and laboured Definition. But, as I cannot sacrifice my Reason to a Ceremony, nor prostitute it to Flattery ; so I can by no Means dispense myself from it. Whether, or not, the Doctor, in his several Analyzations of Mars, did really discover such *Phænomena*, as would lead a reasonable Man to think it composed of the Materials, and in the Manner he assigns, I will not venture to say : But I rather incline to believe he was led into this chymical Way of defining it, from the Prejudices and Attachment he might have to the obscure and mysterious Part of that Art, (which is nowhere so much espoused and cultivated as in *Germany* ;) and perhaps, to shew himself an Adept in it besides. But, be that as it will, I shall proceed to deliver my own Sentiments upon

upon it ; which are intelligible, plain, and (I hope) natural.

My Sentiment upon the Matter is this : Allowing those Principles to constitute Mars, which Doctor *Chrouet* lays down as Fact, I would suppose it to be brought to pass by the following Mechanism, *viz.* That when, or wheresoever those Principles meet together in a proper Matrix, and strike each other at proper Angles, they inosculate, unite, and are intimately interwoven together, and so assume a new Form and Denomination. And thus may be formed the first Seeds or Rudiments of a Mine, or mineral Bed ; which may enjoy Virtues and Properties, as well as a Form and Substance, that did not visibly pre-exist in either of the Individuals ; and these Seeds, or Rudiments, being thus formed and disposed, might daily vegetate, and increase in Bulk. They would not vegetate, indeed, like as Plants and Trees do, which receive their Nutriment through the fine Tubes of their Roots and Seeds, but by a Kind of Vegetation, which is peculiar and proper to themselves ; in common with other Minerals, perhaps. But, though I don't absolutely deny and reject Doctor *Chrouet's Hypothesis*, yet

yet, I confess, I am more inclined to favour another. That is, I am of Opinion, that Mars or Steel is not a Body compounded of various Principles; but that all its constituent Parts are simple, genuine, and of original Existence; and that these Parts, or Particles, (conformable to the eternal and immutable Laws of Attraction,) as they approach nearer together, do incline more violently to each other, till at last they unite and combine together in one Mass; which Mass continuing to act in like Manner (in Obedience to the same attractil Property) upon all such homogeneous, or similar Particles as pass over, or approach near it, does daily vegetate or increase in Quantity; 'till in Process of Time, large Mines, or mineral Beds, are formed: And this I hope will be judged more consistent with the true Nature and Doctrine of mineral Vegetation, than Doctor *Chrouet's* Hypothesis. Moreover, that great Operator [Nature] is not more excellent and admirable in the Formation of this Mineral, which she renders so solid and compact, as in a Manner to conceal its Virtues from our external Senses; than she is in separating again, in dissolving, mixing, and so rendering it applicable
to

to a Multitude of medicinal Ufes ; in which it displays surprizing and almost infinite Virtues.

But here I proceed to the Consideration of Vitriol.

Vitriol is commonly counted a Semi-Met-
tal, it being a Salt, which has poluted itself
by engendering with some Mettal or other.
But however unchaft and polute it may be
in its Commerce with different Species, it is
neverthelefs excellent in its Nature and
Ufes. And, firft, it greatly corroborates the
Stomach and Guts ; it reduceth their relaxed
Fibres ; and by contracting and reftoring the
Orifices of fuch Glands, as were too lax and
open, it represses a redundant Phlegm and
Slime in the Stomach and Bowels ; and fo be-
comes an Accessory to the Promotion of Ap-
petite and Digestion. It opens Obstructions,
by heating and attenuating the Fluids ; and
ftops Fluxes, by astringing the Solids. Its
Virtues and Ufes, should I enumerate every
particular, are very many ; but these are
much increafed, as well in Number as Degree,
when it is complicated with Mars.

Nitre is a great Cleaner of the Conduits and
Veffels of the Body, and tends to purifying
the

the Blood: It incides and attenuates all greasy, slimy, tenaceous Humours; and by that Means removes Obstructions: It divides, and destroys their Cohesion and Union, by penetrating them with its sharp Points: And, lastly, precipitates the Matter by Urine; and in that Operation, it likewise scowers and cleanses the Reins and Ureters.

The subacrid Salt, which is produced upon the Analyzation of this Water, is in a small Quantity, that it scarce deserves Notice. However, in Proportion to its Quantity, it must be very aperient, deterfive and cleansing.

It appears from what has been said of these individual Principles, that they are all and each of them shaped to the same general Ends and Purposes, though they affectuate them by different Ways and Means. And thus far Nature is justified, who is said to be right and uniform in all her Operations; as she has not complicated and blended together Things which are opposite and repugnant to one another in their Natures and Effects.

When these various Principles are (by her) brought into a perfect Union, and are not only intimately mixed and united, but wrought up (by the same Hand) to the utmost Degree of Sublimity and Volatility; what new Virtues

tues and Properties must they not acquire? and to what Degree may they not increase those that pre-existed? Here it is, methinks, in this Situation of Things, that I can palpably trace and discover all those great, various, and even opposite Effects, which are produced by the Waters of the *Pouhon*; and which (notwithstanding they are obvious from daily Experience) seem to have staggered the Reason of such Persons as have hitherto wrote upon them.

Doctor *Nessel*, (another Physician of that Country,) when he is speaking of the great Virtues and Effects of these Waters, (though proved by him experimentally in numerous Instances,) anticipates to himself the Railery of the World. He supposes every one will account what he is about to relate apocriphal, if not paradoxical. Again, he supposes that the Almighty had impressed an intelligent Spirit on them; by Virtue of which, the Waters knew precisely, upon what Parts, or Humours they ought to act, exclusive of, and abstracted from all the rest. He fears the World will think him very romantic, when he says they are both hot and cold, moist and dry. And, indeed, well it may:
For

For they are not actually so, (as he seems to imagine,) but only virtually. He expects to find but a few Believers, where he says they heat what is too cold; and that they cool what is too hot; that they dry up a redundant Moisture; and moisten what is too dry; that they open what is too constipated; retract and restore what is too much relaxed, &c. But why all this Astonishment? Why must we suppose all these Effects, and Operations to arise and proceed immediately from the Direction and Influence of a supernatural Agent? Certainly this Gentleman never made any Appeal to his Reason; or else, surely, he would have been able (in some Measure at least) to have discerned the Causes of all these Operations and Effects in a rational Light. For my own Part, I ingenuously and solemnly declare, that though my Senses were not convinced in all these Particulars; yet my Reason (informed by their Analyzation) would readily have suggested them to me in Favour of these Waters.

To sum up all in few Words: I have discerned such Virtues and Qualities in the *Pouhon* Water, as lead me to believe, that by a just, regular, and due Use of it, it is capable of curing

ring very many and great Disorders ; and, finally, of restoring the just Ballance of Nature, of bringing all the particular Faculties and Functions of the human Constitution to a just Equilibrium ; which, as it is the most certain Cure for many Diseases, so it is the best Barrier of Health. Here I take leave of the *Pouhon*, and proceed to the *Geronster*.

In examining the *Geronster* Water, I went through all the same Experiments, as upon the *Pouhon* : And afterwards I put it to the Wreck in divers other Manners. But, before I relate my Experiments, it will be proper to observe, that this Water is highly impregnated with a sulphureous Vapour or Essence ; as is manifest to the Taste and Smell ; besides, other Circumstances, which arise immediately upon drinking of it, plainly speak the same Thing. This Vapour or Essence must necessarily be extremely volatil, since it instantly dissipates upon the least Access of Heat. People, ont heir first taking this Water, are usually affected with sulphureous Belchings ; after they have drank a few Glasses of it. This is what I my self have frequently experienced ; and as oft as I have belched after drinking them, it has been attended
with

with a very odd Perception; like as if a Flash of Gunpowder issued from my Stomach.

I first tried it with a Gaul; which being scraped very fine, and put into it, tinged it of a purple Colour; but upon mixing a few Drops of Oil of Vitriol with it, this borrowed Colour soon subsided. I had next Recourse to Evaporation: By which Process I extracted three Drams and one Scruple of a deep Cinnamon-coloured Oker, from five and twenty Pounds of the Water. This Powder likewise, affordeth but very little Taste, and differed from that of the *Pouhon* in nothing, so much as in the Colour and Quantity; though, indeed, but very little in the latter. When this Powder was taken out of the Evaporating Vessel, I perceived all around and about the Bottom of it a white saline Matter, which we could not scrape off without Difficulty. This I judged to be an alumenous or vitriolic Salt, which (being not so intimately mixed and incorporated with the Mars and other Principles) separated in boiling, and by its Weight precipitated, and fell down sooner than the other Feces. Indeed, it is evident that the Mars is not so perfectly blended and incorporated with its Fellow-Principles

ples in this Water, as in the others; and consequently, it is more genuine, distinct, and separable; which will plainly appear from the following Experiment. I gathered some of the Ruddle, or reddish earthy Matter, which gradually adheres to the Stones in the Fountain; but more especially to those it passes over, as it runs from it. This I judged more proper for any Experiment of this Nature, than the Feces remaining after Evaporation; because the former is a pure and natural Concretion, or rather gradual Gathering of the more gross, terrene Particles, free from the Alteration and Destruction that Fire must undoubtedly produce upon the latter. This earthy Matter, which to Sight appears a sort of Iron Rust, and would incline one to think the Water impregnated with little else, were it not for its Lightness in Weight, as well as Greasiness, and the saltish Taste that it imparts: This earthy Matter (I say) being calcined gently on a polished iron Plate, or in a Crucible, all its ironish Parts easily detach themselves upon the Approach of a Loadstone, and adhered to it. Which did not appear in the like Experiments made on the Feces of the other Waters. Hence we are

instructed that the Mars, contained in this Water, is not so much fettered and entangled with its Fellow-Principles, as in the others. The Feces remaining, after the ironish Particles were thus extracted by the Magnet; being boiled in rain Water, and then filtered and exhaled; there remained a small Quantity of a bitter, piquant Salt, of the neutral Kind. This Water, then, manifestly contains a redundant sulphureous Spirit or Vapour, as appears both from the Smell and Taste, as well as from other Circumstances already mentioned; a good Quantity of well elaborated Mars, not intricated and confused with the other Principles; some Vitriol, as is apparent from the Tincture it receives by the Gaul; and an alcalic, fixed Salt. I call the Salt alcalic, though in Reality it is neutral; because the alcalic Quality greatly predominates over the acid. How many, and what great Virtues and Properties must necessarily be contained here? And what Effects may we not expect from these Principles, justly proportioned, intimately mixed, infinitely divided, and, lastly, sublimed to the highest Degree of Volatility?

Mars and Vitriol I have already explained upon ; and it would be unnecessary to speak of Sulphur in this Place, were its Virtues as well understood, as they are universally allowed. To speak then of Sulphur: It is a most powerful Purifier, and a considerable Rarefier of the animal Juices : It attenuates, dissolves, and destroys all gross, tenacious, and viscous Combinations : It resolves all morbid Concretions, by dissolving, or otherwise destroying their Cement ; and is equally good in many acute, as well as chronical Diseases : It cures all cutaneous Distempers, whether recent or inveterate : It levels (in general) all ill Humours, whether acid, acrid, or corrosive : And if there be any Humours so stubborn as to resist a compleat Dissolution, Correction, or Expulsion, it will so work upon them by Digestion, as greatly to enervate and unarm them. And this it effects by filing off, and blunting their Points ; and so rendering their acute Angles obtuse and offenceless. But should only the first Character or Quality, I have ascribed to Sulphur, be granted me, *viz.* That it is a great Rarefier of the Blood ; it would be easy to prove the Necessity of all the rest, from the ingenious

Doctor *Morgan's* Explanation of the Laws of the Motion and Secretion of the animal Fluids.

* Besides these, it softens the too-rigid Vessels and Fibres, and promotes Perspiration. And, finally, (to end where I should have began,) it warms and comforts a cold, weak Stomach, and restores its decayed Ferment.

The fixed Salt, discoverable in these Feces, is what now demands to be spoke to. This Salt seems calculated to make the Composition truly perfect and harmonious: This is wonderfully adapted to precipitate and carry off by Urine, those Humours which were wrought upon and prepared by the Sulphur, Mars, &c. Besides this, it may have, and undoubtedly has many inherent Virtues, which are peculiar to itself; and it may be qualified to act on some Species of Humours, which none of the other Principles could touch. For, though their Virtues are really very great and numerous, yet I don't pronounce them Panaceas. When speaking of Sulphur, *e. g.* I said it levelled in general all ill Humours, whether acid, &c. That is to be taken in a comparative Sense. This Salt
is

is a powerful Bitter, and consequently a Promoter of Digestion: It resolves and attenuates the Fluids by its Subtility, and Piquancy of its Points; and for the same Reason, must deterge and cleanse the Glands and Blood-Vessels; especially the latter, and the smaller. Now, when by the Joint-Force and Action of these Principles and Powers, all the ill Humours, whether acid, acrid, or corrosive, are corrected; and all the gross, slimy, viscous, and tenacious, are resolved, and the whole destroyed, or discharged; it is not improbable, but all those happy Effects, I shall hereafter mention, may ensue.

In examining the *Sanveniere* Water, my first Essay was by Exhalation; by which Process fifty Pounds of the Water yielded me five Drams and a half of Powder, of a brighter Colour, though in Weight and Taste nearly resembling those of the Waters already mentioned; but this Powder, being calcined upon an iron Plate, the greatest Part dissipated in bouncing Sparkles, like Nitre. There remained, after the Experiment, an acrid, piquant Salt; which, upon a close Examination, we found had corroded the Plate.

Doctor *Chrouet* relates an Experiment which I had not Time to make myself; and therefore, for the present, must take it upon Trust. He reports to have put twelve Drams of that red earthy Substance (which adheres to the Stones over which the Water passes) upon an iron Plate made very hot, and that it immediately sparkled violently, (I suppose like Nitre, tho' I have not the Doctor's Word for that,) and spread a truly sulphureous Smell for the Space of two or three Minutes. But, when these Appearances were over, and the Smell of Iron began to take Place, he remov'd it from the Fire, and found it diminish'd three Drams in Weight; which assur'd him that it contain'd one fourth Part Sulphur. After this (adds he) the *Magnet* attracted it very readily, and it turn'd a Tincture, given by a Gaul, blackish; which it has been observ'd not to do, when kept a longer Time upon the Fire; because the Texture of its Mars being very loose, the Fire would easily consume its metallic Sulphur, and so entirely destroy the Metal: Whereas, being (on the other Hand) but a little while expos'd to the Fire, it only consum'd its exterior, gross Sulphur,

Sulphur, which before hinder'd the Force and Action of the Loadstone upon the Mars.

Hence it is evident, that the chief, if not the sole Impregnations of the *Sanveniere*, are Mars, Sulphur, and Nitre, with a small Quantity of an acrid, vitriolic Salt: But, how well Doctor *Chrouet's* Experiment quadrates with his own Reflections upon it, I leave the World to judge. He says, That putting the Matter upon a red-hot iron Plate, it immediately sparkled very much, and cast a sulphureous Smell for the Space of two or three Minutes; and after that, weighing the Matter again, and finding it one fourth Part diminish'd, he does not hesitate to charge the whole Consumption upon the Sulphur, and makes no Account of the nitrous Particles that first detach'd themselves from the Mass in the Way of bouncing Sparkles.

It would be needless in this Place, to say any Thing of the Virtues and Properties of Mars and Sulphur, as being the principal Minerals with which this Water is impregnated; (having already been pretty copious on each.) However, I cannot omit to add in Favour of Sulphur, That its balsamic,

softening Quality, coacting with the penetrating, diuretic Nature of the Nitre, and the deterging, cleansing Property of the Mars, must necessarily qualify it to effect those great Ends and Purposes, for which I shall hereafter recommend it. This Water, being reputed very cold, I tried it with a Thermometer ; which (being first filled with rectified Spirit of Wine) I plunged in the Water, and held it there about five Minutes ; after which, taking it out again, I found the Spirit condensed about a fiftieth Part.

The three other Fountains, *viz.* the little *Sanveniere* or *Groesbeeck*, the *Tannelet*, and the *Wartroz*, are truly Sources of very delightful Waters, and have some perceptible Differences from each other ; but they are now almost out of Date, and quite out of Use. The *Wartroz* has a purgative Quality: There is yet one Thing (as I have been well assured by credible Persons) common to all the mineral Fountains about *Sparw*: It is this; Take an Eel, or any other Reptil, and plunge into it; it gives a Spring, and dies immediately.

I will now enter upon my third, and last Section: Wherein I shall endeavour to appropriate and direct the great Virtues and Properties, I have ascribed to these Waters, to their proper and respective Diseases.

S E C T. III.

THE Waters of those three admirable Fountains, the *Pouhon*, the *Geronster*, and the *Sanveniere*, though they have some Virtues and Properties in common with each other; yet have they others which are distinct and peculiar; and in some Cases, they even produce Effects directly opposite and repugnant to each other: But this is no less obvious to Reason, than it is evident from Experience; as I shall make appear, when I come to explain mechanically upon the Virtues and Properties of each Water; deducing them from the Consideration of their respective, individual, constituent Principles, with which they appeared (upon Analysis) to be impregnated.

The *Pouhon* Water appears evidently to be greatly impregnated with Mars, Vitriol,
and

and Nitre. Some Physicians and Authors contend very obstinately, that there is both Sulphur and Alom in it. But, as I could discern no Marks of either in its Analyzation; so I shall consider them no further, than only to observe, That should there be some Sulphur, its Proportion is so small, (compared with the other Principles,) as to be almost out of the Question. Besides, the Use and Experience of this Water, in many Cases, (as I am credibly and well informed,) are equally tacit concerning a Sulphur, as the Examinations I passed upon it; and; as I have already hinted, those three cardinal Principles being granted, in that Justness of Proportion, so intimately mixed and incorporated, and so highly sublimed, as they evidently appear to be; I need not rack the Water, or my own Brains, to find out new Ones.

I have already spoke of the Virtues and Properties of these three Principles taken separately: I shall now proceed to consider them in their compound State. And,

FIRST, The Mars and Vitriol are wrought by Nature into a perfect Vitriol *Martis* of the most sublime and excellent Kind. This

Com-

Compound bespeaks many, and very great Virtues and Uses: But then, being intimately mixed and incorporated with Nitre, its pre-existing Virtues must necessarily be increased, as well in Number as Degree. This happy Confederacy of Principles, by their Joint-Force and Action, are capable either of raising or reducing the animal Oeconomy to, or supporting it under a just Regulation. They are capable either of searching or guarding it, from their first Entrance at the Mouth, through its most intricate Meanders and Labyrinths, to its most remote Outlets. They are calculated, and qualified to distribute impartial Justice every where. They can raise and inspirit what is weak and languid; curb and suppress what is too luxuriant. They can force open and cleanse those Ducts and Canals, which are choaked up with Filth, or otherwise obstructed; contract and restore those that are relaxed, and too much dilated.

But to proceed regularly.

I shall, (for Method's sake,) *First*, set forth how, and by what various Ways and Means this Water acts upon our Constitutions. *Secondly*, How, and by what Mechanism,

it

it produces the various Effects ascribed to it. *Thirdly*, In what Diseases it is particularly proper and useful ; and in what improper and pernicious.

Its first Action is upon the *Primæ Viæ*, or what we call the alimentary Duct, as far as to the Stomach ; though, indeed, if drank in large Draughts, and at short Intervals, its Action will reach the Guts likewise ; where, by its Coldness and Weight it strikes forcibly on all the interior Glands and Fibres, so as to contract them very vigorously ; its subtil, volatil, elastic Spirit acting at the same Time with a Stimulus, not only cooperates to the same End, but it likewise penetrates their Orifices, and gets immediate Passage into the Blood, by piercing through, or breaking down any slimy, viscous Humours ; which, sticking in and clogging the recipient Tubes, might obstruct its Entrance. The above supposed Action, which is thus communicated to the interior Glands and Fibres of the alimentary Duct, by the Coldness and Weight of the Water, and the Stimulus of its volatil Particles, (not to mention the increased Attrition of the Stomach, which will contribute a good deal to the same

same

same Ends,) is continued with a proportion-
 al Diminution to the very Superficies of the
 Body; when at the same Time the subtil,
 volatil, elastic Particles, which e're now
 have penetrated the recipient Tubes, and got
 Access to the Blood, are co-assisting to the
 same End, by invigorating the Blood and
 Spirits, and teaching the exterior Solids, as
 well as the whole artereal System, to re-act
 proportionally to the increased Force they
 receive from within. We are here to consi-
 der, that by this Time (for this complicate
 Scene is not long in Acting) a great deal
 of the more gross, as well as volatil Ele-
 ments have insinuated themselves into the
 Blood; and that their Virtues and Forces are
 joined together, and disposed in Action.
 Here, may we discern a triple Power in
 Alliance and Joint-Action together. All the
 Solids are stirr'd up to Action by the Weight
 and Coldness of the Water striking upon
 them; whilst the Blood and animal Spirits are
 actuated and rarefied by the volatil, elastic
 Principles contained in it, which get imme-
 diate Access to them; and by this Time, all
 the Parts and Principles of the Water, as
 well the gross and terrene, as the subtil and
 volatil,

volatil, are uniting and levelling their utmost Force, to correct or alter, attenuate or dissolve, break down and destroy, all ill Humours, whether acid or acrid, gross or slimy, viscous or glutinous, which may happen to lie in their Way, and obstruct or interrupt their rapid Motion. The whole Frame of the human Fabric, thus co-operating with the medicinal Virtues of the Water; those great Ends and Purposes will very probably be obtained, (as Experience testifies they often have been,) which neither the same, nor any other Principles, in any other Form or Disposition, could accomplish. But further; whether the Ends desired are perfectly obtained, or not, the Constitution certainly fares the better for it (to the Exception of a very few particular Circumstances.) For it is the peculiar happy Property of these Waters to act in Conservation of the human Frame, and not to its Destruction; which is the ill Faculty of but too many Medicines given in other Forms.

It may by this Time, perhaps, sufficiently appear from the Natures and Properties I have assigned to these Waters, as well as from their Operations, that they do, and indeed

indeed necessarily must act in Preservation of the human Frame, with all its particular Faculties and Functions, and not to their Destruction or Depravation: And was it not that I should degrade what I am intimately concerned about, and interested in, (that is, the Practice of Physick,) I might with equal Ease and Certainty shew, that other Forms of Medicines (some of them at least) act to very different Effect, that is, to their Destruction, and not to their Preservation; except only, when they are directed by a Physician truly judicious in Medicine, as well as penetrating into Nature; which, I may venture to say, are not the Portions of every one amongst us. I shall readily be understood to mean here, all Medicines of the Galenical or Chymical Tribes, directed or applied by such Persons, who, for want of a due Knowledge, either natural or acquired, or both, are incapable to form any just Judgment, either of the Nature of a Disease, or of the Intentions of Cure; or, lastly, with what Instruments to execute such Intentions. And if these Medicines, which have a strong and violent Operation, should (as it's odds but they will) miss of their Aim, and produce

no good Effect on the Matter or Humours constituting the Disease: These will evidently remain the same, or perhaps be aggravated, whilst the poor Constitution is the Sufferer; and which being thereby greatly debilitated and extenuated, falls a Victim to the Enemy.

The late learned and accurate Doctor *Freind*, in his *History of Physick*, very justly censures some of our systematick Physicians of the present Time: These Men (he tells you) pursue their own Notions and Chimeras in Physick, in Contempt and Neglect of all the ancient and modern Writers in that Science. Strange Arrogance! That this or that Man should implicitly believe and prefer his own Whimsies and Conceits, so far as to disdain searching for farther Information, or drawing any Succours from past Ages. But Doctor *Freind* has treated this Subject in so masterly and convincing a Manner, and has so shortened every Man's Labour of this Kind, by culling out, and severing from the voluminous Chaos, such Books only as are peculiarly proper and useful to be read in the several Branches of Physick, that I hope, in Time, we may
have

have the Satisfaction, and the World the Benefit of seeing these Gentlemen become his Profelytes.

The very learned and justly-renowned Doctor *Boerhaave*, Professor at *Leyden*, has laboured more happily and effectually towards restoring the Practice of Physick to its primitive Purity, than any other Person, (that I know of at least,) either in the present or several Ages past. He, indeed, is a Mirror of Perfection in every particular Branch of it; and the Merit of his Labours is rewarded with the universal Testimony and Approbation of all the learned World. His Labours, Discoveries, and Improvements in Chymistry, have of late appeared in Publick, and are very justly acknowledged to be stupendious, and to excel every Thing extant upon that Subject. The same Harmony, Purity, Truth, and Chastity, are alike conspicuous in his Practice and Theory. *Expertus loquor*: For I have the Honour of some Acquaintance with both. The Lectures he utters to the Pupils in his Colleges, excel (perhaps) any Thing to be met with of that Nature: They are so clear, perspicuous, orthodox, and instructive, that

I will venture to say, if amongst the great Number of young Physicians that list under him yearly, any go away unduly qualified, it can only be owing to their own Inattention, or Incapacity to digest and turn them into salutary Nourishment.

Doctor *Morgan*, in his Preface to the excellent Book above quoted, strenuously urges another Branch of Learning, which to some perhaps may seem a little foreign to Physick, as indispensably necessary towards the forming a good Physician: And, indeed, He finely illustrates the Use of it in the Text of his Book. This is the Science of Mathematicks; and therein particularly Arithmetick, Geometry, and Algebra; upon whose Basis and Principles he requires that a competent Knowledge of the animal Oeconomy, with its Laws of Motion, &c. should be founded.

An accurate Acquaintance with Mathematicks, is indeed absolutely necessary to the perfect Attainment of many Arts and Sciences: But, I apprehend Doctor *Morgan* lays too great a Stress upon it, with Regard to Physick. It is certainly, however, a good Basis, as well as an Ornament to Physick,

sick, when it does not interfere with Things of greater Use and Importance. But then, surely, our chief Endeavours (after having attained to a due Knowledge of what we call the *Leges scriptæ Medicinæ*) ought to be employed about cultivating and improving the natural Genius; or in acquiring an Aptitude and Facility to solve all the *Phænomena* of Nature, especially all those incident to the human Body: That is, its various Diseases and Distemperatures.

I would not, however, be thought to contemn or disregard the Science of Mathematicks; but rather admire and recommend it: As it's not only useful, but ornamental to that of Physick; and as it strengthens and enobles the human Mind. But then, I would obviate its Subordination to what is really more essential: That it should be sought, indeed; but in that Order of Time and Degree of Measure, which are proportional to the Weight and Use it carries in Physick. What I particularly contend for, and would give the Precedence to, is mechanical Knowledge: And I presume it will be allowed me, that mechanical Knowledge did precede the mathematical in Point

of Time, as it now does in Excellency and Extent. For, mathematical Knowledge serves only to explain and demonstrate the mechanical or rational: And should the mechanical or rational want that Demonstration; it may nevertheless be true, substantial, and useful. But (*vice versa*) a Man of the most consummate mathematical Knowledge, may be incapable of solving, in a mechanical Light, the simplest *Phænomenon*, which lies without the Sphere of his past Experience, or what he had never heard debated. And this leads me to applaud the Poet, — where he says — *Felix qui potuit rerum cognoscere causas*. Furthermore, it will appear, that mathematical Knowledge is (in a comparative Sense) narrow and bounded; but the mechanical is liberal and universal: It takes every Thing into its View. And the Physician, who does not (though I hope and believe many do, indeed) consider every Disease in a mechanical Light; with Regard to its Nature, Essence and Intentions of Cure, is, *de Facto*, no more than an Emperick. On the other Hand; I presume the greatest Advocates for Mathematicks, or Adepts in it, seldom appeal to
it

it in their Reflections on Diseases, or make it in any wise the Rule and Standard of their Practice. And hence I infer, that mathematical Learning, without a natural Aptitude and Capacity to reason mechanically about Things, will be of but little Service in Medicine; whereas the latter, without Mathematicks, may be of a great deal.

I am not (however) about to derogate from Doctor *Morgan's* Performance. No! But far otherwise. I profess to admire it; and account it very excellent. The Book bespeaks, not only the accurate Mathematician, and One well acquainted with the animal Oeconomy, but the Man of a fruitful and fine Invention likewise; and is such as must secure the Approbation and Esteem of all Men of useful Learning and sound Judgment, both to it self and its Author. But, to wave this Argument; Would all Physicians, or rather Students in Physick, be directed by Doctor *Freind*, in so important a Point as he urges to them; we might in Time, not only arrive to some Degree of Perfection, but to a Uniformity in Practice likewise: Whereas at present we are the most variable, as well as inconsistent Set of

Men living. We are not only one Day, but in one Place or Country, Peripateticks; in others Epicureans: Here Galenists; there Chymists: Every Age, or Country, new modelling the Art, and adapting it to its own Scheme and Caprice. Hence, it's no Wonder that the Profession is scarce advanced since its Infancy; and that Theories and Practice should so vary amongst the Learned. But here I finish a long Digression, and resume my Story.

The mineral Waters, in and about *Spaw*, but more especially the *Pouhon*, enable Nature's Self to work, at the same Time that they put Tools into her Hand to work with: And to suppose the worst of these Waters; Though this or that Disease in Question should not be compleatly cured by their Use; (which will very rarely happen, where the Patient exactly conforms to the Dictates of a judicious Physician,) it is a great Chance, but some other latent Disease is prevented: For, it is their peculiar Prerogative to preserve the whole human Frame under its due Regulations: To restore its lost or decayed Ballance of Power, and to bring every Thing into a just Equilibrium.

librium. And it is by these Means, chiefly, that they cure so many, so great, and so opposite Diseases.

I shall in this Place, endeavour to reconcile all those mysterious *Phænomena*, which have appeared so stupendious and unconceivable to some Physicians and Writers upon these Waters, and render them familiar and intelligible to the meanest Capacity: And, instead of being staggered at their real and obvious Effects, prove from their constituent Principles, and the Laws of Mechanism, that the like must necessarily come to pass.

The Science of Physick, in general, is dark and intricate enough; but such *Phænomena* as these, are particularly abstruse and unintelligible; and I don't at all wonder they should appear Mysteries and Riddles to some amongst Us. For, though there are many who practice Medicine, that either by Accident, Interest, or Stratagem, acquire and establish Characters in the World; yet, I will be bold to say, not all of these are equal to so important and perplexed a Task. It has been often remarked, (and indeed it's what must recur to the Memory of every

curious Observator,) that some Gentlemen of the Faculty have bribed the publick Vogue, and stepped into high Repute, by Means of a huge Heap of learned Lumber, which they have acquired at immense Pains, on Purpose (perhaps) to cover and conceal their Defects of natural Genius. This, indeed, is what always captivates the Opinion of the Vulgar; who obstinately refuse to see any Imperfection under this Veil: But nevertheless, such Men have often been found the most egregious Ideots in reasoning upon the various *Phænomena* of Nature. This reminds me of what Doctor *Baynard* says, in Sir *John Floyer's History of Cold-Baths*, viz. — That “ Learning in
 “ some Men only serves to worsen them.”
 Such Men (as I have been speaking of) may very justly and aptly be compared to an industrious Husbandman, or expert Gardener: For, as the former bestows the best Manure on the barrenest Soils, and the latter lends preternatural Aids to raise the colder Seeds and Plants; so those Gentlemen take more than ordinary Care to dung their cold, infertile Brains with a great deal of Learning. I remember a Passage in an
 epi-

epigrammatical Poem (wrote by a young Physician, and one of the finest Genius's of the Age) which supposes to a Tittle what I here assert. It is this — “ Great Physicians
 “ we have heard of, meer Quacks in Dispu-
 “ ting, &c.” It must be confessed, however, that (generally speaking at least) an accurate Acquaintance with the dead Languages and Logick, with the School Philosophy and Mathematicks, must cultivate and improve every Genius: And every one who is an Adept in these Things, will (*cæteris paribus*) excel another who is less versed in them. But, if the Genius so equiped had not, in its rude and natural State, a peculiar Turn and Aptitude to solve and discuss whatsoever *Phænomena* may present in a mechanical Light; the Man (indeed) may make a Figure in the World, but will never have much real Merit in his Profession: For it may be said (in a comparative Sense) of a Physician, as of a Poet, *Nascitur non fit*: That is, in a Degree of Eminence or Perfection. But to my Purpose.

We see several Diseases, diametrically opposite in their Natures and Symptoms, cured by the same specifick *Spar* Water. One
 Man

Man has an utter Dejection of Appetite; another a violent, but depraved one. In one the Fibres of the Stomach are too lax; in another too tense. In this Man the Ferment of the Stomach is exorbitant; in that weak and languid. One Person's Bowels shall be of a hot Temperament; another's of a cold one. The *Bile* shall be redundant in one; and deficient in another. The Guts of one Person, shall be too rigid and constipated; those of another too lax and open. Some perspire too little; others (though but few such) too much. We observe the Blood to be too hot and rapid in some; too cold and lazy in others. We see Tumours and Defluxions of different Natures, and proceeding from different Causes; as some from Heat, and too violent a Motion; others from Cold and too slow a Motion of Humours. We see some Women labouring under violent menstruous Fluxes; and others under severe Obstructions; and all these, in common, cured by the same specific *Sparw* Water. Finally, We see some Women rendered fertil by the Use of these Waters, who had been barren for many Years, against the Force of all other Medicines;

cines: But here, indeed, they do not produce the contrary Effect; for no Woman was ever rendered steril by them.

Now ; To obviate and solve the Nature and Reason of so many extraordinary and different Operations or Effects: I suppose first, That all these Diseases which have their particular Shapes and Appearances, and seem to have different and distinct Essences, do primarily arise from Errors, either in our Accretions, or our Secretions. These are (in my Opinion at least) the *Causæ primæ*, or original Causes of most Diseases; subordinate to, and dependent on these, are other Causes, which are properly stiled the mediate Causes. These are Humours that offend either in Quantity or Quality; or perhaps in both. Such Humours as offend in the first Sense, cause a Plethora, or Redundancy. This generally yields to Fasting, or proper Evacuations: But if it subsists long, may produce very many and great Disorders; as Headaches, Giddiness, Vertigoes, Apoplexies, Shortness of Breathing, Oppression at the Stomach, Loss of Appetite, Bloody Fluxes, and Hemorrhages of the various Kinds, Tumours, Defluxions, &c.

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The Reasons why, or how all these Disorders may arise from a Plethora or Redundancy, are too obvious to any Physician (I would hope) to need explaining.

The Diseases, which will necessarily result from Humours offending in Quality, are very numerous; and (I apprehend) may reasonably be supposed to constitute nine Tenths of all the Diseases which infest Humankind. They are even capable of producing all the Diseases above mentioned, (and ascribed to an Offence in Quantity,) though by different Ways and Means. Hence arise all Sorts of Fevers, except the contagious and pestilential. These (*viz.* Humours offending in Quality) are the Parents of almost all chronical Diseases; such as the Hypochondriac, Scorbutick, Scrophulous, Strumous, Leprous, Nephritick, and Gouty: As also, the Rheumatism, Jaundice, Dropsy, and even Madness itself. Indeed, some of these may possibly be produced from Errors in Quantity; but that will very rarely happen. Now, That I may not appear to the Undiscerning and Incredulous, to impose a meer *Ipsè dixit* upon the World, I shall proceed to explain this long Train
of

of Disorders (which appear so opposite to one another in Nature and Essence) upon the aforesaid Hypothesis; and demonstrate that they spring from one and the same mediate Cause, only differently disposed; That is, from Humours offending in Quality. And, First, a Loss of Appetite may proceed (as indeed it generally speaking does) from ill Humours deposited in the Stomach, or otherwise critically thrown upon it from the Blood; which will necessarily weaken or vitiate its Ferment. On the other Hand, gross, slimy, or viscous Humours, clogging and obstructing the Glands and Capillaries of the Stomach, may deny Access to the animal Spirits, and those Juices, by whose Joint-Force and Irritation the Perception of Hunger is excited. Or furthermore, slimy, sizy Humours, gathering within the Cavity of the Stomach, and sticking to its inward Rugee, or Plies, may either weaken their Force, or render them so slippery, as to subvert their Faculty of retaining the Aliment received into the Stomach, 'till the Office of Digestion is duly performed. A ravenous, depraved Appetite, or *Fames canina*, must be caused by
 acrid,

acrid, corrosive Humours, whose precise Figure I will not pretend to determine; or by a vitiated and too-exalted Ferment, which may immediately proceed from them. A Relaxation of the Stomach's Glands and Fibres, may come from their Immersion, or soaking in slimy, viscous Humours; or from the same Humours obstructing, and immoderately distending the capillary Vessels; by which Means the Nerves may be so compressed, as to deny a due Access to the influent Spirits. On the contrary: Too great a Tension of the Stomach's Fibres, &c. must result from an impetuous Influx of animal Spirits; or from hot, acrid Humours, which too violently irritate and contract them. An Excess or Defect of the Stomach's Ferment, fall under the immediately preceding Definitions; or otherwise may spring from an ill proportioned Mixture of its natural Juices, &c. A hot Temperament of the Bowels must necessarily flow from too rapid an Influx of Blood and Spirits; or from a Redundancy of irritating Humours; or possibly (indeed) from a Defect of Mucosity. A cold Temperament (on the other Hand) from a Defect of animal Spirits, and a Surcharge of phlegmatick

matick, slimy Humours. A too rigid and constipated, or too lax and open State of the Guts, generally arise from the opposite Temperaments just mentioned; and consequently, are only remoter Effects of their Causes. A Defect of Perspiration most commonly proceeds from an Obstruction of the excretory Pores; but it may possibly result from some excessive and opposite Evacuation; as by Urine, Stool, or Spitting. On the contrary: An Excess of Perspiration must proceed from a Suppression of some one or more of those; or else from violent Exercise, or too great a Relaxation of the excretory Pores: Though, indeed, the Consequence of the latter would rather shew itself in gross Sweats, than what we (in a strict Sense) understand by Perspiration.

Here I can't omit to relate one Instance of what I have just now advanced. The Story was told me at *Spaw* (even whilst I was writing this) by my worthy Friend Doctor *Cocquillet*, Sen. He relates, That he had a Gentleman for his Patient, who had not the least Discharge by Urine for the Space of a Year and half; but that the Sweat fell from him in large Drops; which the Doctor supposed,

posed might Counterballance the Surcharge of Fluids, which must necessarily result from a total Suppression of Urine. But, suppose we that; most certainly it could not be so heathful, because 'twas not so natural. This Gentleman went to *Spaw* on Purpose to seek a Cure from the Waters, (committing himself to the Care and Directions of the said Doctor *Cocquillet*;) which he very happily and soon obtained. The Doctor observed further, that the Patient drank very hard of spirituous Liquors, even whilst he had this Distemper upon him. Doctor *Cocquillet* said, He found but few Believers amongst the many Persons, and even Physicians whom he told it to. The Case was (indeed) very uncommon: But I am nevertheless surprized, that Physicians (especially) should account it so great a Prodigy.

A too rapid Motion of the Blood, may result from external Heat, and violent Exercise; but doubtless does more commonly proceed from hot, irritating Humours intimately mixed and incorporated with the Mass; which, by their Stimulus excite the Blood to violent Motion, increase the Nisus of the artereal Vessels, and precipitate
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the Separation of animal Spirits. On the contrary; a too flow, lazy Motion of the Blood, must derive from cold, fizy, viscid Humours; which flowing with the Blood, will sheath and depress its native Heat, weaken the Elasticity of the arterial Vessels, and obstruct the due Secretion of animal Spirits. Tumours of the various Sorts (whether by Fluxion or Congestion formed) are produced from Humours some Way or other offending in Quality. As for Example: A Tumour by Fluxion, comes from hot, irritating Particles; determined, or critically thrown off from the Blood upon some one Part or other; where, their Passage being hindered by Reason of their Figure or Size, they stagnate; and a Tumour immediately ensues; or, otherwise, the like might be produced by sharp Humours determined on a Part; whose Spiculæ or Points, striking into, and wounding the Sides of the Vessels; the supposed Vessels would thereupon contract themselves violently; drive the pointed Wedges yet deeper into their Sides; and the consequent Hurry and Confusion of Humours would necessarily bring on a Tumour. Tumours by Congestion (on the other Hand) are caused by

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the Grossness, Sizyness, and Viscidity of Humours; which settling gradually, in this or that Part, form a Tumour by slow Degrees, and frequently without Pain. Defluctions, indeed, generally proceed from Redundancy, and sometimes from the Weakness of Parts.

Inordinate menstruous Fluxes, most commonly take Rise from Redundancy; but sometimes from too great a Heat and Rapidity of the Blood: Or, otherwise, from sharp, corrosive Humours; which falling upon those Parts, tear the Glands and capillary Vessels. Suppressions of the Menses, are most commonly caused by gross, viscous, tenacious Humours; which, choking up the Glands and capillary Vessels of the Parts, deny Passage to the Fluid destined to be discharged by that Way. Indeed, the like Effect may (and doubtless sometimes does) proceed from immoderate and opposite Evacuations: Or, from hot, irritating Humours; which, being thrown off upon those Parts, contract and shut up the Vents.

I flatter myself, it will by this Time evidently appear that the *Pouhon* Water, if it really has the Virtues and Qualities I have ascribed to it, (which I, myself, am perfect-

ly well convinced and assured of, as well from Reason as Experience,) may be capable of giving Relief in all the Disorders above mentioned. However, I will attempt to give a general, though a short Reason to confirm it. And first: This Water, by its forcible Action on the Stomach, greatly increases its Attrition; and by strengthening the contractil Force of all its Glands, enables them duly to eject their Contents, and then scowers them off; which, otherwise, by residing long in them, might choke up, and distend them: The Glands of the Stomach, being thus choked, and preternaturally distended, would deny Access to the animal Spirits and influent Juices; and consequently, either pervert or impair the Functions of the Stomach. This Water provokes Appetite, and confirms a good Digestion and Concoction. Thus the *primæ Viæ* are secured, and all their Functions established. And hence, all our Aliments pass into the Blood (through those common Recipients, the *Lacteals*) perfectly elaborated, and free from Crudity, Acidity, Viscidity, or other Depravities. Hence again, the Water gets a swift Transition into the Blood-Vessels

and mixes with the Fluid; where, at the same Time that it augments its Velocity, it prepares and fits its Humours for Motion; by correcting the acid or acrid, and by attenuating the viscous or glutinous. And, lastly, by increasing the Action both of the Solids and Fluids, it forces the Obstructions of the Skin, (if any there be,) and restores and confirms a due State of Perspiration. Moreover, all these great Ends are effectuated at one and the same Time, without the least Violence or Offence to the Constitution; which will necessarily and equally tend to repair all Weaknesses, repress Fluxes, and other irregular and excessive Evacuati-
 ons, as to open Obstructions. It opens Obstructions, by promoting the Attenuation, and increasing the Motion of the Fluids: As on the contrary, it redresses Fluxes, and other inordinate Evacuations, by assisting and increasing the opposite Discharges, by which Means the Tendency and Pressure of the Humours upon that Region are diverted; and by detarging and cleansing the Vessels of the Parts affected, and by restringing their lax Solids. This Water is a Specific in Barrenness, from what Cause
 soever

soever it may proceed, except it has a Foundation in Nature; and even then, (which may seem a Paradox,) may possibly supplant it. But this is so essential a Part of their Utility, that I cannot omit to make some Reflections upon it.

The Causes of this unhappy Circumstance are various. In the first Place, Barrenness may proceed from a Weakness of the Parts in general, or a Relaxation of the Womb in particular; which, in Consequence of either, will be incapable duly to perform its Office: That is, of retaining the Treasure committed to it. The Whites, if in a great Degree, are absolute Bars to Fecundity; and they may produce that fatal Effect two Ways. *First*, By deriving and exhausting a great Deal of that Substance, which is required for the Nourishment of the Fœtus. Or, *Secondly*, Should a Woman conceive under this Disorder; the diseased Matter, for want of a free Outlet, discharging itself into the Womb, might destroy or prevent the first Rudiments of Generation, by mixing with, diluting and spoiling the Stamina, as well as the Pabulum or Nourishment appointed for it.

Thirdly, A total Defect of the Menfes are Bars to Pregnancy.

Now, Let us suppose Barrenness an Effect of the Cause first assigned, *viz.* That it proceeds from a Weakness of those Parts in general, or a Relaxation of the Womb in particular. The *Pouhon* Water is, in that Case, perhaps, preferable to any other known Remedy; and being duly and advisably used, will very probably obtain the desired End, by strengthening the weak Parts in general, and by invigorating, inspiriting, and restoring the relaxed Womb, in particular. If Sterility result from the Whites, this Water claims the Precedency of any other Medicine whatsoever; for it most powerfully penetrates and searches, deterges and cleanses the lymphatick Glands from all their Filth, Slime, and Mucus; and at the very same Time, strengthens and restores their contractil Force. But, whereas the Whites do sometimes arise from a Defect of Perspiration, or some other natural Evacuation; this Water will most eminently and effectually relieve in that Case, for Reasons already assigned.

But

But, moreover, the Male Sex are sometimes subject to Infirmities, which are comparatively the same with those I have been mentioning in Women: For, we have heard speak of Imbecility and Impotency in Men, as well as Sterility in Women; in which Cases, these Waters prudently and duly administered, must afford great Help. To make this Assertion appear feazible, I will, first, set forth from what Causes Imbecility in Men can reasonably proceed. These indeed are various: And, *First*, (to pass over the common, trite Cause assigned by ignorant Persons and Empericks, called *Onanism*, or Self-Pollution,) 'Tis possible that a Man's Blood may not be sufficiently replete with the necessary Stamina. In such a Case the secreted Semen will be very little in Quantity, or very poor and spiritless in its Nature and Quality. *Secondly*, Supposing the Blood to be duly furnished in this Particular; the *Vasa afferentia* may be naturally too narrow; or may be accidentally contracted or obstructed, so as to deny Passage to a sufficient Quantity of Blood. Or, *Thirdly*, The preparatory Organs may be so choked and obstructed with viscous, fizy Humours, as

to hinder their natural Functions. *Fourthly*, The *Prostata* may be so immoderately distended and weakened, that the Semen deposited in them may run off upon the least Exercise or Strain; so that there will be but little or none left in those Repositories to answer the proper Occasions.

I don't remember, indeed, to have been informed, either by Reading or Conversation, that these Waters have been administered, or even recommended upon these Occasions: But nevertheless they must certainly be of very great Account in them. For if we recur to what has been already said of the Virtues and Properties of these Waters, *viz.* That they inspirit, invigorate, and strengthen the Blood; so, *First*, They must, in Proportion, heighten and increase all its more noble Principles. *Secondly*, They must give a vigorous Action to the Fluids, and a strong Flexure to the Solids. *Thirdly*, They must tend to delate the over-contracted Vessels, and restore a free Circulation of the Juices. And, *Fourthly*, That they promote the Attenuation and Resolution of all viscous, sizey, tenacious Humours, and restore the weakened Glands and Vessels, has already been sufficiently proved.

Thus

Thus I have given a general, but concise View of the Virtues and Qualities of the *Pouhon* Water; mechanically deduced from the Principles, with which (upon Analyzation) it appears to be impregnated.

I shall now abstract my Reflections upon it; and direct it to such Diseases, as it seems particularly calculated to, and specifically good for. And these are, principally, all Obstructions of the lower Belly, *viz.* of the Liver, Spleen, Miffentary, &c. inveterate Quartans, Tumours and Hardness of the Hypochondrias, Hypochondriac Melancholly, King's-Evil, and the Dropsy, if recent, and the Solids not corrupted. It improves all billious Disorders, by regulating their Source, that is, the *Bile*; which it either raises to, or confines within its proper Limits. It restrains and regulates inordinate menstruous Fluxes; and with equal Force and Certainty, removes their Obstructions. It breaks to Pieces, and expels all Concretions in the Reins, Ureters, or Bladder, whether they be Stone or Gravel: And, finally, it cures the Scurvy, by supplanting its first Cause. But, be it understood; I am not so bold as to suppose it cures Stones, or Cal-

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culi of all Magnitudes and different Textures: For we have seen some, which have been taken out of dead Bodies, and others extracted from living ones, that are near as hard and compact as Flint; and which no Medicine in Nature could so much as touch, or produce the least Effect on; let whimsical Chymists, and other chimerical Persons talk what they will. But for Stones of lighter Substances, and looser Textures, they are certainly dissolvable in the Body; and to that End, this Water will work Wonders.

Thus far; Having described the Virtues and Uses of the *Pouhon* Water; I come now to say something in Abatement of it: Which, however, I cannot offer upon the Foot of Experience, but Tradition, and the common Testimony of the People, as well as the Opinion and Report of Physicians who reside at and about *Spaw*. I have been credibly informed, and well assured, that this Water has been found hurtful sometimes in the Gout; as also in stubborn asthmatick Disorders, and radicated Coughs. The Reason of which may be this: When the Matter constituting a Fit of the Gout, is so

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compact and solid, as to refuse Diffolution; Division, or Comminution; or when that productive of an Asthma, a Cough, or the like, is so tough and viscous, as not to admit of Attenuation or Resolution; either Case will be so far from meeting with a Cure, that, on the contrary, it will be the more confirmed by the Use of this Water. But then, even in these Cases, I conceive that some previous, preparatory Methods might be directed by the skilful Physician, which would greatly facilitate and contribute to the Success of the Water: And such, as in moral Certainty would prevent any ill Effects from it; though the Ends proposed were not perfectly obtained. But, indeed, it is too much the Practice of Persons who visit *Spaw*, to go giddy to work, and drink the Waters without consulting a Physician concerning the particular Kind; the necessary Preparations, and the Quantity or Manner of Drinking. And though many may do this, without drawing any palpable Inconveniency on themselves; yet they very probably frustrate thereby the Benefits and Advantages which might otherwise have been obtained. And thus, these Waters, the
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most innocent, as well as most excellent Remedy in the World, may be sometimes brought into Discredit.

When I reflect on the many excellent Virtues and Properties of this Water, and its admirable Effects, I apprehend a very just Parallel may be drawn betwixt them, and those which arise from Cold-Bathing; so far as the latter extend: For the Uses and Benefits of Cold-Bathing are, by much, more limited and confined than those of the *Spaw* Water. Cold-Baths are calculated and adapted rather to prevent, than cure ill Habits in general: Whereas the *Pouhon* Water does both the one and the other. The Use of Cold-Bathing would be very pernicious, and even destructive in many Diseases arising from ill Habits of Body; but the like could not possibly happen from *Spaw* Water in equal Circumstances. However, Thus far their Uses and Benefits may be drawn in exact Parallel: The *Spaw* Water strengthens and restores the impaired Action of the Fluids and Re-action of the Solids; so does Cold-Bathing; but inversely. The *Spaw* Water dephlegmates, thins, and refines the Blood in a duplicate Sense: The Use of
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Cold-Baths, does the same in a single Sense. *Spaw* Water strengthens the nervous System, and promotes the Elaboration and Separation of animal Spirits: Cold-Bathing does the same. The *Spaw* Water is eminently good to correct Errors in our Secretions, especially that of Perspiration; so is Cold-Bathing. *Spaw* Water strengthens and restores the decayed elastick, or contractil Force of the excretory Pores, hardens the Skin, and renders it Proof against Cold, and the like external Injuries: And, that the Use of Cold-Bathing, answers all these Ends in the highest Degree of Perfection, is universally allowed. On the other Hand; wherever the *Spaw* Water has appeared to be hurtful; as in stubborn Gouts, Asthmas, radicated Coughs, and the like; there too, Cold-Bathing would be extreamly pernicious. And the Reason of these Things will appear plain, if we consider, *First*, That Cold-Bathing has only the single Property or Power of hardening a lax Skin, and of increasing the contractil Force and Action of the Solids, and Reaction of the Fluids: But it communicates no other Benefit to the latter, except such as will necessarily result from the supposed increased
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Action of them: And these are the Resolution and Comminution of all grumous, phlegmatick, and slimy Humours; by which Means, those already formed, and incumbent in the Blood, will be prepared and thrown off by the Excretories of the Body, and the Generation of new ones be at the same Time prevented: Whereas, the *Pouhon* Water does not only answer all those Ends, by the very same Mechanism inverfly; but at the same Time, by its volatil, elastic Spirit, and other inherent Qualities, greatly assists to the Accomplishment of the same, and many other great Ends.

Furthermore, The *Pouhon* Water and Cold-Bathing are alike qualified to render the Body defenceable (in a comparative Sense at least) against all malignant and pestilential Diseases. For, As both the one and the other manifestly strengthen the elastic, contractil Force of the exterior Pores, increase the Motion of the Blood, and cause a strong and vigorous Perspiration; so they must necessarily strengthen the Barrier without. For, in Proportion to the Quantity of Matter thrown off by Perspiration, and the Force with which it is propelled, it will resist

fiſt and repel all malignant and other noxious Effluvi-
ums.

That great Numbers of weak, valetudinary Perſons, have been rendered ſtrong and robuſt, by the Uſe of *Spaw* Water or Cold Bathing, is undeniable: And I apprehend it would be no difficult Matter to adjust the Quantity or Meaſure of ſuch Effects by certain Experiments. As for Example, By holding finely poliſhed and burniſhed Metals, or Looking-Glaſſes before a Man's naked Stomach and Breſt: For, By ſuch Experiments, the Quantity of Dew they received, and the Diſtance they took it at, would ſufficiently determine the Degree of Perſpiration, and the Extent of its Atmoſphere. The Effects of this Sort, produced from the Uſe of *Spaw* Water and Cold Bathing, reſemble thoſe cauſed by voracious feeding on high ſeaſoned Meats and ardent Spirits; only thoſe flowing from the latter, are momentary, ſoon ſubſide, and give Place to bad Conſequences; whereas, thoſe produced by the former, are conſtant, equal, and permanent, and are aſſociated with many other great Benefits.

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To make this appear, Let any one, by Means of the above-mentioned Experiments, measure the Extent and other Circumstances of the Atmosphere, encircling a Person under a Debauch of high seasoned Meats, and ardent Spirits: And let him observe again, by the same Experiments, when the Debauch is intirely over; he will assuredly find the Action of the atmospherical Effluvia to be much brisker, the Substance denser, and the Extent greater in the first State, than in the latter. Now, under the Circumstance of such a Debauch, a Man would, perhaps, be as well secured against the Access of infectious Diseases, as if he was interested with all the Benefits of *Spaw* Water, or Cold-Bathing. But, alas! When this temporary Guard is fled, leaving a weak Barrier without, and the Fortrefs within equally defenceless, he will then become a very easy Victim to the Fury of the Enemy.

The learned and ingenious Doctor *Cheyne*, (I remember,) in his *Essay on Health and long Life*, censures Punch very severely, for the many Mischiefs it causes to Persons much accustomed to drink of it; and especially the *West-Indians*. But, for my Part, (though

(though I have all imaginable Respect and Deference for Doctor *Cheney's* Sentiments and Writings,) I am of Opinion, that the Mischiefs he charges it with, proceed rather from the Disorders it creates in our natural and regular Secretions, than from any noxious Qualities inherent in the Punch itself. And, the Disorders I would be understood to mean here, may be no other than an Inequality in our Secretions at different Times. For, Suppose a Man to debauch every, or every other Day with Punch, or any other ardent, spirituous Liquor: In that Case, all the Secretions, but especially Perspiration, would be in a State of reciprocal Ebbing and Flowing, which would be sufficient to superinduce very many and great Evils.

The *Geronster* Water, which is at this Day in great Repute upon the Spot, is, as it were, saturated with a sulphureous Vapour or Effence; which, as I have already proved, is exceeding volatil. It is this sulphureous Impregnation, which (by Reason of its great Abundance and Volatility) renders it so eminently useful in all asthmatick Disorders, and inveterate Coughs. Its Mars, as I have said before, is better elaborated, and more

genuine than in any of the other Waters, as appears by its ready Approach to the Magnet; which it does without that Purgation by Fire, that is requisite to separate it in the Feces of the other Waters. This Water is of wonderful Efficacy in curing Barreness; that, indeed, is accounted its cardinal Virtue: It acts here, chiefly, by Means of its sulphureous Essence; which not only attenuates and dissolves the viscous, stagnant Humours, and so scoures and cleanses the Glands and Vessels of the Womb, from whatsoever foul Humours they may be stuffed with; but at the same Time, invigorates and inspirits the whole Seat of Generation. It is a grand Specific in the Scurvy; which it cures sooner, and by a different Mechanism to that of the *Pouhon*: It warms, comforts, and strengthens a cold, weak Stomach: It powerfully corrects all Acidities and Austerities, and discharges their Matter either by Urine, Vomit or Stool: It destroys all tenacious, viscous Humours in the Blood, and renders it fluxil, pure, and spirituous. Its Virtues extend even to the Gout (that Scandal to Physick and its Ministers;) which it generally relieves, and sometimes cures.

I cannot omit to remark, That this Water is attended with very odd Effects when People first begin drinking of it. It gives a Giddiness, and to some a Numbness of the Head; which greatly indisposes Persons for Reading, but more especially for Writing, during some Hours. These Effects plainly speak the volatil, sulphureous Essence; which, by rarefying the Blood, so distends the arterial Vessels, that the Nerves are compressed by them, and the animal Spirits seem imprisoned for a Time: Or, the like *Phænomènon* might arise from an extraordinary Action impressed on the animal Spirits themselves; whence the Brain might be for a Time confused; and the Nerves and Membranes endeavouring at Extension, seem girt and confined. The *Sauveniere*, is what next demands to be spoke to.

The Virtues and Properties of this Water are not very numerous; but are, nevertheless, extraordinary in their Kind. This Water is chiefly directed and determined to the urinary Passages, being highly Nephritic and Diuretic; and, consequently, powerfully breaks to Pieces, and expels the Gravel and Stone; whether it be in the Kidnyes,

Ureters, or Bladder. It is a fovereign Remedy for Ulcers in the Reins, Ureters, or Bladder; which, it first deterges and cleanses, and afterwards disposes to heal. It is likewise a Specifick in the Hemorrhoides, and represses inordinate Fluxes of the Menses.

The three other Fountains, *viz.* The *Groesbeeck*, the *Wartroz*, and the *Tonnelet*, have likewise their respective Virtues and Properties: But, as I had not Time to examine them by Analyzation; so, am not duly qualified to judge, or speak of them.

I might enlarge, and embellish this little Treatise with numberless Cures, wrought by these Waters; which I could have gathered from the Physicians, and other Inhabitants of the Country; and which would be so many Testimonies of the Justice and Truth of my Reasonings upon them: But that would be foreign to my Intention and Purpose; which were only to give a succinct, mechanical Explanation of the respective Natures, Properties and Uses; and to assign Reasons for the various and great Effects of these Waters; and all these founded upon, and deduced from the most solid Basis, *viz.* The Natures, Virtues, and Properties of the several

several individual Principles, with which they appear to be impregnated; and that, considering them, first in their simple, and afterwards in their compounded State.

Postscript. Although, in revising and transcribing this Essay, (after a Suspension of seven Years; during which Time, it has been out of my Hands,) I have strayed a little from the Promise I made in the Preface, of sticking close by my Text, and introducing Nothing that was not strictly pertinent to it: Yet, as I have only interspersed a Digression or too, (which duly considered, may appear not altogether foreign and impertinent to the main Scope,) and have, *en passant*, paid a slight Tribute to the Merit of some great Men of the Faculty: So, I hope the candid Reader will be indulgent, and pardon this Breach of my Covenant with him: For such I account the Preface of a Book to be.

OF THE
Hot FOUNTAINS
AT
AIX-LA-CHAPPELLE, &c.

HAVING proposed in the Title to the foregoing Piece, to subjoin a cursory Enquiry into the Natures and Properties of the hot Fountains at *Aix-la-Chapelle*; and having to that End, taken a View of the several Springs there, and tasted them on my Way to *Spaw*; yet I designed at my Return, to have passed a longer Time there, on Purpose to have gone through the whole Class of Examinations upon their Waters. But, just as I had finished the above *Treatise on the Waters of Spaw*, and was preparing to return to *Aix*; some Affairs of Moment required my immediate Departure for *Holland*. Hereupon I contented

tented myself with getting all the Materials I possibly could, and brought them with me. What I here call Materials, are the Principles discovered and produced from them by Analyzation, &c. And these were only a Salt, and a very fine Flower of Brimstone; which last seems to me to be Nothing else than the meer gross and substantial Part of a Vapour, which is perpetually steaming from the Waters, and gathers to the Sides and Roofs of the Pits and Bathing Rooms; whilst the more fluid, watry Particles dissipate. However, Though I have not had an Opportunity of analyzing these Waters; yet, as I am well assured, by Physicians and others, that the Salt and fine Sulphur aforementioned, together with the more gross Sulphur that is produced by Exhalation, are the only Principles discoverable in them: So I hope, upon a due Examination of those Individuals, to be able to judge and determine on the Virtues and Uses of the Compound. But before I proceed, it may not be amiss, that I relate the Sentiments of some Writers of that Country, concerning the Nature of their Waters.

And, *First*, They all agree to allow they contain a Sulphur in great Plenty ; and though they don't express it in the Manner I do ; yet, were we to debate it fairly together, I believe they would scarce disagree with me. Their great Dispute is about the Salt found in them ; and concerning this important Point, there are very many and different Opinions.

Monfieur *Heuesh* maintains, that it is an alcalic Salt, inclining to the lixivious Kind. Messieurs *Blondel* and *Didiez* affirm it to be a Confusion of Sea-Salt, Nitre, and Alom. Monsieur *Franciscus de le Boë Silvius*, as well as Monfieur *Heuesh*, denies that Sal Gem, or Nitre, bear any Proportion in this Salt : And the former urges, as a Proof, that the great Acidity of Sal Gem, or Nitre, cannot admit of such a Supposition. *Abbeers* agrees with these latter, in the Opinion that it contains no Nitre ; and he gives for a Reason, that Nitre is no where generated, but in the Superficies of the Earth, and not in its Entrails ; Because the acid Air (which he takes for granted, is absolutely necessary to the Formation of Nitre) cannot penetrate
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into the Bowels of the Earth; where he supposes these, and indeed all other mineral Waters, receive their Impregnations. Monsieur *Vicaire*, is likewise of Opinion, that Nitre has no Share in this Salt: But he pretends to support his Notion by a dogmatical Position, which I can by no Means allow to be just: For, he confidently affirms, that Nitre is a Part of, and peculiar to the animal Kingdom; and that it does not in the least appertain to the Mineral, *Glauber* seems to refute this Position with great Colour of Reason. He asserts and maintains, that there is no Composition in the three Regions of the animal, vegetable, or mineral Kinds, without Nitre: And this seems very probable; because the alcalic Salt of Vegetables and Minerals, together with the Acid of the Earth, are, in Nature, no other than the Acid of the Air, and the alcalic Salt of Animals; from which Nitre is generally allowed to be produced.

The same Thing may be said of all mineral Waters; because the most alkaline amongst them contain something of an acid Spirit: And *Vicaire* affirms, that something which
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he calls the universal, interior, acid Spirit of the Earth, is the efficient Cause of all such Impregnations in Waters. He supposes this Spirit to exist in all Minerals; and that upon their Immersion in Water, the Spirit extricates itself from its Imprisonment: And, that afterwards by its reciprocal Action on the Minerals, and the Water in which they are immersed, it divides, subtilizes, and finally, prepares and disposes the Minerals in such a Manner, as to make them incorporate, and become essential with the Water.

Thus I have given a short Abstract of the Sentiments of several the most reputed Authors, who have mostly resided at, and about *Aix-la-Chapelle*, concerning the Nature and Essence of their Waters; believing it will not be unacceptable to the Reader. But, I am of Opinion, the World will agree with me, that these chymical Definitions are only a Gingle of Words, and prove very little, or nothing essential. Indeed, they seem to me, rather calculated to perplex and confound the Truth of Things, than to obviate and explain it. Doctor *Bres-*
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mal, indeed, offers some fair, and honest Experiments upon them; but then they only serve to prove what one may almost discern with the naked Eye. As, *First*, Where he avers, that the hot Fountains of *Aix-la-Chapelle* contain a Sulphur; because, that upon the Projection of powdered Gaul into them, they immediately turn as white as Milk. *Secondly*, Because that Nitre and Sea-Salt being concentered with the sulphureous Acid of Vitriol, and infilled into the said Waters, they appear tinged with a purple Colour; which he says could not be produced, except by the Mixture of two Sulphurs. But, to sum up, or rather to banish all further Regard to the many Disputes concerning the Nature of this Salt; I may venture to affirm it (though really neutral) to be much retaining to the alkaline Kind; as is manifested by the very notable Effervescence that arises upon its Projection into acid Spirits. But, though the alkaline (as abovesaid) is manifestly their predominant Quality; yet some Experiments evince, that they are not without an Acid too. But, e're I finish my Report of these

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Authors; I must do them the Justice to relate some Accounts from them, which are not incurious. And, *First*, Doctor *Bresnal* asserts, that the Sulphur of the *Aix* Waters is produced by a Mixture, or Operation of the universal, acid Spirit, with certain fat, bituminous, and subtil Particles: And these Principles (he says) in Conjunction with the lixivious, alkaline Salt, must necessarily yield a Remedy to Men, for which they cannot sufficiently thank the Almighty.

This Notion is not disingenious; and the universal acid Spirit, he talks of, being granted; I can easily conceive how the supposed Spirit, acting upon greasy, bituminous Particles, may change them into the Form and Effence of a Sulphur: And was it convenient in this Place; I could offer some Experiments, not unlike it in their Nature, which would be so many collateral Testimonies of its Probability. But Monsieur *Vicaire* delivers Experiments, which are absolute Proofs of it. He affirms, that any inflammable Oil: For Example, Oil of Turpentine, Juniper, or Amber, mixed with a volatil acid Spirit, and distilled through

a Retort ; there will remain a perfect Sulphur.

This is his Text. *Rx. Pingue aliquod inflammabile, v. g. Oleum Terebinthinæ, Juniperi, aut Succini, &c. distilla per Retortam, & acquires Sulphur vivum perfectum.*

(1.) Monsieur *Bresmal* further observes, That the Salt, which remains after Evaporation, being put into a Crucible, and placed in a melting Furnace, will melt presently : That for the Time it is on the Fire, it gives a Flame resembling live, burning Sulphur ; or like common Salt in a melting Furnace. After this Operation, he says, the last assumes an ironish Colour, and becomes fixed : Nevertheless, it dissolves in Water ; and the Solution being filtered and evaporated, renders a Salt perfectly white : But that Salt, being again exposed to the Fire, loses its Fixidity, and dissipates entirely. But here I take Leave of those Authors ; leave them to themselves, and proceed to deliver my own Sentiments.

The fine Flower of Brimstone, which results from the Steam of the Waters, in the Manner above mentioned, (and in whose Formation,

mation, Nature's self is the Artificer) is a very subtil, pure Effence: And either in its natural and simple, or in a compounded State, does undoubtedly very far exceed that prepared by human Art or Skill. Its very Price gives some Colour to this Supposition: For the Person, from whom I had it, told me it cost him five Shillings per Ounce: And I am assured on all Hands, that there is no Instance of its being sold for less than two Pistoles per Pound in Quantity. This, as above observed, is a presumptive Testimony of its Excellency; but its Taste, its Subtilty, and Purity, are self-evident Proofs of it. Besides this; the more gross, terrestrious Flower of Brimstone, (which the Waters yield in such great abundance by Exhalation,) deserves our Notice likewise. This, though infinitely short of that I have been speaking of, is yet vastly preferable to the ordinary Flower of Brimstone.

The Salt extracted from these Waters (as has been already proved) is of the neutral Kind: That is, it is neither perfectly alkaline, nor perfectly acid. It imparts a very strong Relish; and being once communica-
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ted to the Palate, is retained a good while. It is very picquant, and somewhat acrimonious. I am not informed of the Method to extract this Salt from the Waters, separate from the Sulphur: But I apprehend it may be effected by boiling any Quantity of the Water over a Fire, 'till the spirituous, volatil Particles, being dissipated, (which, like as they do in the *Spar* Waters, preserve the several Principles in a State of intimate Mixture, Dissolution, and Rarefaction,) the individual Principles, resuming their more gross and terrene Forms and Natures, begin to attract, aggregate, and combine together. The Water being brought to this State, may be passed through a Paper by Filtration; in which Operation all the Salts will escape with the transparent Water, whilst the Sulphur remains behind in the Paper: And the filtered Water, being afterwards evaporated, would leave the Salt at bottom: And as to the Quantity of it, according to Doctor *Bresmal*, every Tun of Water yields a Pound of Salt.

This fine Sulphur and Salt, together with the more gross Sulphur produced by evaporating

rating the Waters, are, as abovesaid, the only Principles discoverable in them: Whence it appears a great Myſtery how they acquire ſuch a Heat in the Bowels of the Earth, as they are evidently poſſeſſed of when they are ſpewed out of it. Indeed, it is natural and reaſonable to ſuppoſe, that the ſoft ſpongy, yielding Parts of ſulphureous Matter, might ſuſtain an eternal Mixture, Motion and Collifion with the Particle of any Salt whatever, (eſpecially when they both flow in ſo cool, and pacific an Element as Water,) and never excite Heat; like as the Particles of divers heterogeneous Bodies, which perhaps are all hard in their Natures, and diſſimilar in their Figures, moſt reaſonably and neceſſarily muſt do, when in violent Agitation and Collifion together: And eſpecially when they flow in ſo pure and thin a Medium as Air; which will ſcarce interrupt their Motions, ſheath their Points, or ſtifle the Heat they may produce. The Fact however is evident; and it has been a long conteſted Point amongſt Writers, what are the Cauſes of it. The ingenious Doctor *Chrouet*, in his Book intituled, *Traité ſur les Eaux d'Aix*

d' Aix, &c. recounts the Opinions of two Authors, who have been most conspicuous for their Labours to unriddle this great Mystery, which when brought to Light, won't avail the World a Halfpenny, and very justly exposes them as unreasonable and ridiculous: But then, he substitutes Notions of his own, in the room of those he has dethroned; which I confess appear to me (though wrought up with more Art, and with a more mechanical and luxuriant Invention) to be equally chymical and groundless. However, having given my Suffrage in its Favour, as preferable to the others, in Point of Invention and Neatness, I will here give an Abstract of it.

Doctor *Chrouet*, first supposes a subterranean Cavern, of any given Dimensions: Let us call it (for Example) 200 Foot long, 60 Feet wide, and 30 deep. *Secondly*, A Bed of Sulphur, situated at one End of the supposed Cavern, to have taken Fire, and to burn continually, throwing its Flames all along the Cavern. In the third Place, He makes this Cavern, towards the farther End, to send out a smaller Branch on one Side,

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which, we are to imagine, terminates in a subterranean Current of Water. And, lastly, that the sulphureous Flames, being projected through this Branch, with great Force and Rapidity, because of its Narrowness, are quenched in the Water; and by that Means, doth heat and impregnate it with its Sulphur.

The Objections brought against this Solution by the Physicians and Authors of the Country are twofold. *First*; It is affirmed, that Fire cannot subsist without Air. *Secondly*; That the supposed Bed of Sulphur would decay, and be entirely exhausted with Time. But these Objections are, in my Opinion, of but very little Weight. The first is built upon a false Supposition; (for Air pervades and possesses all Parts of the Earth, even to its inmost Recesses;) and the latter carries no great Weight with it, because the Earth may continually vegetate Sulphur to feed the Bed proportionably to what is spent in Flames.

But here perhaps it may be expected, I should offer my own Sentiments upon the Matter, which I will do with all possible brevity: In order to which, it may first be

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be necessary to describe the Situation of *Aix*.

The City of *Aix* lies in a Bottom amidst a Circle of Hills, which are pretty high, very rocky, and of an almost perpendicular Ascent. Now, as it's utterly impossible to come at an absolute Certainty about these Things, we must content ourselves with the most probable Conjectures; and my Conceptions about the Matter are as follows. I imagine several large Basons or Reservoirs in the Bowels of the Hills, which encircle the City, towards their Tops; formed by Nature to receive the Waters continually rising from all around towards their Eminences. I imagine further, that, the Waters rising continually upwards, and forcing themselves incessantly into the supposed Basons or Reservoirs, Nature has opened other Conduits or Channels, by which they are derived, and conveyed from the Basons to the Places where they rise out of the Earth in hot-boiling Springs.

It will not be disputed, I believe, that the Causes productive of Heat, in all Bodies whatever, are Matter and Motion: And the Degrees of Heat will always be in the

compounded Ratios of the Qualities of Matter, and the Quantities and various Directions of its Motion.

I suppose the Waters to have acquired the first constituent Cause, assigned to Heat, before they reached the said Basons; by running through some sulphureous and saline Beds in their Course thither: But I presume that the latter Cause was impressed on them, in their Passage from the Basons to the Places where they are discharged out of the Earth. I suppose again, those Ducts or Channels, by which the Waters are conveyed from the supposed Basons to the Places where they issue out of the Earth, have infinite Turnings and Windings; and that they grow gradually less and less. Allowing Things to be thus disposed, and the Waters to be forced forwards with a great and continual Pressure, together with their own Weight; and, besides, passing *de vasibus majoribus in minora*, from larger Ducts or Conduits into smaller, they must necessarily move with great Rapidity: And, as they will meet with many retrograde Courses in their Way, the Principles or Particles, with which they are imbued, will have

so great and various Commotions, and be in such different Angles and Directions, as cannot fail to excite great Heat. And further; besides the Benefit of Heat thence arising, this violent Pressure of the Waters, and intestine Motion of the heterogeneous, dissimilar Particles contained in them, must necessarily digest, divide, subtilize and sublime them to the highest Degree of Perfection.

I apprehend this Notion cannot be liable to any Objection, either in Nature or Reason; as all those I allude to (of which I have only quoted the most specious and ingenuous) are: For, if we consider the many Rivulets of common Water, which spring from the Tops of high Mountains, it would be impossible otherwise to account for the Way or Manner of their getting thither, than by supposing that Water does actually pervade the Soil, and ascends à *Profundis in Altum*: Though I shall not go about to explain in this Place, by what Mechanism Nature produces a *Phænomenon* so contrary to the known Property of Fluids; which is always to descend, except sustained by something, or else impelled upwards by some active Force.

And thus I conceive the *Aix* Waters; the most admirable and stupendious for their Virtues and Uses, acquire their Heat and the Perfection of their Qualities. But e're I dismiss this Topic; to give my Conjecture all the Force and Weight it's capable of; let us examine it more minutely. I suppose those Ducts or Channels, by which the Waters are conveyed from the Basons to the Light, are not only conical, but have infinite Turnings and Windings, in the most retrograde and opposite Directions to one another; otherwise they could not impress so great a Heat on the Fluid passing through them: For though true it is, that conical Tubes or Canals, running in right Lines, might, by the Resistance their Sides would give to the influent Waters, cause some intestine Motion in their inherent Particles; yet such a Motion would be far inferior to that caused by the different Turnings and Windings I suppose.

This Argument has a very natural and just Appeal to a Thing every Day visible to our outward Senses: Which, though not exactly parallel to it; yet I think gives great Colour
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of Truth to my Conjecture. This is Thunder and Lightning: I consider them as one, because they are most commonly inseperable, and are Effects of the same Cause; both which, I presume, are caused by a violent Compression of Air, abounding with heterogeneous Particles, in the midst of Clouds, which environ it on all Sides. Now, was that Pressure, I speak of, equal on all Sides, (a Thing not to be supposed) the intestine Motion caused in the Air would be nothing, or, at most, but very inconsiderable; and consequently, but little Heat, much less Fire, would be produced. But this Pressure being unequal on the different Parts of its Superficies; the inclosed Air must suffer great intestine Motion: And thus moving, in Obedience to the unequal Pressure on its Superficies; transversely and obliquely in all manner of Angles and Directions; its heterogeneous Particles, striking variously and forcibly against each other, excite so great a Heat, as to terminate in Fire. And so the Air, which had been for some Time pent up and confined in the Midst of Clouds, enlarges and relieves itself by Explosion, which so

fenfibly appears to us in the Shapes of Thunder and Lightning.

I am fo unhappy, indeed, as to differ from a great Man of our own Country, in Opinion about the Cause of Heat in Mineral Waters; that accurate and ingenious Naturalist, Doctor *Lyster*. He fays, all hot Springs derive their Heat from the sulphureous Marchafites, which are formed, heated, and inflamed in the Bowels of the Earth: And from them likewise, fays he, all Earthquakes, Volcanos, and burning Mountains proceed.

I have weighed and confidered this Notion very maturely and impartially; and fo far as it regards Volcanos, burning Mountains, and the like, I agree with him: But, as it relates to hot Springs, I cannot help differing from him. For how unreasonable must it be, to imagine that thofe sulphureous Marchafites fhould continue burning for fo many Ages, and always with equal Force, or nearly fo. And furthermore; fhould the Fewel be exhausted, or the Fire be extinguished by Time or Accident; the Water would foon loofe its Heat. Befides this,
another

another Objection presents against Doctor *Lyster's* Definition. For, did those Waters derive their Heat from the supposed Marchasites; they must not lie at any great Distance from the very Issues; otherwise, the Waters would grow cold again in their Passage through the Earth: Whereas, allowing they acquire their Heat in the Manner I have laid down, it will be not only continual, but always the same, or nearly so. Having thus described the Cause of the Heat and Impregnations in the *Aix* Waters, I shall proceed to consider the Virtues and Properties of their inherent Principles.

The Virtues of Sulphur I have already spoke to pretty largely, in treating of the *Spaw* Waters; as a Principle with which they are impregnated. However; as it exists in the Waters of *Aix*, in a different Form, Mixture, and Proportion; so it may not be amiss to consider it under this new Shape.

It would be unnecessary to repeat here, that Sulphur, however shaped, mixed, or modelled, is perhaps one of the greatest Purifiers of the Blood in Nature. Besides that, it rarefies the Blood beyond any other Thing, yet

yet discovered; whether in the vegetable or mineral Worlds (Opium excepted.) It is by Means of this rarefactive Faculty, that it resolves, attenuates, and divides all gross Concretions, and other viscous Combinations of Humours in the Blood, or elsewhere: And it not only fits and prepares such Humours to go off by Perspiration, but generally expells them by that Secretion; and sometimes (though more rarely) by Stool and Urine. It greatly promotes the Digestion and Concoction of ill Humours, and is equally good in many acute, as well as chronical Diseases. In many of the latter Denominations, it entirely exterminates their very Seeds and first Principles; and in those of the former, it cures by bringing on a Crisis. It is too well known, to need mentioning here; how efficacious Sulphur (even in its most coarse and common Form and Nature) is in all scorbutic, and other cutaneous Eruptions: And I am very much of Opinion (though I have no Authority for it, but my own Reason and Conjecture) that so pure a sulphureous Essence, as is contained, and in so great Plenty, in the *Aix* Waters, would, if judiciously directed

rected and long used, exterminate the Leprosy itself.

It is notorious of what admirable Use this Fossil (especially as it exists in the *Aix Waters*) is in Phthisicks, Asthmas, and all other Diseases of the Breast. It is a Specific in all Diseases of the Reins and Ureters; and forcibly dissolves and expels both Gravel and Stone: The last of these it performs by destroying (as I have observed before in my Treatise on the Waters of *Sparw*) their Cement, and the First by increasing the Motion of the Fluids; and consequently the Expulsion of Humours, &c. which it greatly facilitates; by softening (at the same Time) and relaxing the Passages, and so rendering them capable of greater Distension.

The Salt which these Waters manifest upon their Analyzation, is, as above observed, of the neutral Kind; and of a sub-acrid, piquant Taste. One very considerable Property or Use of this Salt is; that, by opening the Body of the sulphureous Particles, these are more infinitely divided, and more intimately mixed, and united with the Waters, than so spongy and tenacious a Substance would

would otherwise be capable of. But as Nature is no where niggardly in bestowing Endowments on what she produces to Light: So this Salt, besides the Property already ascribed to it, has several innate, medicinal Virtues, proper and peculiar to itself. It is highly absterfive and cleansing: By means of which Properties, it scours (in some Degree at least) all the Vessels of the Body in general; but more particularly the Stomach and Guts, from any sort of Filth, which may adhere to them, so as to clog and depress their elastic Force, and obstruct their natural Functions. If it meets with any Filth in the Stomach, it usually discharges it by vomiting; and sometimes, though more rarely, by Stool: But if it encounters Filth, or any kind of noxious Humours in the Intestines, it always discharges them by Stool; and, according to the Quantity and Quality of the Humours offending, it will sometimes create a very notable Conflict for a Time; 'till Victory inclining to the Remedy, the Enemy yields. But the chief and sovereign Virtue of this Salt is, that, when coacting with the Sulphur, whilst This rarefies, at-

attenuates

tenuates and resolves the noxious Humours; That, by irritating the Solids, increases their Nifus or Action; and, by that Means, enables them more effectually to throw off the Humours so prepared by some Secretion.

Thus far, I have only pointed out the Virtues and Properties of these two Principles, as they are simple and separate: It may now be expected I should consider them in their mixed or compounded State; determine on their conjunct Qualities, and direct them to such Diseases as they appear most singularly, and eminently good for.

The *Aix* Waters, being impregnated with such Principles, and in the Quantities and Qualities above named; must necessarily possess the following Virtues and Properties. And first: They are peculiarly calculated to divest and cleanse the Stomach from all slimy, glutinous, or other noxious Humours: They warm, comfort and revive it, if cold, weak, and vapid: They strengthen its Ferment, and correct a redundant Acid: They cleanse, warm, and comfort the Guts; and invigorate, as well as strengthen their peristaltic Motion. They destroy Worms, and
totally

totally exterminate their very Seeds and first Principles. These Waters are a sovereign Remedy for Coughs, Phthificks, Asthmas, and almost all other Diseases of the Breast. They are of singular Use and Benefit in the Jaundice, whether the yellow or black; whether recent or inveterate. They are a Specific in pluretic and rheumatic Disorders; in which they not only palliate, and relieve the Effects; but oftentimes extirpate their Causes. It is notorious, of what admirable Use and Efficacy these Waters are in all scorbutic Disorders; nor can they fail to equal (perhaps) any other Medicine in the Reduction of the Scrophulous and Strumous: Indeed, I cannot suppose them void of Use, even in the Gout. They are a Specific of the first Rank, in the Gravel and Stone; and likewise for all Ulcers in the Bowels, whether the Guts, Reins, or Ureters. All Experience testifies (what Reason in this Case plainly speaks) that they are of stupendious Use and Efficacy in all inflammatory Diseases; especially those of the Bowels and urinary Ducts; bleeding being premised; and such other Helps joined with them, as
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the good Physician shall think convenient. I will not presume to extend their Benefits to stubborn, radicated, venereal Cases; but in recent Claps, they will happily and speedily do the Business, with only a very little Help drawn from the Galenical and Chymical Provinces: Indeed, it's to be wished their Utility in this Particular, was universally known; as it might hinder many a good Constitution from being shattered and debilitated by Medicines (which are but too much in Use amongst Quacks and ignorant Pretenders to great Secrets in that Way; not to mention some Men of Learning and a regular Education) that have a rugged and violent Operation.

To conclude; I flatter myself (and I hope Physicians, and others, who are well acquainted with the *Aix* Waters, and interested in them, will agree with me) that I have given a pretty compleat (though brief) Account, of their most eminent and conspicuous Virtues and Uses: Though, I allow, they may be used indifferently, in many other Cases, with some Prospect of Success from them.

Indeed;

Indeed; a good deal might yet be said in behalf of these Waters, as applicable externally: For it's well known, and universally acknowledged; that in radicated, fixed Tumours, proceeding from a cold, phlegmatic Cause; as also in fixed Pains, arising from the like Causes; very extraordinary Cures have been performed by bathing in the Waters; and pumping them upon the Parts affected: But what I have delivered concerning their internal Use, will be a sufficient Light and Guide, when and in what Circumstances to use them externally; Wherefore I chuse to spare my self the Trouble of writing; and and the Publick that of reading, what in Reality, would be a sort of Tautology.

I have delivered my Sentiments upon the *Aix* Waters, in such a Style, as may perhaps be thought somewhat positive and peremptory: When, at the same Time, I declare that I have neither the Authority of Experience or Tradition for what I say: But have given an Account (meerly rational) of their Virtues and Properties; deduced from a mechanical Consideration of the Principles with which they appear to be impregnated.

If

If ever Inclination or Accident should lead me to visit *Spaw*, and *Aix la Chapelle*, again; I propose to make, yet a more minute Search and Enquiry into the Natures, Virtues, and Properties of their respective Waters: For in my frequent Reflections upon them, since my Return into *Holland*; I suggested to myself several Ways of torturing them; which have not been thought of; or at least not described by any of the Authors I have met with: And, if this little Essay should appear acceptable to the World; I may probably acknowledge its Indulgence, by giving a larger, and more finished Treatise upon the same Subjects.

 CHAUD FOUNTAINE, &c.

ON my Return from *Spaw*, my Curiosity led me to visit *Chaud Fontaine*, and *Huy*. The first of these is a Spring of lukewarm Water, which issues out of the Earth in great Plenty; and is raised by four Pumps into a large Cistern, from whence its conveyed by Pipes into several commodious Baths. This Spring lies in a large Gut, or Valley, near the Side of a shallow River; which, by Reason of its Cascades, and the Mountains that run on each Side of it; and whose Turnings and Windings seem exactly parallel with it; exceeds, for Beauty and Agreeableness of Prospect, any Thing that the *Latin* Poets have described, or that Fancy could suggest.

I confess I was highly ravished with my Passage down the River, from thence to *Liege*, in a Boat. That Place was certainly

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ly calculated for, and designed to be the Seat of the Muses, however they came to miss of it: For nothing could more irradiate and inspirit a poetic Vein. I had not an Opportunity of making any other Inquiries into the Nature of this Water, than by the Taste only; which does not suppose it to be impregnated, in any Degree, with Minerals, either as to Quality or Quantity. And hence; though I allow it to be an agreeable Bath; yet I cannot conceive it possesses any extraordinary Virtues or Qualities.

The H U Y.

Huy, is a Town situate on the River *Meuse*; the Midway betwixt *Liege* and *Namur*. It has only one Spring, which they account Mineral, about five hundred Paces without the Town: It rises out of the Earth, in a Flat, near the Side of a River. I examined its Water by the Taste only: And though the Inhabitants of the Town make great Account of it, I could not discover the Marks of any great Virtues in it, nor

any Characters of mineral Impregnations. I met with a Religious (as I remember, a Jesuit) coming back from it; who gave me a long Detail of its Virtues and Cures. But as his Report agreed very ill with that of my own Senses; I had not Faith enough to believe him, nor Curiosity enough to commit what he told me to Memory.

The C H E V E R O N.

I think there is only one other mineral Fountain discovered in those Parts: And that is the *Cheveron*, whose Waters are commonly called *Bru*: But as this Water deserves rather to be exploded than recommended to the World, on account of a noxious Mineral it contains (as I have mentioned in my Preface) so I did not take the Trouble of going to examine it.

The Fountain L O U Z A N A.

If we take a Survey of Mineral Waters in general, we shall find them, according to their different Impregnations, to be very
 stupendious,

stupendious, and no less variable from each other, in their Qualities and Effects. We see some which soften, and even dissolve a Stone; and others which endure, and even petrify whatsoever is immersed in them. But the most surprising *Phænomena* which present in any mineral Spring in Nature (perhaps) are those of the Fountain called *Louzana*, in the Kingdom of *Galicia*; situate in a high Mountain called *Cebret*, near the Source of the River *Lours*. It is reported by Authors of Credit, that this Fountain flows and ebbs alternately and regularly, like the Sea: though in my Opinion, it cannot reasonably be supposed to communicate with it, or depend on it; being above twenty Leagues distant from it. But what is yet more surprising, is, that this Fountain is reported to be at sometimes as cold as Ice, and at others very hot.

One of the German Authors above mentioned, has undertaken to assign the Causes of those extraordinary *Phænomena*: But, in
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my humble Opinion, with no better Success, nor greater Probability of Truth on his Side, than he has attempted the Explanation of many other Things, in the same Sphere; though indeed, of different Natures. He has really explained them into yet greater Obscurity; or at least, has explained nothing about them; as I believe it will appear to every judicious Reader.

As to the first mentioned *Phænomenon*; the Flux and Ebb of this Fountain; he says, it depends on that of the Sea; and he offers as a Reason for his Opinion, that this Fountain is horizontally parallel with the Sea's Surface. A very violent Presumption this; to say peremptorily, that a Thing situate above twenty Leagues distance from the Sea, is exactly upon a horizontal Parallel with its Surface! A Man should be accurately skilled in the Art of Surveying, or rather in Calculations of that Sort, to make this appear. And after all (allowing that) it will require a great many Arguments to prove, that the
Fountain

Fountain in Question, has such a Connection with, or Dependance on the Sea, as thus to sympathize with it in its ebbing and flowing. But, to say no more; the very Situation he gives to this Fountain, is a plain Contradiction to the Causes he assigns to the *Phænomenon*. As to the latter *Phænomenon*; he says, that the Coldness of the Water is its natural Temperament; but that its Heat is preternatural and adventitious: But, the Causes he ascribes to this *Phænomenon*, are so uncooth, intricate, and trifling, and depend on so unreasonable Postulata, that I forbear to recite them. For my own Part, though it would be very easy to find out Causes, equally at least, if not more plausible than those I hint at: Nevertheless, I confess my Weakness, and Insufficiency for such a Task; and that I am not a little staggered when I think of it. Indeed, these *Phænomena* seem to me to be amongst the *Insolubilia*; or those Things which are too deep for a human and finite Capacity to fathom.

In a Word, I defy all the Adepts in Chymistry (in which Commodity *Germany* is very fertil; and 'tis from that Source that the Definitions of these Problems must be drawn) to produce a Solution that will stand the Test of Examination.

F I N I S.





